Factors Associated with Hearing Aid Adoption

6/30/19

Learning Outcomes

After this course learners will be able to:

1. Identify how some contextual variables influence hearing aid adoption.
2. Identify how some intra-personal variables influence hearing aid adoption.
3. Identify how some interpersonal variables influence hearing aid adoption.

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Assumptions

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I. For most but not all people with age-related SNHL, there is benefit associated with the use of hearing aids

"Hearing aid use (a comparatively non-invasive, low-risk option with considerable potential benefits, which is the only viable treatment for SNHL) improves adults' HRQoL by reducing psychological, social, and emotional effects of SNHL"

(Chisolm et al., 2007, JAAA, 18, p. 169)

II. For a variety of reasons, many people with age-related SNHL are not appropriate candidates for hearing aids, despite possibly benefitting from them.

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What drives hearing aid adoption?

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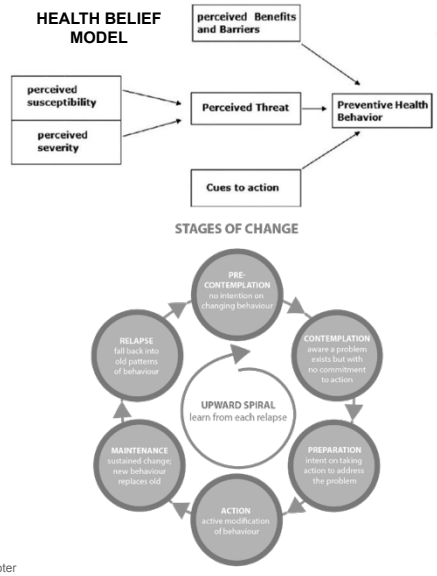
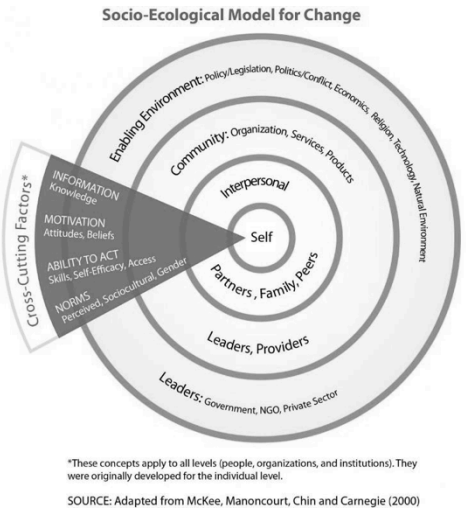
Theoretical Approaches to Understanding Hearing Aid Adoption





*These concepts apply to all levels (people, organizations, and institutions). They were originally developed for the individual level.

SOURCE: Adapted from McKee, Manoncourt, Chin and Carnegie (2000)

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What drives hearing aid adoption?

What Drives Hearing Aid Adoption?

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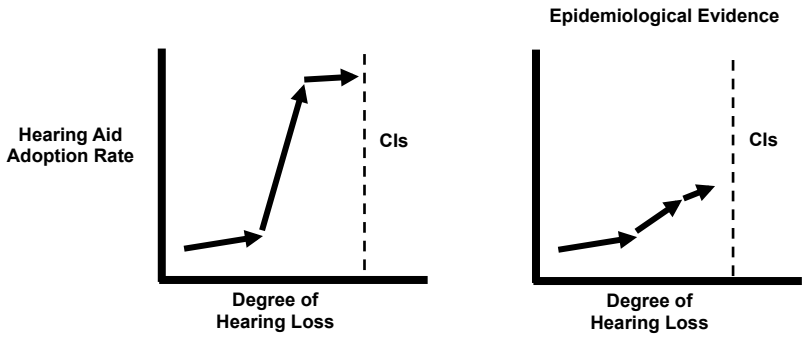
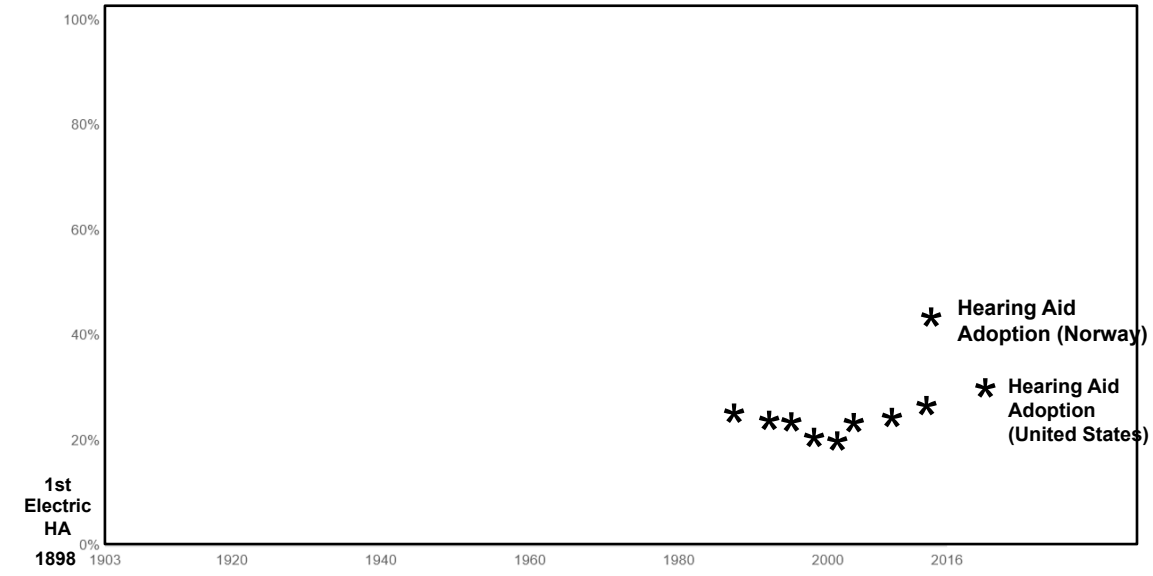


► Objective hearing loss does not fully predict hearing aid adoption

Kochkin, 2009, Hearing Review; Gopinath et al., 2011, An. of Epi; Chien & Lin, 2012, Arch Intern Med

Historical Technology Adoption Curves



Kochkin, 2009; Hear Rev, Abrams & Kim, 2015; Hear Rev; Valente & Amlani, 2017, JAMA Oto Head Neck Surg; Desjardins, 2018, Visual Capitalist

Hearing Aid Adoption: Any guesses?

Hearing Aid Adoption: Self-Perceived Hearing Ability

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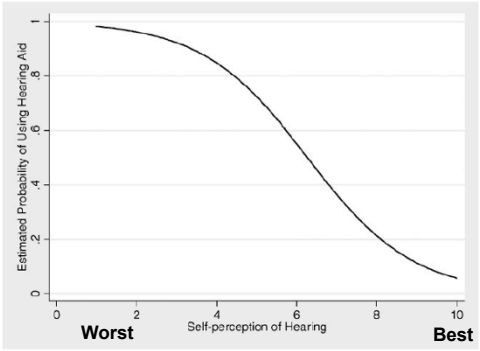

Figure 4. Probability of using a hearing aid vs. self-rating of hearing ability.

"On a scale from 1 to 10, 1 being the worst and 10 being the best, how would you rate your overall hearing ability?"

► Self-reported hearing difficulty (OR ranges from 47.0 to 110.7) single best predictor of HA adoption

(Palmer et al., 1999, JAAA; Sawyer, Dawes, Singh, & Munro, in press, E&H)

What is Perception?

What we think and what we feel

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Objective Hearing Loss

Perception:
- **Social world**
- **Judgmt & Dec. Mak.**
- **Emotion**

Hearing Aid Adoption

Why Study Social Relationships?

- Humans are a pack species
  - We care what others think (shape attitudes & inform beliefs)
  - Relationships are critical to well-being:

Why involve significant others?

Published in final edited form as:
Soc Indic Res. 2014 June 1; 117(2): 561–576. doi:10.1007/s11205-013-0361-4.

The Relationship Between Social Support and Subjective Well-Being Across Age

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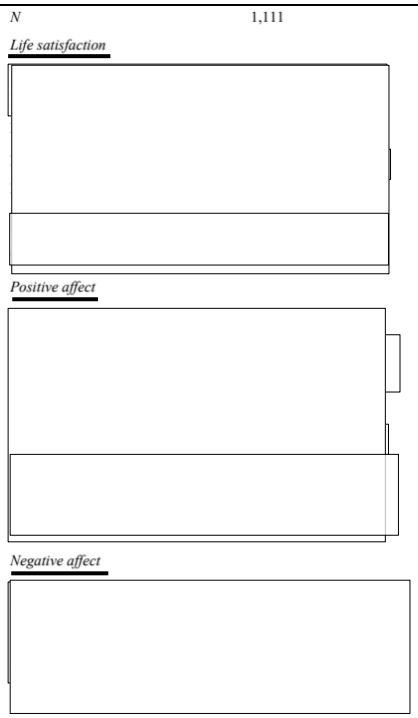

Why Study Social Relationships?

Role of 'others' on health outcomes

Social Relationships and Health

JAMES S. HOUSE, KARL R. LANDIS, DEBRA UMBERSON

Recent scientific work has established both a theoretical basis and strong empirical evidence for a causal impact of social relationships on health. Prospective studies, which control for baseline health status, consistently show increased risk of death among persons with a low quantity, and sometimes low quality, of social relationships. Experimental and quasi-experimental studies of humans and animals also suggest that social isolation is a major risk factor for mortality from widely varying causes. The mechanisms through which social relationships affect health and the factors that promote or inhibit the development and maintenance of social relationships remain to be explored.

has, however, been less clear. Does a lack of social relationships cause people to become ill or die? Or are unhealthy people less likely to establish and maintain social relationships? Or is there some other factor, such as a misanthropic personality, which predisposes people both to have a lower quantity or quality of social relationships and to become ill or die?

Such questions have been largely unanswerable before the last decade for two reasons. First, there was little theoretical basis for causal explanation. Durkheim (2) proposed a theory of how social relationships affected suicide, but this theory did not generalize to morbidity and mortality from other causes. Second, evidence of the association between social relationships and health, especially in general human populations, was almost entirely retrospective or cross-sectional before the late 1970s. Retrospective studies from death certificates or hospital records ascertained the nature of a

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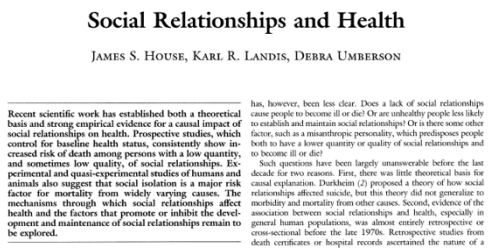

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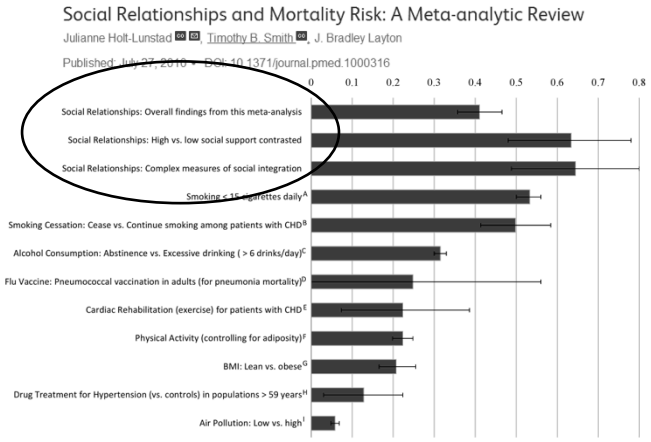

Why Study Social Relationships?

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- Humans are a pack species
  - We care what others think (shape attitudes & inform beliefs)
  - Relationships are critical to well-being:
    - Positive relationships with others are a distinct dimension of psychological well-being
    - Mortality (one's social relationships are MORE important than exercise, obesity, excessive alcohol consumption, etc)

We study social relationships in hearing care because:

- It matters who sits beside us in clinical appointments; SOs take the journey of hearing rehabilitation with us
- Significant others inform decision-making
- Significant others influence one's experience

Effects of HL and Rehab on Interpersonal Relationships?

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Impact of Hearing Loss

- Less involvement in **social activities** (QI, Qn; L)
- Greater **loneliness** (QI, Qn, L)
- Less engaged **social participation** (QI; E)
- Smaller **social networks** (Qn)
- Less availability of **social support** (L, Qn)
- Less intimate **spousal relationships** (QI, L)
- Greater **unemployment** and less **income** (Qn)
- Miscommunication during **medical care** (Q, Qn)

Effect of Hearing Rehabilitation

- More involvement in **social activities** (QI, Qn)
- Less **loneliness** (QI; L)
- More engaged **social participation** (E)
- Improved **spousal relationships** (QI; Qn)
- Improved **peer relationships** (QI; Qn)

► QI = Qualitative; Qn = Quantitative; E = Experimental; L = Longitudinal evidence

The Role of Others in Hearing Rehabilitation

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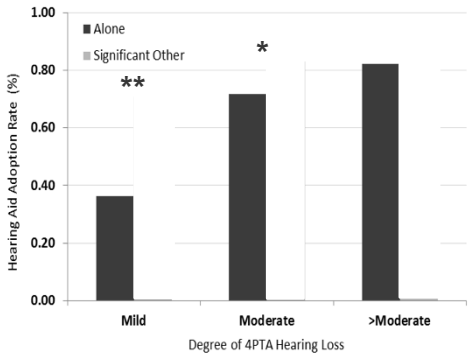
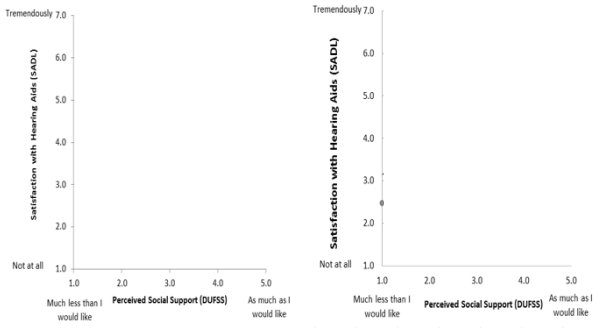


N = 60,964 1st time patients of audiology clinics
**participants were not randomly assigned to condition*



Social support BEST predicts HA Satisfaction

Study 1: N = 173 (M age = 69; SD = 13)

Study 2: N = 161 (M age = 33; SD = 13)

Footer

Singh, Lau, & Pichora-Fuller, 2015. Ear & Hearing.

► **Clinical outcomes improve markedly by considering significant others during the rehab process**

Social Relationships: The Role of Stigma?

A mark of disgrace associated with a circumstance, quality, or person

- 'Gospel' in hearing care
- Limited quantitative data investigating stigma in audiology; even less experimental work on the topic
  - *Stigma to Hearing Loss?*
  - *Stigma to Age?*

Why Study Emotion?

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- Core mechanism by which we interpret experience
- Critical to social communication
- Motivates behavior

We study emotion in hearing care because:

- Hearing loss is a highly emotional experience (sadness, anger, embarrassment, frustration, etc)
- Enhance communication (signal processing): HAs do not adequately preserve emotion information in signals
- Implications for decision making

The Role of Emotion in Hearing Rehabilitation

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Findings

Mental health outcomes are poorer in patients with HL & SOs

Recordings of clinician-patient interactions suggests that few (<5%) emotionally-focused utterances are observed

(Grenness et al., 2015)

Suggests that emotional relationship-building does not always take place

EMOTIONAL COMMUNICATION IN HEARING QUESTIONNAIRE (EMO-CHeQ)

Name: Date of Birth:
Sex: Date:

Please read the following items and indicate your level of agreement with each statement.

1. I have difficulty identifying the emotions expressed by people I interact with on a regular basis.
2. I have difficulty understanding emotions expressed in speech by men.
3. I have difficulty understanding emotions expressed in speech by women.
4. I find it difficult to identify the emotions of people speaking on television.
5. I have difficulty understanding emotions expressed in speech by young adults.
6. I find that people misinterpret my emotions (e.g. others think I am angry when I am not angry).
7. I find that it is difficult to monitor the way my emotions come across in my speech.
8. I find it difficult to convey my emotions about a subject in a subtle manner using the tone of my voice.
9. I find that it is difficult to express my emotions about a topic out loud using the tone of my voice.
10. It is harder for me to identify the emotions expressed by others when I'm in a noisy environment.
11. I find it challenging to identify emotions expressed by others when there is someone else talking at the same time.
12. Difficulties identifying emotions in speech make me feel left out when in groups.
13. Difficulty identifying emotions expressed in speech causes me to feel uncomfortable when talking to friends.
14. Difficulties identifying emotions expressed in speech cause me to feel sad.
15. Difficulties understanding emotions expressed in speech cause me to feel frustrated.
16. My difficulty identifying emotions expressed in speech negatively affects my relationships with friends and family.
17. I find myself reflecting on conversations in an attempt to understand the speaker's emotional intentions.

Strongly Disagree | Slightly Disagree | Neither Agree nor Disagree | Slightly Agree | Strongly Agree

The Role of Emotion in Hearing Rehabilitation

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Possible Implication

- Emotion influences action and the process of decision making
- **RAISES THE POSSIBILITY: Discussions about emotion** may contribute to processes that support **action** and what one should do about one's HL

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New Research: Emotion & Hearing Aid Adoption

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Research Question: Do conversations about emotion facilitate hearing aid adoption?

Method:

- 439 adults who attended audiology clinics in Canada
- Participants were randomly assigned to complete 1 of 2 questionnaire in the waiting room
  - **EMO-CHeQ**: The patient's responses were used as a prompt to discuss the emotional experience of hearing loss with the clinician
  - **Expected Consequences of Hearing Aid Ownership (ECHO):** The patient's responses were used to as a prompt to discuss potential hearing aid ownership (if appropriate for the patient)
  - After the conversation about the questionnaire, clinicians rated the level of perceived **comfort** of the conversation about emotion/expectations between themselves and the participant (1 = completely uncomfortable; 4 = neutral; 7 = completely comfortable)

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New Research: Emotion & Hearing Aid Adoption

Participant Group	No. of persons with HL	Mean Age (SD)	Sex	Mean Better Ear $PTA_{0.5\text{-}4kHz}$ (SD)
ECHO	220	68.47 (8.62)	103 M 112 F 5 Unknown	28.40 (11.73)
EMO-CheQ	219	68.98 (8.69)	106 M 111 F 2 Unknown	27.49 (10.10)

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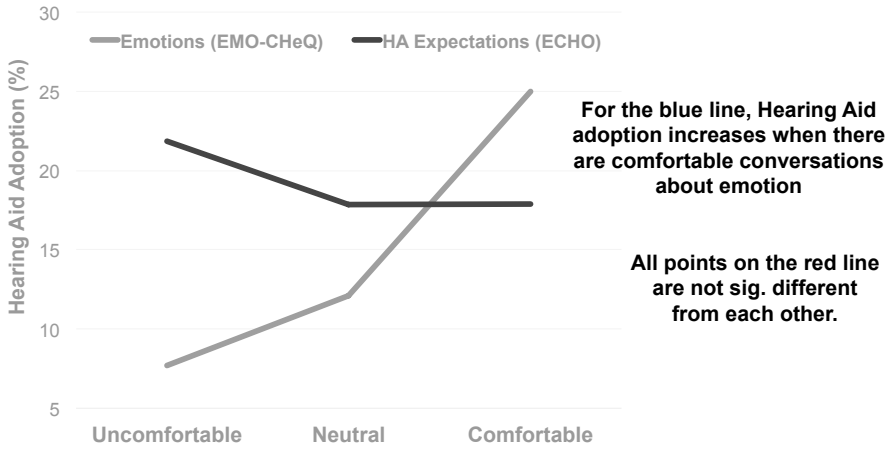
Results: Emotion & Hearing Aid Adoption



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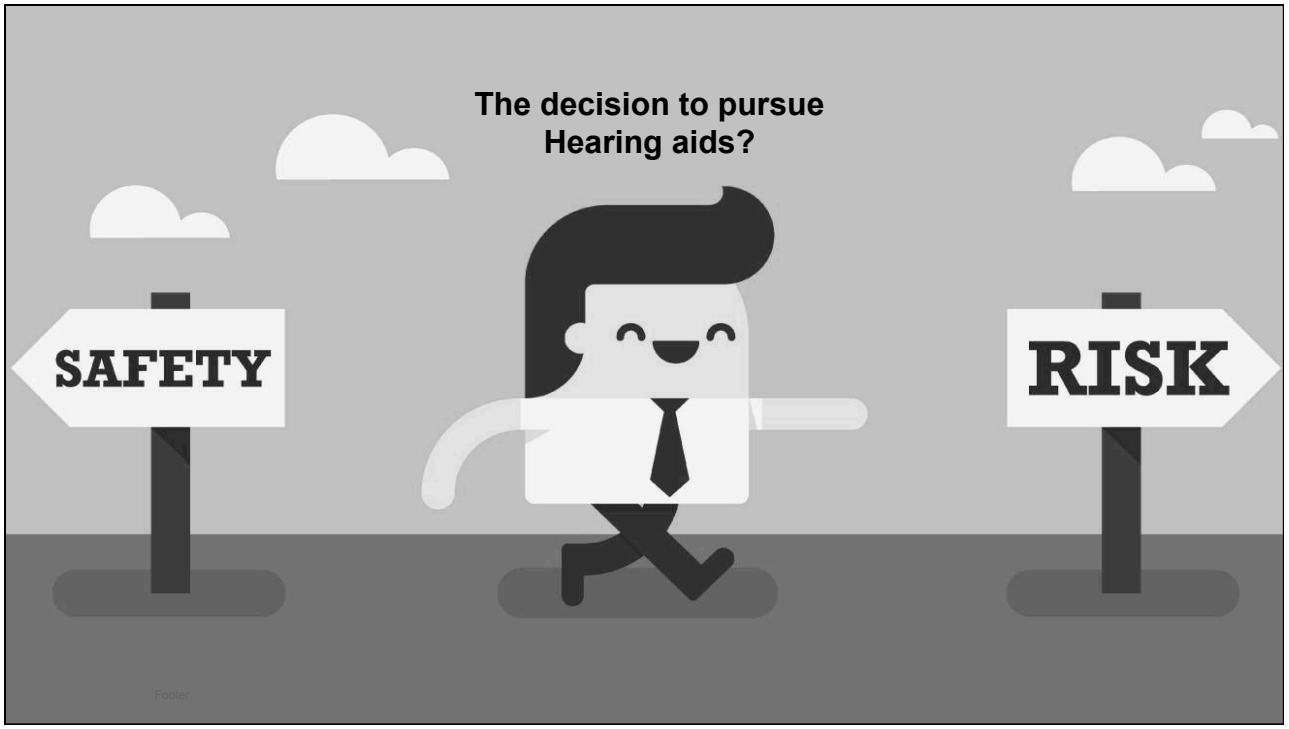
Why Study Decision Making?

- Decisions govern action and behavior change
- The world contains uncertainty
- Decision-making is influenced by cognitive biases

Why study decision making in hearing care?

- Significant uncertainty about hearing care (trust, efficacy, cosmetics, cost, etc)
- Biases affect decision-making, including decisions about hearing care

► **People can't always explain their behavior and motivations**


The decision to pursue
Hearing aids?
SAFETY
RISK
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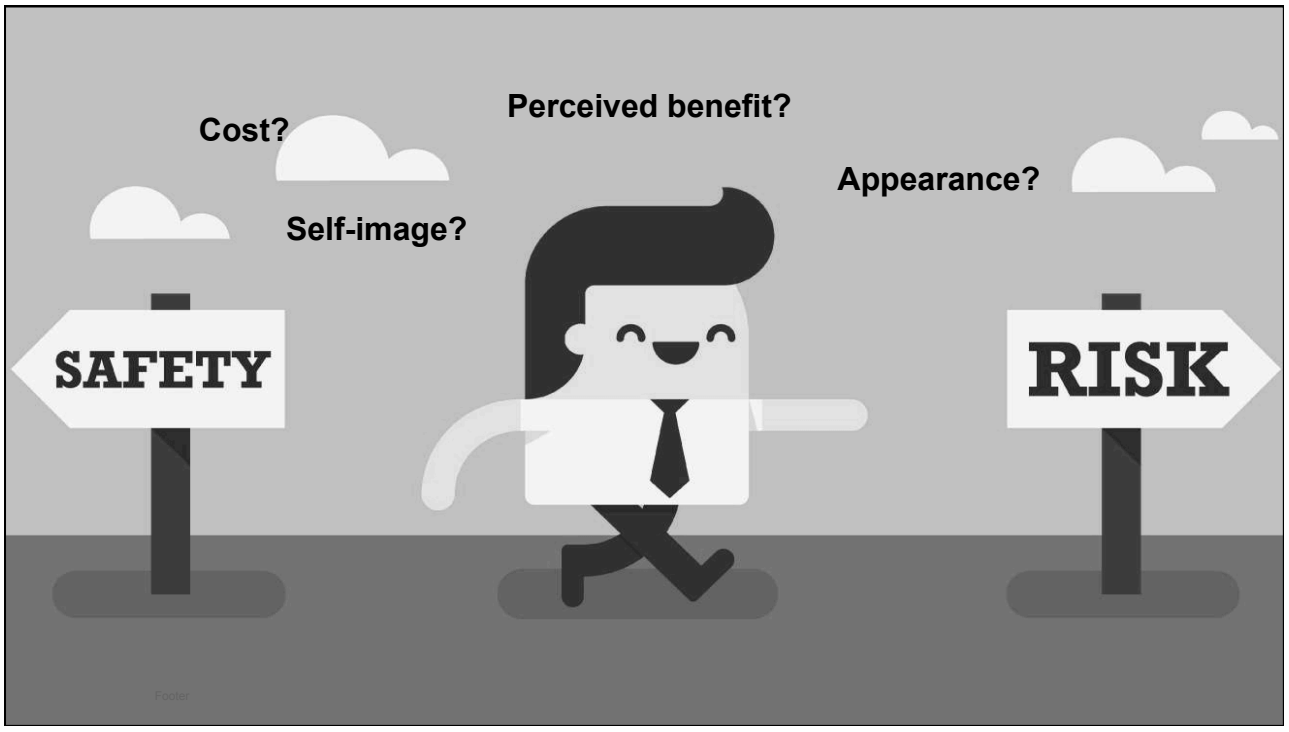
Cost?
Perceived benefit?
Appearance?
Self-image?
SAFETY
RISK
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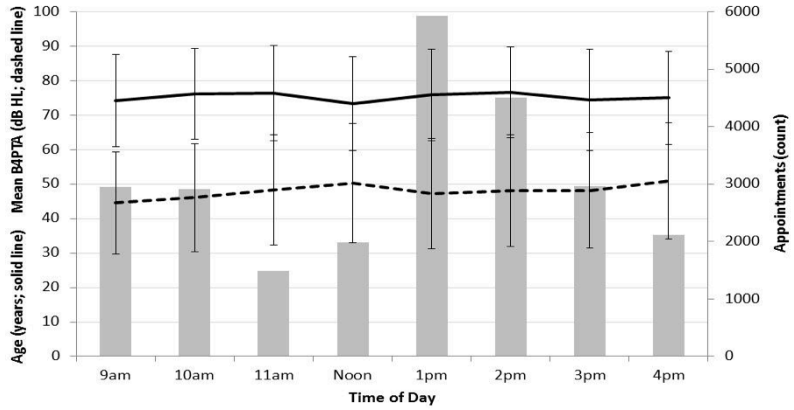
Time of Day & Hearing Aid Adoption: Method

37

- Retrospective analysis of 24,842 patient records of audiology appointments in Canada
- 1st time patients of the clinics with no reported HA experience
- Cross-referenced time of appointment & HA adoption outcomes
- Appointment times were adjusted to account for time zone differences



Time of Day & Hearing Aid Adoption: Results

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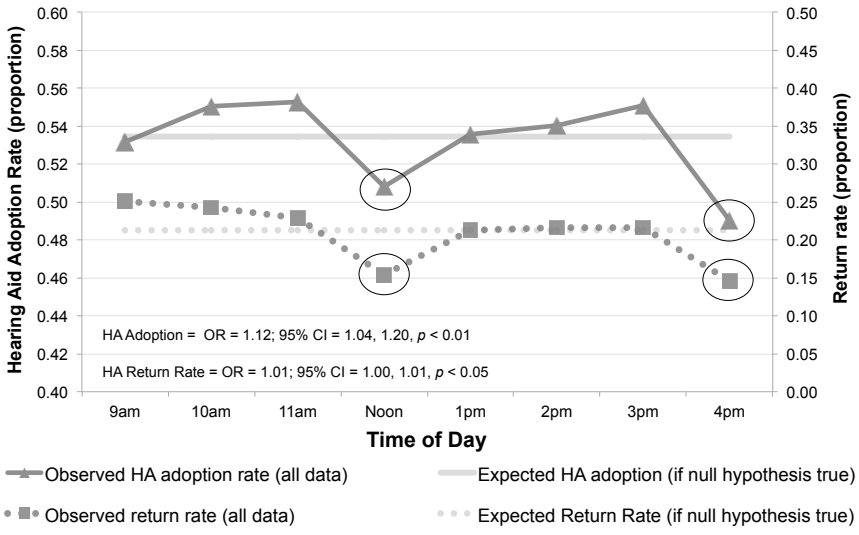

Caveat: Study is a Retrospective Analysis of Non-Experimental Data

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Patients less likely to adopt HAs **schedule** appointments at noon and at the end of the day?	**I don't think so**
Patients are less receptive to take "risks" (ie, try hearing aids) at certain times of the day (i.e., when bodily resources low?)	**Possibly**
Clinicians are performing non-optimally at certain times of the day	**Possibly**

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Time of Day & Hearing Aid Adoption

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Original Article

Time of Day and Hearing Aid Adoption

Trends in Hearing
Volume 22: 1–14

DOI: 10.1177/2331216518769789
journals.sagepub.com/home/tia
SAGE

Gurjit Singh[1,2,3,4] **and Stefan Launer**[5,6]

Abstract

To date, there is little understanding of how contextual factors may influence the decisions individuals make regarding the adoption of options for hearing rehabilitation. This explorative retrospective study investigated whether hearing aid adoption and return rates are associated with the time of the day at which an appointment takes place. The study sample consisted of 24,842 patients experiencing their first audiology appointment. It was observed that hearing aid adoption was significantly associated with appointment times whereby lower hearing aid adoption rates were observed at noon and 4 p.m. It was also observed that hearing aid return rates were significantly associated with appointment times whereby lower return rates were observed at noon and 4 p.m. In light of the methodology employed in the study, it is not possible to unequivocally determine why time of day is associated with hearing aid adoption and return rates. Several possible explanations for the patterns of associations are discussed. In light of previous research observing that hunger lowers risk tolerance and glucose consumption increases risk tolerance, the results are consistent with an interpretation based on risk-aversion resulting from hunger. To establish causality between hunger and decision-making in audiology, additional research employing experimental methodologies are necessary.

Summary

- HA adoption is low
- Objective hearing loss predicts HA adoption, but perceived HL is a much better predictor
- Understanding factors that contribute to perceptions of HL is necessary to increase HA adoption
  - May be relevant to adopt a “whole-person” perspective:
    - Social world
    - Emotional world
    - Cognitive processes

Questions?