GENERAL AND SITUATION-DEPENDENT TRAITS PREDICT READINESS TO PURSUE AUDIOLOGIC INTERVENTION
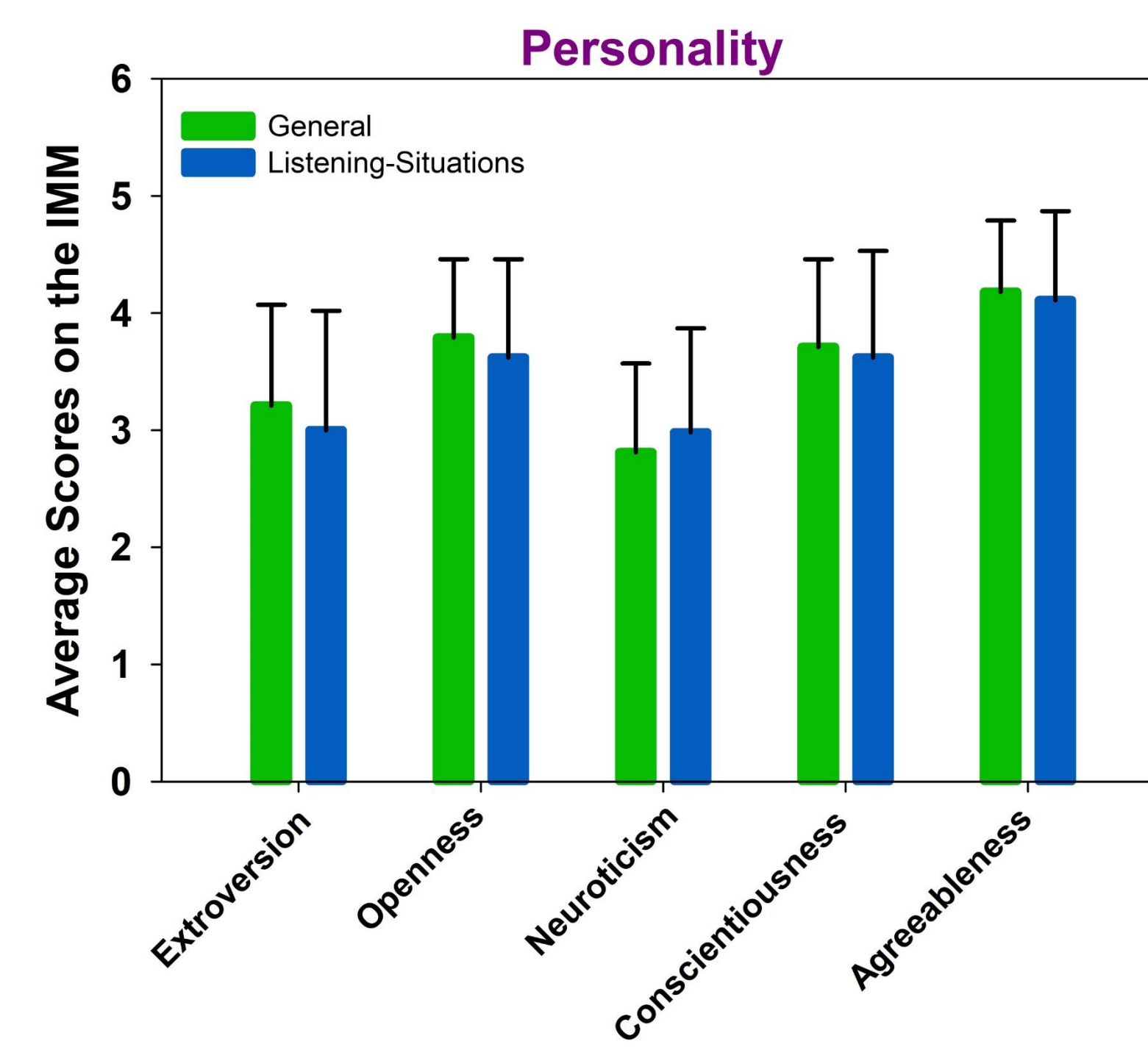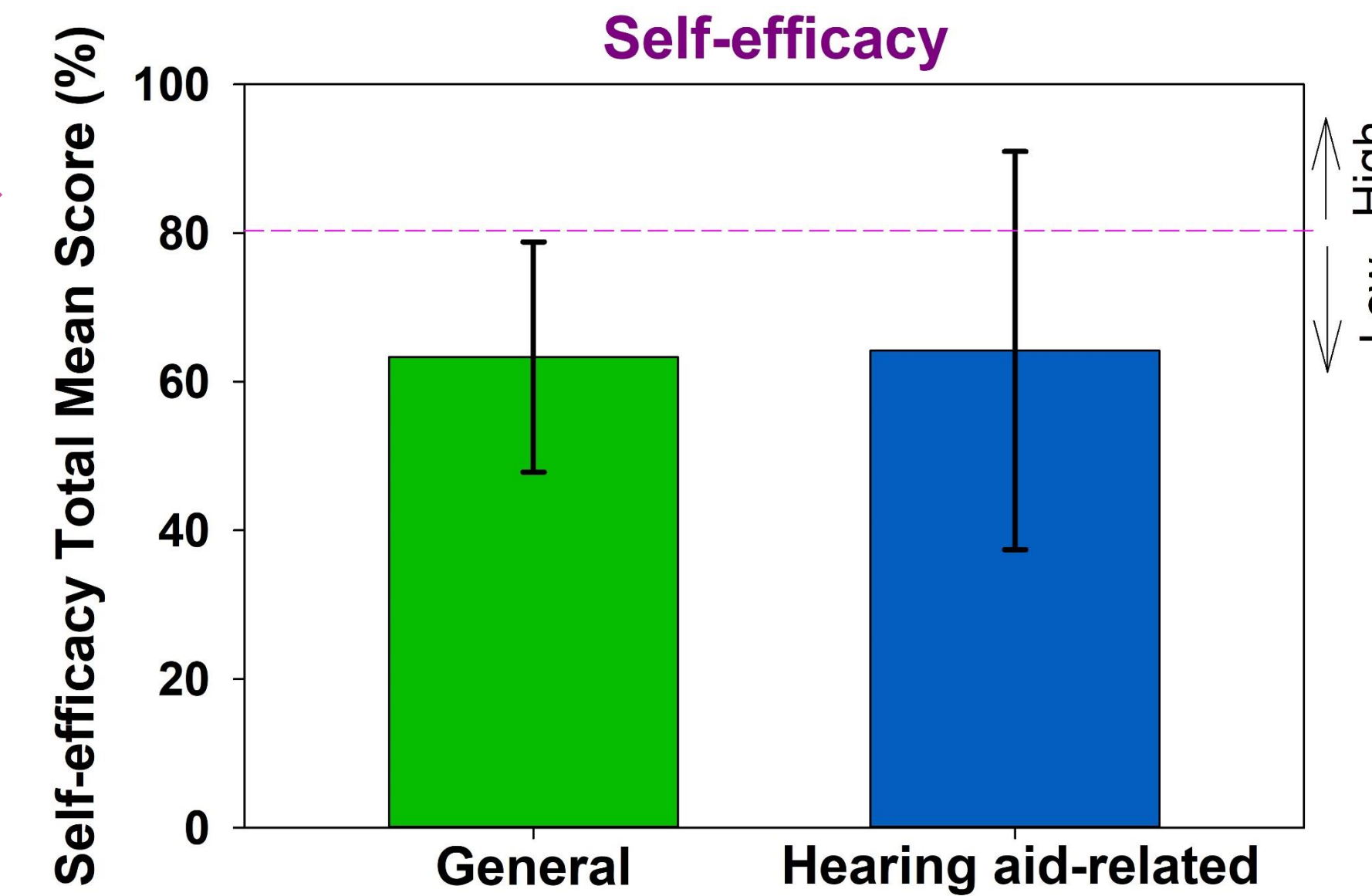
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Presented at the Annual Meeting of the American Auditory Society, February 2022

HARL — Hearing Aid Research Lab

THE UNIVERSITY OF MEMPHIS

Introduction

Hearing aid (HA) success is commonly assessed in terms of HA uptake, use, benefit, and satisfaction in daily living. These outcomes can only be assessed in later stages of an individual's hearing health journey. For those in earlier stages, perceived readiness to pursue hearing healthcare could be used as an indicator of progress towards positive hearing health outcomes. The present study explores whether some reported patient traits that are predictors of later indicators of HA success (self-efficacy, personality, and affective states) also predict readiness to pursue hearing intervention. We further explored the relative impacts of modifiable patient traits on the relationship between perceived hearing difficulties and readiness to pursue intervention using moderation/mediation analyses.

This research also examined whether adults with hearing loss respond differently to surveys about their self-efficacy, personality traits, and affective states when they were assessed "in general" and in hearing-related situations.

Method

Design: Cross-sectional descriptive survey administered using the Qualtrics online survey software.

Participants:
62 adults (43 females) aged 20-80 years (M = 70.3), with self-reported adult-onset hearing loss and no previous experience with hearing aids.

Predictor Variables:

- **Hearing Handicap:** The Hearing Handicap Inventory for Adults/Elderly (HHIA/E; Ventry & Wienstein, 1982).
- **General Measures:** Participants were asked to respond to self-report measures based on their perceptions of themselves "in-general".
  - **Self-efficacy:** The General Self-efficacy Scale (GSE; Schwarzer & Jerusalem, 1995) was used to assess confidence in completing general tasks effectively.
  - **Personality:** The International Mini Markers (IMM; Thompson, 2008) was used to assess the Big Five personality traits.
  - **Affective states:** The Positive and Negative Affective Schedule – Short Form (PANAS-SF; Watson et. al., 1988) was used to assess to participants' emotions and feelings.
- **Situation-dependent measures:** Participants were asked to describe themselves while considering their experiences related to their hearing and hearing health.
  - **Self-efficacy:** The Measure of Audiologic Rehabilitation Self-efficacy for Hearing Aids (MARS-HA; West & Smith, 2007) was used to assess self-efficacy for hearing aid success.
  - **Personality:** Participants responded to the IMM while considering attributes in hearing related situations.
  - **Affective states:** The participants listened to 4 vignettes describing different listening situations (At a social event, Asking directions, At a doctor's appointment, & At home) and completed the PANAS-SF for each listening situation.

Dependent Variable:

- **Readiness to Change:** The modified University of Rhode Island Change Assessment (URICA; Laplante-Levesque et al., 2013) was used to assess participants' readiness to pursue a hearing intervention.

Step 1. Comparing reported patient traits in general and listening situation-dependent contexts.

- On average, participants reported self-efficacy lower than the established cutoff (80%; West & Smith, 2007).
- Paired t tests showed no significant differences in the average scores of general and hearing aid self-efficacy ($t=-.46$, $p=.65$).
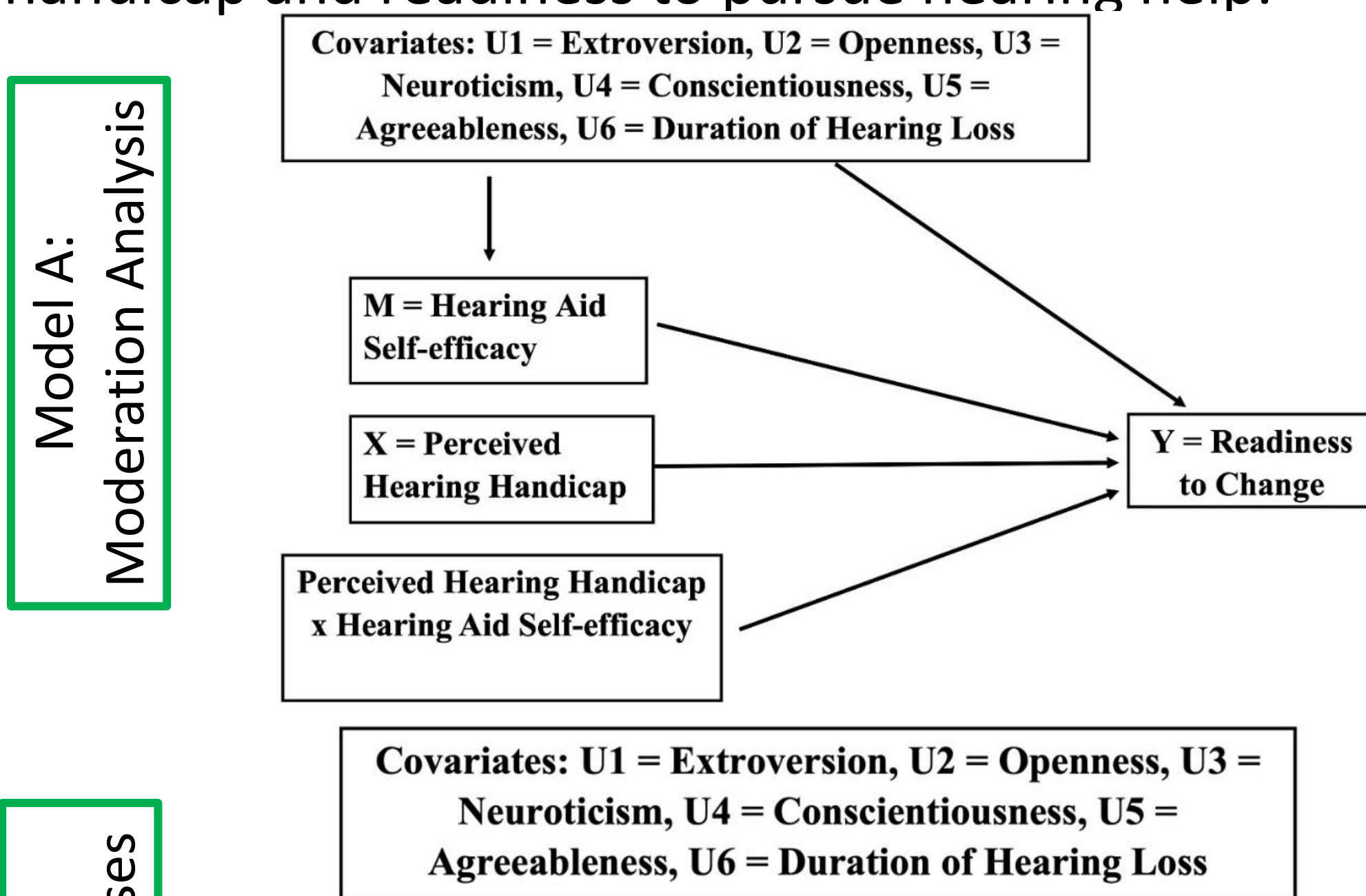

Self-efficacy

- Paired t tests with Holm Sidak corrections showed no significant differences in the average scores of general and situation-dependent scores for any of the personality traits ($p>.05$).
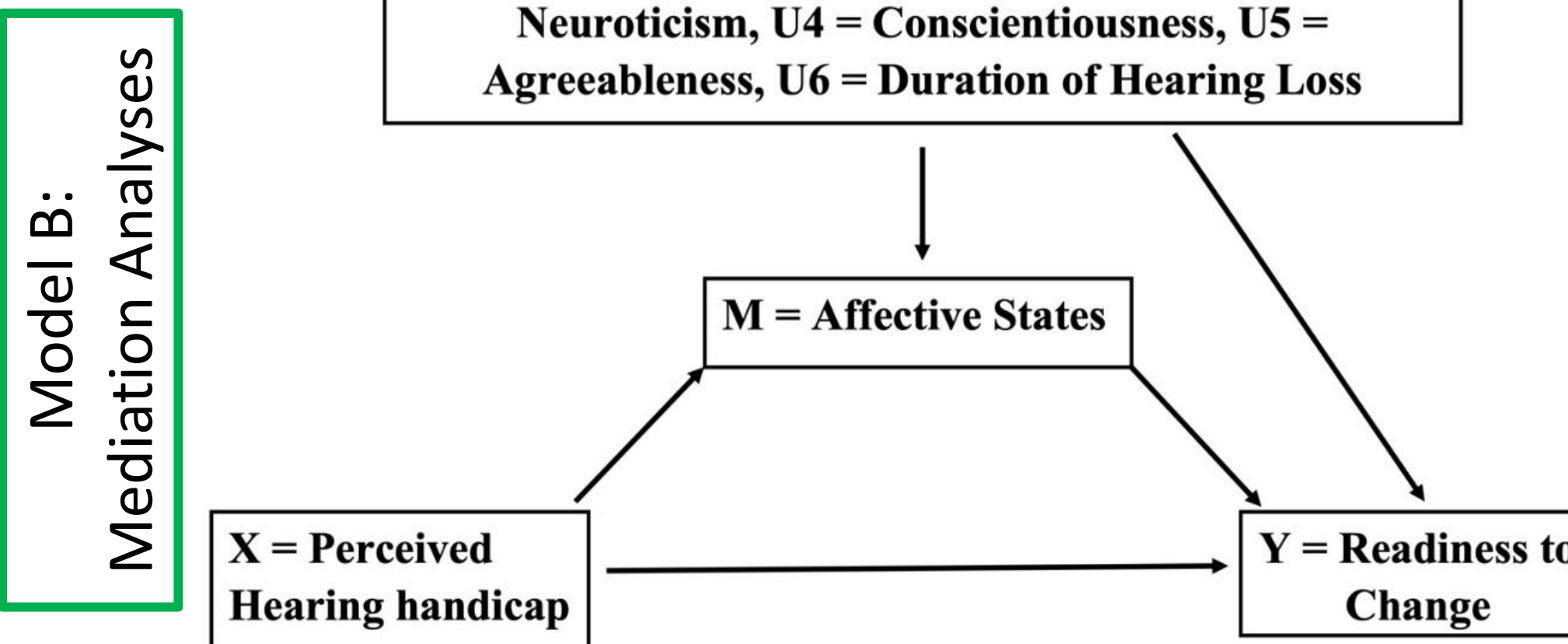

Personality (General / Listening-Situations)

- On average, participants reported more positive affective states in general compared to in the four listening-related situations.
- Repeated measures with Holm Sidak corrections demonstrated that reported affective state:
  - "In General" was significantly more positive than affective state in all the four listening situations ($p<.001$).
  - "At home" was also significantly less positive than for the other listening situations (($p<.001$).

Affective States
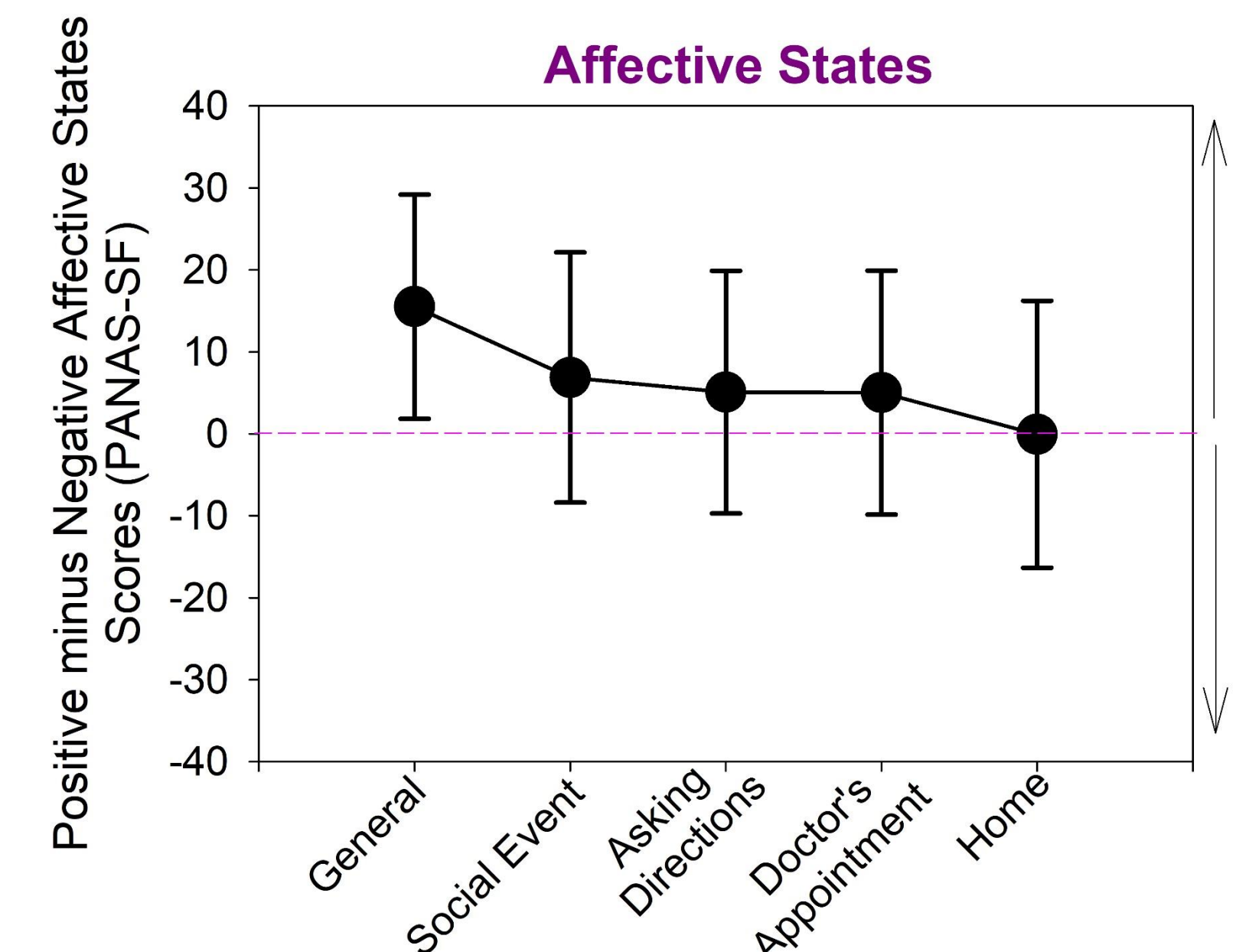
Step 2. Identifying significant predictors of readiness to pursue audiologic intervention and exploring impact of modifiable patient traits on the relationship between perceived hearing handicap and readiness to pursue hearing help.

Model A: Moderation Analysis

Covariates: U1 = Extroversion, U2 = Openness, U3 = Neuroticism, U4 = Conscientiousness, U5 = Agreeableness, U6 = Duration of Hearing Loss

M = Hearing Aid Self-efficacy
X = Perceived Hearing Handicap
Perceived Hearing Handicap x Hearing Aid Self-efficacy
Y = Readiness to Change

- Perceived hearing handicap ($t=7.24$, $p<.0001$), HASE ($t=2.30$, $p=.03$), Agreeable personality trait ($t=2.17$, $p=.03$), and duration of hearing loss ($t=-2.35$, $p=.02$) were significant predictors of readiness.
- Hearing Handicap*HASE = Not significant ($p=.81$).

Model B: Mediation Analyses

Covariates: U1 = Extroversion, U2 = Openness, U3 = Neuroticism, U4 = Conscientiousness, U5 = Agreeableness, U6 = Duration of Hearing Loss

M = Affective States
X = Perceived Hearing handicap
Y = Readiness to Change

- Perceived hearing handicap ($t=7.93$, $p<.0001$), Conscientiousness personality trait ($t=-2.53$, $p=.01$), and duration of hearing loss ($t=-2.76$, $p=.01$) were significant predictors of readiness.
- Bootstrapped confidence intervals for potential mediators' indirect effects demonstrated that none of the affective states were significant mediators of the X-Y relationship.

Results and Discussion

Q.1. When traits were assessed with general and listening situation specific measures, did adults with hearing loss report different:

- **Self-efficacy? No.**
  - General and hearing aid self-efficacy were not significantly different. Our participants were in the early stages of their hearing health journey. In these stages, general self-efficacy is more relevant (Rapley & Fruin, 1999) and is correlated with HASE (Dullard, 2014). It is of interest to explore how these associations might vary for those in later stages.
- **Personality? No.**
  - Personality traits were not perceived as significantly different in different contexts. This supports the claim that personality is stable over time (Bouchard & Loehlin, 2001).
- **Affective States? Yes.**
  - Our participants reported significantly less positive affective states in listening situations compared to general life. This likely reflects the negative psychosocial impact of hearing loss (Picou et al., 2018).

Q.2a. Did these patient traits predict readiness to pursue audiologic intervention? Yes, but significant predictors varied.

- Both models A and B were able to explain a significant amount of variance in readiness to pursue hearing help (Model A = 58%, Model B = 64%). In both models, individuals with greater hearing handicap and who had their hearing loss for a shorter duration were more ready to pursue hearing help. When HASE was included in model A, having higher HASE and higher Agreeable personality trait scores also independently predicted readiness. When HASE was removed and affective states were considered in Model B, lower Conscientiousness personality trait scores added to the model. This trait has been shown to co-occur with negative emotions (Mill et al., 2018) and our participants reported more negative emotions in listening-related situations.

Q.2b. Did HASE and affective states have an impact on the relationship between perceived hearing handicap and readiness to pursue hearing help? No.

- Model A (Moderation analysis) demonstrated that the relationship between hearing handicap and readiness didn't change as a function of HASE, when controlling for personality traits and duration of hearing loss.
- Model B (Mediation analyses) demonstrated that the relationship between hearing handicap and readiness could not be explained by their relationships with affective states, when controlling for personality traits and duration of hearing loss.

Conclusion

- This study confirms that self-efficacy, certain personality traits, and duration of hearing loss are important variables that motivate people toward or away from becoming successful in their hearing health journey. This study also suggests that context-specific measures of these traits are not required to accurately assess the impact of these characteristics in the early stages of the hearing health journey.
- Future research should explore the associations among these patient traits and their impact on success at different stages of the hearing health journey to determine if an assessment of these factors is warranted.

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