

ASSOCIATIONS BETWEEN PERSONALITY & SELF-REPORT HEARING AID OUTCOME FOR SUBJECTS WHO RECEIVE FREE HEARING AIDS

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Introduction

Self-report outcome data provide a measure of the daily life impact of a hearing aid fitting from the client's point of view. For the most part, we tend to assume that self-report outcome data primarily reflect the real world effectiveness of the hearing aid and the efficacy of the fitting strategy as applied to the individual patient. There is relatively little research that assesses the validity of this assumption, or the extent to which non-hearing-aid variables might influence subjective outcomes of hearing aid fitting. A few studies suggest that personality attributes, such as extraversion and anxiety, can account for at least 10-20% of the variance in self-assessments of hearing aid outcomes such as benefit or satisfaction. To put this modest relationship in perspective, it is helpful to note that this means personality is a more effective predictor of outcome than hearing impairment (audiogram) or any laboratory speech understanding test. In previous research on this topic, subjects have used different types of hearing aids, so it has not been possible to rule out effects due to differences in the amplification used by subjects. In this poster, we present results of ongoing research in which all (except one of the subjects were fitted with the same type of hearing aid. Data reflecting the quality of the fittings were collected for analysis of their relationship with outcomes.

Subjects

108 hearing-impaired veterans (all men).

Aged 60+, mean age = 73.

Fit with Starkey Sequel hearing aids - programmable, single memory, analog, WDRC. (One S switched to a different HA).

All were bilateral fittings, except 1.

57% of subjects were novice HA users.

Type of fitting was: BTE=2%, ITE=45%, ITC=32%, CIC=21%.

37% of subjects did not have a volume control.

15% of subjects had a directional microphone.

Procedure

Before the hearing aid fitting, subjects completed a set of questionnaires designed to measure:

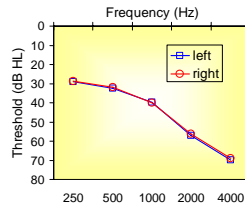
- (1) General health.
- (2) Personality and related variables (locus of control and coping strategies).
- (3) Problems in daily life caused by the hearing loss.
- (4) Expectations about the hearing aid.

During the hearing aid fitting, three verification measures were made:

- (1) Preferred gain for conversational speech.
- (2) Maximum output at preferred gain setting.
- (3) Sound field aided thresholds at preferred gain setting.

After the hearing aid fitting, self-report outcomes were measured. This poster reports data obtained 6 months post-fitting. Outcome domains :

- (1) Daily use (USE).
- (2) Benefit (SHAPE).
- (3) Residual communication problems (AAPHAB).
- (4) Residual emotional barriers (AHHIE).
- (5) Satisfaction (SADL).



Two types of Self-Report Outcomes

Data from the questionnaires for the 5 outcome domains were subjected to principal components analysis. Two components (PC1 and PC2) captured 74% of the variance in outcome data.

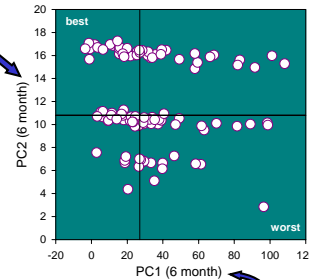
PC1 ("me-focused" outcome) is positively related to residual disablement (AHHIE and AAPHAB) and negatively related to satisfaction (SADL) and benefit (SHAPE). A high score on PC1 is a poor outcome.

PC2 ("HA-focused" outcome) is positively related to daily use (USE), satisfaction (SADL), and benefit (SHAPE). A high score on PC2 is a good outcome.

Associations Between Personality & Outcome

This dimension is not strongly related to any personal issues, but is related to subjective degree of hearing difficulty (HLPROB).

24% of the variance in PC2 is attributable to differences in HLPROB



This dimension is strongly related to personal issues

31% of the variance in PC1 can be explained using a combination of Negative affect + Avoidance coping + Previous HA experience or

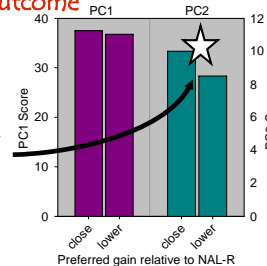
38% of the variance in PC1 can be explained using a combination of Emotional concerns + Expectations + Previous HA experience (Pragmatically, these variables are easier to measure than personality variables.)

Associations Between Hearing Aid & Outcome

Some data from the hearing aid fitting were related to PC2, but none were related to PC1.

When hearing loss was controlled, subjects who preferred a gain setting closer to the NAL-R prescription on the day of the fitting reported significantly better outcomes for PC2 after 6 months of HA use ($p < .05$). There were no differences in PC1 related to preferred gain on the day of the fitting.

None of the other fitting verification data were related to the PC1 or PC2 outcomes.



A Guide to the Questionnaires

AAPHAB: 24-item measure of problems with communication or noise, with amplification.

AHHIE: 25-item measure of impediments or negative feelings with amplification.

CSI: 24-item measure of use of avoidance, problem solving, & support seeking coping strategies.

ECHO: 15-item measure of expectations/attitudes about the hearing aid.

HLPROB: a single item requesting a category for subjective "degree of hearing difficulty".

LOC: 24-item measure of internal and external locus of control.

NEO-FFI: 60-item comprehensive personality inventory yielding scores on five factors.

SADL: 15-item measure of satisfaction with hearing aid.

SF-36: 36-item health inventory yielding scores for nine scales.

SHAPE: 24-item measure of absolute situational benefit (i.e. "how helpful when...?")

UAPHAB: 24-item measure of problems with communication or noise, without amplification.

UHHIE: 25-item measure of impediments or negative feelings without amplification.

USE: a single item requesting a category for hours of hearing aid use per day.

Interim Conclusions

• When we consider self-report data in multiple domains, it appears that hearing aid outcomes comprise two components, which we have named PC1 and PC2. The Table below suggests a possible interpretation of the differences between them.

If we ask....	Type of outcome
"How are you doing?"	PC1
"How is the hearing aid doing?"	PC2

- PC1 outcomes are rather strongly related to personality. It seems likely, therefore, that they will not be very sensitive to differences in hearing aid fittings.
- PC2 outcomes are rather strongly related to the subjective degree of hearing impairment, but not to personality. We hypothesize, therefore, that PC2 outcomes will be sensitive to important differences between hearing aids.
- This hypothesis is supported by the fact that one aspect of the amplification system - preferred gain on the day of the fitting - did seem to impact PC2 outcomes. Additional research is needed to determine exactly what aspects of hearing aid fittings impact PC2 outcomes. Our data suggest that traditional measures of MPO and aided thresholds are not very helpful indicators of fitting outcomes, but this might be limited to the WDRC device used in the study.
- The results of this study suggest that the AHHIE and the AAPHAB will be useful when studying the impact of amplification on the individual, but they will not be useful for differentiating between hearing aids. The SADL, the SHAPE, and hours of daily use (or similar measures) should be more useful for differentiating between hearing aids.



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