

# Is the Device-Oriented Subjective Outcome (DOSO) independent of personality?

Kelsey Dumanch<sup>1</sup> BS, Yu-Hsiang Wu<sup>1</sup> MD/PhD, Elizabeth Stangl<sup>1</sup> AuD, Christi Miller<sup>2</sup> PhD, Christopher Bishop<sup>2</sup> PhD, Kelly Tremblay<sup>2</sup> PhD, Ruth Bentler<sup>1</sup> PhD.

<sup>1</sup>University of Iowa <sup>2</sup>University of Washington-Seattle

## INTRODUCTION

- Self-report questionnaires are a frequently utilized method of evaluating hearing aid outcomes.
- Studies have shown that personality can account for 10-30% of the variance in response to self-report measures (e.g., Gatehouse, 1994; Saunders and Cienkowski, 1996; Cox et al., 1999; Barry and Barry, 2002; Hutchinson et al., 2005; Cox et al., 2007).
- Personality influences are not necessarily a bad thing, depending on the application of the outcome measure data; however, when comparing the technological merit of two or more hearing aids, this is an undesirable effect, as these factors limit the generalizability of results.
- To circumvent personality influences on outcome data the Device-Oriented Subjective Outcome (DOSO) was developed (Cox et al., 2014). The DOSO contains six subscales related to the amplification device and its features (speech cues; listening effort; pleasantness; quietness; convenience; use).
- The DOSO was developed to demonstrate outcomes of the amplification device and its technology independent of the user's personality. This association has been investigated by the creators of the DOSO; however, it has not been replicated by a third party.
- The purpose of this study was to examine the relationship between personality and the DOSO.

## METHODS

### Participants

- 77 adults (42 from University of Iowa; 35 from University of Washington-Seattle)
- Aged 32-79 yrs (mean = 69.1 yrs; SD = 7.3 yrs)
- 23 males and 54 females
- All wore bilateral hearing aids for at least two hrs per day (mean = 10.9 hrs; SD = 4.8 hrs)
- 100% of participants were experienced hearing aid users (use  $\geq 6$  mos) and wore their own hearing aids (fit at private practices, clinics, hospitals, and laboratories - NOT fit specifically for this study)
- Participants' hearing aids represented 12 brands, at least 53 models, 4 styles (ITE, ITC, RIC, BTE), a wide range of directionality and noise reduction, and aided SII (65 dB SPL input) ranging from 26-87.

### Procedure

- Each participant completed questionnaires using a pen and paper response format.
- Questionnaires were completed during a series of two three-hour sessions as part of a larger study.

## METHODS

### Questionnaires

- Personality Measure: NEO-Five Factor Inventory (NEO-FFI)
  - The NEO-FFI consists of five subscales pertaining to domains of normal personality (neuroticism; extraversion; openness; agreeableness; conscientiousness).
- Hearing Aid Outcomes: Abbreviated Profile of Hearing Aid Benefit (APHAB); Satisfaction with Amplification in Daily Life (SADL); Device Oriented Subjective Outcome (DOSO - Form A); Hearing Handicap Inventory for the Elderly (HHIE) or for the Adult (HHIA)
  - The purpose of using the SADL, APHAB, and HHIE/HHIA in addition to the DOSO was to see if correlations between personality and outcome measures used by Cox et al. (2007; 2014) to support the creation of the DOSO were replicable.

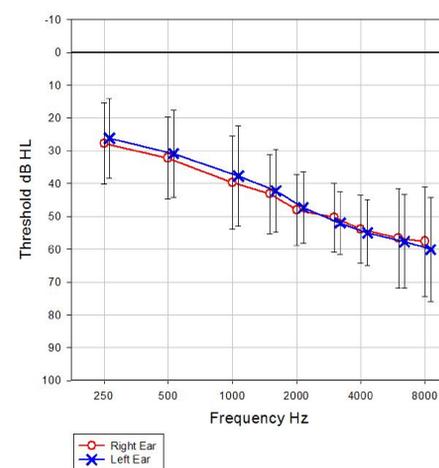


Figure 1: Composite audiogram for participants

Figure 2: DOSO(a) (developed by Cox et al., 2014)

## RESULTS

- Correlations were calculated between each DOSO subscale and each NEO-FFI personality factor, and the coefficients are shown in Table 1 (below).

	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Speech Cues	-0.15	0.11	<b>0.29*</b>	0.11	-0.07
Listening Effort	-0.21	0.21	<b>0.26*</b>	<b>0.26*</b>	0.05
Pleasantness	-0.15	0.14	0.13	<b>0.26*</b>	0.08
Quietness	-0.20	0.20	0.20	<b>0.24*</b>	0.08
Convenience	<b>-0.38**</b>	0.22	0.13	<b>0.31*</b>	0.13
Use	-0.21	0.02	0.07	0.14	-0.14

Table 1: The correlation coefficients for combined data (Iowa and Washington)

\*  $p < .05$

\*\*  $p < .001$

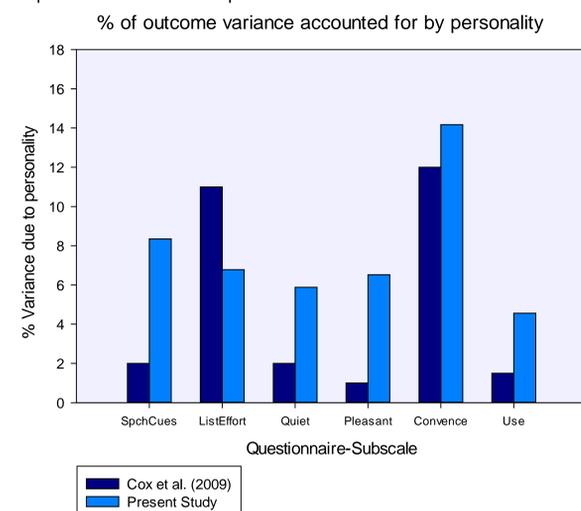


Figure 3: These data suggest that all of the subscales, with the exception of Use, are significantly related to personality. It is important to note that the Positive and Negative Affect Schedule (PANAS) was used to collect the Cox et al. (2009) personality data. The data bars represent the highest percent variance explained among the personality traits measured.

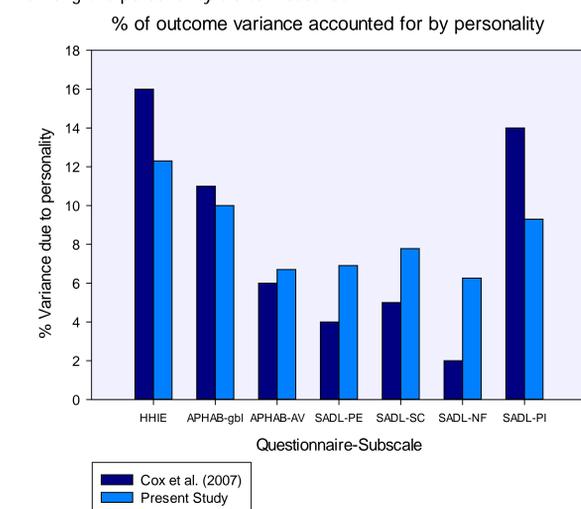


Figure 4: The extent to which personality can explain the variance in outcomes in this study was compared to those found in Cox et al. (2007). The NEO-FFI was used to collect personality data. The data bars represent the highest percent variance explained among the five personality traits measured.

## DISCUSSION

- We examined the correlation between personality and the six DOSO subscales, seeking to replicate previous study outcomes and to answer questions surrounding the DOSO.
- Results indicated that the DOSO is more related to personality than previously thought. Specifically, data suggest that all of the subscales, with the exception of Use, are significantly related to personality.
- We also examined the correlation between personality and three additional questionnaires, seeking to replicate previous study outcomes.
- Results corroborate previous findings that some aspects of other questionnaires are related to personality, and that a certain amount of variance can be explained by this.
- Questionnaires differ in the strength of their link to personality, and some subscales within each questionnaire are more closely linked to personality than others.
- The results of the Cox et al. (2007) study were not replicated. There are several potential explanations for this:
  - Different study populations: however, the results of the other questionnaires were similar to Cox et al. (2007)
  - Different personality scales: NEO-FFI (Cox et al., 2007; Cox et al., 2009) vs. PANAS (Cox et al., 2009)
  - Because similar results were obtained for the other three questionnaires studied, the DOSO results are probably not due to different study populations. It is likely that the use of different personality questionnaires has a bigger role in these equivocal findings.

## CONCLUSIONS

- The DOSO is affected by personality.
- The degree by which personality affects the DOSO is similar to other hearing aid outcome questionnaires.
- When interpreting DOSO data, researchers and clinicians should not assume that the results are personality-free.

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## CONTACT FOR MORE INFORMATION

- Yu-Hsiang Wu: yu-hsiang-wu@uiowa.edu
- Kelsey Dumanch: kelsey-dumanch@uiowa.edu

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