

Critical Review: Is there evidence to support that personality variables in adults contribute to perceived hearing aid benefit, as measured by self-assessment inventories?

Jewulski, A

M.Cl.Sc. (Aud) Candidate

School of Communication Sciences and Disorders U.W.O.

This critical review examines whether personality variables contribute to self-reported perceived hearing aid benefit of adults with hearing loss. Research supports that certain personality characteristics are associated with unique response patterns on self-assessment measures. However, these responses were found to explain only a small amount of the variance in self-report data. Overall, research does not provide sufficient evidence to change current clinical practice. The findings in this review should serve to alert clinicians and researchers to the possible effects of personality variables on outcome measures of hearing aid benefit.

Introduction

There are numerous variables that influence a hearing aid user's self-reported hearing aid benefit. Clinicians can fit the same hearing aids and make all the necessary adjustments only to discover that one client does not perceive the same amount of benefit as another client with a comparable hearing loss.

Currently more emphasis is being placed on measuring self-report data as it allows the clinician to understand the hearing aid user's perceptions of the benefit they are receiving from their hearing aids. Further this information can be used to help evaluate the success of a particular hearing aid fitting, influence the course of rehabilitation as well as assess the quality of service (Cox et al, 2007). It is, therefore, important to know whether variables other than hearing aid performance contribute to responses on these measures. Researchers have noted that personality variables can account for 10 to 20% of the variance in responses to some measures of hearing aid benefit and satisfaction (Segar, 2006). It is, therefore important to investigate which aspects of personality are associated with these response patterns.

For the purposes of this review benefit is defined as the overall advantage obtained from the use of a hearing instrument as reported by the user on a self-assessment inventory. Personality is defined as "the unique organization of traits, characteristics, and modes of behavior of an individual, setting the individual apart from others and at the same time determining how others react to the individual" (Taber's Cyclopedic Medical Dictionary, as cited in Segar, 2006, p. 3).

Objectives

The primary objective of this paper is to critically evaluate existing literature regarding the influence of personality variables on perceived hearing aid benefit, as measured by self-assessment inventories.

Methods

Search Strategy

Computerized databases, including CINAHL, MedLine, ASHA, PubMed, and the Hearing Journal, were searched using the following search strategy:

(Personality) AND (hearing aid benefit)

There were no limits placed on this search.

Selection Criteria

Studies selected for inclusion in this critical review paper were required to investigate the relationship between personality variables and hearing aid benefit, as measured by self-assessment inventories. The studies were limited to adults, however, no limits were placed on the personality inventories or outcome measures.

Data Collection

Results of the literature search yielded the following types of articles congruent with the aforementioned selection criteria: survey studies (2), and correlational studies (2).

Results

Survey Studies

Cox, et. al, (1999) recruited 83 elderly individuals using newspaper advertisements and clinic files. Three personality variables were assessed; anxiety as measured by the State-Trait Anxiety Inventory (STAI), extraversion-introversion as measured by the Myer-Briggs Type Indicator (MBTI), and a measure of locus of control. The outcome measure used to assess benefit from hearing aids was the Abbreviated Profile of Hearing Aid Benefit (APHAB). The results of a stepwise multiple regression analysis revealed that the top predictor of hearing aid benefit was the extraversion-introversion

dimension, accounting for 20% of variance on the Reverberation subscale, 10% on the Background Noise subscale and 9.5% on the Ease of Communication subscale of the APHAB. Therefore, extroverted individuals reported more hearing aid benefit than those who were more introverted on the abovementioned subscales of the APHAB. Further, individuals with an external locus of control were found to report more difficulties adjusting to environment sounds both with and without their hearing aids ($r= 0.38, p<0.01$).

Limitations of this study include the uneven distribution of men and women, with men comprising 75% of the sample. Furthermore, the study fails to specify the amount of experience of the hearing aid users, only reporting that participants wore their hearing aids for a sufficient amount of time. A major strength of this study was that it controlled for gender in the analysis of the data.

Segar (2006) examined personality traits using the Myer-Briggs Type Indicator and the Keirsey Four Types Sorter. The Hearing Aid Performance Inventory (HAPI) and the APHAB were used as outcome measures of hearing aid benefit. Eleven men and 9 women were recruited from the case files at the University of Maryland Hearing Clinic. Participation was limited to those individuals with bilateral, symmetrical sensorineural hearing loss that had worn their hearing aids for at least three months. Spearman rank correlation analysis of the Myer-Briggs Type Indicator revealed a significantly negative correlation between extraversion and background noise ($r= -.508, p<0.05$), suggesting that extroverts perceive less benefit from hearing aids in noise. Introverted individuals reported more benefit from their hearing aids in background noise. These results were only found on the APHAB, suggesting that extroverts and introverts may respond differently on measures other than the APHAB.

Correlation analysis of the Keirsey Four Types Sorter revealed that Guardians reported more benefit in background noise ($r=0.463, p<0.05$) as measured by the HAPI and the APHAB. Further Idealists reported less perceived benefit in background noise ($r= -0.465, p<0.05$), and Rational personality types reported less aversiveness to sound when wearing their hearing aids ($r= -0.480, p<0.05$). Both findings were found only on subscales of the APHAB.

Limitations to this study included the varying amounts of hearing aid experience and different degrees of hearing loss of the research participants. In addition the type of amplification/technology was not addressed. One of the strengths of this study was that it controlled for variables such as gender and mood in the data analysis.

Correlational Studies

Barry & McCarthy (2001) assessed the relationship between personality and the Ease of Aided Communication subscale of the APHAB. They recruited 16 veterans that had worn binaural hearing aids for at least one year. The Keirsey Four Types Sorter was administered in order to classify participants into one of four categories; one was classified as Artisan, three as Idealists, eight as Guardians, and three as Rationals. Spearman rank coefficient analysis revealed a statistically significant negative correlation ($r= -0.935, p<0.001$) between the Idealist personality type and the Ease of Communication subscale. Authors speculate that the Idealist personality type may have unrealistically high expectations regarding the benefit they will receive from their hearing aids. When those expectations are not met they may react negatively.

The major limitation of this study was the small sample size that resulted in an unrepresentative distribution of the Keirsey personality types. The only significant finding in the study was based on the response of one participant who was sorted into the Idealist personality category.

A follow up study by Barry & Barry (2002) was conducted to further investigate the Keirsey personality types with a larger sample consisting of 40 participants and used the entire version of the APHAB. Results are consistent with the previous study indicating a negative correlation ($r= -0.38, p<0.01$) between the Idealist personality type and perceived hearing aid benefit. Results also reveal a negative correlation between the Artisan personality type and the overall benefit score on the APHAB. A major limitation of this study is it only reported statistical data for scores on the overall APHAB, failing to provide information for individual subscales.

Both of the abovementioned studies are limited for several reasons. First, the sample only contains male participants which are not the only users of hearing aids in the general population. Second, it is possible that the personality characteristics of the military population are different from those of the general population. Finally, it is reasonable to assume that the etiology of the military population differs for the general public as it is primarily noise induced hearing loss. These factors limit the generalizability of this study.

Conclusions

Research provides evidence that to some extent the responses on measures of hearing aid benefit reflect the personalities of the individuals who answer them. Overall, there was only one consistent

finding in the current review, indicating that individuals who are categorized as Idealists have a tendency to respond more negatively to self-reports of hearing aid benefit. The inconsistent findings across studies may in part be due to the fact that the age and gender of the participants, duration of hearing aid use, the degree of hearing loss and the types of amplification/technology used were not controlled. Previous research has reported that variables such as gender, age and degree of hearing loss contribute to measures of hearing aid benefit (Segar, 2006). The results also suggest that the degree to which personality variables will influence self-report data will depend on the outcome measures used.

Overall, the studies evaluated in this review present a suggestive level of evidence, meaning that some aspects of the appraisal are debatable, but unbiased experts would likely agree that the evidence presented is important (Dollaghan, 2007). Personality variables were found to explain only a small amount of variance in the measure of hearing aid benefit. The available literature did not provide enough evidence to lead to changes in current clinical practice. The findings serve to alert clinicians to the possibility that self-report of hearing aid benefit is influenced in part by non-audiological factors.

The studies evaluated in this review were limited by flaws in methodology as well as lack of tangible research to support the use of personality measures. Personality inventories such as the Myers-Briggs Type indicator and the Keirsey Four Type Sorter lack in validity and reliability and this should caution researchers and clinicians in the use and interpretation of these measures (Segar, 2006). Finally, only the study by Cox et al (1999) was published in a peer-reviewed journal, suggesting caution needs to be taken when evaluating the accuracy and validity of the remaining studies.

Future Research

Future research should investigate the relationship between personality and perceived hearing aid benefit between hearing aid users and nonusers. Prospective studies should also more accurately investigate the extent to which personality variables impact self-assessment data by controlling variables such as age, gender, degree of hearing loss and by using different outcome measures. Finally, research should investigate the extent to which different types of hearing aid technology affects outcomes on measures of hearing aid benefit.

References

Cox, Alexander, & Gray (2007). Personality, hearing problems & amplification characteristics: Contributions to self-report hearing aid outcomes. *Ear and Hearing*, 28(2), 141-162.

Cox, R.M., Alexander, G.C., & Gray, G. (1999). Personality and the Subjective Assessment of Hearing Aids. *Journal of the American Academy of Audiology*, 10(1):1-13.

Barry, E.K., & Barry, J. (2002). Personality type and perceived hearing aid benefit revisited. *The Hearing Journal*, 55(8):44-45.

Barry, E.K., & McCarthy, P. (2001). The relationship between personality type and perceived hearing aid benefit. *The Hearing Journal*, 54(9):41-46.

Dollaghan (2007). *The Handbook of Evidence-Based Practice in Communication Disorders*. Brookes Publishing Co., Inc.

Segar, A.A. (2006). Personality Type and Self-perception of Hearing Aid Benefit. (*Doctoral dissertation, University of Maryland*)