INTRODUCTION

Despite the 26.2 million people over the age of 50 that have hearing loss, only 3.8 million Americans wear hearing aids (Chia, 2014). Low uptake is associated with a hearing loss, cost of amplification, and not perceiving a hearing handicap are a few major reasons as to why the adoption rate of hearing aids is so low. Those who ignore the effects of their hearing loss are known to experience a decreased quality of life, depressive symptoms, and accelerated cognitive decline (Gopinath et al., 2011; Lin et al., 2013). While a hearing aid improves quality of life scores, encouraging even those with mild hearing losses to consider audiologic intervention (Chia et al., 2007).

Assistive technology options that facilitate communication exist along a continuum. Assistive technology devices range from aids down to simple amplifiers. Recently, personal sound amplification products have entered the market to appeal to the 20 million Americans who have hearing loss but do not own a hearing aid. They are a simpler and less expensive alternative to hearing aids, though more technologically advanced than straightforward assistive devices. While these products provide gain across a range of frequencies, they are not fit prescriptively based on audiometric results of hearing loss and are advertised predominantly for use during recreational activities (Gaffney & Palmer, 2013).

Despite a guidance issued by the US Food and Drug Administration (FDA) stating that PSAPs are not intended for individuals with hearing loss, over one-third of those with hearing loss are interested in trying a PSAP to improve their hearing and over 2 million individuals with diagnosed or self-reported hearing loss have already purchased a PSAP (CEA Market Research Report, 2014). These people are more likely to be younger, less educated, earn an average of $10,000 less per year, have unilateral hearing loss, mild to moderate hearing loss, and report less problems understanding speech in noise than those who purchase traditional hearing aids (Kochkin, 2010; Gaffney & Palmer, 2013).

While some audiologists feel that the advent of PSAPs is a threat to the market, others believe it is an opportunity to expand their client base. The questionnaires were provided to participants in the form of a web-based survey yielding a total possible score of 100%.

The purpose of this study was to determine the benefit of a different type of hearing device than just its appearance. This shows that there is more that goes into the decision of whether to purchase an amplification device than just its appearance.

METHODS

Participants

Twenty-five English-speaking adults, 16 females and 9 males, participated in this study. All participants had normal hearing, based on air conduction screening at octave intervals between 250 and 8000 Hz, and an absence of middle ear pathology as confirmed by tympanometry.

Instrumentation

Speech in noise testing was performed in a double-walled sound booth. A Grason Stadler GS161 two-channel clinical audiometer was used to present recorded speech and noise material. Participants were shown the Sound World Solutions CS50 and the Emyotonic Bean PSAPs separately during testing. Discussion of results using the CS50 are reported here. The CS50 volume was held constant and the restaurant program was used for testing. The Emyotonic Bean PSAP was set to the normal position for testing.

Speech in noise testing was performed using word list recorded Northwestern University Auditory Test Number 6 (NU-6) word lists. Following speech in noise testing, two 8-item questionnaires, each specifying the particular PSAP being studied, were given to participants to answer regarding their experience and attitudes towards the CS50. Scores were rated on a 5-point scale, with 1 being very poor or very unlikely and 5 being very good or very willing.

Procedure

Speech in noise testing was performed in sound field with the speaker at a 0° azimuth. Word list and multi-talker babble were presented simultaneously through the speaker, each at 50 dBHL. Participants were instructed to repeat each test word. Each correctly repeated word was worth 2%, yielding a total possible score of 100%.

Wearing hearing aids improves quality of life scores, cognitive decline (Gopinath et al., 2011; Lin et al., 2013). Quality of life, depressive symptoms, and accelerated effects of their hearing loss are known to have a decreased quality of life scores.

RESULTS

Speech in Noise Testing

There is no statistically significant difference between the speech understanding in noise scores of normal hearing listeners when wearing the CS50 and Bean PSAPs when being judged by participants with hearing loss. As all respondents had normal hearing, however, it would be difficult to generalize these results to those whose hearing device is marketed. Willingness to pay was found to be significantly positively correlated with the ease of inserting/removing the device from the ear and perceived sound quality. This is not surprising, as sound quality is a key factor that makes it to come to a consumer selecting and wearing a hearing aid (Kochkin, 2005).

Surprisingly, no significant correlation between willingness to pay for the CS50 and Bean PSAPs and unaided condition.

Recommendations for Future Research

It is important to establish the benefit of the CS50’s directional microphone by studying speech understanding with noise present from behind the listener. Future research is necessary to determine the benefit of the CS50 on speech understanding in noise in listeners with hearing loss and how attitudes and opinions of the device would change if being judged by participants with hearing loss.

REFERENCES

1. Chia, E., Wang, J., Rochtchina, E., Cumming, R., Newall, P., & Mitchell, P. (2007). Hearing impairment and 26.2 million people over the age of 50 that have hearing loss, only 3.8 million Americans wear hearing aids (Chia, 2014). Low uptake is associated with a hearing loss, cost of amplification, and not perceiving a hearing handicap are a few major reasons as to why the adoption rate of hearing aids is so low. Those who ignore the effects of their hearing loss are known to experience a decreased quality of life, depressive symptoms, and accelerated cognitive decline (Gopinath et al., 2011; Lin et al., 2013). While a hearing aid improves quality of life scores, encouraging even those with mild hearing losses to consider audiologic intervention (Chia et al., 2007).


