

Stages of change in adults who failed an online hearing screening

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Hearing screening has been proposed to promote help-seeking (for example, attend an audiology appointment) in adults with acquired hearing impairment. This study of 224 Swedish adults who had failed an online hearing screening investigated the stages that people go through towards help-seeking. Four stages were uncovered: precontemplation, contemplation, preparation, and action. As most people were in the contemplation or preparation stages, this study shows that screening alone is unlikely to be enough to improve help-seeking in adults with acquired hearing impairment.

Introduction

BACKGROUND
Hearing screening programs could promote help-seeking in adults with acquired hearing impairment. Hearing screening can be performed on the telephone or online to facilitate access and minimize audiologist time [1]. However, a follow-up of 193 adults 4-5 months after they had failed a telephone screening showed that 36% of them had seen a health professional regarding their hearing and only 3% reported benefiting from hearing aids [2]. Experts have stressed that the "intervention following screening should be carefully considered

and investigated" [3]. Reasons why screening does not always result in help-seeking need to be better understood. Some barriers could be inherent to the people who fail a hearing screening. To understand those, theories of health behavior change could be helpful. The transtheoretical (stages-of-change) model of health behavior change has been proposed to describe profiles and needs of people facing behavior change such as seeking help for hearing impairment. According to this model, people go through three stages: precontemplation, contemplation, and

action [4]. People who seek help for the first time are in the action stage [5]. In this population, four stages exist: precontemplation, contemplation, preparation, and action. The stages-of-change model has been shown to predict whether people take up hearing aids or communication programs and whether they achieve good outcomes [5].

OBJECTIVE
This study investigated the stages-of-change model in adults who had failed an online hearing screening.

Methods

SAMPLE
Adults who had failed a Swedish online hearing screening (based on their speech-in-noise recognition threshold) and who did not own hearing aids were asked to complete questionnaires. In total, 224 adults participated.

URICA QUESTIONNAIRE
The University of Rhode Island Change Assessment (URICA) is a questionnaire that measures stages of change [6]. We used eight URICA items for each of the three stages of change: precontemplation (e.g. *As far as I'm concerned, I don't have any hearing problems that need changing*), contemplation (e.g. *It might be worthwhile to work on my hearing problem*), and action (e.g. *I am actively working on my hearing problem*).

The five response options are: (1) strongly disagree, (2) disagree, (3) undecided, (4) agree, and (5) strongly agree. Total stage scores range from 8 to 40, with higher scores indicative of greater endorsement of the relevant stage of change.

OTHER QUESTIONNAIRES
The participants reported their

perceived degree and duration of hearing disability.

DATA ANALYSIS
URICA scores were analyzed. Relationships between URICA scores and speech-in-noise recognition threshold, self-reported degree of hearing disability, and self-reported duration of hearing disability were investigated.

TABLE 1. SAMPLE CHARACTERISTICS (N=224).

sample characteristic	n (%)	sample characteristic	mean (standard deviation)
gender male female	129 (58) 95 (42)	age, in years	68.2 (8.9)
education less than college college or more	124 (55) 100 (45)	speech-in-noise recognition threshold expressed as a signal-to-noise ratio, in dB	-0.4 (2.3)
living situation alone with others	51 (23) 173 (77)	self-reported duration of hearing disability, in years	10.6 (10.3)

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Results

STAGES OF CHANGE
In contrast to the original stages-of-change model which proposed three stages (see Figure 1), the principal component analysis of the URICA scores obtained in this study identified four stages of change (see Figure 2): precontemplation (11% of variance), contemplation (15% of variance), preparation (17% of variance), and action (19% of variance). The stages of contemplation and preparation were those for which the average

scores were highest (see Figure 3). Figure 4 shows that most participants scored highest on the preparation or contemplation stages of change. Few participants scored highest on the precontemplation or action stages.

RELATIONSHIP BETWEEN STAGES OF CHANGE AND OTHER VARIABLES
Participants who reported a more advanced stage of change had reported greater hearing

disability. Greater self-reported hearing disability was associated with higher contemplation stage scores ($r=0.29$; $p<0.01$), higher preparation stage scores ($r=0.22$; $p<0.01$), and higher action stage scores ($r=0.20$; $p<0.01$). However, participants who reported a more advanced stage of change did not have a worse speech-in-noise recognition threshold or reported a longer duration of hearing disability.

FIGURE 1. STAGES OF CHANGE: ORIGINAL MODEL (4).

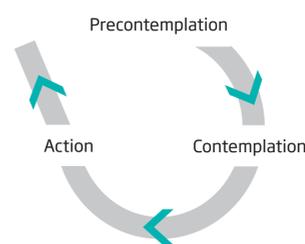


FIGURE 2. STAGES OF CHANGE: MODEL OBTAINED IN ADULTS WITH HEARING IMPAIRMENT WHO HAD FAILED AN ONLINE HEARING SCREENING (N=224).

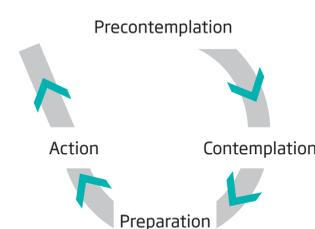


FIGURE 3. STAGE-OF-CHANGE SCORES: AVERAGES AND STANDARD DEVIATIONS (N=224).

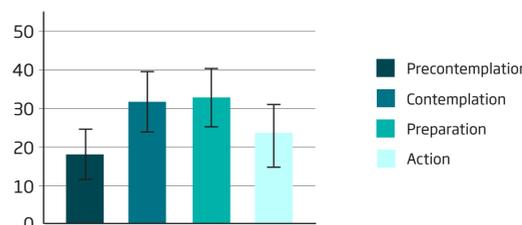


FIGURE 4. STAGE-OF-CHANGE SCORES: DISTRIBUTION OF STAGE WITH HIGHEST SCORE (N=224).



Discussion

SUMMARY OF RESULTS
People who have failed an online hearing screening are in one of four stages towards help-seeking. In contrast to people who seek help for the first time who are mostly in the action stage [5], most people in this study were in the contemplation or preparation stages. Significant relationships between stages of change and self-reported hearing disability were found and followed the direction expected. No significant relationship between stages of change and speech-in-noise recognition threshold or self-reported duration of hearing disability was found. This underlines how

impairment (measured here with speech-in-noise recognition thresholds), self-reported duration of hearing disability, and stages of change are three distinct concepts.

IMPLICATIONS
The extra stage this study uncovered, preparation, highlights the need for adequate information provision to adults who are yet to seek help for their hearing. Most people were in the contemplation or preparation stages. Very few people (less than 3% of the sample) were in the action stage: screening alone is unlikely to be enough to improve help-seeking.

FUTURE RESEARCH
Whether shorter questionnaires could measure stages of change, how stages of change relate to help-seeking and rehabilitation, and whether people can be moved to a more advanced stage of change (away from precontemplation) are questions future research should address.

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REFERENCES: [1] Smits C, Merkus P, Houtgast T. 2006. How we do it: The Dutch functional hearing screening tests by telephone and internet. *Clin Otolaryngol*. 31, 436-40. [2] Meyer C, Hickson L, Khan A et al. 2011. Investigations of the actions taken by adults who failed a telephone-based hearing screen. *Ear Hear*. 32, 720-31. [3] Pronk M, Kramer SE, Davis AC et al. 2011. Interventions following hearing screening in adults: A systematic descriptive review. *Int J Audiol*. 50, 594-609. [4] Prochaska JO, DiClemente CC. 1983. Stages and processes of self-change of smoking: Toward an integrative model of change. *J Consulting Clinical Psychol*. 51, 390-5. [5] Laplante-Lévesque A, Hickson L, Worrall L. 2013. Stages of change in adults with acquired hearing impairment seeking help for the first time: Application of the transtheoretical model in audiological rehabilitation. *Ear Hear*. 34, 447-57. [6] McConaughy EA, Prochaska JO, Velicer WF. 1993. Stages of change in psychotherapy: Measurement and sample profiles. *Psychother: Theory Res Pract*. 20, 368-75.