Title: Identifying the approaches used by audiologists to address the psychosocial needs of their adult clients

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ABSTRACT

Objective: To identify the approaches taken by audiologists to address their adult clients' psychosocial needs related to hearing loss.

Design: A participatory mixed methods design. Participants generated statements describing the ways in which the psychosocial needs of their adult clients with hearing loss are addressed, and then grouped the statements into themes. Data were obtained using face-to-face and online structured questions. Concept mapping techniques were used to identify key concepts and to map each of the concepts relative to each other.

Study sample: An international sample of 65 audiologists.

Results: Ninety-three statements were generated and grouped into seven conceptual clusters: Client Empowerment; Use of Strategies and Training to Personalise the Rehabilitation Program; Facilitating Peer and Other Professional Support; Providing Emotional Support; Improving Social Engagement with Technology; Including Communication Partners; and Promoting Client Responsibility.

Conclusions: Audiologists employ a wide range of approaches in their attempt to address the psychosocial needs associated with hearing loss experienced by their adult clients. The approaches described were mostly informal and provided in a non-standardized way. The majority of approaches described were not evidence-based, despite the availability of several options that are evidence-based, thus highlighting the implementation gap between research and clinical practice.

INTRODUCTION

Psychosocial impacts of acquired hearing loss are well documented and include feelings of frustration, anger, embarrassment, inferiority, shame, stigmatisation, loss of identity, isolation, and loneliness (e.g., Barker et al, 2017; Heffernan et al, 2016; Vas et al, 2017). Initial emotional reactions to the diagnosis of hearing loss often include disbelief, anger, and/or grief, with individuals being able to overcome these initial emotions as they accept

and adjust to their hearing loss (Heffernan et al, 2016). After diagnosis, many people with hearing loss continue to experience negative emotions in daily life, such as frustration or embarrassment in response to communication difficulties and the limitations of hearing rehabilitation (Heffernan et al, 2016). In addition, it has been widely reported that individuals with hearing loss experience stigma, or the perception that one is associated with characteristics, qualities, or behaviours that are devalued (Wallhagen, 2009). Stigmatisation has been reported to negatively affect help-seeking for hearing loss, uptake, and use of hearing aids (David & Werner, 2016; Meyer & Hickson, 2012; Southall et al, 2010; Wallhagen, 2009).

The breakdown of communication that is often experienced due to hearing loss can affect an individual's ability to socially engage (Broese van Groenou et al, 2013). Consequently, the result is social withdrawal, demonstrated both by reduced attendance at social gatherings and/or less engagement within social environments, such as minimizing participation in conversations (Heffernan et al, 2016). Both can lead to feelings of loneliness, defined as the subjective evaluation of an individual's expectations of, and satisfaction with, the frequency and closeness of contacts (Jong-Gierveld & van Tilburg, 2006). As a result of communication breakdowns hampering connections with others, even socially active people can report feeling lonely as a result of their hearing loss (Vas et al, 2017). The relationship between hearing loss and loneliness has been documented in a number of clinical and population-based studies (Pronk et al, 2013; Pronk et al, 2014; Weinstein et al, 2016).

Understanding the role of hearing loss in psychosocial symptom development is particularly pertinent to older adults, as social networks decrease throughout adulthood (Cornwell et al, 2008). This decrease in network size may be due to deaths of network members, changes in external circumstances (such as changes in social roles or location), because of personal choice (choosing to focus on fewer more intensive relationships), or due to participation restrictions (such as hearing loss) (Wrzus et al, 2013; Ogawa et al, 2019). Broese van Groenou et al (2013) investigated changes in network size across time in a sample of older adults and found that the degree of self-reported hearing capacity was not an important factor for the continuation of existing relationships, but *was* important for the start of new

relationships when existing ones were lost. Hearing loss hampered a participant's ability to make new ties or strengthen more remote ties required for satisfactory relationships. Adults with hearing loss who have greater access to social support are more successful in coping with their hearing loss, hearing help-seeking, hearing aid uptake, hearing aid use, and satisfaction with hearing aids (Keidser & Seeto, 2017; Moser et al, 2017; Ng & Loke, 2015; Singh et al, 2015; Meyer et al, 2014; Hickson et al, 2014; Pronk et al, 2017). For adults with hearing loss, social relationships also appear to facilitate protection against development of more loneliness (Moser et al, 2017) and mental health symptoms (Keidser & Seeto, 2017; West, 2017). For instance, in a cohort of US adults aged 50 years and over, low levels of social support were associated with more depressive symptoms but only among people with poor self-rated hearing (West, 2017). Among those with excellent self-rated hearing, low levels of social support did not increase depressive symptoms.

Clinical guidelines emphasize that audiologists should address these far-reaching psychosocial impacts of hearing loss (American Speech-Language-Hearing Association, 2018; British Society of Audiology, 2016; Audiology Australia, 2013). However, studies of clinical practice demonstrate that psychosocial support is rarely provided (Ekberg et al, 2014; Grenness et al, 2015). In those studies, when clients raised psychosocial concerns during audiology appointments, audiologists did not address these concerns and redirected conversations back to hearing aid related discussions. Another recent study (Bennett et al, 2020b) explored audiologists' self-reported clinical behaviours asked participating audiologists to describe their normal course of action in response to three case vignettes depicting depression or severe grief. Almost half of the audiologists reported actions that only addressed audiological symptoms of impairment, and not the psychosocial or psychological issues raised. Although previous research has suggested some of the ways in which audiologists could potentially provide more psychosocial support in the audiology setting (Ekberg et al, 2014; Hickson et al, 2007a; Preminger & Yoo, 2010a; Van Leeuwen et al. 2019), little is known regarding whether these approaches have been adopted into clinical practice, and how audiologists currently provide psychosocial support in the audiology setting. Therefore, this study aimed to identify the approaches currently used by audiologists, in various settings internationally, in their attempts to address their clients'

psychosocial needs. The knowledge gained from this study could be used as a starting point to inform policy and practice guidelines, as well as to inform the future development of clinical interventions in order to increase the provision of psychosocial support in the audiology setting.

## METHODS

This study employed concept mapping methodology (Trochim, 1989), an established participatory mixed methods approach that combines qualitative techniques to data collection with quantitative analyses to produce visual 'concept maps' of how people view a particular topic. Concept mapping engages a group of participants to put forward statements describing their experiences, perceptions, thoughts or ideas about a specific topic. They then give meaning to these statements through grouping and ranking activities, which are analysed to produce the concepts. In this way, the participants play an active role in not just generating the statements, but also synthesising and interpreting the data. For this reason it is of more value to enrol participants who are knowledgeable about the topic in question rather than to obtain a sample of participants that are representative of the general population. Concept mapping is recommended in healthcare research that aims to evaluate services and plan improvements (Trochim & Kane, 2005). Its applications in audiology have included identifying client-clinician interactions that influence hearing aid adoption (Poost-Foroosh et al, 2011), developing a framework to understand problems associated with hearing aid use (Bennett et al, 2018a), improving our understanding of how hearing aid owners respond to hearing aid problems (Bennett et al, 2018b), and informing item development for surveys evaluating hearing aid skills and knowledge (Bennett et al, 2018c). Concept mapping was applied in this study as it systematically generates a comprehensive list of views on a certain topic, informed by a large and diverse group of stakeholders via an online platform (allowing for recruitment of international participants). In this study, we define stakeholders as audiologists and consequently, audiologists from around the world were asked to put forward statements describing their experiences and thoughts regarding the delivery of psychosocial support during audiology consultations (i.e., brainstorming activity). The audiologists then gave meaning to these statements through a

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grouping activity (activities described in further detail below) (Rosas & Kane, 2012). A global perspective to data collection and synthesis was chosen to facilitate cross-institutional and cross-cultural learning and increase transferability of study outcomes.

Participants

Hearing healthcare professionals worldwide vary in the names that they use to describe their profession and the training they undertake to become qualified (Goulios & Patuzzi, 2008). For the purpose of this study, audiologists recruited were defined as hearing healthcare clinicians providing assessment and treatment services to people with hearing loss. Inclusion criteria required participants to be over 18 years of age and have sufficient understanding of written English to complete the data collection sessions. No further exclusion criteria were applied.

*Recruitment.* Guidelines recommend a sample size of at least 20 people for a concept mapping brainstorming activity to provide diversity in the responses (Trochim, 1989), and 15 people for a grouping activity to improve reliability of the resultant concept map (Rosas & Kane, 2012).

Two cohorts of audiologists were recruited:

1.  Australia-based audiologists were recruited from the 2019 biennial audiology conference 'Sound Exchange' hosted by Audiology Australia (main professional organization for audiologists in Australia) that took place in Alice Springs, Northern Territory. The conference included five streams, each with a different focus. All delegates enrolled in the "Infusing Counselling into Audiological Practice" stream provided data for this study by participating in a workshop, wherein they completed a brainstorming activity during a face-to-face session. Delegates were informed of this before participating in the workshop and were given the choice to opt out if they preferred. Only one delegate opted out and the rest participated.

2.  Audiologists from outside Australia were recruited through the professional networks of the members of the research team. The researchers were asked to forward a recruitment email onto their clinical networks. In turn, individuals in these

networks were invited to forward the recruitment email on to their networks. This snowball approach allowed for recruitment across a wide variety of workplaces and geographical locations.

Sixty-five participants were recruited for this study. All completed the brainstorming activity and 18 completed the grouping activity (27.7% retention rate) (described in Table 1).

Table 1. Cohort description.

|  | Brainstorming activity (n=65) | Grouping activity (n=18) |
|---|---|---|
| Country |  |  |
|    Australia | 37 | 8 |
|    Canada | 3 | 1 |
|    China | 2 | 0 |
|    Ireland | 6 | 2 |
|    UK | 7 | 4 |
|    USA | 8 | 2 |
|    Switzerland | 1 | 1 |
|    Netherlands | 1 | 0 |
| Age (years): Range; median (SD) | 22 to 66; 37 (11.8) | 27 to 66; 34 (12.7) |
| Gender | 53 female (81.5%) and 12 male (18.5%) | 17 female (94.4%) and one male (5. 6%) |
| Years of clinical experience: Range; median (SD) | 1 to 42; 13.8 (10.6) | 1 to 42; 16.8 (13.4) |

Procedure

Approval for this study was granted by the Human Research Ethics Committee of The University of Western Australia. All participants provided informed consent.

*Brainstorming activity.* All participants were asked to provide statements in response to the open-ended research question "*What clinical practices are used by audiologists to address the psychosocial needs of adults with hearing loss, including those that promote social engagement/participation and reduce feelings of loneliness and isolation?*". They were provided with the focus prompt "*Think as broadly as you can. When I work clinically with individuals with hearing loss and associated ear disorders, I can help them to maintain connections, be socially active, participate and re-engage by ...*". All participants were encouraged to brainstorm as many responses as possible.

The Australia-based audiologists completed the brainstorming activity during the 1.5 hour face-to-face workshop described above. The session was held in a medium-sized conference room, with all participants facing a projection screen at the front of the room, and guided by four facilitators to structure the process (authors RB, CB, JM & LH). Participants were asked to put forward statements in response to the research question (above). The research question and focus prompt were written on the screen and delivered verbally in a neutral tone by the session moderator. Participants were not prompted or given feedback during the session. The statements the participants put forward were typed into Microsoft Excel and displayed onto a large screen for all to see. In this way, participants could build on each other's statements. All statements were accepted, and all members in the group were given equal opportunity to provide input.

Participants from outside Australia completed the same brainstorming activity via the online concept mapping portal using Concept Systems Inc. software (Concept Systems Incorporated, 2011). All of the statements generated were visible to other participants; in this way, they could enter either new statements or built on existing statements. Individual participants were neither able to change or comment directly on others' statements nor identifiable to each other. The brainstorming activity was accessible online for six weeks and participants were able to log in to view and add statements as many times as they wished during that period.

After completion of both brainstorming activities, the research team pooled all the statements generated. They then reviewed the statements, removed duplicates, and edited them to ensure they were clear and understandable. Guidelines recommend that structured processes be used to reduce the number of statements generated by participants during the brainstorming activity to fewer than 100 as large numbers of statements impose serious practical constraints in the subsequent participant activities (Kane & Trochim, 2007; Rosas & Kane, 2012). These processes often involve synthesis of the data, merging of like items and omission of data at the discretion of the research team. However, after removing duplicates the number of statements generated in the current study was fewer than 100. Thus, all statements were retained, including those with similar, yet not identical, meaning. This allowed us to retain the participants' voice by using the language that they used. Review and editing of the data was performed by one researcher (RB) and cross-checked by three members of the research team (RE, AC, DG). This edited list of statements was used for the grouping activity.

*Grouping activity.* Approximately one month after completion of the brainstorming activity, all participants were sent an email with an invitation and instructions to complete the grouping activity via the concept mapping online portal. Participants were asked to group the edited list of statements in a way that made sense to them, using the following guidelines: (1) each statement could only be placed in one group, (2) a statement could have its own group if considered unique, and (3) an 'other' group was not permitted. They were also asked to assign a name to each of the groups they created. Participants completed the grouping activity independently and could not see other participants' work. The grouping activity was accessible online for ten weeks. Participants who had not yet responded, were sent an email reminder at week eight.

Data Analysis and Interpretation

Data analysis was conducted in line with concept mapping guidelines (Trochim & Kane, 2005) using Concept Systems software (Concept Systems Incorporated, 2011) and IBM SPSS Statistics (SPSS Version V21, 2014), version 21 (see Bennett et al, 2018a for a detailed

description of the process). First, multidimensional scaling was used to generate a point map, graphically displaying the results of the grouping activity (Trochim, 1993). The strength of the multidimensional scaling analysis was tested by computing a stress index value, with a value <0.365 indicating an acceptable fit (Kane & Trochim, 2007). Second, hierarchical cluster analysis was used to determine the overarching clusters indicated by the participants' grouping data (Trochim, 1993). This analysis graphically displays clusters of points (i.e., statements) dependent on how the participants grouped them, with tighter clusters representing a narrower conceptual area. Third, although the cluster formations are determined using the participants grouping data, the selection of the final concept map is determined by human judgement (Jackson & Trochim, 2002). In this study, five members of the research team (RB, RE, JP, AC & DG) decided upon the appropriate number of clusters by reviewing the statements within each cluster and discussing whether a higher or lower number of cluster was more appropriate, that is, whether it made sense, given the distribution of statements in that particular cluster arrangement (Jackson & Trochim, 2002). These decisions were also informed by 'bridging scores', indicating how often participants grouped the statements in a particular cluster. The bridging value is between 0 and 1. The lower the bridging score, the more often participants grouped these statements together. Conversely, a higher bridging score indicates that participants were less likely to have grouped these statements together. Each cluster, containing a unique concept, was then given a name that represented the concept contained therein, informed by the names put forward by the participants during the grouping activity.

Finally, split-half reliability was computed in order to evaluate the reliability of the final concept map by applying the Spearman-Brown Prophecy Formula correction. A correlation above 0.7 is considered high (Hinkle et al, 2003), indicating an accurate representation of the participants' grouping data by the concept map.

## RESULTS

Editing of the statements produced by the brainstorming activity resulted in a final list of 93 statements for the grouping activity (Appendix 1). These statements described approaches that may serve as techniques to gather more information, strengthen the client-clinician

relationship, or to provide targeted intervention for psychosocial issues. Many of the identified approaches were based on adding or modifying technology in an attempt to address psychosocial concerns, with few directly addressing the emotional state of the client.

The number of groups created by the participants to organize the statements ranged from 6 to 15 (mean = 9.9, SD = 3.0). A concept map with seven conceptual clusters was selected to optimally represent the participants' grouping data. The seven unique concepts that describe the approaches taken by audiologists to address the psychosocial needs of adults with hearing loss were: (1) Client Empowerment (17 statements), (2) Use of Strategies and Training to Personalise the Rehabilitation Program (17 statements), (3) Facilitating Peer and Other Professional Support (17 statements), (4) Providing Emotional Support (15 statements), (5) Improving Social Engagement with Technology (11 statements), (6) Including Communication Partners (10 statements), and (7) Promoting Client Responsibility (6 statements). Figure 1 shows the concept map that was formed, graphically displaying the seven clusters of statements (the points) that are similar in thematic content (concept). Spatial distances reflect how frequently the statements were grouped together as similar. The statements that participants frequently grouped together are plotted closer together in the two-dimensional space than statements that participants infrequently grouped together. Similarly, there is significance in location of the conceptual clusters depicted on the map, in that, conceptual clusters that appear close to one another are considered related and conceptual clusters that are depicted further apart are considered less related by the participants. The concept 'Promoting Client Responsibility' was situated close to the middle of the concept map, suggesting that this concept is, to a greater extent, related to all of the other identified concepts. A description of each conceptual cluster and examples of the statements contained within them can be found in Table 2. Some overlap between the concepts can be observed, in that some statements may be more appropriately placed in other conceptual clusters. In line with the concept mapping approach, the research team cannot move the statements or influence the grouping; the clustering of the statements is solely based on the participant grouping data. It is worth noting that participants were instructed to group the statements in a way that made sense to them. A review of the group names proposed by the participants suggested that some participants grouped the data in

Figure 1. A concept map depicting the seven concepts that describe the approaches taken by audiologists to address the psychosocial needs of adults with hearing loss. The numbers provide identification for the individual statements provided in Appendix One. The points represent the individual statements generated by the audiologists. Lines depict the cluster boundaries.
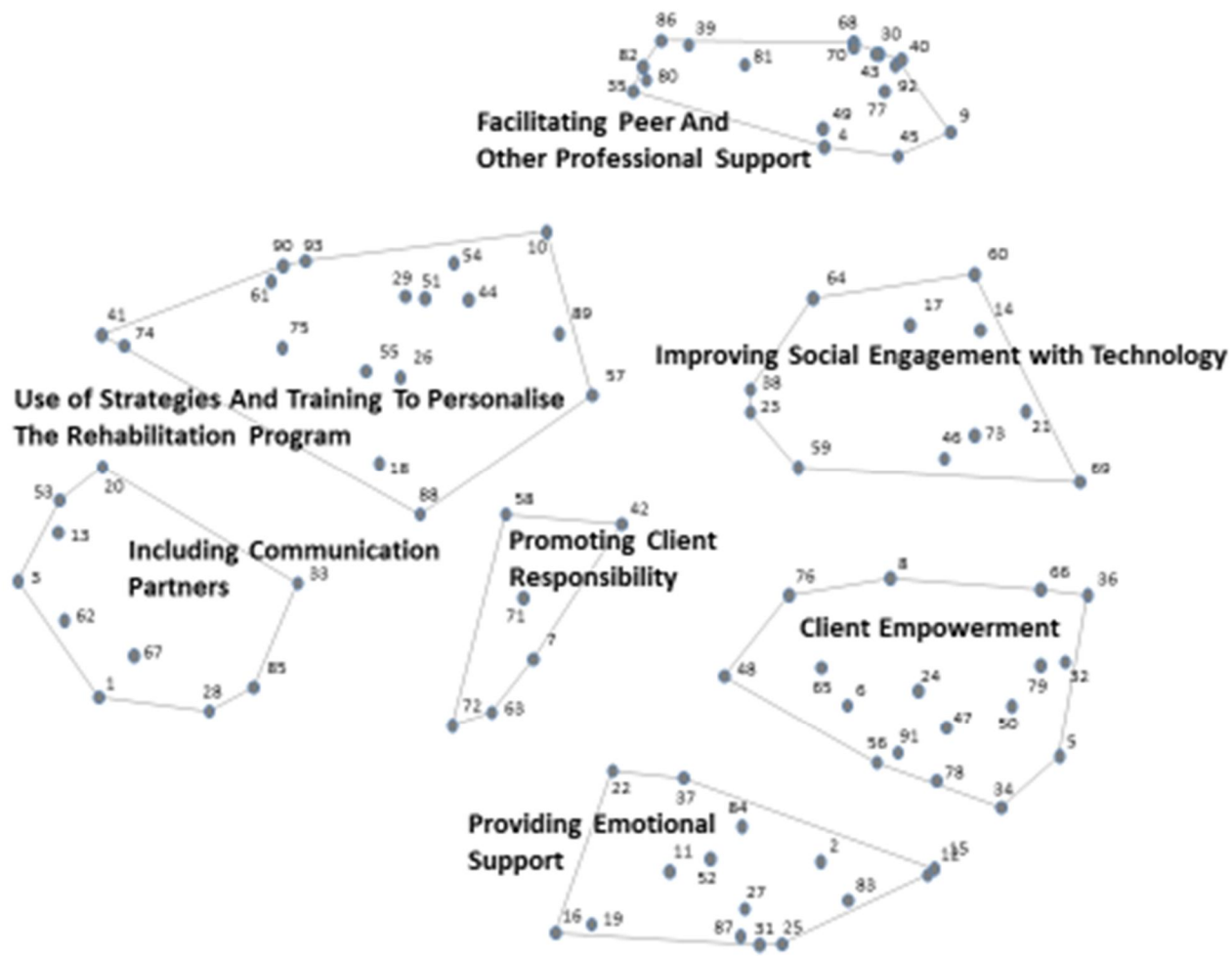
Table 2. Seven concepts that address the psychosocial needs of adults with hearing loss. The example statements included are those with the smallest bridging scores, that is, the statements that were placed in each concept group by the participants most often, therefore best representing the central meaning of each cluster. Statement examples are included in order of lowest to highest bridging scores.

| Cluster Names (Number of statements; Bridging Score) | Cluster Descriptions | Statement Examples (Bridging Score) |
|---|---|---|
| Client Empowerment (17; 0.32) | Assisting the client to establish their rehabilitative goals based on their needs, for example this could be by helping the client determine their wants, needs, and barriers and tailoring the rehabilitation program to account for these personalised goals. | 91. The audiologist makes sure that all of the client's communication difficulties are being addressed not just the hearing concerns (0.22). 56. The audiologist listens to the client's specific needs and wants in terms of their individual experience of hearing loss (0.22). 34. The audiologist addresses the client's emotional needs and fears by asking them what happens in those difficult-to-hear situations, and how they feel about it (0.24). 6. The audiologist supports the client in making their own personalised social re-engagement goals (0.25). |
| Use Of Strategies And Training To Personalise The Rehabilitation Program (17; 0.47) | The provision of individualised training and education to account for the specific needs of the client's rehabilitation, such as communication strategies and use of assistive listening devices. | 44. The audiologist provides clients with training on how to adjust their environment to make listening easier (such as reducing the background noise, improving lighting, or using softer furniture to absorb reverberation/echoes) (0.29). 51. The audiologist provides clients with training on how to be a better communicator (such as asking people to gain your attention first, using face-to-face communication, and asking for repeats) (0.30). 26. The audiologist discusses listening strategies for specific/different listening situations, such as using face-to-face communication, getting the persons attention before talking, or turning down the background noise (0.32). 29. The audiologist provides communication training to help clients develop the skills to improve communication and repair conversation breakdowns when they occur (0.32). |
| Facilitating Peer and Other Professional Support (17; 0.13) | Encouraging clients to become involved with the community and other people living with similar experiences, for example through attending support groups or via social media. Also, recommending other professional health services or offering more specialised audiological services for the specific needs of the client, such as external counselling support or running specialised group sessions. | 68. The audiologist informs the client of local activities held for people who are hard of hearing (0.00). 70. The audiologist introduces the client to local groups which bring together like-minded individuals with similar difficulties, e.g. lip-reading classes (0.00). 43. The audiologist introduces the client to other people with hearing loss, to promote discussions about possible strategies to improve social interactions when one has a hearing loss (0.02). 40. Encouraging clients to join Social Media Groups, such as Facebook, so that they can discuss their hardships and successes with people experiencing similar challenges (0.03). 49. The audiologist refers the client to a social worker to support with long term goals of social re-integration (0.17). |
| Providing Emotional Support (15; 0.24) | Addressing and supporting the emotional needs of the client beyond | 25. The audiologist is "present" for the client - there is no need to be sorry or fix things (0.12). 31. The audiologist connects with the client - human to human (0.12). |

| | | technology alone, for example encouraging and supporting the client to express their feelings and thoughts. | 2. The audiologist gives the client time to talk, and listens to what they say (0.16).<br>27. The audiologist is non-judgemental and accepts the client for who they are (0.16). |
|---|---|---|---|
| Improving Social Engagement with Technology (11; 0.47) | | The role of the audiologist to assist the client in improving social participation. | 38. The audiologist identifies gaps where hearing aids alone are not addressing the problem, and provides the client with hearing aid accessories to help them overcome hearing difficulties in specific social situations, such as wireless communication devices (remote microphone systems that pick-up voices from a distance) (0.35).<br>23. The audiologist explains the importance of going back into those challenging listening situations with their new hearing aids to give it another go (0.35).<br>59. The audiologist works with the client to develop a plan for how they will get back into the community now that they have improved hearing (after hearing aid or cochlear implant fitting) (0.37).<br>64. The audiologist provides the client with the hearing aid manufacturer's apps (online programs) before the hearing aid fitting, to help them learn more about how hearing loss can impact a range of communication functions, and to help identify those social environments that are currently more difficult (0.41). |
| Including Communication Partners (10; 0.48) | | Incorporating tasks that include the clients' communication partners throughout their rehabilitation journey, such as educating them and encouraging them to share their perspectives. | 62. The audiologist works within a Family Centred Care framework, that is, invites the client's family to attend and be part of the audiological rehabilitation program (0.37).<br>53. The audiologist provides the opportunity for family members to experience hearing loss, such as using computer-based hearing loss simulators or ear plugs (0.38).<br>13. The audiologist educates the client's family on how to support someone with hearing loss, which helps take the responsibility off the person with hearing loss (0.38).<br>67. The audiologist invites family members into appointments and asks their perspective on how communication is going at home (0.42). |
| Promoting Client Responsibility (6; 0.46) | | Reinforcing the role that a client has in their own rehabilitation journey, such as promoting self-management of their hearing loss and self-advocacy (assertiveness) in social situations. | 58. The audiologist emphasises the responsibility of the client to use the hearing aid (0.38).<br>71. The audiologist works together with the client to strategize about what the client needs in order to be successful in their social environments; this may include hearing aid accessories, additional programs, knowledge of environmental acoustics, or self-advocacy behaviours (0.39).<br>7. The audiologist outlines the client's role in self-management of their hearing loss, alongside the audiologist's role as more of a supportive professional (0.40).<br>42. The audiologist discusses the association between hearing loss, social decline, and isolation (0.41). |

themes similar to the concepts presented here, while others grouped the data according to the chronological order in which they perform certain activities (e.g. grouped by appointment type). These variations in approach to grouping may have influenced the formation of the clusters, i.e. it is inherent in the approach. This variation presented some challenges to name and describe the conceptual clusters. In line with concept mapping techniques, the research team selected concept names that were informed by the names put forward by participants during the grouping activity, and which captured the spirit of the statements in the cluster.

The final concept map had a stress index of 0.299, suggesting that the concept map appropriately represented the grouping data (Trochim, 1993). Reliability testing of the grouping activity using split-half correlation and application of the Spearman–Brown correction resulted in a reliability estimate of 0.910, suggesting high consistency in how the participants grouped the statements (Hinkle et al, 2003).

DISCUSSION

The purpose of this study was to identify the approaches taken by audiologists to address the psychosocial needs of their adult clients with hearing loss. A large number and diverse range of approaches were identified. This suggests that audiologists consider the psychosocial impacts experienced by people with hearing loss to be multifaceted, but perhaps more importantly, it illustrates that currently, there is a lack of targeted and universally agreed upon interventions for these impacts. It is also possible that different approaches may be relevant for different clients. Each of the seven concepts identified by the concept mapping process is discussed below in the context of published literature and clinical practice.

Client Empowerment

Client empowerment is a complex experience of personal change that can be facilitated by adopting a person-centered approach to clinical practice acknowledging the clients' own

experience, priorities, and fears (Aujoulat et al, 2007). Participants described aspects of client empowerment through statements about (1) exploring the client's psychosocial needs, (2) collaborative problem-solving, (3) shared decision making, and (4) highlighting previous wins, such as moments of successful social connectedness. Previous research exploring factors that influence hearing aid adoption and use has identified the importance of client empowerment, facilitated through supporting the client's responsibility and choices, encouraging skill development, using shared decision making, and accounting for their contextual factors (Laplante-Lévesque et al, 2010; Laplante-Lévesque et al, 2012; Poost-Foroosh et al, 2011). Although studies have identified how audiologists might facilitate client empowerment, analysis of the discourse from recorded audiology consultation sessions suggests that questioning, information transmission, and decisions are mostly unidirectional; from the audiologist towards the client (Barker et al, 2016; Ekberg et al, 2014; Grenness et al, 2015). An examination of behaviour change techniques used by audiologists to encourage and enable hearing aid use found that audiologists often provided information and encouraged skill development, but rarely engaged the client in shared decision making or collaborative problem-solving (Barker et al, 2016). Whereas current practice tends to leave clients in a state of dependency on the audiologist, empowering audiology clients with the knowledge, skills, and confidence to self-manage their own hearing difficulties will likely result in better rehabilitation outcomes (Convery et al, 2019a; Convery et al, 2016). In an attempt to facilitate shared decision making and encourage addressing existing psychosocial needs in patients, Van Leeuwen et al (2019) developed an intake tool (an online screening questionnaire) based on the ICF Core Set for Hearing Loss for a Dutch audiology and ENT practice. This tool aims to facilitate discussion and shared decision-making, in that patients and clinicians jointly discuss and prioritize any functioning problems that emerge from this screening tool. Although promising, the tool still is in the phase of implementation and results are not yet available.


Use of Strategies and Training to Personalise the Rehabilitation Program

This concept acknowledged the need for audiologists to use a person-centred approach in clinical care. A person-centred approach in this context means that the client should be encouraged to be an active participant in their health care, working in partnership with the

audiologist in order to design a rehabilitation process that addresses individual needs. Statements within this concept described programming hearing aid features based on the client's personal communication goals, providing supplemental or alternative listening devices for situations in which the hearing aid does not provide sufficient benefit, and using auditory and communication training to improve social interactions. The benefits of the approaches described by the statements are evidenced in the literature (Chasin & Russo, 2004; Chisolm et al, 2007; Hickson et al, 2007b; Ingvalson et al, 2014; Lawrence et al, 2018; Lunner et al, 2009; Maidment et al, 2020; Sweetow & Sabes, 2007; Thorén et al, 2014).


Facilitating Peer and Other Professional Support

Approaches encompassed by this concept included: (1) use of group audiological rehabilitation, wherein individuals with hearing loss and their communication partners take part in activities and socialization provided during group sessions run by the audiology clinic; (2) participation in support and community groups, wherein individuals with a shared impairment/disability meet online or face-to-face to provide each other with support, information, encouragement and solace; and (3) referral to other professionals, such as those trained in the provision of other healthcare or support services. There is some evidence to suggest that participation in group audiological rehabilitation programs provides improvement in self-perceived auditory and visual speech perception skills following this training (Preminger, 2003), and a reduction in self-perception of hearing disability when delivered face-to-face (Hawkins, 2005; Hickson et al, 2007b), and residual disability when delivered online (Thorén et al, 2014). Self-help support groups for people with hearing loss on the other hand, provide benefit in the form of reduced stress caused by the hearing handicap and improved community involvement (such as helping others to navigate their rehabilitation journey) (Cummings et al, 2002). On-referral, the process of referring clients to another health care professional when a client's needs fall outside of the clinician's scope of practice and/or skill set, is a vital component of client care and is recommended clinical practice (American Speech-Language-Hearing Association, 2018; Audiology Australia, 2013). However, recent self-report surveys suggest that audiologists rarely refer for psychosocial support, often due to a lack of knowledge regarding who, how and when to refer (Bennett et al, 2020a; Bennett et al, 2020b; van Leeuwen et al, 2018).

Based on implementation science and theories of behaviour change, Van Leeuwen et al (2019) identified strategies to overcome barriers to on-referral (and barriers to addressing patients' psychosocial problems in general) by audiologists and Ear Nose and Throat surgeons. These strategies included training and the integration of supporting instruments that would provide practical information on possible treatment options and referral pathways. Although a diverse range of peer and professional support services were described by audiologists in the current study, the individual statements they generated were context specific, often describing by name the specific social support group(s) that they recommend to their clients. The promotion of peer and professional support services could be facilitated through a formal guide that helps people identify local peer and professional support networks that may benefit them.

Providing Emotional Support

Counselling techniques that prioritize and address the client's personal thoughts, feelings, and emotional needs were the focus of this concept; and highlight the need for empathy in the audiological setting. However, research suggests that in practice, audiologists typically do not respond with empathy to the emotional concerns of their clients (Bennett et al, 2020a; Bennett et al, 2020b; Ekberg et al, 2014; Grenness et al, 2015). "Lack of skill" has been described as the key barrier to delivery of emotional support by audiologists (Bennett et al, 2020a), with some suggesting that this lack of skill or training may be due to the lack of education about emotional support counselling in University-based programs (Meibos, 2018; Whicker et al, 2018; Whicker et al, 2017). The skills required to provide emotional support can be taught (Jennings et al, 2013; Riess et al, 2012; Teding van Berkhout & Malouff, 2016). Various research groups have reported efforts to build the evidence base to demonstrate the effectiveness of educational programs to improve counselling and support skills in the audiology setting (Beck & Kulzer, 2018; Finai et al, 2018; Munoz et al, 2017).

Improving Social Engagement with Technology

This concept included approaches that specifically promote active social engagement, such as asking personalized questions regarding recent activities, providing education and

training on socialization strategies, devising goals that address participation restrictions, and providing interventions targeting social barriers. A recent meta-analysis of loneliness-reduction interventions described four primary intervention strategies to address social engagement behaviours: (1) improving social skills, (2) enhancing social support, (3) increasing opportunities for social contact, and (4) addressing maladaptive social cognition (Masi et al, 2011). The most successful interventions are those that address maladaptive social cognition (i.e. addressing negative thoughts about self-worth and how other people perceive you; Masi et al, 2011). However, within the audiology context, psychosocial interventions tend to focus on improving social skills or increasing opportunities for social contact (Ferguson et al, 2016; Ferguson et al, 2019; Hickson et al, 2007a; Meijerink et al, 2017; Thorén et al, 2014; Ingvalson et al, 2014; Preminger & Yoo, 2010a; Preminger & Ziegler, 2008; Sweetow & Sabes, 2007; Thorén et al, 2014), and do not target maladaptive social cognition directly, such as through cognitive therapies. The work of Masi et al (2011) suggests that clinical approaches targeting maladaptive social cognition would be more effective than the interventions used to date at optimizing social connectedness and psychosocial function for adults with hearing loss. However, this work pertains to the general population and is not specific to populations with sensory deficits. Further research is needed to establish whether addressing maladaptive social cognition would be beneficial in the case of sensory deficit.

Including Communication Partners

In line with the principles of family-centred care, participants recognised the need to involve communication partners in order to address psychosocial sequelae associated with hearing loss. They reported that this could be achieved through strategies like actively inviting their participation, educating them directly, and developing shared goals to address the psychosocial impact of the hearing loss on both parties. There is evidence that involving communication partners in audiological rehabilitation is beneficial in terms of increasing the likelihood that the client will pursue hearing intervention (Pronk et al, 2017; Singh et al, 2015; Stark & Hickson, 2004), hearing aid management and trouble shooting skills (Ekberg et al, 2015; Hickson et al, 2014; Singh et al, 2015; Montano & Spitzer, 2020), and adaption and adjustment to the stressors of living with hearing loss (Barker et al, 2017). However,

many of the approaches put forward by participants described informal involvement of communication partners and made no reference to particular standardized programs or approaches. Some research groups have developed formalized individual approaches to include communication partners, such as the SUpport PRogramme (SUPR) for older hearing aid users (Meijerink et al, 2017), the Communication Rings (Montano & Al Makadma, 2012) and the Goal-sharing for Partners Strategy (Preminger & Lind, 2012). Other group programs include communication partners, such as the Active Communication Education (ACE) program (Hickson et al, 2007a). Studies have indicated that both the individual with hearing loss and the significant other may experience some reduced hearing handicap following involvement in a group audiological rehabilitation program (Preminger, 2003; Preminger & Meeks, 2010b). However, there is a paucity of literature showing the extent to which including communication partners in auditory rehabilitation improves psychosocial outcomes for adults with hearing loss and/or their communication partners.

Promoting Client Responsibility

Whereas the concept of 'Client Empowerment' describes the process of helping clients discover personal strengths and capacities to take control of their lives, the concept of 'Promoting Client Responsibility' describes the process of making the client aware that rehabilitation outcomes are largely dependent on their active involvement and commitment to the rehabilitation process. Indeed, research indicates that outcomes are better when clients have a high level of health literacy towards their own disorder (Convery et al, 2016) and understand the importance of managing their own disorder (Schillinger et al, 2002). Linssen et al (2013) found that hearing aid owners perceive themselves to be responsible for the ongoing use of hearing aids, with hearing aid non-users recognising that their low levels of hearing aid benefit are directly linked to their low levels of hearing aid use. Audiologists can support client responsibility by outlining the client's role in self-management of hearing loss (Convery et al, 2019b). However, the use of self-management approaches in the clinical setting appears limited (Barker et al, 2016). This raises the possibility that current clinical guidelines provide vague descriptions of clinical attributes necessary for self-management support (e.g., "be professional" and "support self-advocacy") and need to be replaced with detailed guidelines describing attributes in more behavioural terms (e.g., "provide training

on device management and evaluate the efficacy of the training" (Barker et al, 2015). The concept of 'Promoting Client Responsibility' was centrally located within the concept map, suggesting that audiologists view client responsibility as closely related to all the other concepts identified. This is not surprising, as audiological rehabilitation aims to improve a client's hearing and communication in their everyday environments, not just within the clinic, and thus the client must be responsible for applying the skills learned throughout the audiological rehabilitation process in their real world environment.

Limitations and future directions

This study used concept mapping, an established and reliable technique for canvasing a wide range of views on a particular topic (Rosas & Kane, 2012). One limitation of this study is that the proportion of audiologists that participated in the grouping activity was relatively low (i.e., 18/65= 27%), although greater than reported elsewhere in health-related studies using concept mapping techniques (Rosas & Kane, 2012). This probably had to do with the grouping activity being more complex and time consuming than the brainstorming activity. Use of face-to-face methods for data collection have shown to produce higher rates of completion for activities, and may have been preferred in that sense (Rosas & Kane, 2012). Recruitment of Australian audiologists attending a counselling workshop, and individual clinicians selected via the professional networks of researchers who generally are in the forefront of innovation may have biased the sample that participated in the study such that their data is not representing of wider clinical practice. However, the purpose of this study was to identify the breadth of approaches used by clinical audiologists in an attempt to address the psychosocial needs of their adult clients, and thus enrolling participants that were highly interested and knowledgeable about the area likely resulted in a larger and more diverse list of approaches than likely would have been generated by participants recruited through other channels. Indeed, the very nature of this study meant that we were aiming to identify as comprehensive a list as possible of approaches, not trying to determine approaches typically used in general practice.  It is worth noting that participants were almost all from high income countries, many with little cultural diversity. On the other hand, participants did come from eight different countries with a wide range of educational programs and operating with various scopes of practice. The resultant concept map enables

a clinical audiologist to explore their practice in relation to the psychosocial approaches used in the international community.

The approaches used to provide psychosocial support reported here should be studied further in order to identify which and to what extent each achieves improved clinical outcomes. This information could then be used to inform development of evidence-based clinical guidelines, protocols, evaluation tools, student/clinician training programs, or targeted intervention programs. Furthermore, the concept map developed herein could assist with the identification of potential gaps in audiological service delivery for which clinical need to be developed. Systematic reviews and meta analyses demonstrate the effectiveness of interventions for psychosocial well-being that include solution-focussed counselling, group psychoeducation, self-administered digital interventions, and cognitive behavioural therapy (Cattan et al, 2005; Huibers et al, 2007; Masi et al, 2011). Future research could explore the utility of these approaches in the audiology setting. A study is currently underway to explore the views of adults with hearing loss regarding the perceived benefit and/or likely use of these approaches.

## Conclusion

Audiologists report employing a range of approaches in order to address the psychosocial effects of hearing loss with their adult clients, including the development of personalized goals, exploration of psychosocial impacts of hearing loss, involvement of communication partners, promotion of self-management, and referring-on when appropriate. The approaches were mostly informal and provided in a non-standardized way. The majority of approaches were not evidence-based, even though many evidence-based approaches exist. This highlights the implementation gap between research evidence and clinical practice. Further work is warranted in assessing the efficacy of current approaches, and the development of evidence-based clinical guidelines and programs to address the psychosocial needs of clients.

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