

# **Person centred care: preference, experience and predictors in Speech-Language Pathology and Audiology students**

Faheema Mahomed-Asmail <sup>a</sup>, Louise Metcalfe<sup>a</sup>, Marien Alet Graham<sup>b</sup>, Karin Joubert <sup>c, d</sup>, Vera-Genevey Hlayisi <sup>e</sup>, De Wet Swanepoel<sup>a, f</sup>

<sup>a</sup> Department of Speech-Language Pathology and Audiology, University of Pretoria, Pretoria, South Africa.

<sup>b</sup> Department of Science, Mathematics and Technology Education, University of Pretoria, Pretoria, South Africa

<sup>c</sup> Department of Audiology, University of the Witwatersrand, Johannesburg, South Africa

<sup>d</sup> Ndlovu Wits Audiology Clinic, Dennilton, South Africa

<sup>e</sup> Division of Communication Science and Disorders, Department of Health and Rehabilitation Sciences, Faculty of Health Sciences, University of Cape Town, South Africa

<sup>f</sup> Ear Science Institute Australia, Subiaco, Australia

## Orchid IDs

Faheema Mahomed-Asmail, <https://orcid.org/0000-0002-3666-8331>

Marien Alet Graham, <https://orcid.org/0000-0003-4071-9864>

Karin Joubert, <https://orcid.org/0000-0002-2366-8607>

Vera-Genevey Hlayisi, <https://orcid.org/0000-0001-8508-6840>

De Wet Swanepoel, <https://orcid.org/0000-0001-8313-1636>

Corresponding Author: Faheema Mahomed-Asmail, Department of Speech Language Pathology and Audiology, University of Pretoria, Pretoria, Gauteng, South Africa.

Email: [faheema.mahomed@up.ac.za](mailto:faheema.mahomed@up.ac.za)

Postal address: Private Bag X20, Hatfield, 0028, South Africa

## **Abstract**

**Background:** Person-centeredness is an important aspect of healthcare service delivery endorsed by the World Health Organization. To instill person-centered care (PCC) in health training requires prioritization of PCC concepts. Focusing on Speech-Language Pathology and/or Audiology (SLP/A) this study aimed to i) measure student preferences towards PCC using the modified Patient-Practitioner Orientation Scale (mPPOS) ii) determine predictors towards these preferences and iii) describe students' views and experiences towards PCC.

**Method:** A mixed-method design was followed utilizing an online survey and four focus group discussions. The survey included demographic questions, the modified Patient-Practitioner-Orientation Scale (mPPOS), the Ten-Inventory-Personality-Scale (TIPI) and an open-ended question. The focus group discussions included prompting questions which facilitated an open-ended discussion.

**Results:** A total of 321 students (54.5% SLP) completed the online survey across all seven South African Universities, and 16 students (39% Audiology students) participated in the focus group discussions. High preference towards person-centeredness with a mean mPPOS score of 4.3 (SD 0.6) was obtained. Quantile regression analysis revealed eight common predictors towards PCC preferences. Three main themes emerged from the open-ended question and focus group discussions: i) client-clinician relationship ii) barriers towards PCC and iii) PCC training.

**Conclusion:** Although students have a preference for and an understanding of PCC, there are important factors to consider during training. Curriculum enhancement can nurture and foster the skills required to provide care that is more person-centered.

**Keywords:** Patient-centeredness, Preferences, Predictors, Audiology, Speech Pathology, Education, Curriculum, Personality Traits.

## **1. Introduction**

The World Health Organization (WHO) 2026 vision embraces a future where all people have access to health services provided in a way that responds to their life course needs and preferences (WHO 2015) emphasizing person-centered care (PCC) as a core value of health services worldwide (Bellon-Harn et al., 2017; Manchaiah Dockens, Bellon-Harn and Burns, 2017; Song et al., 2022). PCC takes into consideration the complex and intimate relationship between biological, psychological, and social factors influencing a person (Song et al., 2022; Watermeyer, Kanji and Brom, 2020). Evidence has shown that health systems oriented around the needs of people and communities are more effective, cost less, improve health literacy and client engagement (WHO, 2017).

PCC has been widely investigated across healthcare professions, some of which include medicine (Krupat et al., 2000), nursing (Hwang, 2015; Jardien-Baboo et al., 2016), human nutrition (Jones et al., 2021), occupational therapy (Hammell, 2015), speech-language pathology and audiology (Bellon-Harn et al., 2017; Forsgren, Åke and Saldert, 2022). Previous studies in

the field of Speech-Language Pathology and/or Audiology (SLP/A) have focused on determining preferences towards patient-centeredness in both practitioners and speech and hearing students using the modified Patient-Practitioner Orientation Scale (PPOS) (Bellon-Harna et al., 2017; Haidet et al., 2002; Manchaiah et al., 2014). Current evidence has demonstrated contradictory findings. Laplante-Lévesque et al. (2014) found that age and years of experience of clinicians significantly influenced their person-centered preferences, whereas, Manchaiah et al. (2017) and Bellon-Harna et al. (2017) found no relationship between demographics (age, years of experience, gender, education type, and work setting) and person-centered preferences. In pre-service students, Dockens et al. (2016) specifically investigated the effects of curriculum exposure on students' preferences towards person-centered care with no significant differences found. They however mention that additional factors such as pre-work experiences in related fields, motivation towards studying speech and hearing sciences, and family history related to the communication pathology could have influenced students' preferences towards PCC. Greene et al. (2012) also suggests that interpersonal attributes such as an individuals' personality trait might impact one's preference towards PCC.

Personality traits refer to characteristics that are stable over time, provide the reasons for the person's behavior, and are psychological in nature. They reflect who we are and determine our affective, behavioral, and cognitive style' (Mount et al., 2005). Five core personality traits underlying the differences between human beings have been proposed (Digman, 1990). They include i) emotional stability characterized by sadness, anxiety, and neuroticism; ii) extraversion characterized by excitability, sociability, assertiveness, and high amounts of emotional

expressiveness; iii) openness to experience featuring characteristics such as a broad range of interests and creativity; iv) agreeableness attributes such as trust, altruism, affection, and other prosocial behaviors, v) conscientiousness includes good impulse control and goal-directed behaviors (Cherry, 2019). Examination of personal traits of health professionals, in general, is limited and has been explored only in mental health professionals, medical doctors and the field of nursing (Eley et al., 2012; Gerits et al., 2005; Goetz et al., 2018; Humpel and Caputi, 2001; Wagner et al., 2002) with few studies focusing on students including dental and medical students (Wagner et al., 2001; Stormon, Ford and Eley, 2019). Investigating how individual personality traits may relate to preferences toward person-centered care is unknown in the health field of SLP/A.

Development of students responsive to individual clients' needs and preferences ensuring clients' values guide decision-making can be promoted based on an informed understanding of existing knowledge and preferences. This study therefore aimed to i) measure student preferences towards PCC ii) to determine possible predictors towards these preferences and to iii) understand students' views and experiences towards PCC.

## **2. Materials and Method**

This study was conducted under the ethical oversight of the Institutional Research Ethics Committee (HUM031/0921). Permission was also obtained from the registrars and heads of

departments of all seven participating Universities. Prior to data collection, student participants provided written informed consent.

### ***2.1. Study design and participants***

The study employed a two-phase mixed-method design. For phase one, the quantitative component constituted an e-survey distributed to all undergraduate students registered for the professional degree of either Speech Pathology and/or Audiology (SLP/A). As such participants were studying towards becoming clinical practitioners after completing the four-year undergraduate qualification. Participants registered for the degree at any of the seven South African Universities offering the course were recruited. The qualitative component (phase two) constituted four focus groups for each year of undergraduate study. Participants indicating their willingness to participate in second phase of the study by leaving their email address at the end of the e-survey were approached.

### ***2.2. Procedures***

The survey (Appendix A) was made available to participants using Qualtrics (Provo, UT) for a period of six weeks from April to May 2022, with bi-weekly reminders sent out. A monetary incentive included a \$20 (ZAR 350) online store voucher for one participant from each year group based on a lucky draw. To ensure compliance with the POPI Act, the link to the e-survey was provided to the Heads of Departments to distribute to potential participants in their departments via email or through their online teaching platforms. The survey consisted of biographic information (age, gender, university, year of study), the Ten Item Personality

Measure (TIPI), a modified version of the modified Patient-Practitioner Orientation Scale (mPPOS), followed by an open-ended question.

For phase two of the study, 16 students across the seven higher education institutions who were willing to participate in the second phase of the study were recruited (one from University A, two from University B, two from University D, two from University E, three from University F, six from University G). Participants were contacted to obtain additional consent and arrange an appropriate meeting time. Four focus group discussions with four students from each year group took place over two weeks in May and June 2022. Those who participated in the virtual focus group discussions were compensated for the data used with a 1GB data voucher.

### ***2.3. Data Collection Materials***

The TIPI personality scale used was developed by Gosling et al. (2003) to measure the five basic personality traits. The validated 10-item scale makes use of two items (one positive and one negative) to measure each of the five personality traits (Extraversion, Agreeableness, Conscientiousness, Emotional Stability, Openness to Experience) using a seven-point Likert type scale (1 = disagree strongly, 7 = agree strongly). For the TIPI scoring, the total score is taken for each of the five sub-dimensions. The personality trait belonging to the sub-dimension in which the individual gets the highest score is their primary personality trait. This validated scale takes approximately one minute to complete (Appendix A). Shorter surveys typically have higher response rates (Liu and Wronski, 2017; Saleh and Bista, 2017) and therefore the TIPI tool was

utilized as opposed to other personality trait tools that are usually much longer (240 to 360 items).

Bejarano et al. (2022) recommended that studies assessing healthcare practitioners preferences towards person-centred care should use the PPOS to allow for comparability to previous literature. The PPOS comprises 18 questions that are scored on a six-point Likert scale (1=strongly agree; 6=strongly disagree). The questions are split into two subscales, caring and sharing, that both have nine items each. The sharing subscale reflects the extent to which the respondent believes that clients desire information and should be part of the decision-making process (e.g., clients should be treated as if they were partners with the clinician, equal in power and status). The caring subscale reflects the extent to which the respondent sees the client's expectations, feelings, and life circumstances as critical elements in the treatment process (e.g., a treatment plan cannot succeed if it is conflicting with a client's lifestyle or values) (Manchaiah, 2017).

For the purpose of this study, the PPOS terminology was modified to suit both fields of Audiology and Speech-Language Pathology (i.e., 'Doctor' replaced with 'clinician', 'patient' replaced with 'client', 'medical advances' replaced with 'communication advances', 'health condition' replaced by 'communication condition', 'medical information' replaced with 'communication impairment information').

The modified PPOS (mPPOS) was followed by a single open-ended question



*We are interested in knowing what your personal opinion and views are about person-centered care. Please write as much as you would like in the space available below.*

The survey concluded with two spaces for an email address for participants who were willing to participate in phase two of the study and the second space for an email address for participants who wished to enter into the lucky draw.

For phase two of the study, a sub-group of 16 participants participated in one of four focus group discussions. To ensure consistency, and avoid leading remarks and a biased approach, a focus group guide (Appendix B) was developed. A research assistant facilitated the semi-structured, online, synchronous focus groups over MSTeams™, video-recorded and transcribed verbatim, whilst accounting for body language, e.g., nodding, etc. (Watermeyer et al., 2012).

#### **2.4. Data analysis**

Cronbach alpha is used to determine reliability for scales with ten or more items, as the TIPI included only five dimensions Cronbach alpha was not used, however, inter-item correlation for each dimension of the TIPI was determined. Pallant (2020) has recommended that statistically significant ( $p > 0.05$ ) inter-item correlations above 0.1 are acceptable, the inter-items correlations obtained for the TIPI dimensions were acceptable ( $r_s > 0.1$ ,  $p < 0.01$ , Appendix C). For the mPPOS The Cronbach alpha was acceptable (0.744). The inter-item correlation was acceptable for the total and sharing subscale ( $r_s > 0.1$ ,  $p < 0.01$ , Appendix B) (Pallant, 2020). However, the mean inter-item correlation was below 0.1 for the mPPOS caring subscale; when item 17 was

removed from the scale, the mean inter-item correlation increased to 0.112 with the majority of p-values (57.1%) being significant, which indicated reliability (Appendix C). Item 17 was thus removed from the scale, resulting in a total of 17 items (of the original 18) included in the analysis.

The analysis further included descriptive statistics (i.e., mean, standard deviation). Wilcoxon signed-ranks tests were used to determine significant differences between the mPPOS subscales. Multivariate linear regression analysis is the most well-known method used where the mPPOS total and subscale (sharing and caring) scores are the dependent variables with biographical and demographic details being used as predictors. However, multivariate linear regression has many assumptions; for example, the residual error terms must be normally distributed. The Shapiro-Wilk test was used to test normality, and it was found that not all residual error terms were normally distributed. Accordingly, robust quantile regression was used where it is not necessary to meet the assumptions set out by multiple linear regression. The percentage reduction error was positive when compared to the mean absolute error (MAE) for the mPPOS (total, sharing and caring subscales) and thus fit the null to the final model (Gomez-Cravioto et al., 2022; Kurzawa and Lira, 2015). Robust quantile regression models were built with the following predictors: participant age (continuous variable); participant home language (three categories, 10 other SA official languages, other languages and English with the latter as benchmark); gender (two categories female and male with the latter as the benchmark); ethnicity (four categories Asian, colored, white and African with the latter as benchmark); degree registered for (three categories dually qualified, Audiologist, Speech-language Pathology with the latter as benchmark); year of

study (first year, second year, third year, and fourth year with the first years as the benchmark); SLP/A as the first choice of study (two categories, no and yes with the latter as a benchmark); most influential reason for selecting to study SLP/A (four categories, career opportunities, having had personal experience related to SLP/A, expanding knowledge base, with to help others as a benchmark) and TIPI personality traits (continuous variable).

Inductive thematic analysis using content analysis was employed to identify themes within the data (Braun & Clarke, 2006). All transcripts were anonymized with data grouped for thematic analysis from the open-ended questions (n=218) and the focus group discussions (n=16). After becoming familiar with the data, two researchers independently identified themes and coded the data to obtain a frequency count (#) for each of the themes. Coded data were reviewed for errors (95% interrater agreement) which were then interpreted and discussed, with inconsistencies being resolved where needed.

### **3. Results**

A total of 359 students (mean age 21.2, SD 2.5) participated in this study, 38 responses were incomplete, leaving a total of 321 responses that were analyzed. More than half of the participants (54.2%) indicated that the reason for their choice of study was ‘to help others’. The remaining 16.2% (52) indicated their choice was based on ‘career opportunities’ with 12.8% (41) having had personal experience (family with a communication disorder) that persuaded them to register for the degree with only 5% (16) keen on expanding their knowledge base.

**Table 1. Participant Demographics (n= 321)**

	Year groups n (%)				
	1 <sup>st</sup> years	2 <sup>nd</sup> years	3 <sup>rd</sup> years	4 <sup>th</sup> years	All groups
<b>Participants</b>	74 (23.1)	90 (28)	59 (18.4)	98 (30.5)	321 (100.0)
<b>Gender</b>					
Female	67 (90.5)	78 (86.7)	53 (89.8)	87 (88.8)	285 (88.8)
Male	6 (8.1)	8 (8.9)	6 (10.2)	10 (10.2)	31 (9.6)
Other	0 (0.0)	4 (4.4)	0 (0.0)	1 (1.0)	5 (1.5)
<b>Ethnicity</b>					
African	35 (47.3)	48 (53.3)	19 (32.2)	40 (40.8)	142 (44.2)
Asian	7 (9.5)	6 (6.7)	7 (11.9)	12 (23.2)	32 (10.0)
Coloured	6 (8.1)	9 (10.0)	6 (10.2)	11 (11.2)	32 (10.0)
White	25 (33.8)	27 (30.0)	27 (45.8)	35 (35.7)	114 (35.5)
Other	1 (1.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.3)
<b>Home Language</b>					
English	28 (37.8)	27(30)	29 (49.2)	40 (40.8)	124 (38.6)
10 Official SA languages (excl English)	44 (59.5)	61 (67.8)	30 (50.8)	56 (57.1)	191 (59.5)
Other	2 (2.7)	2 (2.2)	0 (0.0)	2 (2.0)	6 (1.9)
<b>Current Course</b>					
Audiology	25 (33.8)	29 (32.2)	20 (33.9)	36 (36.7)	110 (34.3)
Speech-language Pathology	39 (52.7)	46 (51.1)	37 (62.7)	53 (54.1)	175 (54.5)
Dual: Speech-language Pathology and Audiology	10 (13.5)	15 (16.7)	2 (3.4)	9 (9.2)	36 (11.2)
<b>University*</b>					
University A	6 (8.1)	15 (16.7)	2 (3.4)	9 (9.2)	32 (10.0)
University B	9 (12.2)	11 (12.2)	15 (25.4)	17 (17.3)	52 (16.2)
University C	0 (0.0)	7 (7.8)	2 (3.4)	5 (5.1)	14 (4.4)
University D	15 (20.3)	15 (16.7)	6 (10.2)	17 (17.3)	53 (16.5)
University E	8 (10.8)	5 (5.6)	4 (6.8)	7 (7.1)	24 (7.5)
University F	32 (43.2)	25 (27.8)	15 (25.4)	26 (26.5)	98 (30.5)
University G	4 (5.4)	12 (13.3)	15 (25.4)	17 (17.3)	18 (5.6)

\*Details of Universities cannot be disclosed due to confidentiality clause

**Table 2. Modified Patient-Practitioner Orientation Scale (mPPOS) mean and standard deviation (SD) for 321 participants**

<b>PPOS Item</b>	<b>1<sup>st</sup> year</b>	<b>2<sup>nd</sup> year</b>	<b>3<sup>rd</sup> year</b>	<b>4<sup>th</sup> year</b>	<b>All groups</b>
1. The clinician is the one who should decide what gets talked about during the visit.	3.8 (1.2)	3.9 (1.4)	4.4 (1.3)	4.5 (1.3)	4.2 (1.3)
2. Although health care is less personal these days, this is a small price to pay for communication advances.	3.25 (1.2)	3.8 (1.4)	4.0 (1.2)	3.9 (1.4)	3.8 (1.4)
3. The most important part of the standard appointment is the assessment.	2.3 (0.9)	3.0 (1.4)	3.3 (1.2)	3.4 (1.5)	3.0 (1.4)
4. It is often best for clients if they do not have the full explanation of their communication impairment.	5.0 (1.2)	4.9 (1.3)	5.3 (0.9)	5.1 (1.3)	5.1 (1.5)
5. Clients should rely on their clinician's knowledge and not try to find out about their conditions on their own.	3.6 (1.6)	4.0 (1.6)	4.6 (1.3)	4.7 (1.3)	4.2 (1.5)
6. When clinicians ask a lot of questions about a client's background, they are prying too much into personal matters.	4.8 (1.1)	5.0 (1.2)	5.1 (0.9)	5.2 (0.9)	5.1 (1.0)
7. If clinicians are truly good at diagnosis and treatment, the way they relate to clients is not that important	4.8 (1.1)	5.1 (1.2)	5.5 (0.7)	5.3 (0.9)	5.2 (1.0)
8. Many clients continue asking questions even though they are not learning anything new.	3.9 (1.2)	3.9 (1.3)	4.4 (1.2)	4.2 (1.1)	4.1 (1.2)
9. Clients should be treated as if they were partners with the clinician, equal in power and status.*	4.6 (1.5)	4.6 (1.5)	5.3 (1.0)	5.1 (1.2)	4.9 (1.4)
<b>Sharing subscale</b>	<b>4.0 (0.5)</b>	<b>4.3 (0.8)</b>	<b>4.7 (0.6)</b>	<b>4.6 (0.6)</b>	<b>4.3 (0.6)</b>
10. Clients generally want reassurance rather than information about their communication impairment.	3.1 (1.2)	2.8 (1.2)	2.9 (1.0)	2.9 (1.2)	2.9 (1.2)
11. If a clinician's primary tools are being open and warm, the clinician will not have a lot of success	4.7 (1.3)	4.8 (1.4)	4.9 (1.1)	4.9 (1.1)	4.8 (1.2)
12. When clients disagree with their clinicians this is a sign that the clinician does not have the client's respect and trust.	3.9 (1.3)	4.2 (1.2)	4.6 (1.2)	4.6 (1.1)	4.3 (1.2)
13. A treatment plan cannot succeed if it is in conflict with the client's lifestyle or values.*	4.7 (1.3)	4.9 (1.2)	5.4 (0.9)	5.3 (1.0)	5.1 (1.1)

14. Most clients want to get in and out of the clinician's office as quickly as possible.	3.1 (1.1)	3.2 (1.3)	3.5 (1.2)	3.7 (1.2)	3.4 (1.2)
15. The client must always be aware that the clinicians are in charge.	3.5 (1.3)	3.5 (1.3)	4.4 (1.3)	4.3 (1.3)	3.9 (1.4)
16. It is not that important to know a client's culture and background in order to treat the client's communication impairment.	5.1 (1.3)	5.5 (1.2)	5.5 (1.3)	5.4 (1.2)	5.4 (1.2)
**18. When clients look up communication impairment information on their own, this usually confuses more than it helps	2.7 (1.3)	2.8 (1.1)	3.2 (1.1)	3.4 (1.1)	3.0 (1.2)
<b>Caring subscale</b>	<b>3.8 (0.6)</b>	<b>3.9 (0.5)</b>	<b>4.3 (0.6)</b>	<b>4.3 (0.5)</b>	<b>4.1 (0.5)</b>
<b>Total scale</b>	<b>2.9 (0.5)</b>	<b>4.1 (0.6)</b>	<b>4.5 (0.5)</b>	<b>4.5 (0.5)</b>	<b>4.3 (0.6)</b>

Score of 1 (strongly agree)=most clinician-centered; Score of 6 (strongly disagree)=most patient-centered

\*Items 9, 13 are reversely worded items which were reverse scored

\*\*item 17 (reversely scored) had a mean score of 3.8 (1.3 SD) and was removed as inter-rater reliability could not be reached.

### ***3.1. Preferences and predictors towards PCC***

Participants' personality scores across all year groups were highest in conscientiousness (6.0; SD 1.0) and lowest in extroversion (4.1; SD 1.6) (Appendix D). A total mean score of 4.3 (0.6 SD) was obtained for the mPPOS with a significant difference between the caring (4.1, 0.5 SD) and sharing (4.3, 0.6 SD) subscales with the caring being significantly lower ( $p < 0.05$ ; Wilcoxon Signed Ranks Test) (Table 2).

Robust quantile linear regression model (Mean Absolute Error 0.36-0.41, % reduction in error 0.48-9.63%) revealed eight common predictors (Table 3) across the mPPOS scores after controlling for variance. As students progressed through years of study, an increase in mPPOS

total scores was noted, with a plateau at third and final year ( $B$  0.588; 95% CI 3.369-3.925). This phenomenon was also noted for the sharing and caring subscale scores ( $B$  0.575; 0.500, respectively, 95% CI 0.297-0.853). Additionally, being female ( $B$  0.280; 95% CI -0.034-0.595) and registered for Audiology ( $B$  0.210; 95% CI 0.016-0.404) resulted in higher mPPOS sharing scores together with the agreeableness personality trait ( $B$  0.097; 95% CI 0.013-0.180), whereas emotional stability (neuroticism) resulted in a significant decrease ( $B$  0.101; 95% CI -0.167- (-) 0.036). The mPPOS caring subscale revealed additional predictors related to the choice of study. When comparing reason for choosing to study the course having ‘family members with a communication or hearing disorder’ and ‘career opportunities’ significantly decreasing mPPOS caring scores ( $B$  -0.250, 95% CI -0.093 - (-) 0.407).

### ***3.2. Student views and understanding of PCC***

Frequency counts (#) from the combined open-ended question ( $n = 218$ ) and focus group discussions ( $n=16$ , 6.3% male, 68.8% African) revealed three common themes amongst year groups: i) client-clinician relationship; ii) barriers towards PCC and iii) PCC training with 14 sub-themes as indicated in figure 1.

**Table 3. Significant (p<0.05) predictors according to Robust Quantile Regression Analysis across mPPOS total, mPPOS sharing and caring subscales (n=321)**

Predictors	95% Confidence Interval				
	Coefficient	Std. Error	Sig.	Lower Bound	Upper Bound
<b>Total PPOS score intercept</b>	<b>3.647</b>	<b>0.1412</b>	<b>&lt;0.001</b>	<b>3.369</b>	<b>3.925</b>
Female <sup>a</sup>	0.294	0.1279	0.022	0.043	0.546
Second year of study <sup>b</sup>	0.235	0.1033	0.023	0.032	0.439
Third year of study <sup>b</sup>	0.588	0.1133	<0.001	0.365	0.811
Fourth year of study <sup>b</sup>	0.529	0.1004	<0.001	0.332	0.727
<b>Sharing scale intercept</b>	<b>3.696</b>	<b>0.3373</b>	<b>0.000</b>	<b>3.032</b>	<b>4.359</b>
Agreeableness	0.097	0.0423	0.023	0.013	0.180
Emotional Stability (neuroticism)	-0.101	0.0332	0.002	-0.167	-0.036
Female <sup>a</sup>	0.280	0.1598	0.047	-0.034	0.595
Registered for Audiology <sup>c</sup>	0.210	0.0985	0.034	0.016	0.404
Second year of study <sup>b</sup>	0.256	0.1257	0.043	0.009	0.503
Third year of study <sup>b</sup>	0.575	0.1411	<0.001	0.297	0.853
Fourth year of study <sup>b</sup>	0.522	0.1229	<0.001	0.280	0.764
<b>Caring scale intercept (excluding item 17)</b>	<b>3.875</b>	<b>0.0588</b>	<b>0.000</b>	<b>3.759</b>	<b>3.991</b>
Family members with a communication or hearing disorder <sup>d</sup>	-0.250	0.0798	0.002	-0.407	-0.093
Career opportunities <sup>d</sup>	-0.250	0.0739	0.001	-0.395	-0.105
Third year of study <sup>b</sup>	0.500	0.0814	<0.001	0.340	0.660
Fourth year of study <sup>b</sup>	0.500	0.0712	<0.001	0.360	0.640

<sup>a</sup> gender two categories with 'male' as the benchmark

<sup>b</sup> year of study has four categories with 'first year' as benchmark

<sup>c</sup> degree registered has three categories with 'Speech-language Pathology' as the benchmark

<sup>d</sup> most influential reason for selecting to study SLP/A had four categories with 'to help others' as a benchmark



### *Client-clinician relationship*

The most prominent emerging theme (#462) was client-clinician relationship (Appendix E) comprised of five sub- themes, individualized care (#190), client satisfaction (#98), rapport (#91), necessity (#62) and family centered care (#21).

Participants from first to final year associated PCC to client satisfaction and described PCC as ‘*putting the client first*’, ‘*individualizing care*’, ‘*tailoring therapy*’ and ‘*catering it to the individual’s needs*’. A few (#21) mentioned family involvement with a large proportion (#62) highlighting PCC as being the ‘*cornerstone of clinical care*’, indicating it should be ‘*prioritized*’ with others indicating that it is ‘*vital and necessary*’.

### *Barriers towards PCC*

Barriers towards providing PCC was the second most common theme (#51) with participants mentioning that ‘*emotional attachment*’ and ‘*client involvement*’ made it challenging to provide PCC. It was mentioned that it is difficult to ‘*draw the line between personal life and therapy*’ with many using phrases such as ‘*emotional fatigue*’, ‘*emotional drain*’ and describing it as ‘*emotionally exhausting*’. Senior students (third and fourth years) who had clinical training exposure mentioned four additional barriers which include language barriers (#8), time (#15), resources (#8) and the expense (#6) in providing PCC. These participants mentioned that it would be ‘*costly*’ and ‘*more expensive*’ as intervention needs to be ‘*tailored*’ and ‘*takes more time*’. It was also mentioned that there is a lack of ‘*resources*’ and that is challenging due to the

*'South African context'* where there are *'not enough healthcare professionals'* and *'language'* being an obstacle in proving PCC due to the multilingual population served.

### *PCC Training*

The third theme was PCC training divided into three sub-themes of theoretical knowledge (#19), clinical training (#18) and supervision (#12) (Appendix E). A number of first- and second-year students indicated that they had no exposure to clinical training, *'we haven't started seeing clients yet'* or that they have only covered it *'in theory, but not actual application'*, whereas others mentioned that *'haven't really touched on specifics of person-centered care'* and it has been *'mentioned very briefly somewhere'* with senior students mentioning that it was presented in terms of the *'ICF'*. It was also noted that clinical training varies across universities and courses (SLP/A) as some students indicated that it is an *'abstract concept'* or that there is hardly any *'opportunity in audiology'* whereas others mentioned that it has become an *'unconscious'* process.

Supervision also varied where some supervisors reportedly *'encourage it'* and others do not. One student expanded that

*It really just differs from supervisor to supervisor because everyone's views are very different and everyone's style of mentoring the students under them is also different.*

#### 4. Discussion

SLP/A students indicated a high mean preference (4.3, 0.6 SD) towards patient-centeredness using the mPPOS across year groups in seven South Africa Universities offering one or both of these courses. Mean score were comparable to those obtained in the USA for SLP/A students (4.1, 0.5 SD) as well as those obtained for medical students' scores for males (4.20, 0.5 SD) and females (4.36, 0.4SD) respectively (Wahlqvist et al., 2010). A recent systematic review and meta-analysis across healthcare student (nursing, dietetics, medicine, dentistry, SLP/A) preferences towards PCC obtained a pooled mean score of 4.16 which is comparable to results from this study (Bejarano et al., 2022). mPPOS scores were also comparable to clinicians, including Audiologists in Australia (4.46; 0.52 SD) (Laplante-Lévesque and Hickson, 2015; Grenness, 2014) and Speech-language Pathologists in USA (4.1, 0.6 SD) (Bellon-Harn et al., 2017). SLP/A students scored higher when compared to scores obtained for Audiologists (3.6; 0.6 SD) across culturally diverse populations including Portugal, India, and Iran (Manchaiah et al., 2014).

Cultural competence is a key aspect that is known to influence healthcare quality (Saha, Beach and Cooper, 2008; Zhao et al., 2015). Although cultural differences (home language, ethnicity) were not predictors of preferences towards PCC, cultural effects were noted. In order to ensure validity and reliability of the mPPOS, item 17 ('Humour is a major ingredient in the clinician's management of the client') was removed from the analysis as inter-item correlations could not be met. The removal and/or adaptation of item 17 due to cultural differences was also observed when the PPOS was used in both Nepal and China (Moore, 2008; Wang et al., 2017). The

mPPOS as utilized in this study is valid and reliable. Students however acknowledged that South Africa is '*multicultural and diverse*' and that this makes it difficult to provide PCC. The two main factors of diversity that were mentioned included language as a barrier (#8) as well as socioeconomic diversity which included the expense (#6) and resources (#8) to provide care that is person-centered.

The sharing subscale reflects the respondent's belief that power and control should be shared between the client and the clinician, whilst the caring subscale determines the extent to which the respondent values warmth and support from the client-clinician relationship (Krupat et al, 2001). As with previous studies a statistically significant difference (Wilcoxon signed-ranked test,  $p < 0.05$ ) was noted between these two subscales, with the sharing subscale being significantly higher (Manchaiah et al. 2014, Bellon-Harn et al. 2017). Although students believe that clients should be part of the decision making process, they do not value the client's expectations and life experiences sufficiently in the healthcare process. This outcome is supported by the qualitative findings of this study which indicate that although students '*value*' PCC they feel that providing PCC could cause '*emotional fatigue*' and '*burnout*' as clients' personal challenges and life experiences need to be considered. Bearing in mind that the caring scale relates to empathy, Dockens et al. (2016) found that caring may develop over time as students gain more experience and participate in the client-clinician relationship as they acquire a deeper patient perspective to the clinical process. Robust quantile regression indicated that year of study was a significantly positive predictor (Table 3) of mPPOS caring subscale scores ( $p < 0.05$ ) with students showing

significantly higher caring subscale scores as they progressed through years of study (coefficient 0.500).

Interestingly, the highest personality trait score, conscientiousness (6.0, 1.0 SD) and openness (5.5, 1.1 SD), did not influence students' preferences towards PCC. However, the personality traits of i) emotional stability (neuroticism), which is characterized by sadness and anxiety (4.6, 1.4 SD) and ii) agreeableness (5.4, 1.1 SD) with attributes such as trust, altruism, affection, and other prosocial behaviors (Cherry 2019; Preminger et al. 2015) were significant predictors of student sharing preferences. Students scoring higher in neuroticism were significantly ( $p < 0.05$ , coefficient 0.101) more likely not to share control between themselves and the client, with students valuing trust and affection being more likely to make shared decisions with their clients.

Although mentioned but not considered in previous studies, the motivation or influence behind one's choice of study may predict preferences towards PCC (Dockens et al., 2016; Bellon-Harn et al., 2017). In this study, 'to help others' was the presiding motivating factor (54.2%) for students to study SLP/A with 'career opportunities' being second (16.2%) and 'family members with a communication or hearing disorder' being third (12.8%). When benchmarked against each other, 'family members with a communication or hearing disorder' and 'career opportunities' was a significant negative predictor towards the caring subscale. This suggests that the desire to help others as primary motivation for study course is associated with students valuing warmth and support towards others. Qualitative data further shows that students have the desire 'to help others'.

Across universities, student training on PCC appears to be introduced in the second and third year of study with students reporting that many of the universities utilizing the International Classification of Functioning, Disability, and Health framework (ICF) as a theoretical underpinning. The ICF focuses on adapting assessment and treatment based on each client's personal views of specific contextual factors and experiences of activity and participation in life activities (WHO 2001). However, a recent scoping review on PCC for adults (Forsgren, Åke and Saldert, 2022) found that several records mentioned, in order to truly work in a person-centred way, clinicians need to 'turn the ICF framework upside down', 'flip the rehab model', or 'begin at the end', (Cruice, 2008; Khayum and Rogalski, 2018; Simmons-Mackie, 2007; Jeng, 2015). While the ICF helps structure individual strengths and barriers the ICF underestimates the impact of context and who the person actually is, the person's quality of life, and the importance of 'being' (Cruice, 2008). As such providing PCC training should move beyond the ICF and also focus on including components such as the six elements of PCC, which include active listening, empathy, understanding individual preferences, utilizing open-ended questions, shared decision making and involving clients, family and friends (McLean, 2019). Furthermore, clinical exposure should offer transformative and significant learning experiences rather than purely cognitive and skills-based ones (de la Croix, 2021).

The WHO (2015) indicates that academics and researchers play an important role in providing analytical, educational and implementation skills to support person-centered and integrated health services. Clinical supervisors should be trained in PCC to prioritize and provide meaningful learning experiences over focusing on the 'technical skills' required during clinical

sessions. This can be achieved by offering in-service education to improve their practices regarding PCC (Wallengren et al., 2022). Person-centered components or learning modules are an imperative component of the curriculum and are important enablers of PCC given their roles in training future health care professionals (Wallengren et al., 2022). Future studies should go beyond determining student preferences and predictors towards PCC and explore the content provided to students in terms of syllabus, learning activities, literature choices, clinical sites and exposure.

Limitations of this study include relying on an online survey yielding low response rates that can at least partly be attributed to the rise of online surveys, and information requests as well as greater awareness of privacy issues amongst others (Beullens et al., 2018). Due to a sufficient sample size generalization was possible, however, there was a disproportion of participants across year groups. Future studies should include a larger sample with better representation across categories and also across students from other countries to support generalization of findings. Furthermore, the PPOS was modified to suit the culturally diverse SA population with results being comparable to previous studies. It is recommended that for future studies using the PPOS in countries with known cultural diversity, item 17 should be rephrase or removed. This study was the first study to make use of a personality trait tool in determining its influence on preferences toward PCC. Although the TIPI has been criticized for oversimplifying the measure of personality it is a validated tool and is reported to perform as well or slightly better than other ultra-short measures such as the Mini-IPIP (Donnellan et al., 2006).

## **5. Conclusion**

The majority of students have a preference and understanding of PCC and are motivated to take up SLP/A by the notion of wanting ‘to help others’. By staggering learning outcomes, providing students with the knowledge, skills and opportunity to practice PCC, the next generation of professionals can be supported to provide PCC as an integrated part of healthcare services and client interactions.

## **6. Funding**

The authors acknowledge the financial support of the University Capacity Development Programme and the NRF Research Development Grants for Y-Rated Researchers (137794). The funders had no role in the study design, data collection and analysis, decision to publish, or preparation of the manuscript.

## **7. Disclosure Statement**

The authors report no conflict of interest.

## **8. References**

Bejarano, G., Csiernik, B., Young, J. J., Stuber, K., & Zadro, J. R. (2022). Healthcare students’ attitudes towards patient centred care: a systematic review with meta-analysis. *BMC Medical Education*, 22(1), 1-22.



Bellon-Harn, M. L., Azios, J. H., Dockens, A. L., & Manchaiah, V. (2017). Speech-language pathologists' preferences for patient-centeredness. *Journal of Communication Disorders*, 68 (2017), 81-88. . <https://doi:10.1016/j.jcomdis.2017.06.012>.

Beullens, K., Loosveldt, G., Vandenplas, C., & Stoop, I. (2018). Response Rates in the European Social Survey: Increasing, Decreasing, or a Matter of Fieldwork Efforts? *Survey Methods: Insights from the Field*, 1 (2018), 1-12. . <https://doi.org/10.13094/SMIF-2018-00003>.

Bombeke, K., Symons, L., Vermeire, E., Debaene, L., Schol, S., De Winter, B., & van Royen, P. (2012). Patient-centredness from education to practice: The “lived” impact of communication skills training. *Medical Teacher*, 34(5). . <https://doi:10.3109/0142159X.2012.670320>.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi:10.1191/1478088706qp063oa>.

Brown, R. F., & Bylund, C. L. (2008). Communication skills training: describing a new conceptual model. *Academic Medicine*, 83(1), 37–44. . <https://doi:10.1097/ACM.0b013e31815c631e>.

Cherry, K. (2022). *The big five personality traits*. Very Well Mind. Retrieved May, 23, 2020, from <https://www.verywellmind.com/the-big-five-personality-dimensions-2795422#:~:text=Many%20contemporary%20personality%20psychologists%20believe,openness%2C%20conscientiousness%2C%20and%20neuroticism>.

Cruice, M. (2008). The contribution and impact of the International Classification of Functioning, Disability and Health on quality of life in communication disorders. *International Journal of Speech-Language Pathology*, 10(1-2), 38-49. . <https://doi.org/10.1080/17549500701790520>.

de la Croix, A. (2021). The sense and nonsense of communication (skills) teaching-Reflections from a patient and educator. *Patient Education and Counseling*, . <https://doi:10.1016/j.pec.2021.12.004>.

Digman, J.M. (1990). Personality structure: emergence of the five-factor model. *Annual Reviews Psychology*, 41(1), 417–440. <https://doi:10.1146/annurev.ps.41.020190.002221>.

Donnellan, M.B., Oswald, F. L., Baird, B. M., & Lucas, R.E. (2006). The Mini-IPIP scales: Tiny-yet-effective measures of the Big Five factors of personality. *Psychological Assessment*, 18, 192-203. <https://doi:10.1037/1040-3590.18.2.192>.

Eley, D., Eley, R., Bertello, M., & Rogers-Clark, C. (2012). Why did I become a nurse? Personality traits and reasons for entering nursing. *Journal of Advanced Nursing*, 68(7),1546-1555. <https://doi:10.1111/j.1365-2648.2012.05955.x>.

Forsgren, E., Åke, S., & C. Saldert. (2022). Person-centred care in speech-language therapy research and practice for adults: A scoping review.*International Journal of Language and Communication Disorders*, 57(2), 381-402. <https://doi:10.1111/1460-6984.12690>.

Goetz, K., Kleine-Budde, K., Bramesfeld, A., & Stegbauer, C. (2018). Working atmosphere, job satisfaction and individual characteristics of community mental health professionals in integrated care. *Health and Social Care in the Community*, 26(2),176-181. <https://doi: 10.1111/hsc.12499>.

Gomez-Cravioto, D. A., Diaz-Ramos, R. E., Hernandez-Gress, N., Preciado, J. L., & Ceballos, H.G. (2022). Supervised machine learning predictive analytics for alumni income. *Journal of Big Data*, 9(11), 1-31. <https://doi: 10.1186/s40537-022-00559-6>.

Gosling, S. D., Rentfrow, P. J., & Swann, W. B. Jr. (2003). A Very Brief Measure of the Big Five Personality Domains.” *Journal of Research in Personality*, 37, 504-528. Doi:10.1016/S0092-6566(03)00046-1.

Greene, S. M., Tuzzio, L, & Cherkin, D. (2012). A framework for making patient- centered care front and center. *The Permanente Journal*, 16(3), 49-53. <https://doi: 10.7812/tpp/12-025>.

Grenness, C., Hickson, L., Laplante-Lévesque, A., & Davidson, B. (2014). Patient- centred care: a review for rehabilitative audiologists. *International Journal of Audiology*, 53 (Suppl 1), S60-7. <https://doi: 10.3109/14992027.2013.847286>.

Haidet, P., Kelly, P. A., Bentley, S., Blatt, B., Chou, C. L., Fortin, A. H., ... & Communication, Curriculum, and Culture Study Group. (2006). Not the Same Everywhere: Patient-Centered Learning Environments at Nine Medical Schools. *Journal of General Internal Medicine*, 21(5), 405-409. <https://doi:10.1111/j.1525-1497.2006.00417.x>.

Hammell, K. R. W. (2015). Client-centred occupational therapy: the importance of critical perspectives. *Scandinavian Journal of Occupational Therapy*, 22 (4), 237-243. [https://doi: 10.3109/11038128.2015.1004103](https://doi.org/10.3109/11038128.2015.1004103).

Jardien-Baboo, S., van Rooyen, D., Ricks, E., & Jordan, P. (2016). Perceptions of patient-centred care at public hospitals in Nelson Mandela Bay. *Health SA Gesondheid*, 21 (2016), 397-405. [https://doi: 10.1016/j.hsag.2016.05.002](https://doi.org/10.1016/j.hsag.2016.05.002).

Jones, M., Eggett, E., Bellini, S.G., Williams, P., & Patten, E. V. (2021). Patient-centered care: Dietitians' perspectives and experiences. *Patient Education and Counseling*, 104 (11), 2724-2731. [https://doi: 10.1016/j.pec.2021.04.008](https://doi.org/10.1016/j.pec.2021.04.008).

Kurzawa, I., & Lira, J. (2015). The application of quantile regression to the analysis of the relationships between the entrepreneurship indicator and the water and sewerage infrastructure in rural areas of communes in Wielkopolskie Voivodeship. *Quantitative Methods in Economics*, 16 (2), 33-42.

Laplante-Lévesque, A., Hickson, L., & C. Grenness. (2014). An Australian survey of audiologists' preferences for patient-centredness. *International Journal of Audiology*, 53, 76-82. <https://doi.org/10.3109/14992027.2013.832418>.

Liu, M., & Wronski, L. (2017). Examining completion rates in web surveys via over 25,000 real-world surveys. *Social Science Computer Review*, <http://journals.sagepub.com/doi/abs/10.1177/0894439317695581>.

Manchaiah, V., Tomé, D., Dockens, A. L., Harn, M., & Ganesan, P. (2016). Preference to patient-centeredness in undergraduate audiology students in Portugal. *Journal of the American Academy of Audiology*, 27(10), 816-823.

Manchaiah, V., Gomersall, P.A., Tomé, D., Ahmadi, T., & Krishna, R. (2014). Audiologists' preferences for patient-centredness: a cross-sectional questionnaire study of cross-cultural differences and similarities among professionals in Portugal, India and Iran. *BMJ Open*, 4 (10), e005915. [https://doi: 10.1136/bmjopen-2014-005915](https://doi:10.1136/bmjopen-2014-005915).

Ida Institute. (2019). "What are the six elements of Person-Centered Care". [https://idainstitute.com/what\\_we\\_do/news/detail/what\\_are\\_the\\_six\\_elements\\_of\\_person\\_centered\\_care/](https://idainstitute.com/what_we_do/news/detail/what_are_the_six_elements_of_person_centered_care/)

Moore, M. (2008). What does patient-centred communication mean in Nepal?. *Medical Education*, 42,18–26. <https://doi:10.1111/j.1365-2923.2007.02900.x>.

Mount, M.K., Barrick, M. R., Scullen, S. R., & Rounds, J. (2005). Higher-order dimensions of the big five personality traits and the big six vocational interest types. *Personnel Psychology*, 58 (2), 447–478. [https://doi: 10.1111/j.1744-6570.2005.00468.x](https://doi:10.1111/j.1744-6570.2005.00468.x).

Pallant, J. (2020). *SPSS survival manual: A Step-by-Step Guide to Data Analysis Using IBM SPSS* (7th ed.). London: Routledge. [https://doi: 10.4324/9781003117452](https://doi:10.4324/9781003117452).

Parry, R. H., & Brown, K. (2009). Teaching and learning communication skills in physiotherapy: What is done and how should it be done?. *Physiotherapy*, 95(4): 294–301. <https://doi.org/10.1016/j.physio.2009.05.003>.

Pascoe, M., & Singh, S. (2008). By the end of this course you should be able to...”: towards constructive alignment in the SLP curriculum. *South African Journal of Communication Disorders*, 55, 91–110. [https://doi: 10.4102/sajcd.v55i1.772](https://doi.org/10.4102/sajcd.v55i1.772).

Preminger, J. E., Oxenbøll, M., Barnett, M. B., Jensen, L.D., & . Laplante- Lévesque, A. (2015). Perceptions of adults with hearing impairment regarding the promotion of trust in hearing healthcare service delivery. *International Journal of Audiology*, 54, 20-8. [https://doi: 10.3109/14992027.2014.939776](https://doi.org/10.3109/14992027.2014.939776).

Saha, S., Beach, M. C. & Cooper, L. A.. (2008). Patient centredness, cultural competency and healthcare quality. *Journal of the National Medical Association*, 100, 1275-85. [https://doi: 10.1016/s0027-9684\(15\)31505-4](https://doi.org/10.1016/s0027-9684(15)31505-4).

Saleh, A., & Bista, K. (2017). Examining factors impacting online survey response rates in educational research: Perceptions of graduate students. *Journal of MultiDisciplinary Evaluation*, 13 (29), 63-74.

Song, W., Hao, Y., Cui, Y., Zhao, X., Liu, W., Tao, S., Xue, Y. (2022). Attitudes of medical professionals towards patient-centredness: a cross-sectional study in H City, China. *BMJ Open*, 12 (1), e045542. [https://doi: 10.1136/bmjopen-2020-045542](https://doi.org/10.1136/bmjopen-2020-045542).

Stormon, N., Ford, P. J., & Eley, D. S. (2019). Exploring personality in Australian dentistry students: implications for coping with a challenging degree. *European Journal of Dental Education*, 23 (1), 8-13. <https://doi:10.1111/eje.12368>.

Wahlqvist, M., Gunnarsson, R. K., Dahlgren, G., & Nordgren, S. (2010). Patient- centred attitudes among medical students: gender and work experience in health care make a difference. *Med Teach*, 32, e191-8. <https://doi: 10.3109/01421591003657451>.

Wallengren, C., Billig, H., Björkman, I., Ekman, I., Feldthusen, C., Lindström Kjellberg, I., & Lundberg, M. (2022). Person-centered care content in medicine, occupational therapy, nursing, and physiotherapy education programs. *BMC Medical Education*, 22 (1), 1-10. <https://doi:https://doi.org10.1186/s12909-022-03502-8>.

Wang, J., R. Zou, H. Fu, H. Qian, Y. Yan, & F. Wang. (2017). Measuring the preference towards patient-centred communication with the Chinese-revised Patient–Practitioner Orientation Scale: a cross-sectional study among physicians and patients in clinical settings in Shanghai, China. *BMJ Open* 7 (9), e016902. <https://doi: 10.1136/bmjopen-2017-016902>.

Watermeyer, J., A. Kanji, & A. Cohen. (2012). Caregiver recall and understanding of paediatric diagnostic information and assessment feedback. *International Journal of Audiology*, 51 (2), 864-869. <https://doi: 10.3109/14992027.2012.721014>.

Watermeyer, J., A. Kanji, & L. Brom. (2020). What's Going on With My Ears?: Some Reflections on Managing Uncertainty in the Audiology Consultation. *American Journal of Audiology*, 1-9. [https://doi: 10.1044/2020\\_AJA-19-00116](https://doi: 10.1044/2020_AJA-19-00116).

World Health Organisation (WHO). (2001). International classification of functioning, disability and health.<https://www.who.int/standards/classifications/international-classification-of-functioning-disability-and-health>

World Health Organisation (WHO). (2015). People-centred and Integrated Health Services: An Overview of the Evidence: Interim Report.[https://apps.who.int/iris/bitstream/handle/10665/155004/WHO\\_HIS\\_SDS\\_2015.7\\_eng.pdf?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/155004/WHO_HIS_SDS_2015.7_eng.pdf?sequence=1&isAllowed=y)

World Health Organisation (WHO). (2017). What are integrated people-centred health services?. <https://www.who.int/servicedeliverysafety/areas/people-centred-care/ipchs-what/en/>

World Health Organisation (WHO). (2021). World report on hearing. <https://www.who.int/publications/i/item/world-report-on-hearing>

Zhao, F., V. Manchaiah, L. St. Claire, B. Danermark, L. Jones, M. Brandreth, & R. Goodwin. (2015). Exploring the influence of culture on hearing help-seeking and hearing-aid uptake. *International Journal of Audiology*, 54 (7), 435-443. <https://doi:10.3109/14992027.2015.1005848>.