

# Revealing Hearing Loss: A Survey of How People Verbally Disclose Their Hearing Loss

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**Objective:** Hearing loss is the most common sensory deficit and congenital anomaly, yet the decision-making processes involved in disclosing hearing loss have been little studied. To address this issue, we have explored the phrases that adults with hearing loss use to disclose their hearing loss.

**Design:** Since self-disclosure research has not focused on hearing loss-specific issues, we created a 15-question survey about verbally disclosing hearing loss. English speaking adults (>18 years old) with hearing loss of any etiology were recruited from otology clinics in a major referral hospital. Three hundred and thirty-seven participants completed the survey instrument. Participants' phrase(s) used to tell people they have hearing loss were compared across objective characteristics (age; sex; type, degree, and laterality of hearing loss; word recognition scores) and self-reported characteristics (degree of hearing loss; age of onset and years lived with hearing loss; use of technology; hearing handicap score).

**Results:** Participants' responses revealed three strategies to address hearing loss: Multipurpose disclosure (phrases that disclose hearing loss and provide information to facilitate communication), Basic disclosure (phrases that disclose hearing loss through the term, a label, or details about the condition), or nondisclosure (phrases that do not disclose hearing loss). Variables were compared between patients who used and who did not use each disclosure strategy using  $\chi^2$  or Wilcoxon rank sum tests. Multipurpose disclosers were mostly female ( $p = 0.002$ ); had experienced reactions of help, support, and accommodation after disclosing ( $p = 0.008$ ); and had experienced reactions of being overly helpful after disclosing ( $p = 0.039$ ). Basic disclosers were predominantly male ( $p = 0.004$ ); reported feeling somewhat more comfortable disclosing their hearing loss over time ( $p = 0.009$ ); had not experienced reactions of being treated unfairly or discriminated against ( $p = 0.021$ ); and were diagnosed with mixed hearing loss ( $p = 0.004$ ). Nondisclosers tended not to disclose in a group setting ( $p = 0.002$ ) and were diagnosed with bilateral hearing loss ( $p = 0.005$ ). In addition, all of the variables were examined to build logistic regression models to predict the use of each disclosure strategy.

**Conclusions:** Our results reveal three simple strategies for verbally addressing hearing loss that can be used in a variety of contexts. We recommend educating people with hearing loss about these strategies—this could improve the experience of disclosing hearing loss, and could educate society at large about how to interact with those who have a hearing loss.

**Key words:** Hearing loss, Public health, Self-disclosure.

(Ear & Hearing 2016;37;194–205)

## INTRODUCTION

Hearing loss is a problem that society needs to address. Hearing loss is the most common sensory deficit (Mathers et al. 2000; Kochhar et al. 2007), the third most prevalent chronic condition after hypertension and arthritis (Cruickshanks et al. 1998), and

is expected to have a prevalence rate twice that of diabetes in 2025 (Cederroth et al. 2013). Hearing loss affects 16% of those ages 18 and older (Schiller et al. 2012), 34% of those ages 65 to 69 years old (Gates et al. 1990), and 72% of those ages 85 to 90 years old (Gates et al. 1990). Alarming, hearing loss is increasing among younger age groups (Shargorodsky et al. 2010). Among newborns, hearing loss is the most prevalent congenital abnormality (Finitzo & Crumley 1999). Hearing loss prevalence is predicted to rise due to the increasing use of personal listening devices (Daniel 2007; Morata 2007), an aging population (Ries 1994; Wallhagen et al. 1997), and military exposure (Helfer et al. 2011). Hearing loss is economically costly to society (Mohr et al. 2000) and physically and emotionally costly to individuals. Hearing loss has been linked to cognitive dysfunction (Lin et al. 2011a), dementia (Lin et al. 2011b), increased risk for depression in the elderly (Huang et al. 2010), and social and emotional loneliness (Pronk et al. 2011).

Hearing loss is also stigmatized. Some stigmas that have been attributed to hearing loss include its association with the aging process (Héту 1996; Erler & Garstecki 2002); the belief that hearing aids make the wearer appear less intelligent or less physically attractive (Blood et al. 1977; Wallhagen 2010); and the fear that others will misinterpret individuals with hearing loss as weak, disabled, less confident, or less friendly (Franks & Beckmann 1985; Doggett et al. 1998; Kochkin 2007). The stigma of hearing loss has been found to not only prevent people from pursuing hearing tests or hearing aids (Blood et al. 1977; Southall et al. 2011) but also to determine whether or not individuals accept that they have a hearing loss, the types of hearing aids that individuals select, and the contexts in which individuals actually wear their hearing aids (Wallhagen 2010).

Research has shown that people with stigmatized social identities perform “stigma management,” which is an attempt to manage their stigma in all of their social interactions by selectively choosing under what conditions to disclose or conceal the stigma (Poindexter et al. 2010; O'Brien 2011). Stigma management can involve a variety of tactics that allow the stigmatized individual to cope with the stress of having a stigmatized condition. In the social sciences, “disclosure” is the selective, careful, and intended admission of information about the self, including money, interests, opinions, personality, and stigmatized conditions (Jourard et al. 1958; Poindexter & Shippy 2010). When disclosing, some people choose to use humor and make jokes about the stigmatized trait so to put others at ease with the difference (Joachim et al. 2000), while others attempt to normalize the stigmatized condition by isolating themselves into groups of similar others (Becker 1981). On the other hand, some people choose to “pass,” or attempt to conceal their stigmatized characteristic from others so to appear similar to those who are a part of the “normal” group (Joachim & Acorn 2000; O'Brien 2011). Successful passing requires carefully and actively managing information about the stigmatized characteristic by deciding

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Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and text of this article on the journal's Web site ([www.ear-hearing.com](http://www.ear-hearing.com)).

which individuals can learn about the stigma (Goffman 1963). Decisions about stigma management are not discrete, but rather are complex and must be continuously revised (Poindexter & Shippy 2010). To manage information about a stigmatized condition, people analyze the situation they are in and choose a management tactic that they believe is most appropriate.

The benefits of disclosure are well detailed in the literature. Across medical conditions, disclosure is associated with greater self-esteem, better peer relationships, lower anxiety levels (Dam 2008), and access to accommodations (Lynch et al. 1996). Such accommodations include reasonable benefits, services, and programs offered by schools, workplaces, and other institutions that will allow a person with a disability to participate (Lynch & Gussel 1996), such as accessible public transportation, accessible facilities, modified work schedules, interpreters, closed captioning, telecommunications services, and more (US Department of Justice, Civil Rights Division 1990). Disclosure also allows an individual to receive help and support from similarly stigmatized individuals or advice from sympathetic allies on how the individual appears to others (Goffman 1963). People who chose not to disclose have been found to have a lower quality of life rating because of the inability to self-disclose important information about oneself and receive psychosocial support (Ortiz 2005; Blase et al. 2007; Wilson et al. 2007; Rodkjaer et al. 2011). Therefore, disclosure can be a very important part of a person's life and feelings of well-being.

However, there are also perceived negative consequences associated with disclosing. Disclosing requires revealing personal information about oneself, which can be perceived as embarrassing for the discloser (Goffman 1963; Rwemisisi et al. 2008). Other reported concerns include the fear that they will be excluded or discriminated against (Ortiz 2005), that they will become the object of curiosity (Goffman 1963), that other people will treat them differently (MacDonald-Wilson 2005), or that they will be overlooked for a job, promotion, or other benefit (Fesko 2001; Dalgin & Gilbride 2003). Thus, individuals must weigh these consequences when deciding whether or not to disclose.

Despite the well-known benefits of disclosure and the consequences of not disclosing, relatively little is known about the disclosure of hearing loss. Some researchers have explored this topic. For example, Hallberg and Carlsson (1991b) described two management patterns employed by people with hearing loss: controlling versus avoiding the social scene. The authors concluded that "controlling the social scene" is a constructive yet tiring manner of coping with hearing loss while "avoiding the social scene" is less demanding, but still tiring because of the psychosocial effects resulting from limited social interactions. The self-perception of hearing handicap increased in response to both the use of maladaptive communication strategies (avoiding the social scene), and in response to constructive and active coping strategies (controlling the social scene) (Hallberg & Carlsson 1991a), because both strategies call attention to the hearing loss. A different qualitative research study of 12 participants with adult onset hearing loss that aimed to understand what factors influence the disclosure or concealment of hearing loss in the workplace found that disclosure decisions involved individuals evaluating their perception of the importance of the situation, perception of sense of control, community affiliation, burden of communication, and coexisting issues related to hearing loss (Southall et al. 2011).

Most of what is known about social identity management strategies like disclosing and concealing has developed from research among people with invisible social identities (e.g., the gay-lesbian-bisexual-transgendered communities) or among people with invisible races or chronic illnesses, with very little currently known about the management strategies used by hard of hearing people (Jennings et al. 2013). Thus, this study seeks to contribute to existing literature on both disclosure and hearing loss by focusing specifically on the disclosure of hearing loss. In examining how people verbally disclose their hearing loss, we hope to improve patient care and public health by providing advice on how to manage hearing loss disclosure.

## MATERIALS AND METHODS

### Materials

Since research on self-disclosure has not yet focused on issues specific to hearing loss, we created a survey instrument based on a literature review of the self-disclosure of medical diseases and disabilities, and on research about hearing loss in general. We piloted an initial version of the survey with 12 people with hearing loss, which we then modified into a 15-question survey instrument to use for the study (see Survey, Supplemental Digital Content 1; <http://links.lww.com/EANDH/A219>). The survey was designed so that responses could be translated into categorical variables: survey questions are fill-in-the-blank (for ages), Likert-type scale from 1 to 3 or 1 to 5, or boxes to check (recorded as no check = 0, check = 1). To address *how* people verbally disclose their hearing loss, we gave participants a space in which to write the phrase(s) that they use. Although disclosure may occur via contextual or nonverbal cues during an interaction, we only collected the verbal phrases that participants report using to disclose. The responses were coded, as explained in "Results." The phrases that participants provided were compared with objective variables extracted from medical records (e.g., degree of hearing loss quantified by an audiogram) and self-reported variables extracted from the survey (e.g., the age of onset of hearing loss). Tables 2 and 3 provide a full list of the variables.

In terms of objective variables, pure-tone average (PTA) is reported in decibel (dB) hearing level (HL), which is converted from dB sound pressure level based on the national norm for normal hearing people (Acoustical Society of America 2004). At our institution, PTA is defined as the average dB HL of the two frequencies with the lowest thresholds in the frequency range from 500 to 2000 Hz because this provides the closest agreement with speech reception thresholds (Fletcher 1953; O'Neil et al. 1995). Recent work highlights the need to develop more sensitive tests of auditory function, as 50% of spiral ganglion neurons can be missing without affecting threshold responses, therefore underestimating the difficulty of listening in noisy environments, even in subjects with normal thresholds (Kujawa et al. 2015). Since PTA can underestimate the degree of hearing loss, we chose to include in our analysis patients who are classified as having a normal PTA. We report the PTA of the participants, both in terms of the worse hearing ear and the better hearing ear, classified as normal (if PTA was -10 to 15 dB), slight (if PTA was 16 to 25 dB), mild (if PTA was 26 to 40 dB), moderate (if PTA was 41 to 55 dB), moderately severe (if PTA was 56 to 70 dB), severe (if PTA was 71 to 90 dB), or profound (if PTA was >90 dB) (Niskar et al. 1998; Roeser 2013).

Word recognition is defined as a percent of words correctly repeated after being read a recorded word list (Causey et al. 1984; Gelfand 1997) and, specifically, a standardized word list in quiet (Thornton & Raffin 1978). Masking was based on the standard psychophysical principles (Hood 1960), using stored interaural attenuation for each transducer at each frequency (Snyder 1973). All tests were started with unmasked bone because it is the only variable in the masking equation. Whenever the stimulus intensity could be heard by the contralateral bone line then the exact effective masking was calculated and applied. Our standardized method imposes a “leaky integrator” such that the masking stays constant during threshold searching and only changes if the levels are no longer valid. The level at which word recognition is tested is determined using the patient’s audiogram to generate a “best possible” speech curve by progressing the speech intelligibility index (SII) calculation through the audiogram 110 times in 1 dB steps (Acoustical Society of America 1997). This curve typically plateaus across a very wide range of sound levels, which are appropriate for word recognition testing because the intent of the testing is to set sound level for maximal performance. Since the curve plateaus at 70 dB for all patients with normal hearing and many patients with hearing loss, word recognition testing is often performed at 70 dB HL. For steeply downsloping hearing loss, sound level for word recognition testing is adjusted as  $SII_{\max} - 0.5\%$  or 70 dB HL (whichever is greater) (Halpin et al. 1996). We report the word recognition of the participants both in terms of the worse hearing ear and the better hearing ear, categorized as normal (if word recognition was >90%), compromised (if word recognition was between 60% and 90%), or severely compromised (if word recognition was <60%) (Gifford et al. 2010). We use word recognition to refer to speech recognition, word discrimination, and speech discrimination.

By “hearing loss” we mean both audiometric hearing loss, which can be objectively measured, and hidden hearing loss, typically characterized by normal auditory thresholds and perceptual difficulties understanding speech in noise (Lieberman & Kujawa 2014; Kujawa & Liberman 2015; Tremblay et al. 2015). Although a specific clinical test for hidden hearing loss in people does not yet exist, such tests are being developed based on the overwhelming evidence that audiometric thresholds underestimate neuronal damage in a number of animal models (Kujawa et al. 2009; Lin et al. 2011c; Jensen et al. 2015). Clinical tests that have shown promise in quantifying hidden hearing loss include suprathreshold auditory brainstem evoked response (Schaette & McAlpine 2011; Epp et al. 2012; Gu et al. 2012; Stamper & Johnson 2015) and envelope following

response (Plack et al. 2014). Since our survey was designed to capture the experiences of people with hearing loss, from here on we use the term “hearing loss” to include both audiometric and hidden hearing loss.

In terms of self-reported variables, the survey included questions about participants’ self-identified degree of hearing loss, use of assistive hearing technology, and perception of how their hearing loss affects them based on an adaptation of validated hearing handicap measures (Ventry et al. 1982; Umansky et al. 2011). Since the ultimate purpose of our survey instrument was to explore disclosure rather than hearing handicap, an adapted version of validated hearing handicap measures was used to reduce the number of questions included in our survey (Table 1). The scoring system for the hearing handicap questions involved assigning numerical values to each response option (no = 0, sometimes = 2, and yes = 4). For each participant, responses to all five questions were summed, resulting in one score per person. The minimum score is zero and the maximum score is 20. Summed scores of 0 to 4 are considered no handicap, scores of 5 to 12 are considered mild-moderate handicap, and scores of 13 to 20 are considered severe handicap (Ventry & Weinstein 1982; Umansky et al. 2011).

Participants were asked to identify whether the terms hearing, hearing impaired, hard of hearing, or deaf best described them. On a scale from 1 to 5, participants were asked to report how often they disclose their hearing loss (never to all of the time), how comfortable they are with disclosing (very uncomfortable to very comfortable), and how comfortable they have become in disclosing over time (much less comfortable to much more comfortable). In one question, participants were presented with eight disclosure methods (such as telling jokes or using humor, using medical terminology, telling people in a one-on-one setting, etc.) and asked to report whether they never, sometimes, or always disclose using those methods. For another question, participants were presented with nine possible reactions that other people might exhibit after participants disclose their hearing loss (such as being helpful and supportive, being unfair, asking questions, etc.) and asked to check the boxes next to the reactions they had experienced after disclosing.

### Participant Selection

The Human Studies Committee of the Massachusetts Eye and Ear approved the study. Participants were recruited from otology clinics in a referral hospital from March to August 2013. Patients were approached in the waiting rooms. Those who agreed to participate read and signed an informed consent form and an Health Insurance Portability and Accountability Act (HIPAA)

**TABLE 1. Survey question adapted from hearing handicap measures**

14. The following questions ask how your hearing loss affects you. Circle no, sometimes, or yes for each question			
Do you feel embarrassed by your hearing loss?	No	Sometimes	Yes
Does your hearing loss cause you to feel cut off or left out when you are with a group of people?	No	Sometimes	Yes
Do you feel that your hearing loss limits, hampers, or restricts your social or personal life?	No	Sometimes	Yes
Do you worry about your hearing loss getting worse?	No	Sometimes	Yes
If you cannot hear someone, do you have a hard time asking them to speak louder or repeat what they said?	No	Sometimes	Yes

*Adapted from Ventry & Weinstein (1982). The hearing handicap inventory for the elderly: A new tool. Ear Hear, 3, 128–134; and Umansky, Jeffe, & Lieu (2011). The HEAR-QL: quality of life questionnaire for children with hearing loss. J Am Acad Audiol, 22, 644–653.*

authorization form granting the study investigators access to their medical records for variables related to their hearing loss. Study participants completed and returned the survey instrument on the day of recruitment, before leaving the hospital.

Patients at least 18 years old and with hearing loss of any type, degree, or duration were eligible to participate. The age criterion was chosen to increase the likelihood of the participants disclosing their hearing loss rather than a parent or guardian (Lynch & Gussel 1996; Field et al. 2003). The inclusion of any type of hearing loss ensured that the experiences of people with many kinds of hearing loss were represented in the study. Recruiting participants with diverse types or levels of hearing loss is common in research studies on hearing loss. For example, Hallberg and Carlsson (1991a, 1991b) included participants who were heterogeneous in terms of type and severity of hearing loss in two different studies. Southall et al. (2011) recruited participants who reported a progressive, acquired hearing loss, and participants' degree of hearing loss ranged from mild to profound in the better hearing ear. The Pronk et al. (2011) study included participants with a range of degree of hearing loss, both in terms of self-report and speech in noise testing. Finally, Laplante-Lévesque et al.'s (2010) qualitative study also included individuals with different levels of hearing loss. Thus, our study's inclusion of people with any type of hearing loss is consistent with the literature on hearing loss.

### Statistical Analysis

$\chi^2$  tests and Wilcoxon rank sum tests were used to examine the relationship between each strategy to address hearing loss and variables from patient medical records and the survey. In addition, all of the variables were considered to build a logistic regression model to predict the use of each disclosure strategy while accounting for multiple hypothesis testing. A *p* value of less than 0.05 was considered statistically significant. All data analyses were conducted using SAS 9.4 (SAS Institute Inc. 2013). We also calculated the odds ratios (OR) and confidence intervals (CI) for the data. An OR is a measure of association, which reflects the ratio of the odds that outcome A will occur given exposure B, against the odds that outcome A will occur in the absence of exposure B (Szumilas 2010; Sullivan 2012). A CI presents the range of possible values for a given population parameter given a prespecified level of confidence (we chose 95% level of confidence) in whether the interval contains the parameter (Sullivan 2012).

## RESULTS

### Patient Characteristics

Participants comprised 337 people out of 672 approached, resulting in a participation rate of 50.1%. Patients with the exclusive complaint of vertigo without hearing loss were ineligible for the study, and thus were not included in the response rate. Compared with other survey-based studies that required informed consent due to age and access to medical information, our study has a slightly lower response rate than some, but a higher number of total people asked to participate (Piccirillo et al. 2002; Refaie et al. 2004). Recruiting study participants from waiting rooms is known to yield participation rates under 40% (Bodurtha et al. 2007), with some as low as 3% (Rollman et al. 2007). Nonparticipants rejected participation

based on disinterest in the study (*n* = 222, 66.3%), refusal to allow investigators to access their medical records (*n* = 58, 17.3%), or unwillingness to talk about a newly diagnosed or "cured" hearing loss (*n* = 55, 16.4%).

Because our study entailed comparing participants' strategies to address hearing loss to their objective and self-reported information, we excluded 31 participants who did not fill out the descriptive survey question. Therefore, responses from a total of 306 participants were analyzed. This resulted in 165 women (53.9%) with a mean age (standard deviation) of 57.2 (16.1; range: 18 to 93) and 141 men (46.1%) with a mean age (standard deviation) of 55.9 (16.9; range: 20 to 88). The slight preponderance of women is consistent with women being more likely than men to volunteer in research studies (McCrea et al. 2009). Tables 2 and 3 list additional objective and self-reported demographic characteristics of participants.

### Study Variables

In terms of objective variables, sensorineural hearing loss was most common (*n* = 132, 43.1%), followed by conductive

**TABLE 2. Objective demographic characteristics of participants**

Objective Variables*	n (%)
Age	
18–40	54 (17.6)
41–60	114 (37.3)
61+	138 (45.1)
Sex	
Male	141 (46.1)
Female	165 (53.9)
Type of hearing loss	
Sensorineural	132 (43.1)
Conductive	87 (28.4)
Mixed	85 (27.8)
Unknown	2 (0.65)
Laterality of hearing loss	
Bilateral	175 (57.2)
Unilateral	131 (42.8)
Degree of hearing loss (PTA, worse ear)	
Normal	27 (8.82)
Slight, mild	128 (41.8)
Moderate, moderately severe	95 (31.0)
Severe, profound	40 (13.1)
Unknown	17 (5.56)
Degree of hearing loss (PTA, better ear)	
Normal	138 (45.1)
Slight, mild	114 (37.3)
Moderate, moderately severe	31 (10.1)
Severe, profound	6 (1.96)
Unknown	17 (5.56)
Word recognition (worse ear)	
Normal (>90%)	146 (47.7)
Compromised (60–90%)	78 (25.4)
Severely compromised (>60%)	64 (20.9)
Unknown	18 (5.88)
Word recognition (better ear)	
Normal (>90%)	229 (74.8)
Compromised (60–90%)	47 (15.4)
Severely compromised (>60%)	12 (3.92)
Unknown	18 (5.88)

\*Objective variables were extracted from medical records.

**TABLE 3. Self-reported demographic characteristics of participants**

Self-Reported Variables*	n (%)
Degree of hearing loss	
Slight, mild	88 (28.8)
Moderate	122 (40.0)
Severe, profound	92 (30.0)
Not answered	4 (1.31)
Age of onset (years)	
0–17	63 (20.6)
18–40	70 (22.9)
41–60	112 (36.6)
61+	54 (17.6)
Not answered	7 (2.29)
Years lived with hearing loss	
0–5	113 (36.9)
6–15	72 (23.5)
16+	114 (37.3)
Not answered	7 (2.29)
Label	
Hearing	44 (14.4)
Hearing impaired	129 (42.2)
Hard of hearing	95 (31.0)
Deaf	20 (6.54)
Other, please explain	15 (4.9)
Not answered	3 (0.98)
Use assistive hearing technology†	
Yes	95 (31.0)
No	211 (69.0)
Disclosure frequency	
Never	16 (5.22)
Hardly ever	98 (32.0)
Some of the time	145 (47.4)
Most of the time	33 (10.8)
All of the time	11 (3.6)
Not answered	3 (0.98)
Disclosure comfort	
Very uncomfortable	22 (7.19)
Somewhat uncomfortable	59 (19.3)
Neither comfortable nor uncomfortable	52 (17.0)
Somewhat comfortable	55 (18.0)
Very comfortable	116 (37.9)
Not answered	2 (0.65)
Change in disclosure comfort	
Much less comfortable	6 (1.96)
Somewhat less comfortable	16 (5.23)
Neither more nor less comfortable	100 (32.7)
Somewhat more comfortable	76 (24.8)
Much more comfortable	96 (31.4)
Not answered	12 (3.9)
Disclose with humor	
Never	108 (35.3)
Sometimes	151 (49.3)
Always	37 (12.1)
Not answered	10 (3.27)
Disclose with medical terms	
Never	170 (55.6)
Sometimes	109 (33.3)
Always	10 (3.27)
Not answered	17 (5.56)
Disclose with another language	
Never	260 (85.0)
Sometimes	24 (7.8)
Always	0 (0)
Not answered	22 (7.19)

(Continued)

**TABLE 3. (Continued)**

Self-Reported Variables*	n (%)
Disclose with personal feelings	
Never	113 (36.9)
Sometimes	156 (51.0)
Always	23 (7.51)
Not answered	14 (4.58)
Disclose indirectly (speak up, repeat)	
Never	67 (21.9)
Sometimes	176 (57.5)
Always	54 (17.6)
Not answered	9 (2.94)
Disclose nonverbally	
Never	264 (86.3)
Sometimes	25 (8.17)
Always	1 (0.33)
Not answered	16 (5.23)
Disclose one-on-one	
Never	57 (18.6)
Sometimes	192 (62.7)
Always	44 (14.4)
Not answered	13 (4.25)
Disclose in group setting	
Never	129 (42.2)
Sometimes	140 (45.8)
Always	23 (7.52)
Not answered	14 (4.58)
Reaction: help, support, accommodate	
No	137 (44.8)
Yes	169 (55.2)
Reaction: overly helpful	
No	275 (89.9)
Yes	31 (10.1)
Reaction: unfair, discriminate	
No	297 (97.1)
Yes	9 (2.94)
Reaction: not a big deal	
No	143 (46.7)
Yes	163 (53.3)
Reaction: surprise	
No	213 (69.6)
Yes	93 (30.4)
Reaction: make jokes	
No	253 (82.7)
Yes	53 (17.3)
Reaction: ask questions	
No	186 (60.8)
Yes	120 (39.2)
Reaction: avoid me afterwards	
No	300 (98.0)
Yes	6 (1.96)
Reaction: unsure how to react	
No	246 (80.4)
Yes	60 (19.6)
Reaction: other	
No	259 (84.6)
Yes	47 (15.4)
Hearing handicap scores	
No handicap	79 (25.8)
Mild to moderate handicap	162 (52.9)
Severe handicap	58 (19.0)
Not answered	7 (2.29)

\*Self-reported variables were extracted from survey.

†Technology options included hearing aids, cochlear implants, FM systems, telecoils or T-coils, and personal sound amplifiers

( $n = 87, 28.4\%$ ) and mixed ( $n = 85, 27.8\%$ ). The majority of participants had a bilateral hearing loss ( $n = 175, 57.2\%$ ). Most participants had a slight or mild hearing loss ( $n = 128, 41.8\%$ ), followed by moderate or moderately severe hearing loss ( $n = 95, 31.0\%$ ), severe or profound hearing loss ( $n = 40, 13.1\%$ ), and normal hearing ( $n = 27, 8.82\%$ ) in their worse hearing ear. The majority of participants had normal word recognition scores ( $n = 146, 47.7\%$ ) in their worse hearing ear, followed by compromised ( $n = 78, 25.4\%$ ), and severely compromised ( $n = 64, 20.9\%$ ). See Table 2 for information about the better hearing ear.

In terms of self-reported variables, most participants believed they had a moderate hearing loss ( $n = 122, 40.0\%$ ), followed by a severe or profound hearing loss ( $n = 92, 30.0\%$ ), and a slight or mild hearing loss ( $n = 88, 28.8\%$ ). The mean age (SD) of onset of hearing loss was 40.2 (22.0; range: 0 to 85). Comparing current age with age of onset, a very slight majority of participants had lived with hearing loss for over 16 years ( $n = 114, 37.3\%$ ), followed closely by participants who had lived with hearing loss for 0 to 5 years ( $n = 113, 36.9\%$ ), and those who had lived with hearing loss for 6 to 15 years ( $n = 72, 23.5\%$ ). Most participants did not use assistive hearing technology ( $n = 211, 69.0\%$ ). Based on our abbreviated version of validated hearing handicap measures (Ventry & Weinstein 1982; Umansky et al. 2011), the majority of participants can be interpreted as feeling that their hearing loss caused a mild to moderate handicap ( $n = 162, 52.9\%$ ), with the remaining feeling that their hearing loss caused no handicap ( $n = 79, 25.8\%$ ) or a severe handicap ( $n = 58, 19.0\%$ ). See Table 3 for additional information about participants' self-reported demographic characteristics.

### Qualitative Analysis: Coding Participants' Open-Ended Responses

Descriptive and individualized responses to the survey question, "What do you say when you tell people that you have a hearing loss? Please write all of the phrases that you use to talk about your hearing loss" were coded and analyzed by an experienced sociologist (JSW) using content analysis. The aim of content analysis is to describe a phenomenon using a group of concepts or categories, and the outcome of the analysis is those concepts or categories that describe the phenomenon (Elo et al. 2008). Content analysis is performed without preconceived notions or theoretical assumptions about the data (Elo & Kynas 2008), but rather requires getting to know the text well to see which patterns or themes emerge from it (Gibbs 2007). Elo and Kynas (2008) report that content analysis requires three steps: open coding, creating categories, and abstraction. During open coding, investigators write notes or headings in the margins of the text as they read through it line by line, with the purpose of identifying the portions of the text that address the study's research questions. There is no limit to the number of headings that can be written in the margins; instead, as many headings may be assigned as are needed to describe the text's content (Hsieh & Shannon 2005). Second, investigators read through the headings written in the margins of the text and create categories from those headings (Burnard 1991). During the final step of content analysis (abstraction), general descriptors of the data are created from the categories (Robson 1993; Burnard 1996; Polit & Beck 2004). In our study, abstraction occurred by grouping subcategories together as categories.

From the content analysis process, three most robust categories, which we call strategies for addressing hearing loss, emerged: disclosure that serves a purpose, simple disclosure, and no disclosure (Table 4). First, "multipurpose disclosure" ( $n = 94$ ) refers to verbal disclosure of hearing loss while providing a suggestion that facilitates communication. Participants who used this strategy would say that they were "hearing impaired" and that they needed their interactive partner to look at them when speaking to them. Second, "basic disclosure" ( $n = 182$ ) refers to verbal disclosure of hearing loss using the term, "hearing loss," or a label (hearing impaired, hard of hearing, deaf). Third, "nondisclosure" ( $n = 97$ ) refers to not mentioning hearing loss, but rather simply asking people to repeat themselves or to speak louder. The majority of the phrases within this strategy was not specific to people with hearing loss, and would be used by normal hearing people under adverse listening conditions. Nondisclosure is considered to be a strategy to address hearing loss because strategically choosing to hide hearing loss is one way for people to handle their hearing loss. Having nondisclosure as a strategy is consistent with the work of Hallberg and Carlsson (1991b), which describes two coping strategies employed by people with hearing loss: controlling versus avoiding the social scene. Comparisons between strategies to address hearing loss and objective and self-reported variables yielded statistically significant relationships between the disclosure patterns and 9 out of 35 variables (Table 5).

To assess reliability of codes, a second author (JCML) used the prepared codebook to evaluate and code the same phrases. We calculated intercoder reliability using Cohen's kappa, as its calculation avoids over-inflating reliability scores by correcting for agreement that occurs by chance (Hruschka et al. 2004). Kappa scores range from  $-1$  to  $1$  ( $0$  = agreement that is no better than by chance,  $1$  = perfect agreement), and many metrics exist for interpreting the score (Hruschka et al. 2004). We used Cicchetti's (1994) criteria, so we defined as "excellent

**TABLE 4. Coding scheme for strategies to address hearing loss**

11. What do you say when you tell people that you have a hearing loss? Please write all of the phrases that you use to talk about your hearing loss

Multipurpose disclosure: Phrases that disclose hearing loss and provide information to facilitate communication

Examples:

P32: "I don't hear as well out of my right ear. Please walk on my left side"

P34: "Would you please speak up (or repeat what you just said) as I am hard of hearing"

Basic disclosure: Phrases that disclose hearing loss through the term, a label, or details about the condition

Examples:

P33: "40 dB down on the right ear \*Tell the "funny" story how it happened: mosquito + flat hand + Q-tip = -40 dB"

P230: "'I am hard of hearing...' 'I am partially Deaf...' 'I am hearing impaired...'"

Nondisclosure: Phrases that do not disclose hearing loss

Examples:

P17: "I can't hear you. I did not hear you. Speak up"

P67: "Please speak up"

P239: "Say again what?"

*P followed by a number indicates participant (P) and their deidentified code. The examples are exactly as worded by the participants.*

**TABLE 5. Statistically significant comparisons between participant variables and strategies to address hearing loss**

Multipurpose Disclosure		
Variables	More Likely to Disclose in this Manner	Wald $\chi^2$ ( $p$ Value)
Sex	Women	9.5915 (0.002)
Reaction: help, support, accommodate	Experienced this reaction	6.9744 (0.008)
Reaction: overly helpful	Experienced this reaction	4.2484 (0.039)
Basic Disclosure		
Variables	More Likely to Disclose in this Manner	Wald $\chi^2$ ( $p$ Value)
Sex	Men	8.2989 (0.004)
Change in comfort disclosing hearing loss over time	Somewhat more comfortable	13.4363 (0.009)
Reaction: unfairly, discriminate against	Had not experienced this reaction	5.3548 (0.021)
Cause	Mixed	10.8533 (0.004)
Nondisclosure		
Variables	More Likely to Not Disclose	Wald $\chi^2$ ( $p$ Value)
Method: group setting	Do not disclose in group setting	12.2278 (0.002)
Laterality	Bilateral	7.8579 (0.005)

reliability” any scores that ranged from 0.75 to 1. The kappa for multipurpose disclosure was 0.9535 (95% confidence interval [CI] = 0.9166, 0.9903), 0.8923 (95% CI = 0.8392, 0.9453) for basic disclosure, and 0.8831 (95% CI = 0.8236, 0.9427) for nondisclosure. Differences were discussed and adjudicated.

### Multipurpose Disclosure

In univariate analyses, eight variables were statistically significant in regard to the use of the multipurpose disclosure strategy.  $\chi^2$  tests show that the use of the multipurpose disclosure strategy differs significantly among people who report different amounts of use of the method of disclosing in a group setting ( $p = 0.038$ ); people who report different experiences in regard to reactions of help, support, or accommodation after disclosing ( $p = 0.003$ ); people who report different experiences in regard to reactions of people being overly helpful after disclosing ( $p = 0.025$ ); people who self-reported different degrees of hearing loss ( $p = 0.004$ ); people who label themselves differently ( $p = 0.025$ ); people who report different frequencies of talking to others about their hearing loss ( $p = 0.004$ ); men and women ( $p = 0.002$ ); and people with different word recognition scores in their worse hearing ear ( $p = 0.003$ ). Wilcoxon tests performed on ordinal variables show statistically significant results for six variables: degree of hearing loss in the worse hearing ear ( $p = 0.018$ ); method of disclosing by telling people in a one-one-one setting ( $p = 0.049$ ); method of disclosing by telling people in a group setting ( $p = 0.013$ ); self-reported degree of hearing loss ( $p = 0.0007$ ); frequency of talking to others about hearing loss ( $p = 0.0002$ ); and word recognition scores in the worse hearing ear ( $p = 0.0008$ ).

In the final selected logistic regression model, three variables significantly affected a participant’s likelihood to use the multipurpose disclosure strategy: sex ( $p = 0.002$ ); reporting that people react to disclosure with help, support, and accommodation ( $p = 0.008$ ); and reporting that people react to disclosure by being overly helpful ( $p = 0.039$ ). The odds of women using this strategy are 2.28 times than that of men (OR = 2.28, 95% CI = 1.35, 3.85). The odds of using this strategy for participants who report having experienced reactions of help, support, and accommodation are 2.03 times than that of participants who do

not report having experienced this reaction (OR = 2.03, 95% CI = 1.20, 3.42). The odds of using this strategy for participants who report having experienced reactions of being overly helpful are 2.29 times than that of participants who do not report having experienced this reaction (OR = 2.29, 95% CI = 1.04, 5.05).

### Basic Disclosure

In univariate analyses, eight variables were statistically significant in regard to the use of the basic disclosure strategy.  $\chi^2$  tests show that the use of the basic disclosure strategy differs significantly among people of different ages ( $p = 0.034$ ); people with different causes of hearing loss ( $p = 0.017$ ); people who report different changes in comfort over time talking to others about their hearing loss ( $p = 0.015$ ); people who report different amounts of use of the method of disclosing using medical terminology ( $p = 0.006$ ); people who report different amounts of use of the method of disclosing by not telling people directly but asking them to speak up or repeat themselves ( $p = 0.037$ ); people who report different experiences in regard to reactions of being treated unfairly or discriminated against after disclosing ( $p = 0.003$ ); people who report different experiences in regard to reactions of people being curious and asking questions after disclosing ( $p = 0.011$ ); and men and women ( $p = 0.018$ ). Wilcoxon tests performed on ordinal variables show statistically significant results for five variables: age ( $p = 0.017$ ); age of onset of hearing loss ( $p = 0.033$ ); change in comfort talking to others about hearing loss over time ( $p = 0.016$ ); method of disclosing using medical terminology ( $p = 0.003$ ); and method of disclosing by not telling people directly but asking them to speak up or repeat themselves ( $p = 0.041$ ).

In the final selected logistic regression model, four variables significantly affected participants’ choice of basic disclosure: sex ( $p = 0.004$ ); change in comfort over time disclosing hearing loss ( $p = 0.009$ ); reporting that people react to disclosure by treating the participant unfairly or discriminating against them ( $p = 0.021$ ); and the cause of the hearing loss ( $p = 0.004$ ). The odds of women using this strategy are 0.46 times that of men (OR = 0.46, 95% CI = 0.27, 0.78). Compared with participants who reported feeling much less comfortable disclosing their hearing loss over time, the odds of using this strategy

for participants who reported feeling somewhat less comfortable disclosing their hearing loss using this strategy are 1.05 times (OR = 1.05, 95% CI = 0.13, 8.14), the odds of participants who reported feeling neither more nor less comfortable are 1.67 times (OR = 1.67, 95% CI = 0.29, 9.78), the odds of participants who reported feeling somewhat more comfortable are 5.05 times (OR = 5.05, 95% CI = 0.82, 30.89), and the odds of participants who reported feeling much more comfortable are 2.97 times (OR = 2.97, 95% CI = 0.50, 17.66). See Table 6 for additional comparisons of this variable. The odds of using this strategy for participants who report having experienced reactions of being treated unfairly or discriminated against are 0.078 times that of participants who do not report having experienced this reaction (OR = 0.078, 95% CI = 0.009, 0.676). The odds of using this strategy for participants with conductive hearing loss are 1.642 times than that of participants with sensorineural hearing loss (OR = 1.64, 95% CI = 0.89, 3.03), the odds of using this strategy for participants with mixed hearing loss are 3.07 times than that of participants with sensorineural hearing loss (OR = 3.07, 95% CI = 1.57, 6.01), and the odds of using this strategy for participants with conductive hearing loss are 0.54 times than that of participants with mixed hearing loss (OR = 0.54, 95% CI = 0.26, 1.11).

### Nondisclosure

In univariate analyses, eight variables were statistically significant in regard to the use of the nondisclosure strategy.  $\chi^2$  tests show that the use of the nondisclosure strategy differs significantly among people of different ages ( $p = 0.0009$ ); people with unilateral versus bilateral hearing loss ( $p = 0.009$ ); people who report different amounts of use of the method of disclosing using medical terminology ( $p = 0.002$ ); people who report different amounts of use of the method of disclosing by not telling people directly but asking them to speak up or repeat themselves ( $p = 0.022$ ); people who report different amounts of use of the method of disclosing in a group setting ( $p = 0.003$ ); people who report different experiences in regard to reactions of people being curious and asking questions after disclosing ( $p = 0.043$ ); people who report different frequencies of talking to others about their hearing loss ( $p = 0.011$ ); and people who report different levels of comfort in talking to others about their hearing loss ( $p = 0.028$ ). Wilcoxon tests performed on ordinal variables show statistically significant results for eight variables: age ( $p = 0.0002$ ); age of onset of hearing loss ( $p = 0.012$ );

change in comfort talking to others about hearing loss over time ( $p = 0.021$ ); method of disclosing by telling jokes or using humor ( $p = 0.036$ ); method of disclosing using medical terminology ( $p = 0.0006$ ); method of disclosing by not telling people directly but asking them to speak up or repeat themselves ( $p = 0.011$ ); method of disclosing by telling people in a group setting ( $p = 0.0007$ ); and frequency of talking to other people about hearing loss ( $p = 0.013$ ).

In the final selected logistic regression model, the choice of nondisclosure was influenced by two variables: disclosing by telling people in a group setting ( $p = 0.002$ ) and laterality of hearing loss ( $p = 0.005$ ). The odds of using this strategy for participants who report sometimes disclosing in a group setting are 0.43 times than that of people who never disclose in a group setting (OR = 0.43, 95% CI = 0.25, 0.73), while the odds of using this strategy for participants who report always disclosing in a group setting are 0.27 times than that of participants who never disclose in a group setting (OR = 0.27, 95% CI = 0.086, 0.858). The odds of using this strategy for participants with bilateral hearing loss are 2.17 times than that of participants with unilateral hearing loss (OR = 2.17, 95% CI = 1.26, 3.71).

## DISCUSSION

Our study shows that, without any prompting on our part, phrases for verbally addressing hearing loss fall into one of three strategies, namely, disclosure that serves a purpose, simple disclosure, and no disclosure. This is consistent with studies from other fields that have shown that people typically range in how closed or open they are to disclosing, with some people disclosing to no one and others disclosing to many people (Dyson et al. 2010; Rodkjaer et al. 2011). The lack of a significant relationship between the self-reported variable of years lived with a hearing loss and choice of verbal disclosure strategy indicates that our findings are relevant for everyone with hearing loss, whether recently diagnosed or having lived with hearing loss for years. Our findings are significant because they add to the literature on disclosure and have the potential to improve peoples' experience with hearing loss through education and future research.

### Contributions to Disclosure Literature

Others have alluded to but not formalized these disclosure patterns. In books that combine personal experience and research, some scholars with hearing loss point out that

**TABLE 6. Odds ratio estimates and Wald confidence intervals for change in comfort over time telling others about hearing loss by basic disclosure strategy**

Comparison	Odds Ratio Estimate	Wald 95% Confidence Interval	
Somewhat less comfortable vs. much less comfortable	1.05	0.13	8.14
Neither more nor less comfortable vs. much less comfortable	1.67	0.29	9.78
Somewhat more comfortable vs. much less comfortable	5.05	0.82	30.89
Much more comfortable vs. much less comfortable	2.97	0.50	17.66
Somewhat less comfortable vs. neither more nor less comfortable	0.63	0.19	2.08
Somewhat less comfortable vs. somewhat more comfortable	0.21	0.06	0.72
Somewhat less comfortable vs. much more comfortable	0.35	0.11	1.17
Neither more nor less comfortable vs. somewhat more comfortable	0.33	0.16	0.67
Neither more nor less comfortable vs. much more comfortable	0.56	0.30	1.05
Somewhat more comfortable vs. much more comfortable	1.70	0.83	3.49



verbally disclosing hearing loss requires more than a simple, “I have hearing loss” or “I am hard of hearing” (our basic disclosure strategy) because the other person learns nothing from this interaction (Oliva 2004) and can find this simple and direct approach unsettling and undesirable (Brueggemann 2010). These scholars suggest disclosing using phrases similar to what we classified as the multipurpose disclosure strategy. However, they acknowledge that people with hearing loss have to learn successful disclosure strategies over time (mainly via trial and error) because there is no “instruction manual” on having a hearing loss or how to disclose hearing loss (Valente 2011).

While disabilities have historically been analyzed objectively, the self-reported experiences of people with disabilities are now being incorporated into research studies in an effort to understand how people identify themselves as having a disability or how they experience the act of disclosing a disability or illness (Wilson-Kovacs et al. 2008; Brown et al. 2009; Charmaz 2010). Research on stigmatized conditions shows that people commonly range between not disclosing their condition to disclosing to most people in their social networks (Dyson et al. 2010). However, this research places people in categories based on the reasons people had for choosing to disclose or not to disclose and how often people chose to disclose (Rodkjaer et al. 2011), whereas our study categorizes people based on the phrases that they reported using and not their perceptions of their disclosure practices. Furthermore, in response to their study findings on disclosure and concealment decisions in the workplace, Southall et al. (2011) recommended creating audiological rehabilitation programs that focus on strategies for identity management around hearing loss disclosure and concealment in the workplace. We agree that such programs would be beneficial, but we would suggest that such programs could also include information on the phrases that workers find are most successful in helping them deal with their hearing loss in the workplace. Thus, our focus on the “how” that people use to disclose complements others’ work on when, why, and to whom to disclose (Charmaz 2010; Rodkjaer et al. 2011; Southall et al. 2011).

### Implications for Education

By extrapolation, our findings suggest the potential opportunity for an improved lived experience for people with hearing loss when they discuss or verbalize a disclosure option that they believe is appropriate for themselves and their needs. While the most appropriate way to disclose will depend on the specific setting, context, and communication partner with whom a hard of hearing person interacts, people with disabilities generally report that it is important for individuals in any sort of interaction to arrive equipped with knowledge of how to disclose the disability, if they so desire to disclose (Jans et al. 2012). Since the phrases that people report using to disclose have not yet been recorded in the literature, our study offers the opportunity to educate people with hearing loss about all three of the verbal strategies that our participants reported, with the recommendation that they practice using each strategy in different settings to determine which is most helpful depending on the context.

Education about hearing loss disclosure could also take the form of teaching individuals about the benefits of specific strategies for addressing hearing loss. First, individuals may benefit from learning that people who reported having experienced help, support, or accommodation in reaction to disclosing their hearing loss tend to discuss their hearing loss

using the multipurpose disclosure strategy. Second, individuals with conductive or mixed hearing loss may find it helpful to learn phrases from our basic disclosure strategy, as people with similar causes of hearing loss tend to discuss their hearing loss using this strategy. Third, our data indicates that people with bilateral hearing loss are likely not to disclose at all. Such individuals might benefit from learning about phrases from the multipurpose or basic disclosure strategies (e.g., telling others to enunciate clearly or speak to the “good” ear might improve communication for some people).

Finally, our findings indicate that men are more willing to simply say they have hearing loss or to discuss the details about their hearing loss than they are to suggest an accommodation that another person could perform to improve communication. This finding is consistent with the literature because females are more likely to self-disclose than males (Jourard & Lasakow 1958; Van Wijk & Kolk 1997; McCreary et al. 2009;). Literature on disclosing disabilities in the workplace suggests that successful and effective disclosers employ simple, straight-forward explanations that highlight their qualifications and abilities or provide information about which accommodations are most useful in the workplace, while avoiding detailed discussions of the disability (Lynch & Gussel 1996; Jans et al. 2012). The multipurpose disclosure strategy could help extend such recommendations to social settings by allowing people to disclose their hearing loss in a manner that focuses more on how the communication setting could be improved than on the hearing loss itself. Perhaps some men might be more willing to disclose using a phrase from the multipurpose disclosure strategy because they could highlight how their communication partner could help them rather than on self-disclosing the hearing loss. Future studies are needed to determine whether the putative benefits of the multipurpose disclosure strategy indeed pan out in social settings.

### Limitations

Similar to other research studies, ours has some limitations. First, the use of a convenience sample raises the concern of selection bias. Individuals who agreed to participate in the study might have different views about hearing loss than those who chose not to participate. Individuals recruited out of the otology waiting room in a specialty hospital might have different experiences with hearing loss than those seeing an audiologist for hearing screening or those not seeking medical attention for their hearing. Nonetheless, our sampling method captured the many different experiences of people with hearing loss. Future studies should explore different recruitment sites to test the universality of our disclosure strategies.

Second, cross-sectional, survey-based designs have known limitations. Cross-sectional designs pose a threat to internal validity due to difficulty in establishing temporal order or in ruling out confounding variables (Aday et al. 2006). Temporal order is not an issue in this study because hearing loss must be diagnosed or acknowledged before a person can disclose it. However, the study’s ability to rule out confounders is limited because of the inability to randomly assign people to use different disclosure strategies. Thus, our study was not about understanding the effectiveness of the phrases that people use to disclose their hearing loss, but rather to collect and categorize them for the first time. Future studies should be conducted to assess the effectiveness of our disclosure strategies in real life interactions.

Third, the study could only include a limited number of variables to compare to disclosure strategies. We acknowledge that numerous other variables (e.g., race/ethnicity, sociodemographic status, and many others) may affect the experience of disclosure. However, we only analyzed the variables that were presented in the article because this study was designed to look at specific comparisons from the survey. Future studies could explore the effect of other variables on disclosure strategies.

The final limitation of the study may be the fact that we included participants with any kind of hearing loss, as it may be seen as providing too broad of a view of how people disclose hearing loss. However, we believe that, since our study is one of the first ever to specifically explore hearing loss disclosure phrases, it was necessary to include all kinds of hearing loss because maintaining a broad lens is more appropriate when beginning to address novel research questions (Aday & Cornelius 2006). Furthermore, our study results found that hearing loss disclosure strategies do not correlate with the type or degree of hearing loss, thus suggesting that differences in objective variables regarding hearing loss may not be relevant to hearing loss disclosure. Such a finding should be explored in a larger-scale study (see below).

### Future Research Directions

Further research is needed to expand upon the knowledge about hearing loss disclosure gained via this study. Despite the limitations of the study, we feel that it is timely and relevant in its current form because it is one of the first to explore verbal hearing loss disclosure strategies. Additional studies should be conducted to test this study's survey within different patient populations so as to validate the strategies for addressing hearing loss that we present. We also recommend that further studies explore the clinical implications of our strategies for addressing hearing loss. If validated, we recommend that the strategies be converted into a resource guide that will help people with hearing loss learn successful strategies for disclosing their hearing loss. Furthermore, the fact that objective variables related to hearing loss (e.g., word recognition scores or degree of hearing loss) did not have a statistically significant relationship with the strategies people report using to disclose their hearing loss indicates that other, more social or cultural variables should be studied to see what variables really do influence hearing loss disclosure.

### CONCLUSION

Between the well-established negative effects of hearing loss and the consequences of not engaging in self-disclosure, it is imperative to keep people with hearing loss integrated in society. Based on the analysis of the phrases that people reported using to address their hearing loss in social interactions, we have identified three strategies: multipurpose disclosure, basic disclosure, and nondisclosure. Future studies are needed to validate these strategies in different patient populations, and to identify situation-specific strategies that are most successful in facilitating oral communication while educating people with normal hearing in how to interact with hard of hearing people.

### ACKNOWLEDGEMENTS

We thank all the patients whose participation made this study possible. We are grateful to Rong Guo for assistance regarding statistical analysis of the

data, Jacqueline Kaneb, BS (Boston College) for helping administer the survey, and Dr. Chris Halpin for clarifying audiologic testing conventions. Dr. Halpin and Ms. Kaneb received no financial compensation for their contributions to this study.

Dr. Stankovic is a board member of the American Auditory Society. No other conflicts of interest were declared. Dr. Stankovic's research is supported by the National Institute on Deafness and Other Communication Disorders NIH–NIDCD K08 DC010419, the Bertarelli Foundation, and the Nancy Sayles Day Foundation.

The authors have no conflicts of interest to disclose.

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Received June 19, 2014; accepted September 2, 2015.

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