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Determinants of Self-Efficacy among Individuals who are Hard-of-Hearing

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Self-efficacy plays an important role in their lives of the estimated 48 million Americans who report having some degree of hearing impairment, helping them navigate through a myriad of communication challenges. The purpose of the present study was to assess the levels of self-efficacy in this disability group by examining an array of social, psychological, spiritual, disability, and demographic variables. A total of 114 persons who identified as hard-of-hearing took part in an online survey. A hierarchical multiple regression analysis was performed to answer the research question. The proposed regression model explained 24.7% of variance in self-efficacy among individuals who are hard-of-hearing. Specifically, educational attainment, internal locus of control, spirituality/religiosity, social support, and employment status are the five significant predictors of self-efficacy. Finally, implications for rehabilitation practice and research are discussed.

Keywords: *Hard-of-hearing, self-efficacy, disability*

In the United States, about 20% of the population, 48 million, report some degree of hearing loss (Hearing Loss Association of America, 2017). About 2-3 of every 1,000 American children are born with a detectable hearing loss in one or both ears (Hearing Loss Association of America, 2017). The term "hard-of-hearing" can be defined as having a hearing loss that entails a significant loss in both ears causing difficulties, but not impossibility, to understand speech, especially with hearing aids (Bowe, McMahon, Chang, & Louvi, 2005). Hearing loss, an invisible condition, may result from genetic causes, complications at birth, certain infectious diseases, chronic ear infections, the use of particular drugs, exposure to excessive noise, and ageing (World Health Organization, 2017).

In terms of people with hearing loss, there are more Americans who are hard-of-hearing than are deaf (Bowe, et al. 2005), 96% of the deaf/hard-of-hearing population (Bat-Chava, Deignan, & Martin, 2002; Luft, Vierstra, Copeland, & Resh, 2009), making hearing loss one of the largest disabilities in the U.S. (Dew, 1999; Luft, et al., 2009). In general, hearing loss in the age group of 65 or above have a higher rate than the 18-64 age group, also categorized as "working age" (Bowe, et al., 2005; U.S. Census Bureau, 1997). In both groups it is more common for males to have hearing loss than females (Bowe, et al., 2005; U.S. Bureau of the Census, 1997).

When dealing with hearing loss, some individuals who are hard-of-hearing may identify themselves as Deaf/deaf, hard-of-hearing, or hearing under different contexts. For example, Kemmery and Compton (2014) conducted a study to examine the perspectives of identity related to perception of hearing loss from four students with hearing loss. One student perceived himself as a hearing individual when wearing hearing aids and as hard-of-hearing individual when struggling to hear, but he did not identify himself as a deaf individual. However, for the purpose of others to understand his needs, he would categorize himself as a deaf member of society (Kemmery & Compton, 2014). This may not be the case for individuals who become deafened in adulthood,

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also referred to as late-deafened. These individuals who are hard-of-hearing may struggle with communication and adjustment to the impact of hearing loss on their career, professional goals, and lifestyle (Bat-Chava et al., 2002; Luft et al., 2009). In addition, hearing loss can have psychological impact on individuals who are hard-of-hearing including anxiety, anger, frustration, paranoia, loneliness, and for adult onset of hearing loss, it is possible to experience grief (Kooser, 2013; Trychin, 1991). Considering the size and complexity of the population of people with hearing loss, an understanding of the relationship between locus of control and self-efficacy could be useful to this community and the rehabilitation professionals who work with them in terms of positive outcomes in education, employment and independence.

Literature Review

Self-Efficacy

The influence of self-efficacy on the trajectories of life development among individuals who are hard-of-hearing cannot be understated. Researchers have systematically documented how self-efficacy beliefs shape this population's career aspirations, social integration into the hearing world, educational attainments, and quality of life (Bandura et al., 2001; Calderon & Greenberg, 2003; Hintermair, 2008; Parault & Williams, 2010; Punch, Hyde, & Creed, 2004). With proper support and guidance from parents and teachers, hard-of-hearing children learn, at a young age, to reframe self-efficacy into an inner strength of resilience as they embark on a lifelong odyssey in a world that often fails to provide reasonable accommodations for their disabilities (Young, Green, & Rogers, 2008). The incremental buildup of confidence, starting from childhood, is especially critical when facing challenges in different phases of life. Career optimism, in the form of a strong sense of occupational self-efficacy, steers the pursuit of preferred choice of work life (Bubic, 2017), as evidenced by confident musicians with hearing impairments entering an industry which often holds preconceived stereotypical prejudices against them (Fulford, Ginsborg, & Goldbart, 2011).

Self-efficacy refers to a person's beliefs regarding their capacity to perform a specific task (Bandura, 1997; Meyer, Hickson, & Fletcher, 2014). There are four major sources of information that can influence self-efficacy, (1) prior experience in mastering a task, (2) judgment of others' capabilities in mastering a task, (3) feedback from others relating to the ability of mastering a task, and (4) by somatic information from physical and emotion reactions to performing a task (Bandura, 1997; Meyer, et al., 2014; Smith & West, 2006). In addition, verbal persuasion can improve one's confidence in their ability to perform a particular task (Bandura, 1997; Meyer, et al., 2014). Specifically, a person can have high self-efficacy in one area and low self-efficacy in another, as it is thought to be domain-specific (Kelly-Campbell & McMillan, 2015). In a study conducted by Smith and West (2006), 211 participants who are long term hearing aid users were found to have higher self-efficacy for the more advanced hearing aid-related tasks when compared with new hearing aid users.

Similarly, in a study done by Kelly-Campbell and McMillan (2015), it was reported that after surveying 47 participants acquiring hearing aids, the results indicated individuals with hearing loss who had adequate self-efficacy for adjustment to hearing aids found greater psychological functioning, such as self-confidence**.** The same study showed lower self-confidence in use of hearing aids is directly correlated with opinions of the value of hearing aids. Meyer, Hickson and Fletcher (2014) surveyed 307 adults with hearing loss and found that non-hearing aid owners were more likely to report adequate hearing aid self-efficacy if they had experienced (1) early age of onset hearing loss, (2) reported more positive support from a significant other, and (3) were not anxious about wearing hearing aids, alternatively, hearing aid owners were more likely to report adequate hearing aid self-efficacy if they have had a positive hearing aid experience.

Locus of Control

Control is enabled by informing people of what will happen to them in advance so that they can prepare for an event (Kiernat, 1987), and is related to the notion of cognition and locus of control (Grimaldi & Goette, 1999). Locus of control can be defined as the way an individual views event outcomes in their life (Nichols & Gordon-Hickey, 2012). Internal locus of control is viewing events as the result of one's own action whereas; external locus of control is viewing event outcomes as being the result of luck or fate (Nichols & Gordon-Hickey, 2012). Locus of control can contribute to self-efficacy among individuals with disability. For example, a study of 293 participants with rheumatoid arthritis and osteoarthritis examined the relationship among self-efficacy, health locus of control, health status and direct medical expenditure. The results indicated participants reported better health status when there is a combination of a high internal health locus of control and high self-efficacy than those with low internal locus of control and low self-efficacy (Cross et al., 2005). In another study, Amir, Roziner, Knoll, and Neufeld (1999) examined 89 patients to investigate the role of self-efficacy and locus of control to determine the influence of the perceived seizure severity of patients with epilepsy on their quality of life. The findings revealed the importance of a patient's general beliefs (self-efficacy) that he or she can control (locus of control) the course of his or her life in spite of the medical condition of epilepsy regarding disease severity and social support, as well as, quality of life. These studies indicate locus of control and self-efficacy together can positively influence health and general lifestyle outcomes among individuals with disabilities.

Social Support

When communication is ineffective, interpersonal relationships and socialization can be negatively impacted (Luft, et al., 2009). As such, frequent misunderstandings and inaccurate attributions of peers can impact one's social life (Kooser, 2013). Parental expectations for individuals with hearing loss can influence successful transition from high school to adulthood (Appelman et al., 2012; Convertino et al., 2009; Stinson & Walter, 1992). Other parents may be protective and limit age-appropriate opportunities for individuals with hearing loss to explore their capabilities (King, 1992; Punch et al., 2004). As a result, the more education these students obtain, the more autonomy they may develop (Appelman, et al., 2012; Weisel & Kamara, 2005). At times, individuals with hearing loss may feel anger, shame, and have a sense of impaired social identity when others learn about the hearing loss (Tye-Murray, Spry, & Mauze, 2009). An individual who is hard-

of-hearing could consider the greater the level of social participation, the higher the likeliness this individual will seek help for the hearing loss. When individuals who are hard-of-hearing are adjusting to hearing loss, family members are recognized as being able to provide the emotional support they require, but family members often have limited knowledge of hearing loss and do not recognize the importance of being involved (Meyer, Scarinci, Ryan, & Hickson 2015).

Spirituality and Religiosity

Spirituality can be defined as focusing on an individual's increasing sense of a universal connectedness and a search for meaning of life (Barclay, Rider, & Dombo, 2012; Cook, 2004; Johnstone, Glass, & Oliver, 2007). Deafness and/or hearing loss can often be seen as one of the following: a test from God, a punishment from God, or a gift from God (Koosed & Schumm, 2005), and each of these views can impact the relationship to spirituality and religion for individuals with hearing loss (Barclay, Rider, & Dombo, 2012). Faith can give meaning to the sacrifices the family makes when caring for someone who is hard-of-hearing (Ahlert & Greeff, 2012). McClain (2009) conducted a qualitative study sampling 10 participants with different levels of hearing loss to explore the role that spirituality/religion has in the lives of the individuals with hearing loss. The results suggested spirituality/religion served as a strong coping skill under hardship these individuals experience as a result of the hearing loss and also served to help shape the understanding of their existential purpose. There have been research studies on spirituality and disability (Boswell et al., 2007; Fitchett, Rybarczyk, DeMarco, & Nicholas, 1999), however, not necessarily relating to the hard-of-hearing population.

Religiosity and spirituality are not necessarily two dichotomous constructs (Albuquerque et al., 2018; Badanta-Romero et al., 2018; Chinedu Nweke, 2018; Peres et al., 2018; Stern & Wright, 2018). The Eurocentric views of American scholars of the divergence of religiosity and spirituality often fail to acknowledge how people from different cultures and religions embrace these two concepts (Chang et al., 2018; Chinedu Nweke, 2018; Peres et al., 2018). In fact, there is abundance of studies by international scholars that use religiosity and spirituality interchangeably to examine a variety of issues, including mental health, quality of life, HIV, bereavement, interaction between healthcare providers and patients, depression, and the well-being of LGBTQ populations, in Brazil, Iran, Pakistan, Spain, Germany, India, and Australia (Badanta-Romero et al., 2018; Chang et al., 2018; Chinedu Nweke, 2018; Franzen, 2018; Munawar & Tariq, 2018; Rose et al., 2018; Stern, & Wright, 2018).

There is a dearth of research on the factors that impact the perceived self-efficacy of individuals who are hard-of-hearing. This study aimed to examine the levels of self-efficacy in this population by exploring whether social, spiritual, disability, and demographic variables, which have been identified in existing rehabilitation literature, can successfully predict self-efficacy. The research question that guided the study was: What determinants are predictive of self-efficacy in individuals who are hard-of-hearing?

Table 1

Summary of Individual Demographic Characteristics

Demographic Characteristics	N	Percentage
Age	M = 46.82 (SD = 15.71)	
Ethnicity/Race		
European American	68	59.6
Hispanic	39	34.2
African American	4	3.5
Asian American	2	1.8
Native American	1	0.9
Sex		
Male	26	22.8
Female	88	77.2
Educational Level		
High school or less	8	7.0
High school or GED	18	15.8
Associate's degree	34	29.8
Bachelor's degree	29	25.4
Graduate degree	25	21.9
Employment Status		
Employed	71	62.3
Unemployed	43	37.7
Income Level		
$19,999 or less	40	35.1
$20,000 to $29,999	15	13.2
$30,000 to $59,999	34	29.8
$60,000 to $99,999	18	15.8
$100,000 or more	7	6.1
Cause of Hearing Loss		
Congenital	35	30.7
Acquired	79	69.3

Method

Participants

The final sample consisted of 114 individuals who were hard-of-hearing. Table 1 displays the participant's individual demographic characteristics. The ages of the participants ranged from 19 to 86 years, with a mean of 46.82 years (SD = 15.71). Most of the participants were women (n = 88, 77.2%) and employed (n = 71, 62.3%). Ethnically, 59.6% (n = 68) were European American, 34.2% (n = 39) were Hispanic, 3.5% (n = 4) were African American, 1.8% (n = 2) were Asian American, and 0.9% (n = 1) were Native American. Overall, the sample was well educated. About 29.8% (n = 34) of the participants had an associate's degree or a vocational certificate, 25.4% (n = 29) had a bachelor's degree, 21.9% (n = 25) had a graduate degree, and 15.8% (n = 18) had a high school diploma or a GED. Personal income ranged from $19,999 or less to $100,000 or more, with most participants (n = 40, 35.1%) reporting an income of $19,999 or less followed by $30,000 to $59,999 ($n$ = 34, 29.8%), $60,000 to $99,999 ($n$ = 18, 15.8%), $20,000 to $29,999 ($n$ = 15, 13.2%), and $100,000 or more ($n$ = 7, 6.1%). Although more than two-thirds (n = 79, 69.3%) of the participants had acquired hearing loss, 30.7% (n = 35) of them were born with congenital hearing loss.

Instruments

Generalized Self-Efficacy Scale (GSES; Schwarzer & Jerusalem, 1995). The GSES is a 10-item self-report scale that measures the extent to which an individual believes he or she has the ability to perform a particular task or achieve a specific goal. Each item is scored on a four-point Likert-type rating, ranging from 1 = *Not at all true* to 4 = *Exactly true*. The total possible score ranges between 10 and 40, with higher scores indicating greater self-efficacy. An example statement includes "I can always manage to solve difficult problems if I try hard enough." For the present study, the Cronbach's α reliability coefficient was computed to be .909.

Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS is a 12-item self-report scale that is designed to assess an individual's perceptions of his or her social support. As a multidimensional measurement of the sources of perceived social support, the three subscales of the MSPSS evaluate the magnitudes of support from the following three domains: Family, Friends, and Significant Other. The Family subscale is comprised of four items #3, 4, 8, and 11. The Friends subscale consists of four items #6, 7, 9, and 12. The Significant Other subscale consists of four items #1, 2, 5, and 10. For all subscales, items are rated on a seven-point Likert-type rating, ranging from 1 = *Very strongly disagree* to 7 = *Very strongly agree*. The total possible score for each subscale ranges between 4 and 28, with higher scores indicating greater social support. An example statement includes "There is a special person who is around when I am in need." For the present study, the Cronbach's α reliability coefficients of the MSPSS was computed to be .940.

The Religious Commitment Inventory-10 (RCI-10; Worthington et al., 2003). We used the brief RCI-10 to assess the construct of spirituality/religiosity. The RCI-10 is a 10-item self-report scale that measures an individual's religious commitment. Worthington and his colleagues (2003) operationalized religious commitment as the level of adherence to one's religious values, beliefs, and practices, or more specifically, the frequency in which he or she uses these values, beliefs, and practices everyday. Furthermore, the RCI-10 examines intrapersonal religious commitment (6 items) and interpersonal religious commitment (4 items). Each item is scored on a five-point Likert-type rating, ranging from 1 = *Not at all true of me* to 5 = *Totally true of me*. The total possible score ranges between 10 and 50, with higher scores indicating greater religious commitment. An example statement includes "I often read books and magazines about my faith." For the present study, the Cronbach's α reliability coefficient was to be computed at .967.

Levenson Multidimensional Locus of Control Scales (LMLCS; Levenson, 1973). The LMLCS is a 24-item instrument that is comprised of the following three subscales: (a) Internal Locus of Control [items# 1, 4, 5, 9, 18, 19, 21, and 23], (b) Powerful Others [items# 3, 8, 11, 13, 15, 17, 20, and 22], and (c) Chance [items# 2, 6, 7, 10, 12, 14, 16, and 24]. We only used the Internal Locus of Control subscale for the present study. All of the items are scored on a six-point Likert-type scale, ranging from -3 = *Strongly disagree* to +3 = *Strongly agree*. The possible score for each of the eight-item subscales ranges between -24 and +24. For calculation purposes, a value of +24 is added to the sum of the eight items for each subscale to eliminate negative scores. A high rating on the Internal Locus of Control subscale indicates that an individual has a strong internal locus of control. An example statement includes "Whether or not I get to be a leader depends mostly on my ability." For the present study, the Cronbach's α reliability coefficient was computed to be .679.

Demographic and Hearing Loss Facts. The research team developed a background fact sheet for the assessment of demographics and information about the participants' current disability-related lifestyles. Demographic factors of interest included age, ethnicity, sex, education, employment status, and income level. We also documented hearing loss-related facts, such as etiology of hearing loss (i.e., congenital, acquired) and the perceived level of hearing loss in the ear(s).

Procedure

Prior to recruiting study participants, we obtained approval from the Institutional Review Board. A link to a commercial online survey site hosted by Qualtrics was forwarded on behalf of the research team by an independent living center (Valley Association for Independent Living, VAIL), a student accessibility office at a public university (University of Texas Rio Grande Valley, UTRGV), and a national sign language interpretation services agency (Communication Axess Ability Group, CAAG) to individuals who received services for the hard-of-hearing. In addition, the independent living center also allowed us to post the survey link on its Facebook page. In the IRB-approved introductory letter, the research team explained the purpose of the study and the participants' rights. In order to respond to the questionnaire, the participants were required to click on a consent button on the first page of the web site. The surveys took approximately 15 to 20 minutes to complete and no incentives were provided to the participants. All data were entered in an Excel file and then exported to an SPSS file for later statistical analyses.

Data Analysis

To determine the acceptable sample size for a multiple linear regression analysis with 8 independent variables where the power = .80, the α level = .05, and the medium size effect $f^2 = .15$, an a priori power analysis would suggest the present study requires 109 participants (Cohen, 1988). Skewness and kurtosis were used to check the normal distribution of all the variables separately. We also used the Mahalanobis distance to check for multivariate outliers (Meyers, Gamst, & Guarino, 2017). A bivariate correlation matrix was used to screen for multicollinearity and to ensure no correlation exceeded .70 (Warner, 2013). In addition, variance inflation factors (VIF) were scrutinized for each regression analysis to ensure there was no violation of the multicollinearity value that was greater than 5 (Tabachnick & Fidell, 2013). We performed a hierarchical multiple regression analysis to address the research question. Researchers recommend entering theoretically based constructs (e.g., social support, locus of control) at the first step of the regression model to better estimate the contribution of the predictors in the study (Mertler & Reinhart, 2017; Osborne, 2017). We entered demographic variables, such as educational level, employment status, and severity of hearing loss, at the second step to obtain additional variance within the model (Mertler & Reinhart, 2017; Osborne, 2017).

Results

Descriptive statistics and correlations between variables are presented in Table 2. For the correlational analysis, upon examination of skewness and kurtosis values, we concluded the data were normally distributed within the acceptable ranges of skewness and kurtosis (Warner, 2013). Pearson product-moment coefficients showed that all independent variables were correlated to the dependent variable, with the exceptions of severity of hearing loss. The measure of severity of hearing loss was obtained by taking the sum of the perceived levels of hearing loss in the right ear and the

left ear and then dividing by two. The severity of hearing loss was rated on a five-point scale, ranging from 0 = *No hearing loss in right (left) ear*, 1 = *mild hearing loss (16 to 25 dB)*, 2 = *moderate hearing loss (41 to 55 dB)*, 3 = *severe hearing loss (71 to 90 dB)*, to 4 = *profound hearing loss (91 ≥ dB)*. Self-efficacy and social support had the strongest relationship (r = .322, p < .01), followed by social support and spirituality/religiosity (r = .293, p < .01), self-efficacy and internal locus of control (r = .269, p < .01), social support and internal locus of control (r = .260, p < .01), and self-efficacy and spirituality/religiosity (r = .202, p < .05).

Table 3 displays a summary of hierarchical multiple regression analyses predicting self-efficacy for individuals who are hard-of-hearing. Prior to performing regression analyses, we checked the VIF across the criterion variables to examine the degree of multicollinearity (Mertler & Reinhart, 2017). To examine the sample, a hierarchical multiple regression was performed by entering predictor variables including social support, spirituality/religiosity, and internal locus of control as a block in the first step. The preliminary model for self-efficacy was statistically significant, F(3, 110) = 6.426, p < .001 with an R^2 of .149 and an adjusted R^2 of .126. The standardized β for social support was .25, t(110) = 2.59, p < .05. The standardized β for internal locus of control was .19, t(110) = 2.05, p < .05.

Additional demographic variables including educational level, employment status, income level, cause of hearing loss, and severity of hearing loss were then added simultaneously to a subsequent model in the second step. Before the multilevel categorical variables could be dummy coded, they were collapsed into fewer clusters because of concerns about small cell-sample sizes. The educational level variable was collapsed into two groups (1) recipients of bachelor's and graduate degrees and (2) those who had an associate's degree, a high school diploma. The former group was coded as 1 and the latter group as 0. The employment status variable was dummy coded 1 = employed and 0 = unemployed. For the cause of hearing loss variable, participants who indicated trauma, illness, and accident were collapsed into one group. The variable was dummy coded as 1 = acquired and 0 = congenital. The income level variable was dummy coded as 1 = $30,000 and more and 0 = less than $30,000 after we merged participants who made $19,999 or less with those who made $20,000 to $29,999 into one group.

Table 2

Correlations, Means, Standard Deviations among the Variables

Measure	1	2	3	4	5
1. SE	–				
2. SS	.322**	–			
3. SR	.202*	.293**	–		
4. ILC	.269**	.260**	.178	–	
5. SHL	.026	-.148	-.157	-.021	–
M	32.70	61.24	26.25	35.93	2.61
SD	5.07	16.06	13.32	6.01	0.86
α	.909	.940	.967	.679	–

Note. SE = Self-efficacy; SS = Social support; SR = Spirituality/religiosity; ILC = Internal locus of control; SHL = Severity of hearing loss.
* p < .05, ** p < .01.

The final regression equation was found to be statistically significant, F(8, 105) = 4.308, p < .001 with an R^2 of .247 and an adjusted R^2 of .190. The change in R^2 was .098 and the change in adjusted R^2 was .064. The change in R^2 from the first block to the second block was .098. In other words, these demographic variables helped contribute an additional 9.8% to the variance explained in the model to predict self-efficacy. The VIF for the independent variables ranged from 1.020 to 1.082, which supported we had met the assumption of multicollinearity because they were all below the recommended value of 5 (Warner, 2013). The beta weights showed five out of eight variables significantly contributed to the prediction of the dependent variable. The largest standardized β was educational level = .25, t(105) = 2.59, p < .05. The second largest standardized β was social support = .21, t(105) = 2.26, p < .05. Another second largest standardized β was internal locus of control = .21, t(105) = 2.31, p < .05. The fourth largest standardized β was employment status = .19, t(105) = 2.04, p < .05. The fifth largest standardized β was spirituality/religiosity = .18, t(105) = 1.97, p < .05. According to the final regression model, 24.7% (a medium effect [Cohen, 1988]) of the variances in self-efficacy among individuals who were hard-of-hearing could be predicted from the research variables.

Discussion

The purpose of this study was to examine the levels of self-efficacy among individuals who are hard-of-hearing. Our findings revealed five variables are predictive of self-efficacy; namely, an internal locus of control, social support, employment status, spirituality/religiosity, and educational attainment. Educational attainment among hard-of-hearing individuals showed the strongest relation to self-efficacy. This finding is supported in the prior literature (e.g., Weisel & Kamara, 2005; Yu et al., 2015; Zahodne et al., 2015). Weisel and Kamara (2005) found that Israelis with hearing loss who had more education were less fearful of achieving autonomy and more independent than those with less education. It is plausible our participants with further education may have learned necessary skills such as self-advocacy, communication,

Table 3

Summary of Hierarchical Multiple Regression Analysis Predicting Self-Efficacy

Variable	*B*	*SE B*	β	R^2
Step 1				.149
Constant	21.30	2.90		
Social support	.08	.03	.25*	
Spirituality/religiosity	.04	.04	.10	
Internal locus of control	.16	.08	.19*	
Adjusted R^2 = .126				
Step 2				.247
Constant	17.84	3.44		
Social support	.07	.03	.21*	
Spirituality/religiosity	.07	.04	.18*	
Internal locus of control	.18	.08	.21*	
Educational level	2.57	.99	.25*	
Employment status	1.97	.97	.19*	
Income level	-1.57	1.05	-.16	
Cause of hearing loss	-.83	.96	-.08	
Severity of hearing loss	.55	.52	.09	
Adjusted R^2 = .190				

Note. * p < .05

and independence, which deepened their self-efficacy. In addition, individuals with more education may have more knowledge of how to self-advocate and find resources (Chen, Brown, & Kotbungkair, 2015). In other words, hard-of-hearing individuals with higher education levels have learned to overcome several barriers and obtain knowledge of how to accomplish their goals, resulting in higher self-efficacy.

The second strongest predictor of self-efficacy was the internal locus of control. Consistent with prior studies of individuals with rheumatoid arthritis and osteoarthritis (Cross et al., 2005), high self-efficacy is also evident in hard-of-hearing individuals who believe it is personal ability that helps to shape their destiny. Individuals of this orientation rely less on external locus of control, that is believing things happen by chance or the influence of powerful others, when managing challenges and solving problems. With this in mind, it comes as no surprise people with disabilities who subscribe to an internal locus of control seem to attain a better health status than those who do not (Hajek & König, 2017; Kostka & Jachimowicz, 2010; Rizza et al., 2017). Our results are a reflection of Rotter's (1966) internal locus of control definition, in which one is in control of his or her future based on the value of personal skill and more resistant to the influence of others. Individuals who are hard-of-hearing with both an internal locus of control and high self-efficacy may adjust to live better with their hearing loss.

Our findings also showed employment status to be as strong a predictor variable of self-efficacy as internal locus of control. Employment status has been well documented to have positive impacts on various aspects of the lives of people with disabilities (Chen et al., 2015 Hergenrather et al., 2008; Regenold et al., 1999). As is also the case for those with mental illness (Lagerveld et al., 2010) and chronic back pain (Sardá et al., 2009), being employed significantly boosts our participants' self-efficacy levels. In general, it is not easy for people with hearing impairment to be fully functional and participate completely in a hearing world, much less in the workplace. Having a job represents society's recognition of their ability to perform meaningful work-related tasks that are required to achieve the same degree of success as their hearing colleagues.

In the present study, social support, which is comprised of the support of one's family, friends, and spouse, was found to be a statistically significant predictor of self-efficacy. This result is consistent with past research by Moser, Luxenberger, and Freidl (2017), which concluded that social support improves psychological well-being and social quality of life among adults with age-related hearing loss. Furthermore, when undergoing treatments for cancer, oncology patients felt more optimistic about the outcomes if they had support from their families and friends (Howsepian & Merluzzi, 2009). People who are hard-of-hearing face challenges unique to them due to the invisible nature of their sensory disability. The misconception that people with disabilities are less capable than those without disabilities may lead them to internalize self-doubt. However, encouragement from their loved ones, who understand their struggles and have unwavering belief in their potential, can help instill a sense of confidence and worthiness. Consequently, social support allows people who are hard-of-hearing to affirm their own ability to function like a "normal" person both at home and in the community.

Spirituality/religiosity is another predictor of self-efficacy among individuals who are hard-of-hearing. This finding is aligned with the literature, which supports the correlation between self-efficacy and spirituality/religiosity (Revheim, Greenberg, & Citrome, 2010; Robinson & Wicks, 2012). Our participants find comfort in spirituality/religiosity through creating positive meanings from their hearing loss. By understanding and constructing meanings, individuals who are hard-of-hearing may believe in their ability to overcome any challenges in their lives. The positive effect of spirituality/religiosity on self-efficacy lends people to inner strength and to seek spiritual guidance when navigating in the uncertainties of life (de Guzman, Lacao, & Larracas, 2015). Furthermore, Treloar (2002) concluded that both adults with disabilities and the parents of children with disabilities found serenity and stability in their lives through spiritual beliefs that made meaning of a disability and provided assistance in coping. Reliance on God represents a source of intangible strength for people in distressful circumstances (Treloar, 2002). Our findings were consistent with that of McClain's (2009) study, which showed spirituality/religiosity serves as a strong coping factor when facing hardship stemming from hearing loss (McClain, 2009). Overall, spirituality/religiosity can help individuals who are hard-of-hearing to increase their self-efficacy and obtain better life experiences.

Limitations

This study has a few limitations. First, we relied on the CAAG, VAIL, and the UTRGV Student Accessibility Services Office to distribute the survey link to their vast networks of branch offices for the recruitment of prospective participants. As a result, we were unable to determine if the levels of self-efficacy among the participants varied in accordance with their geographical regions of residency. Second, our online survey site did not keep track of the Internet Protocol addresses to protect anonymity and confidentiality of participants. It is therefore infeasible to compare the perceptions of CAAG clients, VAIL clients, and the UTRGV students who responded on Facebook. Third, the online method of data collection may have inadvertently excluded potential participants who lacked access to computers or the internet. In addition, we accidently omitted three categories of decibel levels from our survey when there should have been seven categories. Although severity of hearing loss was not a significant predictor of self-efficacy in the present study, the results might have been different with the expanded categories (Gopinath et al., 2012). Finally, the original intent of the study was to focus solely on communities in south Texas, where there is a dense concentration of Spanish-speaking Hispanic residents. However, we were unable to develop an alternative Spanish version of the questionnaire due to the timeframe of the project. It is therefore plausible language barriers may have discouraged certain individuals who were unable to read, write, or speak English from taking part in the survey.

Implications for Rehabilitation Practice and Research

The issue of self-efficacy has become more salient in recent years as rehabilitation practitioners and researchers have pursued

the best strategies for assisting individuals who are hard-of-hearing to tap and materialize their potential to the fullest. Understanding the relationship between locus of control and self-efficacy may lay the foundation for achieving greater self-efficacy, leading to increased levels of education, employment, and independence. The present study is a pioneer research endeavor devoted to gaining a better understanding of this unique disability population, and its results offer several noteworthy implications for both rehabilitation practitioners and researchers alike.

The findings provide empirical support for professionals working with this population in maintaining an orientation toward the internal locus of control, so they can help strengthen the self-efficacy of their clients, which is recognized as an essential trait necessary in the confidence-building process for overcoming life's adversities and challenges. Rehabilitation practitioners may enhance the levels of their hard-of-hearing clients' self-efficacy by providing unconditional support. Furthermore, their clients may be able to put aside feelings of insecurity and self-doubt and feel encouraged to venture out of their comfort zone. To facilitate building trust and rapport between rehabilitation service providers and recipients, practitioners must represent themselves as dependable allies for their clients and educate them on the concept of advocacy. Rehabilitation professionals can also help to encourage hard-of-hearing individuals to draw strength from religion and spirituality, given disability and spirituality are both very personal concepts. For rehabilitation practitioners to work effectively with hard-of-hearing clients, they need to be sensitive and learn about hearing loss (e.g., causes, population, and culture). For example, they can learn basic sign language to promote successful rehabilitation outcomes and help create stronger relationships with these individuals at a more personal level.

Regarding directions for future research, this study should be replicated with a larger population specific to this disability group, with other groups, and with the general population to generalize the findings. In addition to larger populations, minority populations of culturally and linguistically diverse backgrounds who are hard-of-hearing should also be compared. As these populations grow, so does the need for rehabilitation services. As one of the fastest growing ethnic minority groups in the United States, rehabilitation researchers may opt to translate the questionnaire into Spanish, so the concerns of Hispanic clients from for English is not their first language can be documented and addressed accordingly. This will allow for more effective comparisons of responses between Spanish-speaking and English-speaking participants. Similarly, both online and paper-and-pencil survey formats may be employed to involve individuals without computer access and improve results' generalizability. Finally, advanced statistical techniques, such as path analyses and structural equation modeling, may be used to test complex models of self-efficacy to achieve a better understanding of the impact of hearing impairment on the lives of those with disabilities.

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