University of Cincinnati

Date: 10/26/2017

I, Daniel Ashwood, hereby submit this original work as part of the requirements for the degree of Doctor of Philosophy in Health Education.

It is entitled:
Pediatrician Personality Factors and Communication with Non-normative Hearing Children

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Pediatrician Personality Factors and Communication with Non-normative Hearing Children

A dissertation submitted to the
Graduate School
of the University of Cincinnati
in partial fulfillment of the
requirements for the degree of

DOCTOR OF PHILOSOPHY

In the Department of Health Promotion and Education
of the college of Education, Criminal Justice and Human Services

October 2017
By

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Abstract

AN ABSTRACT OF THE DISSERTATION FOR THE DOCTOR OF PHILOSOPHY
DEGREE IN HEALTH PROMOTION AND EDUCATION, PRESENTED ON OCTOBER 26,
2017 AT THE UNIVERSITY OF CINCINNATI, CINCINNATI, OH

TITLE: Pediatrician Personality Factors and Communication with Non-normative Hearing
Children

DOCTORAL COMMITTEE MEMBERS: Dr. Brittany L. Rosen (Chair), Dr. Amy Bernard, and
Dr. Laura A. Nabors.

This dissertation consists of two studies focused on a sample of pediatricians who
completed a survey to examine their interactions with patients with non-normative hearing.
Study 1 and 2 used the same sample and survey instrument. Study one examined pediatricians’
preferred communication style with non-normative hearing children in relation to constructs of
self-efficacy, behavioral capability, outcome expectations, and exposure. Study two examined
communication style preferences of pediatricians and perceived quality of care in relation to the
above mentioned constructs while adding personality trait factors to each of the models.

Study One Abstract

Non-normative hearing patients utilize healthcare less often, and have poorer health
outcomes than those with normative hearing. Early childhood interactions have been identified
as crucial to non-normative hearers’ perceptions of health care services. The purpose of this
study was to: 1) describe the most preferred communication styles among pediatric care
providers when they are interacting with non-normative hearing children and 2) determine if preferred communication styles vary by self-efficacy, behavioral capability, outcome expectations, and exposure. A cross-sectional survey of U.S. pediatricians was conducted via e-mail in July 2017. Descriptive statistics were used for aim 1. A logistic regression analysis was used for aim 2. Results showed the most preferred communication style to be speech/lip reading. Findings for the logistic regression indicated significant effects for sex, race, years practicing, practice setting, behavioral capability, outcome expectations, and exposure. Findings demonstrated a need for educating pediatricians in methods of communication beyond speech/lip reading and that those who are female, white, or new to the field may be potential in-roads for health education programming on this topic.

Study Two Abstract

Interactions between pediatricians and children with non-normative hearing are important and can define young children’s views of health care provision. The purpose of this study was to 1) evaluate whether pediatricians’ predisposing psychological factors were associated with their preferred communication style regarding their interaction with non-normative hearing children and 2) assess whether pediatricians’ predisposing psychological factors were predictive of their perceived quality of care (PQoC) regarding their interaction with non-normative hearing children. Importantly, the impact of several other factors were evaluated, such as: self-efficacy, behavioral capability, outcome expectations, exposure and demographic variables. In examining communication style, statistically significant effects were seen for sex, race, practice setting, behavioral capability, outcome expectations, self-efficacy, and the psychological factor of conscientiousness. Higher PQoC was predicted by sex, age, type of practice, higher behavioral capability, higher outcome expectations, lower exposure, higher agreeableness, lower
neuroticism and lower conscientiousness while controlling for the other predictor variables within the model. The directional association of the five factor traits (specifically agreeableness, neuroticism, and conscientiousness) indicated promising results for explaining perceived quality of care from this framework.
Acknowledgments

This dissertation, and my doctoral education at the University of Cincinnati (UC), was made possible by partial funding from various sources and departments which include the UC Department of Student Affairs’ Residence Life division, UC’s College of Medicine Surgical Research Unit, the Office of the University Ombuds, a graduate assistantship from the department of Health Promotion and Education, an honorarium from UC’s Graduate Student Governance Association, and the United States Department of Education via a grant titled Leader’s for Tomorrow’s Children. I also want to thank each member of the dissertation committee for their contributions to this project and their support over the last 4 years. Specific faculty and administrators also deserve special recognition. I could not have made it this far without the support of Dr. Brittany Rosen, Dr. Laura Nabors, Dr. Amy Bernard, Dr. Tina Stanton, Dr. Chandrashekharm Gandhi, Dr. Charles Caldwell, Dr. Marshall “Chip” Montrose, and Dr. Peter Landgren.
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Study 1: Communication Preferences of Pediatricians with Non-normative Hearing

Children: Differing Communication Styles and Their Association with Constructs from Social Cognitive Theory
INTRODUCTION

People who experience non-normative hearing, (i.e., those who are deaf, Deaf, or hard of hearing) at a young age, specifically prelingually, are shown to display decreased English skills, and therefore, potentially have difficulty in understanding medical information (Meador & Zazove, 2005). These lower English skills have also been shown to put those who have non-normative hearing at greater risk for miscommunication (Meador & Zazove, 2005) leading to higher hospital admission rates, increased hospital testing, misdiagnosis, and improper treatment (Barnett, 2002; Flores, Rabke-Verani, Pine, & Sabharwal, 2002; Meunch, Verdieck, Lopez-Vasquez, & Newell, 2001). In addition non-normative hearing patients have lower utilization rates of health care services overall (Iezzoni, O’Day, Killeen, & Harker, 2004; Sheppard, 2014). Adults with non-normative hearing may express apprehension around using health services due to past negative experiences (Iezzoni et al., 2004). A recent study focusing on adults who were deaf found that being apprehensive or fearful of physicians was linked to confusing and frightening interactions with physicians during the patient’s childhood, when physicians were either just learning about the patient’s non-normative hearing status or before that status was identified (Sheppard, 2014). As such, early childhood stands out as a crucial time for any non-normative hearing individual regarding the development of their views of the health care system (Sheppard, 2014).

Patients who are deaf have reported beliefs that health care providers are unprepared to accommodate their communication needs (Witte & Kuzel, 2000). Corroborating the patient perspective, physicians have also reported significant difficulties in communicating with patients who are deaf and report feeling that conversations are more difficult with these patients (Ralston, Zazove, & Gorenflo, 1996). According to physicians, issues with miscommunication result in the
patient being less likely to understand their diagnosis as well as their recommended treatment (Ralston et al., 1996). As such, communication stands out as a particular point of relevance for studies of patients with non-normative hearing.

Communication styles range widely for individuals with non-normative hearing. The more common types of communication include American Sign Language (ASL), Pidgin Signed English (PSE), Signing Exact English (SEE), speech reading (or commonly called lip reading), written communication such as notes, or telephone-based interpretation services. Each of the signing techniques (ASL, PSE, and SEE) have their own signs, grammar and syntax to consider (Kaskowitz, Nakaji, Clark, Gunsauls, & Sadler, 2006; Sheppard, 2014; Steinberg, Barnett, Meador, Wiggins, & Zazove, 2006). In a healthcare setting, empirical evidence supports that non-normative hearing patients benefit most from the presence of an interpreter or the use of American Sign Language (Graybill, Aggas, Dean, Demers, Finigan, & Pollard, 2010; McKee, Paasche-Orlow, Winters, Fiscella, Zazove, Sen, & Pearson, 2015; Pollard & Barnett, 2009; Zazove, Meador, Reed, & Gorenflo, 2013). The literature indicates that non-signing types of communication come with various challenges. For example, speech reading/lip-reading can often be attempted where physical barriers are present, such as masks or other obstructions, which cause misunderstandings (Steinberg et al., 2006). Written communication can often be problematic because of the fact that ASL and English are different languages with different syntax and structure, (Graybill et al., 2010; Pollard & Barnett, 2009; Zazove et al., 2013). Additionally, the complex vocabulary of medical information combined with imperfect handwriting skills of providers and patients can cause confusion and frustration (Steinberg et al., 2006). While multiple studies indicate ASL is the preferred communication method for D/deaf and hard of hearing adult patients (Graybill et al., 2010; McKee et al., 2015; Pollard & Barnett,
2009; Steinberg et al., 2006; Zazove et al., 2013), little research exists on the type of communication methods that are most regularly used by pediatricians when interacting with non-normative hearing patients in early childhood and the factors that impact communication with these non-normative hearing children.

The last comprehensive research studies on physicians interacting with non-normative hearing patients occurred in the mid-90s (Ebert & Heckerling, 1995; Ralston et al., 1996). These studies have highlighted misunderstandings and low education on the part of physicians related to interacting with this population (Ebert & Heckerling, 1995; Ralston et al., 1996). For example, only 7.1% of providers knew hearing impaired patients had normal intelligence and only 7.0% knew that deaf people use a specific language to communicate (Ebert & Heckerling, 1995). Another study found that physicians self-reported their conversations are not as free flowing with deaf patients, and more difficulty occurs in understanding these patients than when they self-report the same variables for their general patients (Ralston et al., 1996). These studies highlight a critical need to focus on current physicians’ preferences for communication style in interacting with their non-normative hearing patients, specifically during the time that the patient is in early childhood.

Social Cognitive Theory (SCT) specifically examines behavior as a result of environmental and personal factors as well as attributes of the behavior itself (Bandura, 1977; Bandura, 2001; National Institute of Health, 1995). Literature in the field of deaf populations that include SCT is geared towards patient populations or patients being prompted to change certain behaviors (Hogg & Holland, 2001; Jones, Renger, & Kang, 2007). For example, higher levels of self-efficacy for being able to adhere to a behavior, and positive outcome expectations of treatment within patient populations have been shown to increase medication adherence, the
decision to move forward with treatment, and following the provider’s advice once the visit is over (Hogg & Holland, 2001; Jones, Renger, & Kang, 2007). Exposure, a construct that could be considered an environmental influence under SCT (Hogg & Holland, 2001) as well as being a component of social identity theory and self-categorization theory (Hoang, LaHousse, Nakaji, & Robins-Sadler, 2011), includes the concept that a person learns by observing and being around others. Prior exposure to the Deaf community has been shown to be statistically significant in predicting medical faculty members’ cultural competency in caring for this population (Hoang et al., 2011). Exposure to the deaf and hard of hearing was identified in a review of the literature as being a key component to increasing health care for non-normative hearing populations (Harmer, 1999). Using SCT as a framework, constructs of self-efficacy, behavioral capability, outcome expectations, and exposure have utility to the topic of pediatricians’ preferred communication style with non-normative hearers as no other studies have examined pediatricians in this manner.

This demonstrates a gap in the literature which this paper aims to address; namely, the role of these SCT constructs (Bandura, 2001) regarding the pediatricians’ preferred communication style with non-normative hearing patients/children. As childhood stands out as an important formative point in time for non-normative hearing patients (Sheppard, 2014), there is a clear need to identify and establish communication patterns in terms of providers’ differing preferences when it comes to interacting with these children. Thus, the research aims were to: (1) describe the most preferred communication styles among pediatric care providers when they are interacting with non-normative hearing children (i.e., American Sign Language, Pidgin Signed English, Signing Exact English, speech reading, written communication, telephone-based interpretive services), and (2) determine if preferred communication styles are associated with self-efficacy in treating childhood patients with non-normative hearing, behavioral capability of
interacting with this population, outcome expectations for a visit with a non-normative hearing patient, and exposure to non-normative hearing patients while including demographic variables in the model.

METHODS

Participants and Procedures

The University of Cincinnati Institutional Review Board granted approval for this study (see Appendix A). A cross-sectional survey of pediatricians from the membership list of the Society for Adolescent Health and Medicine (SAHM) was utilized via e-mail. SAHM (2017) is a multidisciplinary organization committed to improving the physical and psychosocial health and well-being of all adolescents through clinical care, health promotion, health service delivery, professional development and research. SAHM consists of 17 regional chapters including all 50 states in the United States of America (SAHM, 2017). Obtaining a sample of pediatric physicians through SAHM is appropriate due to the fact that pediatricians rarely treat adolescents alone and often treat children from birth through adolescence. The initial e-mails were sent in July 2017 (see Appendix B), using Qualtrics Research Core as the distribution method via Qualtrics’ standing partnership with Northern Kentucky University. Participants reviewed an electronic information form (see Appendix C) before completing study questions. Recruitment occurred for four weeks. A reminder e-mail was sent a week and a half into the recruitment period to all participants. However, the link provided for each e-mail address could only be used once. The e-mails were sent to 872 pediatricians from the member list with 409 individuals completing the survey, resulting in an overall response rate of 46.9%. Of the 409 respondents, 10 (2.4%) were
removed due to participants indicating they were not practicing as pediatricians. Therefore, the total number of participants included in the analyses was 399.

The United States Bureau of Labor Statistics indicates that there are roughly 26,960 pediatricians employed in the United States (United States Department of Labor, 2017). In order to obtain statistical inference for a conservatively estimated national pediatric population of 27,000, a sample size of 379 nation-wide participants was required. This number was calculated utilizing a 95% confidence level with a 5% sampling error and a 50% response distribution (Lomax & Hahs-Vaughn, 2012), operating under the assumption that the population is distributed in the same manner as the sample.

The sample for this study was from a national pediatric professional organization and not from a broad national sample. According to the American Academy of Pediatrics (2016), women comprise 56% of pediatricians in 2016, with a median age of 46. The American Board of Pediatrics does not have a public publication on national race/ethnicity. However, the Bureau of labor statistics indicates that for physicians, 7.5% are black or African American, 19.3% are Asian, and 5.9% are Hispanic/Latino (United States Department of Labor, 2016). As the results section will illustrate, women were overrepresented in the sample when compared to national data. Age was representative of the national median. Black/African Americans and Asian individuals were underrepresented. And Hispanic/Latino individuals were representative of the population.

**Instrument**

An 82-item electronic survey (see Appendix D) was developed to determine pediatricians preferred communication style with non-normative hearing children as well as individual SCT
constructs, personality traits, and demographic characteristics. A definition of non-normative hearing patients was included at the beginning of the survey. A non-normative hearing patient was defined as “any patient who is Deaf (meaning part of the Deaf community), deaf (strictly in the medical sense) or hard of hearing” (see Appendix D). The survey was divided into seven sections: (1) interactions with non-normative hearing children (including exposure to non-normative hearing patients), (2) self-efficacy in treating this population, (3) behavioral capability for interacting with this population, (4) outcome expectations for a visit with a non-normative hearing patient, (5) perceived quality of care for non-normative hearing children, (6) five factor trait constructs, and (7) demographic variables. Sections five and six were designed for research aims outside the scope of this paper and are included in a different paper.

The independent variables for this study included demographic variables, self-efficacy, behavioral capability, outcome expectations, and exposure. Demographic variables included sex, age, race and ethnicity, languages known, years practicing, year graduated from medical school, type of practice, and geographic area. Sex, race and ethnicity, languages known, type of practice and geographic area were represented by multiple choice items. Age, years practicing, and year graduated from medical school were assessed using open-ended responses (see Appendix D). For the purposes of the analyses, race was recoded into non-white and white in order to account for the lack of variability in the sample. In addition, ethnicity was excluded from analysis due to lack of variability.

Thirteen items comprised the scale for self-efficacy regarding the confidence in treating childhood patients who have non-normative hearing and were modified from existing items from the Shared Decision-Making Inventory-Revised (SDMI-R) instrument (Bartlett & Peterson, 2013). Items were identified from the SDMI-R as being pertinent to communicating with non-
normative hearing patients and were modified to specifically address this population (see Appendix D). When modifying these items, traditional Likert scales were utilized (Carifio & Rocco, 2007; Dawes, 2008; Likert, 1932). Response options were “Strongly disagree,” “Disagree,” “Neither agree nor disagree,” “Agree,” or “Strongly Agree.” Upon expert review of the survey instrument by four pediatricians working at University of Cincinnati’s UC Health, additional items were added to this scale to further clarify the construct of self-efficacy in a pediatric setting. The range for the full thirteen item scale was 13 to 65 with higher scores indicating greater self-efficacy in effectively treating this population. Cronbach’s alpha score for the scale of self-efficacy was 0.86.

Nine items with 5-point Likert scales were developed to form the behavioral capability scale (see Appendix D). Responses were provided on Likert scales with options including: “Strongly disagree,” “Disagree,” “Neither agree nor disagree,” “Agree,” or “Strongly Agree.” These items were developed based on best practices and issues that have been reported from non-normative hearing patients, specifically regarding their memories of provider interactions when they were children (Sheppard, 2014), and based on expert review. The range of the full scale was 9 to 45 with higher scores being indicative of greater capability for best practice behaviors when interacting with children with non-normative hearing. Cronbach’s alpha for the behavioral capability scale was 0.89.

Outcome expectations were assessed through the development of eight questions that were rated on traditional 5-point Likert scales. Response options were “Strongly disagree,” “Disagree,” “Neither agree nor disagree,” “Agree,” or “Strongly Agree.” These items were based on issues from previous qualitative research on childhood interactions with physicians (Sheppard, 2014), and expert review (see Appendix D). The range of this scale was 8 to 40 with
higher scores being indicative of more positive expected outcomes for a general visit with a non-normative hearing child. Cronbach’s Alpha for the scale of outcome expectations was 0.84.

In describing interactions with non-normative hearing children, pediatricians reported their main point of contact during appointments by selecting from the following options: “child/patient”, “parent”, “interpreter”, and “other”. Multiple options could be selected. Most frequent responses guided the recoding of the responses and included categories of parent and interpreter, interpreter only, child and parent, and parent only. Differences in age of the non-normative hearing patients most often seen was assessed with options of “birth-2 years”, “3 years-5 years”, “6 years-8 years”, “9 years-10 years”, and “10 years or older.” To assess exposure to non-normative hearing children a multiple choice item and one open-ended item were developed. Lifetime exposure over the course of the pediatrician’s practice was an open-ended item and read, “On average, how many non-normative hearing patients have you encountered during your time as a pediatrician?” Frequency of exposure to non-normative hearing patients was captured with the options of “Never,” “Once a month or less,” “Once a week,” “2-3 times a week,” “4-6 times a week,” and “Every day.” Due to the low number of responses at the higher end of the frequency item, this item was re-coded for analysis into 3 options – “never,” “once a month or less,” and “once a week or more.”

The dependent variable for this paper was physicians’ preferred communication style. Preferred communication style was measured as a multiple choice item including the following options: “American sign language (ASL),” “Pidgin signed English (PSE),” “signing exact English (SEE),” “speech reading/lip reading,” “written communication,” “telephone-based interpretation services,” “none,” and “other” as an open-ended response. These options were developed by examining the literature on most common preferred communication methods.
among non-normative hearers (Kaskowitz et al., 2006; Mckee et al., 2015; Pollard & Barnett, 2009; Sheppard, 2014; Steinberg et al., 2006; Zazove et al., 2013). For the analysis, this variable was coded into (a) speech reading/lip reading and (b) all other categories due to lack of variability.

Data Analysis

Descriptive statistics were run to determine frequencies and patterns among communication styles and differing characteristics of the sample. Scales were assessed for reliability using Cronbach’s alpha, and scales were required to have an alpha of .75 or higher (Lomax & Hahs-Vaughn, 2012). To address the research aim of preferred communication style association with self-efficacy, behavioral capability, outcome expectations, and exposure, multiple logistic regression was utilized. Statistical significance level for the regression model was set to $\alpha = .05$. Prior to analyses, it was decided that if any assumptions of logistic regression analysis were found to be violated a modified simpler analysis using re-coded sub-scales might be necessary (Lomax & Hahs-Vaughn, 2012).

RESULTS

Demographic Characteristics

Participants were on average 49.4 years old ($SD = 8.9$) and ranged between 33 and 66 years of age. Female respondents comprised 71.2% ($n = 284$) of the sample. Only 6.5% ($n = 26$) were Hispanic/Latino, 92.8% ($n = 360$) were white, 4.6% ($n = 18$) were black or African American, 1.8% ($n = 7$) were Asian, and 0.8% ($n = 3$) of respondents wrote in a response of other and included “Multiracial” or “More than one ethnicity.” Information regarding demographic information is presented in Table 1.
Regarding languages known, 100% of respondents (n = 399) indicated they spoke English. Only 4.3% (n = 17) reported knowing American Sign Language (ASL) and fewer knew spoken Spanish (2.5%, n = 9). No participants reported knowing Pidgin signed English (PSE) or signing exact English (SEE) nor wrote in responses of any other languages. Average time being a licensed practitioner was 15.7 years (SD = 7.5), with a range from 1 to 34 years. A majority of respondents worked in a clinical care setting (84.7%, n = 338) with the remaining 14.2% (n = 56) working in private practice. Finally, 69.2% (n = 276) reported working in a metropolitan setting, 23.8% (n = 95) working in an urban setting, and only 5.8% (n = 23) reported working in a rural setting.

**Interactions with Non-Normative Hearing Patients**

The average number of patients with non-normative hearing seen by a pediatrician during their life-time practicing was 4,253.09 (SD = 55,196.5) with a range from 0 to 999,999. However, when removing the upper 10 outliers, the average number of non-normative hearing patients seen was 38.7 (SD = 9.3) with a range of 0 to 4,000. A majority of respondents had very infrequent interaction with non-normative hearing children, 66.5% (n = 264) interacting once a month or less with these patients and 19.8% (n = 79) never interacting with these patients. Only 12 (3%) of respondents had interaction with non-normative hearing children every day.

Regarding who the pediatricians most often directly spoke to during a visit with a non-normative hearing child, 75.4% (n = 301) spoke directly to the parent and/or interpreter, 10.5% (n = 42) spoke only to the interpreter, only 9.3% (n = 37) spoke to the parents and/or child, and 4.8% (n = 19) spoke only to the parent. No respondents indicated speaking only to the child. The most
common age groups that pediatricians saw with non-normative hearing was 3 to 5 years old (63.9%, n = 255) and birth to 2 years old (17.3%, n = 69). Exactly 9% (n = 36) saw 6 to 8 year olds most often, and 4.8% (n = 19) saw 10 year olds and older most often. No respondents reported 9 to 10 year olds as the most common age group seen of their non-normative hearing patients. These characteristics are summarized in Table 2.

Insert Table 2 here

**Preferred Communication Style**

Preferred communication style was overwhelmingly speech reading/lip reading with 80.7% (n = 322) of participants preferring this method. In examining the remaining options, 12.5% (n = 50) responded with a preferred communication of “none,” 4.3% (n = 17) responded with ASL being most preferred, 2.3% (n = 9) of respondents wrote in responses such as “English,” “Talking,” or “Working it out,” and only 1 respondent (0.3%) preferred telephone-based interpretation services.

**Constructs of Social Cognitive Theory**

Average self-efficacy score for participants was 51.5 (SD = 7.8) out of a possible 65. Self-efficacy items included a stem to be used for every item at the beginning of the section stating “Regarding non-normative hearing patients, I am confident that I can…” Examples of individual items include, “convey effectively to the patient what next steps they should take regarding the patient’s treatment” (M = 3.01, SD = 1.45), “complete assessment of each patient” (M = 4.3, SD = 0.7), and “obtain information from the patient’s parent regarding the patient’s symptoms” (M = 4.3, SD = 0.7). Individual item means and standard deviations are summarized in Table 3.
Insert Table 3 here

Regarding the behavioral capability items, average score was 26.7 (SD = 6.3) out of a possible 45. Individual items include examples such as, “When interacting with non-normative hearing patients, I engage them on a personal level (non-treatment related topics) at the beginning of the visit” (M = 3.8, SD = 0.8), and “When interacting with non-normative hearing patients, I am mindful that conversations among non-normative hearing individuals tend to be more engaging near the end of a visit” (M = 1.7, SD = 0.9). Table 4 displays individual item means and standard deviations for this scale.

Insert Table 4 here

In examining the outcome expectations scores, the average was 26.7 (SD = 5.6) out of a possible 40. Examples of individual items include, “At the end of a visit, I expect a non-normative hearing patient to be satisfied with his/her visit,” (M = 3.8, SD = 0.6) and “I expect my non-normative hearing patient to not be alarmed by me touching him/her during an examination” (M = 3.7, SD = 0.7). Table 5 displays individual items and mean scores for each. Additionally, group means for each of the 3 construct scales described above are displayed in Table 6.

Insert Tables 5 and 6 here

**Logistic Regression**

For the logistic regression model, we assume linearity between the predictors and the logit of the dependent variable, non-collinearity, and independence of errors (Lomax & Hahs-Vaughn, 2012). Assumptions were checked and met for the model. Good model fit was evidenced by statistically significant results of the omnibus test of model coefficients ($\chi^2$ [9, N =
377] = 297.57, p < .001), non-statistically significant results on the Hosmer-Lemeshow test ($\chi^2 = 9.2, p = .33$), and large effect size index when interpreting Cox and Snell $R^2 = .55$. Table 7 presents results for the model.

Insert Table 7 here

In examining demographic variables, women in this sample were less likely to prefer speech/lip reading than compared to men (OR = 0.2, $p = 0.04$). Non-white respondents were more likely to prefer speech/lip reading compared to white respondents (OR = 2.3, $p = 0.005$). Those in a clinical care setting were more likely to prefer speech/lip reading when compared to those in private practice (OR = 13.05, $p < 0.001$). Also as years practicing increased, odds for preferring lip/speech reading also increased (OR = 1.21, $p = 0.005$).

Within this model, self-efficacy was not found to be statistically significant. Those reporting higher scores for behavioral capability were less likely to prefer speech/lip reading (OR = 0.6, $p < 0.001$), those reporting higher outcome expectations were more likely to prefer speech/lip reading (OR = 2.02, $p < 0.001$), and those reporting higher levels of exposure also were more likely to prefer speech/lip reading (OR = 3.1, $p < 0.001$, See Table 7).

DISCUSSION

In describing the most preferred communication style among pediatric care providers when interacting with non-normative hearing patients, speech reading or lip reading was the most preferred method. Only 4.3% of this study’s population preferred ASL, the communication style which the literature describes as the most preferred method from the adult patient perspective (Meador & Zazove, 2005; Ralston et al., 1996). It may be the case that Pidgin Signed English and Signing Exact English were language options too esoteric for a general population of
pediatricians not specifically specializing in non-normative hearing patients. The 4.3% of pediatricians that preferred ASL matches exactly with the percentage of pediatrician’s who reported knowing ASL (4.3%), possibly indicating that every pediatrician who knew this style also preferred it. This 4.3% who knew ASL in the study is a similarly low percentage to past studies identifying only 7% of practitioners knowing that people who are deaf use a specific language to communicate (Ebert & Heckerling, 1995). Overall, the findings indicate that there is still a substantial need for educating pediatricians about other methods of communication, such as signing, that they could be utilizing when interacting with non-normative hearing children. Additionally, the findings indicate pediatricians may need more education around interacting with children who have none-normative hearing, with only 9.3% interacting with the parent and the child and no other responses including the child. This finding matches the literature on adults with non-normative hearing retrospectively remembering negative experiences, such as being confused during the visit, during childhood (Meador & Zazove, 2005; Ralston et al., 1996). By increasing programing for pediatricians that focuses on teaching them to interacting with children who have non-normative hearing, pediatricians may be able to increase positive experiences for these children, increasing future visits and possibly resulting in increased utilization of health care services and potentially better health outcomes.

Variables from SCT (Bandura, 2001) predicted communication style. For example, behavioral capability was found to be statistically significant in the model illustrating that as pediatricians’ perceptions of their behavioral capability of interacting with this population increased, preference for speech/lip reading decreased. The fact that preferring speech/lip reading is negatively associated with behavioral capability intuitively makes sense as it could be the case that as capabilities to communicate increase, preference for signing or a more
compatible communication style with the population increases. This suggests that programming focused on educating pediatricians about different forms of communication may be beneficial as it may increase their perceived behavioral capabilities in interacting with these children.

Outcome expectations were also found to be statistically significant in the model illustrating that as outcome expectations for a positive visit increased, the preference for speech/lip reading increased. Keeping in mind that physicians report difficulties in communicating with deaf patients and feel conversations are less free-flowing (Ralston et al., 1996), speech/lip reading could be an avenue by which these difficulties could be overcome. Speech/lip reading, while not preferred by adult patients with non-normative hearing, may yet have some utility in improving the overall interaction between pediatrician and child by way of this communication method leading to better expectations on the part of the pediatrician. Future studies will want to focus on if this preferred communication method, and the associated perception of increased positive outcome expectations, is also observable from the perspective of children with non-normative hearing as well.

Exposure to treating patients with non-normative hearing was positively associated with preferring the communication style of lip/speech reading. It is important to remember that signing is the most preferred method among non-normative hearing patients. Therefore, these results may run counter to the general understanding of exposure increasing culturally competent care for general providers (Harmer, 1999; Hoang et al., 2011). Interpreting these results in conjunction with the significance of outcome expectations suggests that pediatricians may behave in a manner that makes the conversation more comfortable for them, but not necessarily more comfortable for the child. Further research and theory development should focus on the impact of exposure and the implications for children with non-normative hearing.
Additionally, self-efficacy in treating a patient with non-normative hearing was not found to be associated with any difference in communication preference. This may be representative of the pediatrician not connecting communication to treatment. Taking into account past studies that have pointed out how few practitioners know that people who are deaf use a specific language to communicate or have normal intelligence (Ebert & Heckerling, 1995), it could be the case that pediatricians do not make a connection between confidence in treatment and choosing a particular communication style with this population. If this is the case, further education of pediatricians will remain important to the field of health, wellness, and medicine.

Women were less likely to prefer speech/lip reading, and non-white respondents were more likely to prefer speech/lip reading. Thus, the aforementioned factors may be associated with pediatrician’s behaviors, such that women and pediatricians who are white may be likely to select a communication style other than speech/lip reading. Programming may take into account that pediatricians with the aforementioned characteristics may be more receptive to programming around signing or non-speech/lip reading methods of communication. Interestingly, those with more years practicing also preferred speech/lip reading while age was not a significant factor. This indicates that perhaps time spent practicing somehow encourages pediatricians to prefer this communication style. Future longitudinal studies will be necessary to explore this possibility.

Those in a clinical care setting were significantly more likely to prefer speech/lip reading when compared to private practice. This finding indicates that those in private practice were much more likely to prefer options of communication other than lip/speech reading. As such, private practice is a possible point of contact for implementation of new health education programming. If individuals working in that setting are already more likely to prefer methods
outside of speech and lip reading, health educators may find a population already willing to engage with non-normative hearing children in unique or different ways.

**Limitations**

While this study has many strengths, various limitations should be noted when interpreting these findings. First, this study does not assess all aspects of SCT which means other constructs within the theory may have a spurious relationship to the results we have observed. It should be noted that while assessing additional aspects of social cognitive theory, such as self-observation, self-evaluation, and self-reaction, may be of interest to future studies of pediatricians, doing so often requires observational studies and ideally sequential observations. Second, the current study was a cross-sectional exploration of pediatricians, which is strong for assessing prevalence but can only infer incidence or temporal association.

Third, this study evaluated data from pediatricians’ self-reporting which can include such weaknesses as recall bias and image management/socially desirable responses (Babbie, 2007). It is also important to consider that there may have been selection bias due to the sample being obtained from only one national organization. Individuals outside of that organization may be significantly different from this sample in some unknown way, and their likelihood to participate in such a study may vary in a similar manner.

Concerning the dissonance of non-normative hearing patients preferred communication style and the preference of pediatricians, it should be noted that preference for communication may have a connection to quality of care, resulting in pediatricians choosing a communication method that results in perceived better expected care outcomes rather than a preference that is merely in line with the population of interest. It is also important to consider that recall bias or
socially desirable responses could be resulting in pediatricians self-reporting overly positive outcome expectations or behavioral capability. That is to say, positive outcomes recalled by the pediatricians may be different than how the children recall the visit.

Conclusions

This study illustrates that health education programming for pediatricians is needed to educate them around communication options beyond speech reading or lip reading. Those who are female, white, or new to the field may be potential in-roads or interested audiences for health education programming regarding communication style preferences outside of speech/lip reading. High preference for speech/lip reading suggested that pediatricians value being able to communicate with patients which may be another possible factor to emphasize when transmitting information about the importance of using language preferences for interacting with patients with non-normative hearing, particularly given the positive association with speech/lip reading and more positive outcome expectations on the part of pediatricians. Overall, the constructs of SCT show potential for explaining pediatrician preference of speech/lip reading, particularly when considering their self-reported behavioral capability, outcome expectations, and exposure. Future research should focus on the impact of exposure and years practicing on communication style as well as the possible discordant association of positive outcome expectations being associational with preferring non-signing communication.
REFERENCES


Dawes, J. (2008). Do data characteristics change according to the number of scale points used? An experiment using 5-point, 7-Point and 10-point scales. *International Journal of Market Research, 50,* 61-77.


### TABLE 1

**Descriptive statistics for demographic variables (n = 399)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>$n$</th>
<th>Valid %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>284</td>
<td>71.5</td>
</tr>
<tr>
<td>Male</td>
<td>113</td>
<td>28.5</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>374</td>
<td>93.5</td>
</tr>
<tr>
<td>Hispanic</td>
<td>26</td>
<td>6.5</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>360</td>
<td>92.8</td>
</tr>
<tr>
<td>African American</td>
<td>18</td>
<td>4.6</td>
</tr>
<tr>
<td>Asian</td>
<td>7</td>
<td>1.8</td>
</tr>
<tr>
<td>More than one race</td>
<td>3</td>
<td>0.7</td>
</tr>
<tr>
<td>Native Hawaiian</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Native American</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Alaska Native</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Languages Spoken</strong>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spoken English</td>
<td>394</td>
<td>100</td>
</tr>
<tr>
<td>American Sign–Language</td>
<td>17</td>
<td>4.3</td>
</tr>
<tr>
<td>Spoken Spanish</td>
<td>10</td>
<td>2.5</td>
</tr>
<tr>
<td>Signing Exact English</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pidgin Signed English</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Practice setting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Care</td>
<td>338</td>
<td>84.7</td>
</tr>
<tr>
<td>Private Practice</td>
<td>56</td>
<td>14.2</td>
</tr>
<tr>
<td>Community Practice</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Group Medical Practice</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Geographic Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metropolitan</td>
<td>276</td>
<td>69.1</td>
</tr>
<tr>
<td>Urban</td>
<td>95</td>
<td>23.8</td>
</tr>
<tr>
<td>Rural</td>
<td>23</td>
<td>5.7</td>
</tr>
<tr>
<td><strong>Variable</strong></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Age</td>
<td>49.4</td>
<td>8.9</td>
</tr>
<tr>
<td>Years Licensed</td>
<td>15.6</td>
<td>7.5</td>
</tr>
<tr>
<td>Graduation Year</td>
<td>2001.4</td>
<td>8.2</td>
</tr>
</tbody>
</table>

*Note.* * indicates more than one option accepted for item.
Table 2

*Interactions with non-normative hearing patients (n = 399)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Valid %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency of Non-Normative</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hearing Children Seen</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once a month or less</td>
<td>264</td>
<td>66.4</td>
</tr>
<tr>
<td>Never</td>
<td>79</td>
<td>19.8</td>
</tr>
<tr>
<td>2-3 times a week</td>
<td>39</td>
<td>9.8</td>
</tr>
<tr>
<td>Every day</td>
<td>12</td>
<td>3.0</td>
</tr>
<tr>
<td>Once a week</td>
<td>5</td>
<td>1.3</td>
</tr>
<tr>
<td>4-6 times a week</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Preferred Communication</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speech Reading/Lip reading</td>
<td>322</td>
<td>80.7</td>
</tr>
<tr>
<td>None</td>
<td>50</td>
<td>12.5</td>
</tr>
<tr>
<td>American Sign-Language</td>
<td>17</td>
<td>4.3</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>2.3</td>
</tr>
<tr>
<td>Telephone-based</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Written Communication</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pidgin Signed English</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Signing Exact English</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Directly speak to...</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent and Interpreter</td>
<td>301</td>
<td>75.4</td>
</tr>
<tr>
<td>Interpreter only</td>
<td>42</td>
<td>10.5</td>
</tr>
<tr>
<td>Child and Parent</td>
<td>37</td>
<td>9.3</td>
</tr>
<tr>
<td>Parent only</td>
<td>19</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Age group most often seen</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-5 years old</td>
<td>255</td>
<td>63.9</td>
</tr>
<tr>
<td>Birth – 2 years old</td>
<td>69</td>
<td>17.3</td>
</tr>
<tr>
<td>6-8 years old</td>
<td>36</td>
<td>9</td>
</tr>
<tr>
<td>10 and older</td>
<td>19</td>
<td>4.8</td>
</tr>
<tr>
<td>9-10 years old</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>M</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Non-Normative Hearing Patients seen (lifetime) | 4,253.1 | 55,196.5 |
### Table 3

**Individual self-efficacy items**

<table>
<thead>
<tr>
<th>Item</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convey effectively to the parent what next steps they should take regarding the patient’s treatment</td>
<td>4.34</td>
<td>0.68</td>
</tr>
<tr>
<td>Complete assessment of each patient I encounter</td>
<td>4.33</td>
<td>0.65</td>
</tr>
<tr>
<td>Obtain information from the patient’s parent regarding the patient’s symptoms</td>
<td>4.31</td>
<td>0.68</td>
</tr>
<tr>
<td>Complete treatment of each patient I encounter</td>
<td>4.28</td>
<td>0.64</td>
</tr>
<tr>
<td>Discuss with the parents any details of their child’s treatment</td>
<td>4.27</td>
<td>0.76</td>
</tr>
<tr>
<td>Provide parents one-on-one education about their child’s visit/treatment</td>
<td>4.24</td>
<td>0.62</td>
</tr>
<tr>
<td>Obtain information directly from the patient’s parent regarding the reason for their visit</td>
<td>4.20</td>
<td>0.66</td>
</tr>
<tr>
<td>Obtain information directly from the patient regarding their symptoms</td>
<td>3.91</td>
<td>0.85</td>
</tr>
<tr>
<td>Teach the patient about behavioral messages that will increase their health</td>
<td>3.83</td>
<td>1.05</td>
</tr>
<tr>
<td>Obtain information directly from the patient regarding their symptoms</td>
<td>3.81</td>
<td>1.05</td>
</tr>
<tr>
<td>Teach the patient about behavioral skills that will increase their health</td>
<td>3.71</td>
<td>1.05</td>
</tr>
<tr>
<td>Effectively use an interpreter or translator for a non-normative hearing patient during their visit</td>
<td>3.21</td>
<td>1.37</td>
</tr>
<tr>
<td>Convey effectively to the patient what next steps they should take regarding their treatment</td>
<td>3.01</td>
<td>1.45</td>
</tr>
</tbody>
</table>

*Note.* Stem for each item = “Regarding non-normative hearing patients, I am confident that I can…” Possible range for each item was 1 (strongly disagree) to 5 (strongly agree).
Table 4

*Individual behavioral capability items*

<table>
<thead>
<tr>
<th>Item</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>When interacting with non-normative hearing patients I engage them on a personal level (non-treatment related topics) at the beginning of the visit</td>
<td>3.84</td>
<td>0.82</td>
</tr>
<tr>
<td>I have strong non-verbal communication skills when communicating with non-normative hearing children. (Body language or facial expressions would be examples of non-verbal communication)</td>
<td>3.61</td>
<td>1.04</td>
</tr>
<tr>
<td>When interacting with non-normative hearing patients I match my facial expressions to the emotion/tone I am attempting to convey with my words</td>
<td>3.60</td>
<td>0.71</td>
</tr>
<tr>
<td>When interacting with non-normative hearing patients I ensure the patient is aware of what I am about to do before I approach them</td>
<td>3.39</td>
<td>0.97</td>
</tr>
<tr>
<td>When interacting with non-normative hearing patients I ensure the patient is aware of what I am about to do before I touch them</td>
<td>3.34</td>
<td>1.04</td>
</tr>
<tr>
<td>When interacting with non-normative hearing patients I will often explain to them any side conversations I have with their parents or family members</td>
<td>2.51</td>
<td>1.01</td>
</tr>
<tr>
<td>When communicating with a non-normative hearing child patient, I always communicate directly with the child</td>
<td>2.50</td>
<td>1.11</td>
</tr>
<tr>
<td>When interacting with non-normative hearing patients I engage them on a personal level (non-treatment related topics) near the end of the visit</td>
<td>2.10</td>
<td>0.88</td>
</tr>
<tr>
<td>When interacting with non-normative hearing patients I am mindful that conversations among non-normative hearing individuals tend to be more engaging near the end of a visit.</td>
<td>1.77</td>
<td>0.86</td>
</tr>
</tbody>
</table>

*Note.* Possible range for each item was 1 (strongly disagree) to 5 (strongly agree).
Table 5

*Individual outcome expectation items*

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the end of a visit, I expect a non-normative hearing patient to be satisfied with his/her visit.</td>
<td>3.83</td>
<td>0.64</td>
</tr>
<tr>
<td>I expect my non-normative hearing patient to not be alarmed by me touching him/her during an examination</td>
<td>3.78</td>
<td>0.79</td>
</tr>
<tr>
<td>I expect my non-normative hearing patient to not be alarmed by me approaching him/her during an examination</td>
<td>3.75</td>
<td>0.74</td>
</tr>
<tr>
<td>I expect my non-normative hearing patients to leave their visit feeling like I addressed them directly</td>
<td>3.26</td>
<td>1.33</td>
</tr>
<tr>
<td>I expect the parents of any non-normative hearing child to call my place of practice if they have any questions or concerns post-visit</td>
<td>3.24</td>
<td>1.04</td>
</tr>
<tr>
<td>At the conclusion of a visit, I anticipate that a non-normative hearing patient will have felt included in all conversations</td>
<td>3.17</td>
<td>1.06</td>
</tr>
<tr>
<td>I expect the parents of my non-normative hearing patients to be able to effectively follow all care instructions</td>
<td>3.12</td>
<td>1.13</td>
</tr>
<tr>
<td>I expect my non-normative hearing patient to be able to effectively follow all care instructions</td>
<td>2.57</td>
<td>1.24</td>
</tr>
</tbody>
</table>

*Note.* Possible range for each item was 1 (strongly disagree) to 5 (strongly agree).
Table 6

Scale mean scores

<table>
<thead>
<tr>
<th>Scale</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Capability</td>
<td>26.63</td>
<td>6.29</td>
</tr>
<tr>
<td>Outcome Expectations</td>
<td>26.72</td>
<td>5.63</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>51.53</td>
<td>7.85</td>
</tr>
</tbody>
</table>

*Note.* Possible range of Behavioral Capability: 9 to 45. Outcome Expectations: 8 to 40. And Self-Efficacy: 13 to 65.
Table 7

Logistic regression results for preferred communication style

<table>
<thead>
<tr>
<th></th>
<th>( b )</th>
<th>( SE )</th>
<th>O.R.</th>
<th>( p )</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>-1.66</td>
<td>0.82</td>
<td>0.19</td>
<td>0.043</td>
<td>(0.04, 0.95)</td>
</tr>
<tr>
<td>Age</td>
<td>0.09</td>
<td>0.05</td>
<td>1.09</td>
<td>0.084</td>
<td>(0.99, 1.21)</td>
</tr>
<tr>
<td>Race</td>
<td>0.84</td>
<td>0.30</td>
<td>2.31</td>
<td>0.005</td>
<td>(1.28, 4.16)</td>
</tr>
<tr>
<td>Year Practicing</td>
<td>0.19</td>
<td>0.07</td>
<td>1.21</td>
<td>0.005</td>
<td>(1.06, 1.37)</td>
</tr>
<tr>
<td>Practice setting</td>
<td>2.57</td>
<td>0.40</td>
<td>13.05</td>
<td>&lt;.001</td>
<td>(5.93, 28.74)</td>
</tr>
<tr>
<td>Behavioral Capacity</td>
<td>-0.54</td>
<td>0.11</td>
<td>0.58</td>
<td>&lt;.001</td>
<td>(0.47, 0.72)</td>
</tr>
<tr>
<td>Outcome Expectations</td>
<td>0.70</td>
<td>0.16</td>
<td>2.02</td>
<td>&lt;.001</td>
<td>(1.49, 2.73)</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>-0.47</td>
<td>0.07</td>
<td>0.95</td>
<td>0.477</td>
<td>(0.84, 1.09)</td>
</tr>
<tr>
<td>Exposure</td>
<td>1.14</td>
<td>0.67</td>
<td>3.11</td>
<td>&lt;.001</td>
<td>(0.84, 11.55)</td>
</tr>
</tbody>
</table>

*Note.* Cox & Snell \( R^2 = .55 \)
Paper 2: Predisposing Psychological Factors Underlying Communication between Pediatricians and Non-normative Hearing Patients and the Impact on Pediatrician’s Perceived Quality of Care
INTRODUCTION

Extensive research has shown that people with non-normative hearing, those who are d/Deaf, hard of hearing or hearing impaired, have substantially poorer health outcomes than those with normative hearing (Barnett, 2002; Herring & Hock, 2000; Hines, 2000; Mackinney, Walters, Bird, & Nattinger, 1995; Ries, 1994; Zazove, Niemann, & Gorenflo, 1993). Being a patient with non-normative hearing has been linked to higher hospital admission rates, increased hospital testing, misdiagnosis, and improper treatment (Barnett, 2002; Flores, Rabke-Verani, Pine, & Sabharwal, 2002; Meunch, Verdieck, Lopez-Vasquez, & Newell, 2001). Related to these poor health outcomes, people with non-normative hearing may make fewer visits to health care providers (Barnett & Franks, 2002). More recent research has suggested that these less frequent visits often have a connection to negative experiences during early childhood when healthcare practitioners are first interacting with the patient (Sheppard, 2014).

Effective communication among patient and healthcare provider is vital, and has implications for various aspects of healthcare utilization for child patients later in life regarding medication adherence (Hogg & Holland, 2001) and decisions about treatment (Jones, Renger, & Kang, 2007). Non-verbal communication has been shown to be important in patient-provider communication, with aspects such as eye contact and approachable non-verbal communication being positively correlated with patient satisfaction (Schmid-Mast, 2007). Cultural differences among non-normative hearing patients can impact communication between patient and provider, such as non-normative hearers being averse to physical contact when they are unaware of preceding verbal cues that go unheard or the social norms surrounding side conversations (Meador & Zazove, 2005). These miscommunications and negative experiences can have
profound influences on non-normative hearing children that negatively impact their perception of providers and the healthcare system later in life (Sheppard, 2014). Therefore, there is a need to examine the communication methods of pediatricians in relation to their interactions with children with non-normative hearing status. Specifically there is a gap in the literature regarding theory based, in-depth explorations of the factors that influence the interactions between pediatric providers and non-normative hearing children (Sheppard, 2014).

When examining interpersonal communications, research has shown physician personality typologies or traits to have an impact on patient outcome (Carmel & Seymour, 1996; Gramstad, Gjestad, & Haver, 2013). The five factor trait model, or big five trait model, is a framework that examines behavior and underlying motivations of the human psyche particularly when it comes to social interactions and behavior (Costa & McCrae, 1992; Goldberg, 1993). In this model, five main traits are utilized to assess aspects of personality (Goldberg, 1993). The five factors are openness, conscientiousness, extraversion, agreeableness, and neuroticism.

Openness can be described as willingness to experience new stimuli or think up novel ideas. Conscientiousness can be summarized as the ability to pay close attention to details and rules as well as having an affinity for order (Carmel & Seymour, 1996; Costa & McCrae, 1992; Goldberg, 1993; Gramstad et al., 2013; Sievert, Zwir, Cloninger, Lester, Rozsa, & Coloninger, 2016). In a healthcare setting, personality traits have been shown to impact a physician’s choice of practice type; with pediatricians reporting higher openness and conscientiousness on average, having tendencies towards more novel experiences but also more orderly routines (Sievert et al., 2016). Extraversion is the sociability aspect of personality. Agreeableness is the factor related to getting along with others and sympathizing, and neuroticism is the propensity for feeling negative emotions (Carmel & Seymour, 1996; Costa & McCrae, 1992; Goldberg, 1993;
Gramstad et al., 2013; Sievert et al., 2016). Literature has reported that healthcare providers with high ratings of agreeableness have more satisfaction in the work place that can, in turn, lead to better patient interaction (Carmel & Seymour, 1996). High levels of physician agreeableness, in addition to openness, have been linked to better patient care as well (Gramstad et al., 2013). While research demonstrates that personality typologies or traits have an impact on physicians’ care of their patients, no studies have focused on non-normative hearing populations and how differences in personality traits may impact a physician’s communication with this specific population during childhood.

In addition to psychological factors, it is necessary to include social and cognitive aspects of communication. Social Cognitive Theory (SCT) is a theory that specifically looks at behavior as a result of environmental factors, personal factors and attributes of behavior itself (Bandura, 1977; Bandura, 2001; National Institute of Health, 1995). Self-efficacy, behavioral capability, outcome expectations, and exposure are components of SCT that have been shown to be pertinent to interactions within healthcare settings (Hogg & Holland, 2001; Jones et al., 2007; Lowenstein, Perrin, Campbell, Tate, Cai, & Ammerman, 2013). In non-normative hearing patient populations, constructs of SCT have been shown to influence medication adherence, the decision to move forward with treatment, and following of provider’s advice once the visit is over (Hogg & Holland, 2001; Jones et al., 2007; Lowenstein et al., 2013). As such, it is important to include these factors when assessing aspects of communication between pediatricians and patients with non-normative hearing.

The purpose of this research was to: 1) evaluate whether pediatricians’ predisposing psychological factors as well as self-efficacy, behavioral capability, outcome expectations, exposure and demographic variables were associated with their preferred communication style
regarding their interaction with non-normative hearing children, and 2) to assess whether pediatricians’ predisposing psychological factors were predictive of their perceived quality of care (PQoC) regarding their interaction with non-normative hearing children when controlling for behavioral capability, exposure, self-efficacy, outcome expectations, and demographic variables.

**METHODS**

**Participants and Procedures**

The University of Cincinnati Institutional Review Board granted approval for the current study (see Appendix A). A cross-sectional survey of pediatricians from the membership list of the Society for Adolescent Health and Medicine (SAHM) was utilized via e-mail. SAHM (2017) is a multidisciplinary organization committed to improving the physical and psychosocial health and well-being of all adolescents through clinical care, health promotion, health service delivery, professional development and research. SAHM consists of 17 regional chapters including all 50 states in the United States of America. Their member list includes national health care professionals that demonstrate interest in traditional care as well as the psycho-social aspects of the study (SAHM, 2017). Pediatricians, as a population, are appropriate to sample within SAHM for this study due to the fact that pediatricians rarely treat only adolescents and often treat children from birth through adolescence. The initial e-mails were sent in July 2017 (see Appendix B) using Qualtrics Research Core as the distribution method via Northern Kentucky University’s partnership agreement with Qualtrics. Participants reviewed an electronic information form before viewing study questions (see Appendix C). Recruitment occurred for four weeks. A reminder e-mail was sent a week and a half into the recruitment period to all participants. However, the link provided for each e-mail address could only be used once. The e-
mails were sent to 872 pediatricians from the member list with 409 individuals completing the survey, resulting in an overall response rate of 46.9%. Of the 409 respondents, 10 (2.4%) were removed due to participants not practicing as pediatricians. Therefore, the total number of participants included in the analyses was 399. These participants, as well as the survey instrument, were used for a separate manuscript focused on pediatricians’ preferred communication style with non-normative hearing children in relation to constructs of self-efficacy, behavioral capability, outcome expectations, and exposure.

The sample for this study was from a national pediatric professional organization and not from a broad national sample. According to the United States Department of Labor’s Bureau of Labor Statistics (2017), there are roughly 26,960 pediatricians employed in the United States. To obtain statistical inference for a conservatively estimated national pediatric population of 27,000, a sample size of 379 nation-wide participants is needed. This was calculated utilizing a 95% confidence level with a 5% sampling error and a 50% response distribution (Lomax & Hahs-Vaughn, 2012) and operates under the assumption that the population is distributed in the same manner as the sample.

According to the American Academy of Pediatrics (2016), women comprise 56% of pediatricians in 2016, with a median age of 46. The American Board of Pediatrics does not have a public publication on national race/ethnicity. However the Bureau of labor statistics indicates that for physicians, 7.5% are black or African American, 19.3% are Asian, and 5.9% are Hispanic/Latino (United States Department of Labor, 2016). For this study, women were overrepresented in the sample. Age was representative of the national median. Black/African Americans and Asian individuals were underrepresented. And Hispanic/Latino individuals were representative of the population.
Instrument

An electronic survey with 82 items (Appendix D) was developed to determine pediatricians preferred communication style with non-normative hearing children and PQoC as well as personality traits, SCT constructs, and demographic characteristics. As mentioned in the participants and procedures section, this survey instrument was used for a separate manuscript focused on pediatricians’ preferred communication style with non-normative hearing children in relation to constructs of self-efficacy, behavioral capability, outcome expectations, and exposure. A definition of non-normative hearing patients was included at the beginning of the survey stating; “For the purpose of this survey, the term ‘Non-normative hearing patient’ refers to any patient who is Deaf (meaning part of the Deaf community) deaf (strictly in the medical sense) or hard of hearing (see Appendix D).” The survey was divided into 7 sections: (1) interactions with non-normative hearing children (including exposure to non-normative hearing patients), (2) self-efficacy in treating this population, (3) behavioral capability for interacting with this population, (4) outcome expectations for a visit with a non-normative hearing patient, (5) perceived quality of care (PQoC) for non-normative hearing children, (6) five factor trait constructs, and (7) demographic variables.

The independent variables for this study included demographic variables, self-efficacy, behavioral capability, outcome expectations, exposure, openness, contentiousness, extraversion, agreeableness, and neuroticism. Demographic variables were sex, age, race, ethnicity, years practicing, and type of practice. Sex, race and ethnicity, and type of practice were represented by multiple choice items. Age and years practicing were included using 2 open-ended items (see Appendix D). For the purposes of all analyses, race was recoded into non-white and white in
order to account for the lack of variability in the sample. In addition, ethnicity was excluded from analysis due to lack of variability.

The 13-item scale for self-efficacy in treating childhood patients with non-normative hearing was modified from existing items from the Shared Decision-Making Inventory-Revised (SDMI-R) instrument (Bartlett & Peterson, 2013). Items were identified from the SDMI-R as being pertinent to treating non-normative hearing patients and were modified to specifically address this population (see Appendix D). When modifying these items, traditional Likert scales were used (Carifio & Rocco, 2007; Dawes, 2008; Likert, 1932). Response options were “Strongly disagree,” “Disagree,” “Neither agree nor disagree,” “Agree,” or “Strongly Agree.” Upon expert review of the survey instrument by four pediatricians, additional items were added to this scale to further clarify the construct of self-efficacy in a pediatric care setting. Range for the full thirteen-item scale was 13 to 65 with higher scores indicating greater self-efficacy in effectively treating this population. Cronbach’s alpha score for the scale of self-efficacy was 0.86.

The behavioral capability items were comprised of nine 5-point Likert items. Response options were “Strongly Disagree,” “Disagree,” “Neither agree nor disagree,” “Agree,” or “Strongly Agree” (see Appendix D). These items were developed based on issues that have been reported from non-normative hearing patients, specifically regarding their memories of provider interactions when they were children (Sheppard, 2014) and from expert review of the survey. The range of the scale was 9 to 45 with higher scores indicating greater capacity for best practice behaviors. Cronbach’s alpha for the behavioral capability scale was 0.89.
Development of traditional 5-point Likert items were used to measure the eight outcome expectation items and were again based on issues from previous qualitative research on childhood interaction with physicians (Sheppard, 2014) as well as expert review (see Appendix D). Response options were “Strongly Disagree,” “Disagree,” “Neither agree nor disagree,” “Agree,” or “Strongly Agree.” Range of this scale was 8 to 40 with higher scores being indicative of more positive expected outcomes for a general visit. Cronbach’s Alpha for the scale of outcome expectations was 0.84.

To assess exposure to non-normative hearing children in this study, one multiple choice items was used. Exposure, operationalized in this study as the frequency of interactions, was captured with the options of “Never,” “Once a month or less,” “Once a week,” “2-3 times a week,” “4-6 times a week,” and “Every day.” Due to the low number of responses at the higher end of the frequency item, this item was re-coded for analysis into 3 options – “never”, “once a month or less”, and “once a week or more”. While lifetime exposure was captured using this same survey to address descriptive aims for a different paper, all analyses in this paper operationalize exposure using the categories described above.

The assessment of personality factors within the five factor trait model were formed utilizing existing items from the International Personality Item Pool (Donnellan, Oswald, Baird, & Lucas, 2006). Twenty-five items were chosen from the thousands of items in the International Personality Item Pool utilizing the Abridged B5 factor models in the Mini-IPIP scales developed by Donnellan et al. as a guide for selection of items (Donnellan et al., 2006). These items can be seen on the “Big Five Trait Theory / Psychological Factor Scale” (see Appendix D) and have been coded to signify categories of openness, consciousness, extraversion, agreeableness, and neuroticism. Each of these five scales have a range of 5 to 25 with higher scores indicating
higher levels of the specific trait. For example, a score of 25 in openness would indicate the highest possible score for this trait. Results show the value for any reverse coded item after it has been recoded. For example, the reverse coded item, “I am rarely stressed” has a value of $M = 3.8$ indicating a relatively high score and thus low reporting of feeling stressed via this one item.

Cronbach’s alpha was conducted for each scale: openness was 0.94, agreeableness was 0.87, conscientiousness was 0.87, neuroticism was 0.86, and extraversion was 0.79.

The dependent variable for Aim 1 was preferred communication style. Preferred communication style was captured as a multiple choice item including options of “American sign language (ASL),” “Pidgin signed English (PSE),” “signing exact English (SEE),” “speech reading/lip reading,” “written communication,” “telephone-based interpretation services,” “none,” and “other” as an open ended response. These options were developed by examining the literature on most common preferred communication methods among non-normative hearers (Kaskowitz, Nakaji, Clark, Gunsauls, & Sadler, 2006; McKee, Paasche-Orlow, Winters, Fiscella, Zazove, Sen, & Pearson, 2015; Pollard & Barnett, 2009; Sheppard, 2014; Steinberg, Barnett, Meador, Wiggins, & Zazove, 2006; Zazove, Meador, Reed, & Gorenflo, 2013). For the logistic regression this variable was coded into (a) speech reading/lip reading and (b) all other categories due to speech/lip reading being the majority response.

The dependent variable for Aim 2 was PQoC. PQoC was assessed by a modified version of the 22-item quality of care scale (Haddad, Fournier, Machouf, & Yatara, 1998; Haddad, Fournier, & Potvin, 1998). As this scale has been previously modified for utilization with patient versus provider perception with high reliability (Abousi, 2015), the items are reasonable to use for capturing pediatricians perceptions of care. The modified scales for PQoC included 13 different 5-point Likert items, with response options of “Strongly agree,” “Agree,” “Neutral,”
“Disagree,” and “Strongly disagree.” The scale had a range of 13 to 65 with higher scores being indicative of higher PQoC. Cronbach’s alpha for this scale was 0.88.

**Data Analysis**

To address the first research aim, a multiple logistic regression model was used for the analysis. For all scales, Cronbach’s alpha reliability tests were required to have an alpha of .75 or higher (Lomax, Hahs-Vaughn, 2012). In order to address the second research aim, a hierarchical regression model was used. When considering the order of blocks for the hierarchical regression, the first block of entered variables was demographics. This provides a base-line of controlling for inherent demographic variables. The variables of self-efficacy, behavioral capability, outcome expectations, and exposure stand out as the most grounded and established constructs from previous literature, particularly when considering formal theory within the field of health education (Edberg, 2015; Goodson, 2010; National Institute of Health, 1995). Therefore, variables of self-efficacy, behavioral capability, outcome expectations, and exposure were included in the second block. Finally the third block was comprised of the five factor trait theory constructs in order to evaluate what value is added by including these factors in the model. Significance levels were set at $\alpha = .05$ for both research aims.

**RESULTS**

**Demographic Characteristics**

Average age for respondents was 49.4 years old ($SD = 8.9$) and ranged between 33 and 66 years of age. A majority of the sample were female (71.2%, $n = 284$). The sample was majority white (92.8%, $n = 360$), with only 4.6% ($n = 18$) being black or African American, 1.8% ($n = 7$) Asian, and 0.8% ($n = 3$) of respondents wrote in a response of “other” with such response as “Multiracial” or “More than one ethnicity.” Average number of years as a licensed
practitioner was 15.7 years, with a range from one to 34 years ($SD = 7.522$). Most reported working in a clinical care setting (84.7%, $n = 338$) and 14.2% ($n = 56$) of respondents reported working in private practice.

**Perceived Quality of Care**

For PQoC items, the average score was 44.59 ($SD = 5.954$) out of a possible 65. Some examples of individual items include, “In general, doctors within this facility are respectful of these patients” ($M = 3.85$, $SD = .68$), “In general, I am capable of finding out what is wrong with the patient during one visit” ($M = 3.77$, $SD = 0.59$) and “Recovery for non-normative hearing patients occurs with no greater number of issues than hearing patients ($M = 2.51$, $SD = 1.29$).

Table 1 summarizes the mean score and standard deviation for each individual item in this scale.

Insert Table 1 here

**Five Factor Trait Constructs**

All trait scales had a range of 5 to 25. Out of all five traits included in this model, participants scored highest on both conscientiousness ($M =18.2$, $SD =3.9$) and openness ($M = 17.9$, $SD = 4.2$). Mean score for agreeableness was 17.3 ($SD = 4.2$), neuroticism was 15.9 ($SD = 4.5$) and extraversion was 15.9 ($SD = 3.5$). Table 2 displays means and standard deviations for each of the five trait scales. Individual item results for each of these scales are in Table 3 with each item having its parent subcategory represented in abbreviated parentheses. Examples of items include “I am always prepared” ($M = 3.92$, $SD = 0.98$) “I am quick to understand things” ($M = 3.78$, $SD = 0.88$) “I get stressed out easily” ($M = 2.59$, $SD =1.23$) and “I talk a lot” ($M = 2.98$, $SD = 1.12$).
Logistic Regression

For logistic regression, we assume linearity between the predictors and the logit of the dependent variable, non-collinearity, and independence of errors (Lomax & Hahs-Vaughn, 2012). All assumptions were checked and met for the model. Good model fit was evidenced by statistically significant results of the omnibus test of model coefficients ($\chi^2 [14, N = 373] = 300.06, p < .001$), non-statistically significant results on the Hosmer-Lemeshow test ($\chi^2 = 6.5, p = .593$) and large effect size index when interpreting Cox and Snell R-square = .55. Table 4 summarizes the full model results.

In examining demographic variables, women in this sample were less likely to prefer speech/lip reading than men (OR = 0.1, $p = 0.02$). For non-white respondents the odds are greater for preferring speech/lip reading than for white respondents (OR = 2.3, $p = 0.008$). Those in a clinical care setting were considerably more likely to prefer speech/lip reading when compared to those in private practice (OR = 16.03, $p < 0.001$, see Table 4). No statistically significant differences were observed for variables of age or years practicing.

Within this model, self-efficacy was negatively associated with preferring speech/lip reading (OR = 0.8, $p < 0.036$) as was behavioral capability (OR = 0.6, $p < 0.001$). Higher outcome expectations were associated with greater preference for speech/lip reading (OR = 2.3, $p < 0.001$). Exposure was not statistically significant. Higher conscientiousness was associated with lower preference for speech/lip reading than not (OR = 0.6, $p = 0.030$, see Table 4). Openness, extraversion agreeableness, and neuroticism were not statistically significant.
**Hierarchical Regression**

The final model summary of the hierarchical regression, as shown in table 5, was statistically significant ($F [5, 365] = 12.99, p < 0.001, R^2 = .73$.)

Insert Table 5 here

Higher PQoC was predicted by the respondent being male ($\beta = -0.13, p < 0.001$), older in age ($\beta = 0.30, p < 0.001$), practicing in a clinical care setting ($\beta = 0.18, p < 0.001$), higher behavioral capability perceptions ($\beta = 0.22, p = 0.001$), higher outcome expectations ($\beta = 0.40, p < 0.001$), lower exposure ($\beta = -0.13, p = 0.005$), higher agreeableness ($\beta = 0.10, p = 0.05$), lower neuroticism ($\beta = -0.09, p = 0.03$) and lower conscientiousness ($\beta = -0.32, p < 0.001$).

Table 6 summarizes the change in explained variance for the three models.

Insert Table 6 here

Examining the squared structure coefficients revealed that outcome expectations accounted for 81.2% of the model’s explained effect and behavioral outcome accounted for 44.6% of the explained effect. Neuroticism accounted for 37.1%, conscientiousness accounted for 29.2% and agreeableness accounted for 24.4% of the model’s explained effect. Practice setting accounted for 3.3% of the model’s explained effect and sex, age, and exposure accounted for <1% of the model’s explained effect (see Table 6).

**DISCUSSION**

Variables representing key factors in the Social Cognitive Theory (Bandura, 2001) were related to preferred communication style. Self-efficacy and behavioral capability were negatively associated with preferring speech/lip reading. Higher outcome expectations were associated with
greater preference. Interestingly, one of the five factor categories was associated with preferred communication style. Specifically, higher conscientiousness was associated with lower preference for speech/lip reading, and there was no statistically significant difference for age, years practicing, exposure, openness, extraversion agreeableness, and neuroticism. Physicians’ PQoC was influenced by variables representing personality constructs. This indicated that when designing interventions, considering personality factors may enhance the “fit” of messages. Demographic variables and factors critical to SCT were also related to perceived quality ratings. Specifically, higher PQoC was predicted by the respondent being male, older in age, practicing in a clinical care setting, having higher behavioral capability, higher outcome expectations, lower exposure, higher agreeableness, lower neuroticism, and lower conscientiousness. The results suggested that white individuals may prefer communication styles other than speech/lip reading. As mentioned, the results also suggested women were less likely to prefer speech/lip reading. While race, sex, and Deaf culture are often covered in the same text books on culturally competent care (Hogg & Holland, 2001), there is a lack of research articles in health education exploring the intersectionality between any race category and sex category and preferred communication style with non-normative hearing populations. As such, this study provides initial information in this area. Further research will need to be conducted to identify and explore the possible intersectionality of race or sex with preferring certain communication styles with non-normative hearing patients and what it means for targeted health education interventions.

In assessing the SCT constructs, communication preference of speech/lip reading is predicted by lower levels of self-efficacy in treating non-normative hearing children, lower behavioral capability, and higher expectations for a positive outcome of a visit. With physicians
reporting significant difficulties in communicating with deaf patients and reporting feeling conversations are less free-flowing with these patients (Ralston, Zazove, & Gorenflo, 1996), speech/lip reading seems to be an avenue by which these difficulties may be overcome at least on the side of the pediatrician – being associated with more positive outcome expectations. Using this data set in a previous study, self-efficacy was not statistically significant in a multiple logistic regression that was identical except for including the five factor variables, but when including the five factor model variables in this study, the significance of self-efficacy was supported. This suggests that the variables of the five factor traits are impacting the association between self-efficacy and preferred communication style. In this model, as self-efficacy increases, the odds of preferring speech/lip reading decreases. This indicates that more confidence in treating these patients is connected to other forms of communication, which includes signing, as well as telephone based communication, and none. This finding provides evidence that as pediatricians gain confidence, they may be more likely to use communication styles that are more in line with the population of interest. However, more research is needed to differentiate between the non-speech/lip reading communication options and which alternative options are most connected to increased self-efficacy.

Looking at the five factor trait scales, pediatricians were highest in traits of conscientiousness and openness. Perhaps not surprisingly, these factors of the trait model are the same factors that predict a physicians’ likelihood to choose pediatrics as their field of practice (Sievert et al., 2016). However, in the current study of communication style, conscientiousness was the only factor shown to be a significant predictor of communication style. It is important to remember that conscientiousness can be viewed as the ability to pay close attention to details as well as having an affinity for order or rules (Carmel & Seymour, 1996; Costa & McCrae, 1992;...
Goldberg, 1993; Gramstad et al., 2013; Sievert et al., 2016). Seeing that conscientiousness is not only predictive of becoming a pediatrician but also of selecting a specific communication style, when preparing health education programs geared at pediatricians, it is important to make the guidelines of the communication with non-normative hearing children clear and structured. For example, if the goal is to increase best practice behaviors, structuring these best practices within a hierarchy or chart may be helpful for those with higher conscientiousness (Carmel & Seymour, 1996; Costa & McCrae, 1992; Goldberg, 1993; Gramstad et al., 2013; Sievert et al., 2016).

In looking at the hierarchical model, self-efficacy was not statistically significant in predicting PQoC. In previous literature, there was a relationship between PQoC and self-efficacy (Hogg & Holland, 2001; Jones et al., 2007; Lowenstein et al., 2013). However, it may be the case that inclusion of the five factor trait variables are impacting what we would otherwise see as a significant relationship between self-efficacy and PQoC. This is evidenced by self-efficacy being significant in the second model, but not in the third model. It may be the case that the trait variables were suppressing the impact of this factor. On the other hand, behavioral capability was not significant in model 2, but was significant in model 3, when the personality factors were added. This pointed to the importance of considering personality variables when assessing perceptions of quality of care - in that they may change the association of key motivational variables with the dependent variable. Although model 3 explains only 5% more of the variance in quality of care, it does illuminate that traits may either suppress or enhance the impact of SCT factors when added to models predicting physicians’ perceptions of quality. Future studies will want to explore path models to assess these possible associations.

Additionally, the squared structure coefficients indicate that outcome expectations and behavioral capability accounted for a large portion of the explained effect in the final model.
This indicates that health education programs aimed at increasing best practice capabilities in interacting with non-normative hearing children as well as increasing outcome expectations would positively impact the perceived patient outcomes. For example, a social messaging program around pediatricians explaining to a non-normative hearing patient any side conversations, and engaging them on a personal level (both aspects of behavioral capability) would likely increase the PQoC for that patient – from the perspective of the pediatrician. Similarly an educational program involving both patients and pediatricians focused on increasing the outcome expectations of how well these patients effectively follow care instructions could also lead to an increase in PQoC – from the perspective of the pediatrician. Future studies will want to incorporate measures of the patients’ PQoC so any differences may be assessed.

In looking at the five factor traits specifically, higher PQoC was predicted by higher agreeableness, lower neuroticism and lower conscientiousness while controlling for the other predictor variables within the model. Higher agreeableness on the part of the pediatrician predicting higher PQoC aligns with the literature on agreeableness of pediatricians being associated with better health outcomes (Sievert et al., 2016). Interestingly, feeling negative emotion, or higher neuroticism, on the part of the pediatrician is predictive of lower PQoC. It is possible that sensitivity to negative emotion is resulting in a more pessimistic view of PQoC on the part of the pediatrician. Finally, contentiousness was predictive of higher PQoC, which may indicate that those who prefer more order and rules to their environment are less likely to step “outside the box” and think of new ways to address quality of care for such a unique population as non-normative hearing children. Although this idea about traits being related to quality of care is speculative, health educators may consider approaches that address pediatricians with high contentiousness as discussed in the paragraph above on communication style. Future research
will want to examine physician’s views of how their traits are related to the PQoC they provide as well as how PQoC is related to actual patient outcomes for those who have non-normative hearing.

Limitations

While this study has many strengths, various limitations should be noted when interpreting these findings. First, this study does not assess all aspects of SCT which means other constructs within the theory may have a spurious relationship to the results we have observed. It should be noted that while assessing additional aspects of social cognitive theory, such as self-observation, self-evaluation, and self-reaction, may be of interest to future studies of pediatricians, those constructs were deemed to be outside the scope of this current study. Second, the current study was a cross-sectional exploration of pediatricians’ perceptions, which is strong for assessing prevalence but can only infer incidence or temporal association (Babbie, 2007).

Third, this study evaluated data from pediatricians’ self-reporting which can include such weakness as recall bias and image management/social desirability response (Babbie, 2007). For example, pediatricians could be self-reporting overly positive outcome expectations or behavioral capability. In other words, positive outcomes of the pediatricians may be different than how the child will recall the visit. It is also important to consider that there may have been selection bias due to the sample being obtained from only one national organization. Individuals outside of that organization may be significantly different from this sample in some unknown way, and their likelihood to participate in such a study may vary in a similar manner.

Concerning the dissonance of non-normative hearing patients preferred communication style and the preference of pediatricians, it should be noted that preference for communication
may have a connection to quality of care, resulting in pediatricians choosing a communication method that results in perceived better expected care outcomes rather than a preference that is merely in line with the population of interest. It is also important to consider that recall bias or socially desirable responses could be resulting in pediatricians self-reporting overly positive outcome expectations or behavioral capability. That is to say, positive outcomes recalled by the pediatricians may be different than how the children recall the visit.

**Conclusions**

The novel finding regarding the association of race and communication style indicates a possible need to develop more inclusive programming. Examining the five factor trait scales in the first aim, conscientiousness was the only factor shown to be a significant predictor, and therefore, identified as important when preparing health education programs geared at pediatricians. For example, highly structured health education programming may be most useful in tapping into this population of pediatricians. The other four factor traits showed no statistical significance, indicating that perhaps the five factor trait theory, as a whole, is not particularly applicable to evaluating preferred communication style with children who have non-normative hearing.

Study findings suggest there is a small but statistically significant relationship between personality traits and PQoC for non-normative hearing children. Specifically, those who scored higher in conscientiousness exhibit patterns statistically different than those of their peers not only when it comes to communication style but also when it comes to PQoC. In addition, higher PQoC was predicted by higher agreeableness, lower neuroticism and lower conscientiousness while controlling for the other predictor variables within the model. While not particularly
applicable to evaluate preferred communication style, the findings suggest that the five factor trait model shows promise for use in future studies aimed at predicting PQoC for children with non-normative hearing, considering the significant relationship of agreeableness, neuroticism, and conscientiousness on PQoC.
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Table 1

*Means and standard deviations for individual perceived quality of care (PQoC) items*

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<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>SD</th>
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<tr>
<td>In general, doctors within this facility are respectful of these patients</td>
<td>3.85</td>
<td>0.68</td>
</tr>
<tr>
<td>In general, I am capable of finding out what is wrong with these patient during one visit</td>
<td>3.77</td>
<td>0.59</td>
</tr>
<tr>
<td>Time spent per visit devoted to non-normative hearing patients is adequate</td>
<td>3.75</td>
<td>0.56</td>
</tr>
<tr>
<td>I feel that non-normative hearing children will feel respected after being treated</td>
<td>3.74</td>
<td>0.58</td>
</tr>
<tr>
<td>Equipment in this hospital/clinic is adequate for caring for patients who do not have normal hearing</td>
<td>3.71</td>
<td>0.50</td>
</tr>
<tr>
<td>Examinations do not result in frustration with patients who have non-normative hearing</td>
<td>3.69</td>
<td>0.50</td>
</tr>
<tr>
<td>The examination rooms create a welcoming environment for non-normative hearing patients</td>
<td>3.53</td>
<td>0.54</td>
</tr>
<tr>
<td>The reception area is a welcoming environment for non-normative hearing patients</td>
<td>3.49</td>
<td>0.52</td>
</tr>
<tr>
<td>The waiting room creates a welcoming environment for non-normative hearing patients</td>
<td>3.46</td>
<td>0.53</td>
</tr>
<tr>
<td>Monitoring non-normative hearing patients occurs with no greater number of issues than hearing patients</td>
<td>3.28</td>
<td>0.90</td>
</tr>
<tr>
<td>Examinations do not result in confusion with patients who have non-normative hearing</td>
<td>2.95</td>
<td>0.82</td>
</tr>
<tr>
<td>These patients understand how to use their medications when the visit is over</td>
<td>2.84</td>
<td>0.76</td>
</tr>
<tr>
<td>Recovery for non-normative hearing patients occurs with no great number of issues than hearing patients</td>
<td>2.51</td>
<td>1.29</td>
</tr>
</tbody>
</table>

*Note.* Possible range for each item is 1 (strongly disagree) to 5 (strongly agree).
Table 2

*Means and standard deviations for five factor trait theory constructs*

<table>
<thead>
<tr>
<th>Trait</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conscientiousness</td>
<td>18.24</td>
<td>3.97</td>
</tr>
<tr>
<td>Openness</td>
<td>17.90</td>
<td>4.21</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>17.30</td>
<td>4.16</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>15.97</td>
<td>4.47</td>
</tr>
<tr>
<td>Extraversion</td>
<td>15.89</td>
<td>3.52</td>
</tr>
</tbody>
</table>

*Note.* Possible range for each scale is 5 (minimum amount of trait) to 25 (maximum amount of trait).
Table 3

Means and standard deviations for the five factor trait construct item scores

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am always prepared (Con)</td>
<td>3.92</td>
<td>0.98</td>
</tr>
<tr>
<td>I am rarely stressed (RC) (Neu)</td>
<td>3.83</td>
<td>1.05</td>
</tr>
<tr>
<td>I am quick to understand things (Ope)</td>
<td>3.78</td>
<td>0.88</td>
</tr>
<tr>
<td>I do not feel comfortable around other people (RC) (Ext)</td>
<td>3.75</td>
<td>0.87</td>
</tr>
<tr>
<td>I am not really interested in others (RC) (Agr)</td>
<td>3.74</td>
<td>0.95</td>
</tr>
<tr>
<td>I pay attention to details (Con)</td>
<td>3.69</td>
<td>0.87</td>
</tr>
<tr>
<td>I take time out for others (Agr)</td>
<td>3.66</td>
<td>0.91</td>
</tr>
<tr>
<td>I leave my belongings around (RC) (Con)</td>
<td>3.61</td>
<td>1.20</td>
</tr>
<tr>
<td>I am not interested in abstractions (RC) (Ope)</td>
<td>3.59</td>
<td>0.87</td>
</tr>
<tr>
<td>I am full of ideas (Ope)</td>
<td>3.58</td>
<td>0.93</td>
</tr>
<tr>
<td>I do not have a good imagination (RC) (Ope)</td>
<td>3.58</td>
<td>0.88</td>
</tr>
<tr>
<td>I follow a schedule (Con)</td>
<td>3.58</td>
<td>0.93</td>
</tr>
<tr>
<td>I sympathize with other people’s feelings (Agr)</td>
<td>3.47</td>
<td>1.12</td>
</tr>
<tr>
<td>I am relaxed most of the time (RC) (Neu)</td>
<td>3.44</td>
<td>1.15</td>
</tr>
<tr>
<td>I like order (Con)</td>
<td>3.44</td>
<td>0.89</td>
</tr>
<tr>
<td>I have excellent ideas (Ope)</td>
<td>3.37</td>
<td>1.12</td>
</tr>
<tr>
<td>I make people feel at ease (Agr)</td>
<td>3.32</td>
<td>0.98</td>
</tr>
<tr>
<td>I am the life of the party (Ext)</td>
<td>3.22</td>
<td>0.84</td>
</tr>
<tr>
<td>I don’t mind being the center of attention (Ext)</td>
<td>3.16</td>
<td>1.15</td>
</tr>
<tr>
<td>I feel other’s emotions (Agr)</td>
<td>3.12</td>
<td>1.13</td>
</tr>
<tr>
<td>I am much more anxious than most people (Neu)</td>
<td>3.05</td>
<td>1.12</td>
</tr>
<tr>
<td>I do not get upset easily (RC) (Neu)</td>
<td>3.05</td>
<td>1.06</td>
</tr>
<tr>
<td>I talk a lot (Ext)</td>
<td>2.98</td>
<td>1.12</td>
</tr>
<tr>
<td>I am quiet around strangers (RC) (Ext)</td>
<td>2.78</td>
<td>0.72</td>
</tr>
<tr>
<td>I get stressed out easily (Neu)</td>
<td>2.59</td>
<td>1.23</td>
</tr>
</tbody>
</table>

Note. Con = conscientiousness, Neu = neuroticism, Ope = Openness, Ext = extraversion, Agr = agreeableness. RC indicates a variable that has been reverse coded. Possible range for each item is 1 (strongly disagree) to 5 (strongly agree).
Table 4

Logistic regression model for preferred communication style

<table>
<thead>
<tr>
<th></th>
<th>b</th>
<th>SE</th>
<th>O.R.</th>
<th>p</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>-2.08</td>
<td>.92</td>
<td>.12</td>
<td>.024</td>
<td>(0.02, 0.76)</td>
</tr>
<tr>
<td>Age</td>
<td>.13</td>
<td>.10</td>
<td>1.14</td>
<td>.185</td>
<td>(0.94, 1.39)</td>
</tr>
<tr>
<td>Race</td>
<td>.86</td>
<td>.33</td>
<td>2.36</td>
<td>.008</td>
<td>(1.25, 4.46)</td>
</tr>
<tr>
<td>Years Practicing</td>
<td>.13</td>
<td>.11</td>
<td>1.14</td>
<td>.215</td>
<td>(0.93, 1.41)</td>
</tr>
<tr>
<td>Practice setting</td>
<td>2.78</td>
<td>.52</td>
<td>16.03</td>
<td>&lt;.001</td>
<td>(5.83, 44.11)</td>
</tr>
<tr>
<td>Behavioral</td>
<td>-.51</td>
<td>.13</td>
<td>.60</td>
<td>&lt;.001</td>
<td>(0.47, 0.77)</td>
</tr>
<tr>
<td>Capability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>.82</td>
<td>.22</td>
<td>2.28</td>
<td>&lt;.001</td>
<td>(1.47, 3.52)</td>
</tr>
<tr>
<td>Expectations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>-.22</td>
<td>.10</td>
<td>.81</td>
<td>.036</td>
<td>(0.66, 0.99)</td>
</tr>
<tr>
<td>Exposure</td>
<td>1.66</td>
<td>.89</td>
<td>5.28</td>
<td>.061</td>
<td>(0.93, 30.02)</td>
</tr>
<tr>
<td>Openness</td>
<td>-.01</td>
<td>.31</td>
<td>1.0</td>
<td>.986</td>
<td>(0.55, 1.81)</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.13</td>
<td>.12</td>
<td>1.14</td>
<td>.266</td>
<td>(0.90, 1.45)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-.09</td>
<td>.15</td>
<td>.91</td>
<td>.536</td>
<td>(1.22, 0.69)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-.52</td>
<td>.24</td>
<td>.60</td>
<td>.030</td>
<td>(0.37, 0.95)</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-.14</td>
<td>.23</td>
<td>.87</td>
<td>.536</td>
<td>(0.56, 1.35)</td>
</tr>
</tbody>
</table>

*Note. Cox & Snell R² = .553.*
### Table 5

*Hierarchical results by model for predicting PQoC*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$b$</th>
<th>SE</th>
<th>$r_s$</th>
<th>$\beta$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-1.79</td>
<td>0.60</td>
<td>-0.03</td>
<td>-0.13</td>
<td>[-1.36, 1.00]</td>
</tr>
<tr>
<td>Age</td>
<td>-0.01</td>
<td>0.04</td>
<td>0.06</td>
<td>-0.12</td>
<td>[-0.09, 0.08]</td>
</tr>
<tr>
<td>Race</td>
<td>1.30</td>
<td>0.42</td>
<td>0.14</td>
<td>0.14</td>
<td>[0.47, 2.13]</td>
</tr>
<tr>
<td>Year Practicing</td>
<td>0.14</td>
<td>0.05</td>
<td>0.11</td>
<td>0.17</td>
<td>[0.04, 0.24]</td>
</tr>
<tr>
<td>Practice setting</td>
<td>3.09</td>
<td>0.25</td>
<td>0.93</td>
<td>0.54</td>
<td>[2.59, 3.60]</td>
</tr>
<tr>
<td><strong>Model 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-1.70</td>
<td>0.42</td>
<td>-0.02</td>
<td>-0.13</td>
<td>[-2.52, -0.87]</td>
</tr>
<tr>
<td>Age</td>
<td>0.08</td>
<td>0.031</td>
<td>0.04</td>
<td>0.12</td>
<td>[0.02, 0.14]</td>
</tr>
<tr>
<td>Race</td>
<td>-0.07</td>
<td>0.29</td>
<td>0.09</td>
<td>-0.01</td>
<td>[-0.64, 0.50]</td>
</tr>
<tr>
<td>Year Practicing</td>
<td>0.09</td>
<td>0.04</td>
<td>0.07</td>
<td>0.11</td>
<td>[0.02, 0.16]</td>
</tr>
<tr>
<td>Practice setting</td>
<td>1.14</td>
<td>0.04</td>
<td>0.61</td>
<td>0.20</td>
<td>[0.64, 1.65]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.10</td>
<td>0.03</td>
<td>0.26</td>
<td>0.13</td>
<td>[0.04, 0.16]</td>
</tr>
<tr>
<td>Behavioral Capability</td>
<td>0.01</td>
<td>0.05</td>
<td>0.69</td>
<td>0.01</td>
<td>[-0.82, 0.11]</td>
</tr>
<tr>
<td>Outcome Expectations</td>
<td>0.73</td>
<td>0.05</td>
<td>0.93</td>
<td>0.69</td>
<td>[0.62, 0.84]</td>
</tr>
<tr>
<td>Exposure</td>
<td>-1.69</td>
<td>0.35</td>
<td>-0.08</td>
<td>-0.16</td>
<td>[-2.38, -1.00]</td>
</tr>
<tr>
<td><strong>Model 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-1.77</td>
<td>0.40</td>
<td>-0.02</td>
<td>-0.13</td>
<td>[-2.55, -0.93]</td>
</tr>
<tr>
<td>Age</td>
<td>0.20</td>
<td>0.05</td>
<td>0.04</td>
<td>0.30</td>
<td>[0.11, 0.29]</td>
</tr>
<tr>
<td>Race</td>
<td>0.16</td>
<td>0.27</td>
<td>0.09</td>
<td>0.02</td>
<td>[-0.37, 0.69]</td>
</tr>
<tr>
<td>Year Practicing</td>
<td>-0.06</td>
<td>0.05</td>
<td>0.07</td>
<td>-0.07</td>
<td>[-0.14, 0.03]</td>
</tr>
<tr>
<td>Practice setting</td>
<td>1.04</td>
<td>0.26</td>
<td>0.59</td>
<td>0.18</td>
<td>[0.53, 1.55]</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-0.06</td>
<td>0.04</td>
<td>0.25</td>
<td>-0.07</td>
<td>[-0.13, 0.02]</td>
</tr>
<tr>
<td>Behavioral Capability</td>
<td>0.20</td>
<td>0.06</td>
<td>0.67</td>
<td>0.22</td>
<td>[0.08, 0.32]</td>
</tr>
<tr>
<td>Outcome Expectations</td>
<td>0.42</td>
<td>0.09</td>
<td>0.90</td>
<td>0.40</td>
<td>[0.24, 0.59]</td>
</tr>
<tr>
<td>Exposure</td>
<td>-1.32</td>
<td>0.47</td>
<td>-0.08</td>
<td>-0.13</td>
<td>[-2.23, -0.41]</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.14</td>
<td>0.08</td>
<td>0.49</td>
<td>0.10</td>
<td>[-0.01, 0.29]</td>
</tr>
<tr>
<td>Openness</td>
<td>0.03</td>
<td>0.09</td>
<td>0.50</td>
<td>0.02</td>
<td>[-0.15, 0.21]</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-0.12</td>
<td>0.06</td>
<td>-0.61</td>
<td>-0.09</td>
<td>[-0.24, -0.01]</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-0.21</td>
<td>0.13</td>
<td>0.32</td>
<td>-0.12</td>
<td>[-0.46, 0.04]</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-0.49</td>
<td>0.10</td>
<td>-0.54</td>
<td>-0.32</td>
<td>[-0.68, -0.29]</td>
</tr>
</tbody>
</table>

*Note.* Statistically significant associations ($p < 0.05$) are bolded. $r_s =$ structure coefficients.
Table 6

$R^2$ summaries for perceived quality of care (PQoC)

<table>
<thead>
<tr>
<th>Model Predictors</th>
<th>$R^2$</th>
<th>$R^2$ Change</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demographics</td>
<td>.29</td>
<td>.29</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2. Demographics, Behavioral Capability, Outcome Expectations, Self-efficacy, Exposure</td>
<td>.69</td>
<td>.39</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>3. Demographics, Behavioral Capability, Outcome Expectations, Self-efficacy, Exposure, Openness, Neuroticism, Agreeableness, Conscientiousness, Extraversion</td>
<td>.74</td>
<td>.05</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Note. Italicized text indicates addition of variables within the model.
Appendix A. Institutional Review Board Approval Letter

Institutional Review Board - Federalwide Assurance #00003152

University of Cincinnati

Date: 6/22/2017

From: UC IRB

To: Principal Investigator: Daniel Ashwood
    COM Surgery Research

Study ID: 2017-2209
Re: Study Title: PEDIATRICIANS’ PERSONALITY FACTORS AND
COMMUNICATING WITH NON-NORMATIVE HEARING CHILDREN

The above referenced protocol and all applicable additional documentation provided to the
IRB were reviewed and APPROVED using an EXPEDITED review procedure in
accordance with 45 CFR 46.110(b)(1)(see below) on 6/21/2017.

This study will be due for continuing review at least 30 days before: 6/20/2018.

The following was reviewed:

Study Documents

Ashwood CV 5.29.17

Citi Report Core 5.29.17

Citi Report Refresher 5.29.17

Funding Agreement 4.17.17.pdf

Funding Application 4.17.17.pdf

Information_Sheet 4.19.17.doc

Information_Sheet 4.19.17.doc
Information_Sheet 4.19.17.doc
Instrument 4.19.17.docx
Protocol 4.21.17
Recruitment E-mail 4.19.17.docx
Recruitment E-mail 4.19.17.docx

The IRB reviewer has determined that this research presents no greater than minimal risk.

Please note the following requirements:

Consent Requirements
Per 45 CFR 46.117 (21 CFR 56.109) the IRB has waived the requirement to obtain DOCUMENTATION of informed consent for all adult participants.

AMENDMENTS: The principal investigator is responsible for notifying the IRB of any changes in the protocol, participating investigators, procedures, recruitment, consent forms, FDA status, or conflicts of interest. Approval is based on the information as submitted. New procedures cannot be initiated until IRB approval has been given. If you wish to change any aspect of this study, please submit an Amendment via ePAS to the IRB, providing a justification for each requested change.

CONTINUING REVIEW: The investigator is responsible for submitting a Continuing Review via ePAS to the IRB at least 30 days prior to the expiration date listed above. Please note that study procedures may only continue into the next cycle if the IRB has reviewed and granted re-approval prior to the expiration date.

UNANTICIPATED PROBLEMS: The investigator is responsible for reporting unanticipated problems promptly to the IRB via ePAS according to current reporting policies.

STUDY COMPLETION: The investigator is responsible for notifying the IRB by submitting a Request to Close via ePAS when the research, including data analysis, has completed.

Please note: This approval is through the IRB only. You may be responsible for reporting to other regulatory officials (e.g. VA Research and Development Office, UC Health – University Hospital). Please check with your institution and department to ensure you have met all reporting requirements.

Statement regarding The International Conference on Harmonization and Good clinical Practices: The Institutional Review Board is duly constituted (fulfilling FDA requirements for
diversity), has written procedures for initial and continuing review of clinical trials; prepares written minutes of convened meetings and retains records pertaining to the review and approval process all in compliance with requirements defined in 21 CFR Parts 50, 56 and 312 Code of Federal Regulations. This institution is in compliance with the ICH GCP as adopted by FDA/DHHS.

Thank you for your cooperation during the review process.

---

**Research Categories**

7. **Research on individual or group characteristics or behavior** (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.)
Appendix B. Recruitment E-mail

Subject line: Survey on Treating Hearing Impaired Patients

Hello,

I am a PhD Candidate conducting a research study to explore communication styles and related beliefs, attitudes, perceptions and psychological factors of pediatricians regarding d/Deaf and hard of hearing patients. This study is being conducted at the University of Cincinnati within the School of Human Services.

Participants in the study must be a physician or pediatrician treating patients from birth-12 years old, and currently working in the United States. The survey should take roughly 10 minutes to complete.

To complete the survey, please click the following link: (Qualtrics Link)

If you have any questions about this study, please feel free to contact me at: ashwoodl@mail.uc.edu

Thank you in advance for your time,

Daniel Ashwood

Doctoral Candidate, Health Promotion & Education | University of Cincinnati | ashwoodl@mail.uc.edu
Appendix C. Information Sheet for Study

IRB #: 2017-2209

Information Sheet for Research
University of Cincinnati
Department: Health Promotion and Education
Principal Investigator: Daniel Ashwood
Faculty Advisor: Dr. Brittany Rosen

Title of Study: PEDIATRICIANS’ PERSONALITY FACTORS AND COMMUNICATING WITH NON-NORMATIVE HEARING CHILDREN

Introduction:
You are being asked to take part in a research study. Please read this paper carefully and ask questions about anything that you do not understand.

This research is sponsored in part by The U.S. Department of Education through a Training/Research Fellowship titled “Leader’s for Tomorrow’s Children.”

Who is doing this research study?
The person in charge of this research study is Daniel Ashwood of the University of Cincinnati (UC) School of Human Services. He is being guided in this research by Dr. Brittany Rosen.

What is the purpose of this research study?
The purpose of this research study is to explore communication styles and related beliefs,
attitudes, perceptions and psychological factors of pediatricians regarding d/Deaf and hard of hearing patients.

Who will be in this research study?
About 379 people will take part in this study. You may be in this study if you are a physician or pediatrician treating patients from birth-12 years old.

What if you are an employee where the research study is done?
Taking part in this research study is not part of your job. Refusing to be in the study will not affect your job. You will not be offered any special work-related benefits if you take part in this study.

What will you be asked to do in this research study, and how long will it take?
You will be asked to complete a short internet based survey. It will take about 10 minutes. The survey will take place on-line. You will be asked about your exposure to different types of patients (hearing/ non-hearing), your attitudes and beliefs about interacting with non-normative hearing patients, your behavior in treating these patients (i.e communication styles), your general personality factors, perceived positive patient experiences, perceived quality of care for patients, and demographic information.

Are there any risks to being in this research study?
It is not expected that you will be exposed to any risk by being in this research study.

Are there any benefits from being in this research study?
You will probably not get any benefit from taking part in this study. But, being in this study may help the greater health care community better understand the interactions between pediatricians and deaf / hard of hearing patients.

What will you get because of being in this research study?
You will not be paid to take part in this study.

Do you have choices about taking part in this research study?
If you do not want to take part in this research study you may simply not participate.

**How will your research information be kept confidential?**

Information about you will be kept private by

- limiting access to research data to the Primary Investigator and Faculty Advisor
- de-identifying the data (i.e. removing e-mail addresses) at the start of the data analysis process
- keeping research data on an encrypted and password protected USB stick

Your information will be kept on an encrypted and password protected USB stick for 2 year. After that it will be destroyed by both deletion of all files and physical destruction of the USB. A USB stick is necessary as the PI will have graduated from the University of Cincinnati (UC) at the conclusion of the study and will need access to the data 2 years prior to the study in order to confirm deletion of the data.

a. Data will be stored on the above mentioned USB stick and will be accessed using University owned computers for the duration of the study. It will only be accessed by a non-UC owned computer at the time of data deletion.

b. The only identifier we are collecting is e-mail addresses to ensure we do not survey any participant more than once. We will not be collecting identifiers such as name, birth date, etc.

c. As there is minimal risk to you by participating, signed consent forms will not be collected. Your consent to participate will be represented by an electronic prompt at the end of this information sheet.

d. The raw data from this study will be kept for 2 years after the close of the study.

e. To ensure no duplicate responses occur, your e-mail address will be initially connected to your responses. All participants e-mail addresses will be deleted as soon as data collection is complete and analysis begins. The data from this research study may be published; but you will not be identified by name.

Agents of the University of Cincinnati or the U.S. Department of Education may inspect study records for audit or quality assurance purposes.

Sometimes confidentiality cannot be assured because of technology limitations, such as on-line surveys or email correspondence. The researcher cannot promise that information sent by the internet or email will be private.

The identity of participants and information about them will be kept confidential, unless the
authorities have to be notified about abuse or immediate harm that may come to the participant or others.

What are your legal rights in this research study?

Nothing in this consent form waives any legal rights you may have. This consent form also does not release the investigator, the U.S. Department of Education, the institution, or its agents from liability for negligence.

What if you have questions about this research study?

If you have any questions or concerns about this research study, you should contact Daniel Ashwood at ashwoodl@mail.uc.edu. Or you may contact Dr. Brittany Rosen, Faculty Advisor, at rosenby@ucmail.uc.edu or at 513-556-3872.

The UC Institutional Review Board reviews all research projects that involve human participants to be sure the rights and welfare of participants are protected.

If you have questions about your rights as a participant, complaints and/or suggestions about the study, you may contact the UC IRB at (513) 558-5259. Or, you may call the UC Research Compliance Hotline at (800) 889-1547, or write to the IRB, 300 University Hall, ML 0567, 51 Goodman Drive, Cincinnati, OH 45221-0567, or email the IRB office at irb@ucmail.uc.edu.

Do you HAVE to take part in this research study?

No one has to be in this research study. Refusing to take part will NOT cause any penalty or loss of benefits that you would otherwise have. You may start and then change your mind and stop at any time. To stop being in the study, you should tell Daniel Ashwood at ashwoodl@mail.uc.edu.

BY TURNING IN YOUR COMPLETED SURVEY YOU INDICATE YOUR CONSENT FOR YOUR ANSWERS TO BE USED IN THIS RESEARCH STUDY.

PLEASE PRINT THIS INFORMATION SHEET FOR YOUR REFERENCE.
Appendix D. Survey Instrument

(Annotated for coding)

Survey on interacting with Deaf/Non-normative hearing patients

Inclusion Criteria Filter Question:
1. Are you a licensed pediatrician in the United States?  Y = 1 or N = 0

Thank you for participating in this brief survey. The purpose of the survey is to explore overall trends in provider interactions with children who are D/deaf, hard of hearing, or have any other non-normative hearing status.

For the purposes of this survey, the term “Non-normative hearing patient” is used to refer to any patient who is Deaf (meaning part of the Deaf community) deaf (strictly in the medical sense) or hard of hearing.

Exposure to Non-normative patients item

2. In the past 12 months, how often did you interact with child patients that have non-normative hearing? (Such as deaf or hard of hearing children.)
   a. Never
   b. Once a month or less
   c. Once a week
   d. 2-3 times a week
   e. 4-6 times a week
   f. Every day

Recoded:
1. Never
2. Once a month or less
3. Once a week
3. 2-3 times a week
3. 4-6 times a week
3. Every day

3. On average how many non-normative hearing patients have you encountered during your time as a Pediatrician? _____ Coded as #__________
**Interaction item**

4. When interacting with a patient that has non-normative hearing, who do you normally address directly? (please mark all that apply)
   a. Child/Patient
   b. Parent
   c. Interpreter
   d. Other ______________

Recoded:
   1. Child and Parent
   2. Just Parent
   3. Parent and Interpreter
   4. Just Interpreter

**Communication Style item**

5. What is your preferred communication style when treating a patient with non-normative hearing? (Such patients would include the Deaf or hard of hearing; please select only one primary preference.)
   a. American Sign-Language
   b. Pidgin Signed English
   c. Signing Exact English
   d. Speech reading/Lip reading
   e. Written Communication
   f. Telephone-based interpretation services
   g. None
   h. Other ______________

Recoded (descriptive):
   1. American Sign-Language
   2. Pidgin Signed English
   3. Signing Exact English
   4. Speech reading/Lip reading
   5. Written Communication
   6. Telephone-based interpretation services
   7. None
   8. Other ______________

Recoded (logistic regression):
   0. American Sign-Language
   0. Pidgin Signed English
   0. Signing Exact English
   1. Speech reading/Lip reading
   0. Written Communication
   0. Telephone-based interpretation services
   0. None
   0. Other ______________
**Patient's age**

6. What is the most common age groups of the non-normative hearing patients you interact with?
   a. Birth – 2 years
   b. 3 years – 5 years
   c. 6 years – 8 years
   d. 9 years – 10 years
   e. 10 years or older

Recoded:
   1. Birth – 2 years
   2. 3 years – 5 years
   3. 6 years – 8 years
   4. 9 years – 10 years
   5. 10 years or older

**Self-Efficacy Scale**

7. Regarding non-normative hearing patients, I am confident that I can…

7.1. **complete assessment** of each patient I encounter.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

7.2. **complete treatment** of each patient I encounter.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree
7.3 teach the patient about behavioral *messages* that will increase their health.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

7.4 teach the patient about behavioral *skills* that will increase their health.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

7.5 discuss with the parents any details of their child’s treatment.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

7.6 provide parents one-on-one education about their child/adolescent’s visit/treatment.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
1. a. Strongly disagree
2. b. Disagree
3. c. Neither agree nor disagree
4. d. Agree
5. e. Strongly agree

7.7 effectively use an interpreter or translator for a non-normative hearing patient during their visit.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

7.8 obtain information directly from the patient regarding the reason for their visit.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

7.9 obtain information directly from the patient regarding their symptoms.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree
7.10 obtain information from the patient’s parent regarding the reason for their visit.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

7.11 obtain information from the patient’s parent regarding the patient’s symptoms.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

7.12 convey effectively to the patient what next steps they should take regarding their treatment.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

7.13 convey effectively to the parent what next steps they should take regarding the patient’s treatment.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
6. a. Strongly disagree
7. b. Disagree
8. c. Neither agree nor disagree
9. d. Agree
10. e. Strongly agree

Behavioral Capability Items

8. When communicating with non-normative hearing child patient, I always communicate directly with the child.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

9. I have strong non-verbal communication skills when communicating with non-normative hearing children. (Body language or facial expressions would be examples of non-verbal communication.)
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

10. When interacting with non-normative hearing patients I ensure the patient is aware of what I am about to do before I approach them.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
Recoded:
   1. a. Strongly disagree
2. b. Disagree
3. c. Neither agree nor disagree
4. d. Agree
5. e. Strongly agree

11. When interacting with non-normative hearing patients I ensure the patient is aware of what I am about to do before I touch them.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
   Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

12. When interacting with non-normative hearing patients I will often explain to them any side conversations I have with their parents or family members.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
   Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

13. When interacting with non-normative hearing patients I match my facial expressions to the emotion/tone I am attempting to convey with my words.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
   Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree
14. When interacting with non-normative hearing patients I engage them on a personal level (non-treatment related topics) at the beginning of the visit.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
   Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

15. When interacting with non-normative hearing patients I engage them on a personal level (non-treatment related topics) near the end of the visit.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
   Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

16. When interacting with non-normative hearing patients I am mindful that conversations among non-normative hearing individuals tend to be more engaging near the end of a visit.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
   Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree
**Outcome Expectations Items**

17. I expect my non-normative hearing patients to leave their visit feeling like I addressed them directly.

   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

Recoded:
1. a. Strongly disagree
2. b. Disagree
3. c. Neither agree nor disagree
4. d. Agree
5. e. Strongly agree

18. I expect my non-normative hearing patient to not be alarmed by me approaching him/her during an examination.

   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

Recoded:
1. a. Strongly disagree
2. b. Disagree
3. c. Neither agree nor disagree
4. d. Agree
5. e. Strongly agree

19. I expect my non-normative hearing patient to not be alarmed by me touching him/her during an examination.

   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

Recoded:
1. a. Strongly disagree
2. b. Disagree
3. c. Neither agree nor disagree
4. d. Agree
5. e. Strongly agree
20. At the end of a visit, I expect a non-normative hearing patient to be satisfied with his/her visit.

a. Strongly disagree
b. Disagree
c. Neither agree nor disagree
d. Agree
e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

21. I expect my non-normative hearing patients to be able to effectively follow all care instructions.

a. Strongly disagree
b. Disagree
c. Neither agree nor disagree
d. Agree
e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

22. I expect the parents of my non-normative hearing patients to be able to effectively follow all care instructions.

a. Strongly disagree
b. Disagree
c. Neither agree nor disagree
d. Agree
e. Strongly agree
Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree
23. I expect the parents of any non-normative hearing child to call my place of practice if they have any questions or concerns post-visit.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
   Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

24. At the conclusion of a visit, I anticipate that a non-normative hearing patient will have felt included in all conversations during that visit.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree
   Recoded:
   1. a. Strongly disagree
   2. b. Disagree
   3. c. Neither agree nor disagree
   4. d. Agree
   5. e. Strongly agree

Perceived Quality of Care Items

Please rate your agreement with the following statements regarding your patients who have any type of non-normative hearing (D/deaf, hard of hearing, etc)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>25. In general, I am capable of finding out what is wrong with these patients during one visit</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>26. These patients understand how to use their medications when the visit is over</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>27. Examinations do not result in confusion with patients who have non-normative hearing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Big Five Trait Theory / Psychological Factor Scale

**Personality Aspects**
The following questions aim at capturing just a few basic psychological factors. These questions are not limited to your patient interactions but rather your general outlook. When answering do not overthink the questions and please record your first reaction to each statement.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>28. Examinations do not result in frustration with patients who have non-normative hearing</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>29. Monitoring non-normative hearing patients occurs with no greater number of issues than hearing patients.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>30. In general, doctors within this facility are respectful of these patients</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>31. Time spent per visit devoted to non-normative hearing patients is adequate</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>32. Recovery for non-normative hearing patients occurs with no greater number of issues than hearing patients.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>33. Equipment in this hospital/clinic is adequate for caring for patients who do not have normal hearing.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>34. The reception area is a welcoming environment for non-normative hearing patients</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>35. The waiting room creates a welcoming environment for non-normative hearing patients</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>36. The examination rooms creates a welcoming environment for non-normative hearing patients</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>37. I feel that non-normative hearing children will feel respected after being treated.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Question</td>
<td>Agreeableness</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>1. I make people feel at ease*</td>
<td>1</td>
</tr>
<tr>
<td>4. I feel other’s emotions*</td>
<td>1</td>
</tr>
<tr>
<td>23. I am not really interested in others* (reverse coded during recoding)</td>
<td>1=5</td>
</tr>
<tr>
<td>14. I take time out for others*</td>
<td>1</td>
</tr>
<tr>
<td>10. I sympathize with other people’s feelings*</td>
<td>1</td>
</tr>
<tr>
<td>15. I am quick to understand things**</td>
<td>1</td>
</tr>
<tr>
<td>8. I do not have a good imagination** (reverse coded during recoding)</td>
<td>1=5</td>
</tr>
<tr>
<td>19. I am full of ideas**</td>
<td>1</td>
</tr>
<tr>
<td>6. I am not interested in abstractions** (reverse coded during recoding)</td>
<td>1=5</td>
</tr>
<tr>
<td>21. I have excellent ideas**</td>
<td>1</td>
</tr>
<tr>
<td>22. I get stressed out easily.***</td>
<td>1</td>
</tr>
<tr>
<td>11. I am relaxed most of the time.*** (reverse coded during recoding)</td>
<td>1=5</td>
</tr>
<tr>
<td>18. I do not get upset easily.*** (reverse coded during recoding)</td>
<td>1=5</td>
</tr>
<tr>
<td>25. I am rarely stressed.*** (reverse coded during recoding)</td>
<td>1=5</td>
</tr>
<tr>
<td>3. I am much more anxious than most people.***</td>
<td>1</td>
</tr>
<tr>
<td>20. I am quiet around strangers**** (reverse coded during recoding)</td>
<td>1=5</td>
</tr>
<tr>
<td>16. I am the life of the party****</td>
<td>1</td>
</tr>
<tr>
<td>5. I talk a lot****</td>
<td>1</td>
</tr>
<tr>
<td>12. I do not feel comfortable around other people.**** (reverse coded)</td>
<td>1=5</td>
</tr>
<tr>
<td>24. I don’t mind being the center of attention.****</td>
<td>1</td>
</tr>
<tr>
<td>9. I am always prepared****</td>
<td>1</td>
</tr>
<tr>
<td>7. I pay attention to details****</td>
<td>1</td>
</tr>
<tr>
<td>17. I like order****</td>
<td>1</td>
</tr>
<tr>
<td>13. I follow a schedule****</td>
<td>1</td>
</tr>
<tr>
<td>2. I leave my belongings around**** (reverse coded during recoding)</td>
<td>1=5</td>
</tr>
</tbody>
</table>

Coding:
*Agreeableness
**Openness
***Neuroticism
****Extraversion
*****Conscientiousness
Demographic Items

63. What is your sex? ___0__Male   ___1__Female

64. What is your age?   ___#_____ Years

65.1 What race(s)/ethnicity(ies) do you MOST identify with?

65.2 Hispanic/Latino  ___1_(Yes)  ___0__(No)

1. Asian
2. Native American Indian
3. Native Hawaiian
4. Alaska Native
5. White
6. Black or African American
7. Other: _______________________

Recoded:
1. Non-white
2. White

66. Which languages do you know (please circle all that apply)
   a. American Sign-Language
   b. Pidgin Signed English
   c. Signing Exact English
   d. Spoken Spanish
   e. Spoken English
   f. Other Spoken Non-English Language

   Recoded:
   1. American Sign-Language
   2. Pidgin Signed English
   3. Signing Exact English
   4. Spoken Spanish
   5. Spoken English
   6. Other Spoken Non-English Language

67. How many years have you been a licensed practitioner? _____#___________

68. What year did you graduate medical school? ______#________

69. Which type of practice setting do you work in?
   a. Private Practice
   b. Community Practice
   c. Group Medical Practice
   d. Clinical Care
   e. Other _______________________

Recoded:
1. Private Practice
2. Community Practice
3. Group Medical Practice
4. Clinical Care
5. Other _________________________

70. Which of the following describes the geographic area in which you currently work?

   a. Metropolitan (population 500,000 or more people)
   b. Urban (population 100,000 or more but less than 500,000)
   c. Rural (population less than 100,000)

   Recoded:
   1. Metropolitan (population 500,000 or more people)
   2. Urban (population 100,000 or more but less than 500,000)
   3. Rural (population less than 100,000)

Thank you for taking the time to participate in this survey!