BLEACHING THE RAINBOW: HOW HIGH SCHOOL DIVERSITY BECOMES PROFESSIONAL HOMOGENY IN SPEECH-LANGUAGE PATHOLOGY AND AUDIOLOGY

by

Isabelle Ariane Husson

Communication Science & Disorders, University of Pittsburgh, 2019

Submitted to the Graduate Faculty of

The School of Health and Rehabilitation Sciences in partial fulfillment

of the requirements for the degree of

Bachelor of Philosophy

University of Pittsburgh

2019

UNIVERSITY OF PITTSBURGH

School of Health and Rehabilitation Sciences

This thesis was presented

by

Isabelle Husson

It was defended on

June 28, 2019

and approved by

Christopher Brown, PhD, Associate Professor, Communication Science & Disorders

Michael W. Dickey, PhD, Associate Professor, Communication Science & Disorders

External Examiner: Luis F. Riquelme, PhD, BCS-S, Associate Professor, Speech-Language

Pathology, New York Medical College

Thesis Co-director: Paula Leslie, PhD, Senior Lecturer Speech & Language Therapy,

University of Central Lancashire

Thesis Co-director: Erin Lundblom, PhD, Associate Professor, Communication Science &

Disorders

Bleaching the Rainbow: how high school diversity becomes professional homogeny in speech-language pathology and audiology

Isabelle Husson, B.A.

University of Pittsburgh, 2019

ABSTRACT

Background

While the population of the United States is diverse, the education system resembles a funnel that ultimately leads to a lack of heterogeneity in many higher education institutions. This diversity deficiency can be especially noticed in the careers of speech-language pathology and audiology. The American Speech Language Hearing Association has made attempts at increasing the diversity of the professions through programs aimed towards undergraduates; such programs have done little to lessen this issue.

Aims

The aim of this study was to answer: what majors do first and second-year students select; what motivates academic major and career choices; and, why do students choose (or not) to pursue speech-language pathology or audiology?

Method

An anonymous survey was developed and distributed via the online Qualtrics Survey System to first and second-year students, enrolled in 1 of the 17 colleges/universities in Pennsylvania with an undergraduate major in Communication Science and Disorders.

Results

A total of 103 participants responded to the survey. About three-quarters of participants reported knowing their intended major prior to applying to college. Popular reported majors included

Communication Science and Disorders, Biology, Engineering, Business, and Psychology. Popular influences on choice of major included personal interest, future salary prospects, and graduate school requirement. Participants who did not list their intended major as Communication Science and Disorders demonstrated a general lack of knowledge regarding the professions and responded either neutrally or negatively when asked how likely they would be to pursue either career.

Conclusion

Interest in pursuing a career in Communication Science and Disorders depends on an awareness of such a pathway. In order for diversity within the field to increase, more steps should be taken to recruit high school students. The recruitment strategies should take into account reasons why students choose to pursue particular careers (e.g., salary, graduate school requirement, and interest). Once diversity in the field increases, so does the chance of having a group of professionals better equipped to more effectively serve the diverse population of the nation and build cultural awareness in professionals.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

PREFACE

I cannot imagine completing this project without the unwavering support of my family, friends, and professors. They were there for me when I needed them most, they believed in me when I had trouble believing in myself, and they helped to lift me when I was unable to stand (literally and figuratively). I feel incredibly lucky to have them all in my life and cannot put into words how grateful I am for them – but I'm going to try.

To my parents – thank you for providing me with every opportunity that ultimately led to this project. I would not be where I am today without you. I will never stop trying to make you proud. To Dr. Lundblom and Dr. Leslie – thank you both for everything you have done to help me and this project succeed. You have contributed to my growth as an individual, a student, and a future clinician. I owe so much to each of you. To Dr. Brown, Dr. Dickey, and Dr. Riquelme – thank you for your dedication to this project. I am grateful for all of your help and guidance. To Jordan, Ben, and Steph – thank you for being a constant source of joy and fun during this entire process. I'll always treasure Phesis Phridays and our time in Boston at the ASHA convention. Finally, thank you to everyone taking the time to read this body of work – I hope that you enjoy it and share what you learn with those around you.

1.0   INTRODUCTION

Picture yourself entering a room full of people that you know. You say hello to everyone and ask how they are doing. You laugh and joke with your friends. Picture yourself at work giving an important business presentation that could make your company successful. The clients are impressed by your eloquence when speaking. People communicate to interact and connect with one another on a daily basis. Communication is essential to human life. It is the foundation upon which humans share information with each other and express their wants and needs. Now picture yourself entering a room full of people that you know. You experienced a stroke a few months ago and now have trouble speaking clearly; others often do not understand what you say. You also have difficulty hearing, and feel more withdrawn and less comfortable talking to others. Without your intact communication skills, you feel lost and alone. You want to communicate clearly and effectively. Are there any professionals you can turn to for assistance?

1.1   COMMUNICATION SCIENCE AND DISORDERS

Speech-language pathologists (SLPs) and audiologists are the professionals in the field of communication science and disorders (CSD). SLPs and audiologists work with individuals who have communication difficulties and/or swallowing disorders stemming from a variety of conditions. SLPs and audiologists work with many populations in multiple settings.

1

1.1.1   Speech-Language Pathology

Speech-language pathology is a field related to communication and swallowing issues. SLPs are the health care professionals involved in the prevention, evaluation, diagnosis, and treatment of language, speech, and swallowing disorders. SLPs work in numerous settings such as schools, hospitals, outpatient rehabilitation centers, and skilled nursing facilities. The salary of an SLP varies depending on setting, years of experience, location, and whether they are full or part-time. Services are delivered across the age continuum: from birth to death (American Speech-Language-Hearing Association [ASHA], 2016).

To become a certified clinician in speech-language pathology, entry into the field begins with a graduate degree from a program approved by the Council on Academic Accreditation. Following the graduate program individuals must pass the national PRAXIS exam in speech-language pathology and complete a clinical fellowship (Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2013). This clinical fellowship is completed under a mentor who holds certification from the American Speech Language Hearing Association (ASHA). After completion of the requirements, clinicians can apply for their Certificate of Clinical Competence from ASHA. The licensure of SLPs is overseen on a state-by-state basis. In Pennsylvania, licensure for SLPs is managed by the Department of State through the Bureau of Professional & Occupational Affairs, Pennsylvania State Board of Examiners in Speech-Language and Hearing (ASHA, 2019f; Pennsylvania Department of State, 2019). SLPs must continue to earn continuing education credits in order to keep their certification and licensure up-to-date.

1.1.2 Audiology

Audiology is a field in which professionals are involved in the prevention, evaluation, diagnosis, and treatment of auditory disorders, balance issues, and hearing loss. Audiologists may work in a variety of settings including schools, hospitals, private practices, and hearing aid companies. The salary of an audiologist varies depending on setting, years of experience, location, and whether they are full or part-time. They work with individuals across the life span (American Academy of Audiology, 2004; ASHA, 2018).

Practicing audiology requires the completion of an entry-level doctorate from a program approved by the Council on Academic Accreditation as well as an externship. To obtain the Certificate of Clinical Competence from ASHA, the prospective audiologist must also pass the national PRAXIS exam in audiology. The licensure of audiologists is overseen on a state-by-state basis. In Pennsylvania, licensure for audiologists is managed by the Department of State through the Bureau of Professional & Occupational Affairs, State Board of Examiners in Speech-Language and Hearing (ASHA, 2019f; Pennsylvania Department of State, 2019). Audiologists must continue to earn continuing education credits in order to keep their certification and licensure up-to-date.

1.1.3 American Speech Language Hearing Association

The American Speech Language Hearing Association (ASHA) is the governing body of the professions of speech-language pathology and audiology. It oversees the certification of the professions, their scopes of practice, and their code of ethics. ASHA identifies as the "national professional, scientific, and credentialing association" for the CSD professions (ASHA, 2019b).

The association has five different publications and holds an annual convention for the progression of the CSD field. Their vision is "Making effective communication, a human right, accessible and achievable for all." (ASHA, 2019b)

1.1.4 Higher Education Terminology

Different terms related to the careers of speech-language pathology and audiology may cause confusion in higher education. Many undergraduate majors, programs, and departments related to speech-language pathology and audiology use an umbrella-term such as Communication Science and Disorders (CSD). Academia is an isolated setting in which this term is used. This is problematic, because the terminology does not contain the professional terminology like say occupational therapy, physical therapy, dietetics, and more.

1.2 CULTURAL AWARENESS AND DIVERSITY

'Diversity' as defined by Merriam-Webster (2019) is "the inclusion of different types of people (such as people of different races or cultures) in a group or organization." Diversity includes the categories of race, ethnicity, socioeconomic status (SES), sexual orientation, age, gender, and education level. Diversity as discussed in this paper will primarily focus on ethnicity and culture. The concepts of ethnicity, race, and culture are distinct yet related. A person's ethnicity is best described simply as their geographic origin or ancestral lineage combined with shared aspects of culture (Jackson & Hogg, 2010). This is separate from race, as race does not imply ethnicity. For example, people from any race can identify as Hispanic or Latino (United States Census Bureau,

2018a). Many researchers have said that race is a social construct but there are some biological characteristics associated with race (Jackson & Hogg, 2010). Culture is derived from many different sources including religion, ethnicity, social factors, race, and generational group. These sources provide influence on a person's values, beliefs, and customs (Egede, 2006). It is possible for people to belong to many cultures within each other, such as identifying with both a religious group and one's own country. According to the Greater Good Science Center at UC Berkley (2019), the existence of different people is what inspires innovation and brings culture and community to life.

1.2.1   Importance of Representation

The United States is commonly referred to as a 'melting pot' of many diverse cultures, ethnicities, and beliefs. The country is currently the most diverse it has ever been and it is projected to become even more so, with an expected lack of a racial or ethnic majority by the year 2055 (Cohn & Caumont, 2016). This is due in part to immigration over the past few decades. Immigration has been steadily increasing, with most new immigrants arriving not from Latin America but from Asia (Cohn & Caumont, 2016). According to information from the United States Census Bureau (2016), the estimated population was 325,127,513 with 61% of people identifying as White, non-Hispanic alone but that increased to 77% of people identifying as White alone when not including Hispanic ethnicity. People identifying as Hispanic or Latino accounted for 18% (regardless of race), 13% of people identified as Black or African American alone, 6% as Asian alone, 3% as two or more races, 1% as American Indian and Alaska Native alone, and <1% as Native Hawaiian or Other Pacific Islander alone. The millennial generation, born between 1981 and 1996, is

currently the most ethnically diverse population in the nation racially, with 43% identifying as non-white (Cohn & Caumont, 2016).

The United States is ranked as one of the wealthiest nations in the world and spends more money per person on health care than any other country; however the health outcomes of this nation's citizens demonstrate a disadvantage compared to health outcomes of other high-income countries (Institute of Medicine of the National Academies, 2013). This general health disadvantage cannot be pinpointed to one particular issue but rather a combination: health systems, health behaviors, social and economic conditions, and physical environments (Institute of Medicine of the National Academies, 2013). A person's access to health opportunities may also be affected by their components of identity such as race and ethnicity, gender, geographical location, SES, disability, and immigration status (National Academies of Sciences, Engineering, and Medicine, 2017).

1.2.2 Where can we find diversity in the workforce?

In the general labor force, 64% of workers identify as non-Hispanic white (Burns, Barton, & Kerby, 2012). This is a stark contrast from the professions of speech-language pathology and audiology where the workforce is the antithesis of ethnic diversity. The profession of speech-language pathology is one of the most un-diverse professions in the country (Fox, 2017). According to ASHA member counts at the end of 2016, 5% of ASHA members identified as male, 5% identified as Hispanic or Latino, and 8% identified as belonging to a racial minority (ASHA, 2017b). The percentages from ASHA are all lower than the percentages of the general U.S. population where 50% identified as male, 18% identified as Hispanic or Latino, and 28% identified as belonging to a racial minority (ASHA, 2017b; United States Census Bureau, 2016). According

to Grumbach and Mendoza (2008), the failure to meet the primary education needs of low SES and minority K-12 students is the greatest obstacle to increasing diversity within the health professions.

Although the country's population is increasingly diverse, this is not always adequately represented in different areas of society. Lack of diversity in various settings, such as in higher education and the health care workforce, casts a light on the problems of health disparities between different sub-populations in the United States. In part, some disparities are a repercussion of the deficiency in adequate proportions of diversity in higher education and the health care professions. Education has been identified as playing a major role in health outcomes. This is because the quality of neighborhoods and schools with less resources is directly associated with health inequity. There has been research indicating that where you grow up and live has a larger impact on your health than some genetic factors. This is due to "the effect of interpersonal, institutional, and systemic biases in policies and practices (structural inequities)" that result in people being placed based on their SES and race into neighborhoods/schools that are either rich or poor in resources (National Academies of Sciences, Engineering, and Medicine, 2017, p. 101).

Populations served by health care professionals are culturally diverse and professionals should be as well (Franca et al, 2016). This is not to suggest that the key to culturally sensitive clinicians is only having ethnically diverse clinicians work with patients from their own culture. Being a clinician who is bilingual or from a particular culture is not enough – cultural appreciation and awareness is equally as important. Clinicians who are not aware or appreciative of diversity may not be able to help individuals from varied backgrounds, because they are unable to fully understand the values and beliefs of other cultures (Franca et al, 2016). Sometimes it is not enough to simply be aware of other cultures – it is best when a clinician embraces a particular background

and has that shared knowledge with a particular population. This can be particularly helpful when it comes to understanding how a certain group views medical intervention and treatment (e.g., a person who has religious beliefs that are opposed to blood transfusions or organ transplantation), or if a particular race is more likely to have certain diseases or disorders.

1.2.3 Health care

Following the trends of the general population, patient populations in this country are diverse. With this ethnic diversity comes differences in how health is viewed and valued by different cultural groups, as well as, differences in how clinicians approach their treatment. According to a report by Wilson-Stronks, Lee, Cordero, Kopp, and Galvez (2008) poorer quality care and health outcomes are results of health disparities of a racial or ethnic nature. Some evidence shows that health professionals belonging to underrepresented minority groups are more inclined to care for underserved populations than professionals belonging to the majority; however, this does not mean that caring for underserved populations is the responsibility of underrepresented minority health professionals alone (Grumbach & Mendoza, 2008). It is an equity issue that should be addressed by all health care professionals.

According to Churchill (2019), the term "cultural awareness" is less limiting than "cultural competency." Cultural awareness is about knowing and understanding one's own culture as well as that of others. With cultural competency, it is implied that clinicians must achieve a threshold of cultural understanding but the development of cultural awareness is ongoing. Cultural appreciation can be learned in the classroom but more effectively through interactions with particular populations. Just as is the case with most learned topics, more real-world experience leads to a better overall understanding. The more a clinician works with a particular population

and becomes accustomed to any cultural differences, the more culturally aware they may become over time. Professionals can be well-educated in diversity and diversity practices, but sometimes this still is not enough. A need exists for some diverse populations to have health professionals that show others deeper cultural and ethnic understanding. Doing this can make it easier for a patient to feel understood by someone who either has a similar background to them or has acquired knowledge about their ethnic and cultural groups.

ASHA has made the topic of cultural competency a professional issue of which clinicians should be aware. The organization states that having cultural competency is becoming more important in regard to service delivery due to: (1) the changing demographics of the U.S. population, (2) improve the quality of service provided and in turn health outcomes, (3) help to eradicate the health disparities among people of various racial/ethnic backgrounds, and (4) to comply with mandates at various levels (ASHA, 2017a). Achieving goals in regard to cultural awareness begins with understanding one's own cultural identity and realizing that the process of cultural awareness and appreciation development is life-long. ASHA specifies that clinicians must have met various academic and professional standards which must include knowledge about different aspects of cultural and how they may have an effect on communication (ASHA, 2017a).

1.3   ASHA'S INITIATIVES TO IMPROVE CULTURAL AWARENESS

ASHA has a long history of attempting to diversify its members through recruiting and maintaining a greater amount of minority professionals. The organization has attempted to achieve this by establishing different offices, initiatives, and programs.

1.3.1   Office of Multicultural Affairs

ASHA's national office created the Office of Multicultural Affairs (OMA) in 1969. Its main focus is cultural and linguistic diversity, particularly in relation to patients as well as professionals in the field. It oversees two teams: Multicultural Education and Multicultural Resources Services. The teams assist the OMA in fulfilling its mission. The teams do this through many actions such as: exploring current multicultural issues and producing information on the issues, following the changing needs of diverse populations, and finding new resources and information to guide their policies, tools, programs, and activities (ASHA, 2019i). An example of one of the useful tools for professionals is a self-assessment of cultural competence that is available on their website. It offers this tool as a way for professionals to gauge their level of cultural competence and what they can improve upon in order to better their services. (ASHA, 2019h).

1.3.2   Recruitment through mentorship programs

There are two programs that are run by ASHA in an attempt to recruit and retain historically under-represented undergraduate and graduate students: the Minority Student Leadership Program (MSLP [*sic*]) and the Student to Empowered Professional (S.T.E.P.) Program. The MSLP was started in 1999 and is a week-long program that takes place in conjunction with the annual ASHA convention. It provides networking and leadership opportunities to a maximum of forty students who are preferably of a racial/ethnic minority background that is considered to be historically under-represented within ASHA. Students must be enrolled in a CSD program and be at least at the undergraduate fourth-year level. The overall purpose of the program is to recruit historically

under-represented students and develop their leadership skills through focused programs and increase their knowledge of ASHA and its leaders (ASHA, 2019e).

Student to Empowered Professional (S.T.E.P.) Mentoring Program is an online ASHA program approximately eight months in length offered to undergraduate and graduate students. It pairs a student mentee with a mentor in the field. The pair communicates, establishes goals, and aims to be involved in different experiences to enhance learning (ASHA, 2019a). Part of the mission of the S.T.E.P. program is to empower students from under-represented minorities through mentee-mentor relationships. The program's ultimate goal is to become a community for diverse students who all share a hope that the diversity of society becomes the diversity of ASHA (ASHA, 2019g).

1.3.3   New Marketing Strategies

In May 2019 the CEO of ASHA, Arlene A. Pietranton, announced in an electronic update that the organization had developed a series of student diversity brochures. It did not specify the exact date the brochures were made and distributed. The development of this research project for this thesis occurred in early 2018, before the 2019 announcement.

The brochure had five versions targeted towards different underrepresented races/ethnicities within ASHA: Black/African American, Asian Indian, Asian Pacific Islander, Hispanic, and Native American. All of the brochures were in English. The brochures were made with the intent to be displayed at career fairs and other events. The organization said that it purchased a mailing list of high schools that were comprised of at least 75% members of the racial/ethnic groups on the brochures. In addition to sending the brochures to the high schools, ASHA included a cover letter for the school's guidance counselor that provided reasoning for why

their students should consider a career in this field. If the school employed an audiologist or SLP, they were also sent a letter and encouraged to discuss this with the guidance counselor. ASHA claims this strategy thus far has been cost efficient and effective. Future plans regarding this marketing strategy include releasing a Spanish version of the brochure as well as exploring launching a social media campaign. ASHA reports that it expects increasing diversity among professionals will take at minimum another eight years between increasing awareness of the fields and allowing time for individuals to complete the education process (Pietranton, 2019). Could this be the key to increasing diversity within ASHA?

1.4   FILTERING OUT: WHY OR WHEN?

A diverse set of clinicians comes from a diverse group of graduate students which comes from a diverse group of undergraduate students. The diverse undergraduate students come from high schools all over the nation – including every type of school from public to private. While demographics differ between schools and programs, one thing is clear: higher education demographics (particularly in CSD) are not indicative of the diversity of the general U.S. population.

1.4.1   CSD application diversity

CSDCAS, the centralized application for graduate SLP and audiology programs collects demographic information from applicants. This has allowed us to capture the characteristics of the applicant pool from the 2016 academic year. There were 407 applicants who applied to the

University of Pittsburgh's program in either speech-language pathology or audiology. In the CSDCAS data ethnicity and race were combined into one category and participants selected their primary race/ethnicity. In the CSDCAS data, 2 of 407 (0.5%) applicants identified as American Indian, 71 (17%) were Hispanic, 16 (4%) were Asian, 12 (3%) were Black or African American, 270 (66%) were White, 5 (1%) were multiple, and 31 (8%) did not report (see Figure 1).
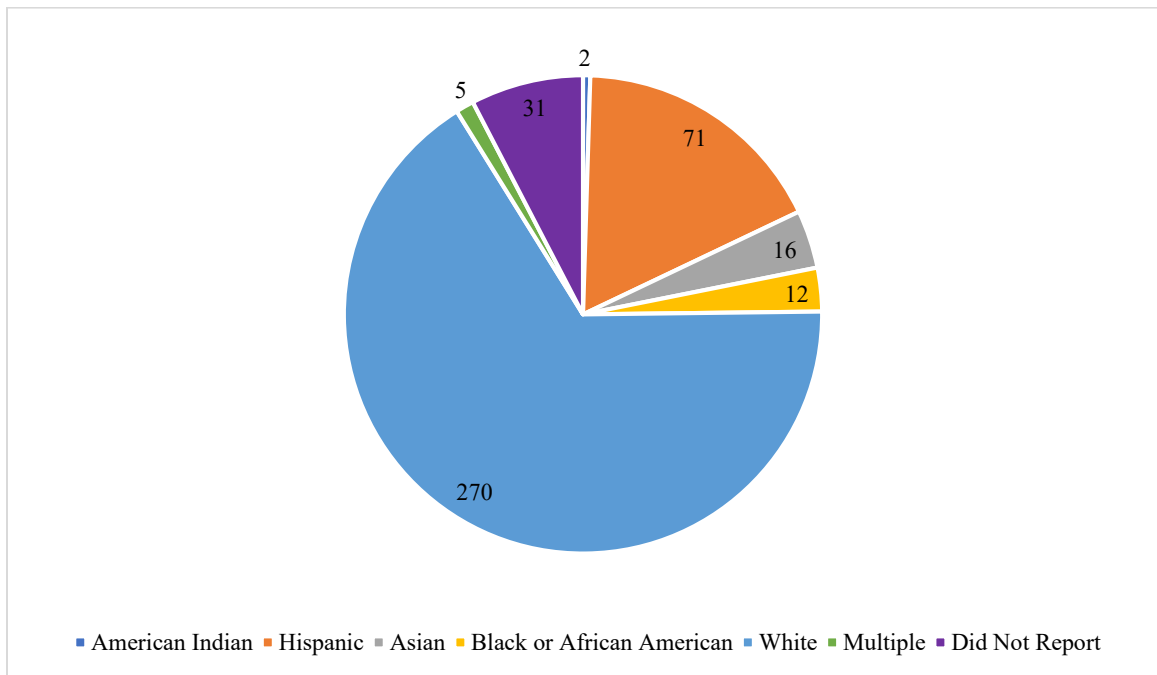
Figure 1. CSDCAS Applicant Race/Ethnicity for University of Pittsburgh 2016 Entry

The Council of Academic Programs in Communication Sciences and Disorders (CAPCSD) and ASHA jointly published a national aggregate data report looking at undergraduate and graduate CSD programs at higher education institutions. According to the report, 89% of the programs that were contacted reported a total of 34,310 undergraduate students enrolled in CSD during the 2017-2018 academic year. This is a decline from the 2016-2017 academic year where 89% of programs reported a total of 36,555 enrolled undergraduate students. Based on the

programs during the 2016-2017 academic year 5% of undergraduates identified as male and 23% identified as belonging to a racial/ethnic minority (excluding international students). During the 2017-2018 academic year, 5% of undergraduates identified as male and 28% identified as belonging to a racial/ethnic minority (excluding international students). The numbers for that academic year were based on the 67% of undergraduate programs that reported demographic information (Council of Academic Programs in Communication Science & Disorders & ASHA, 2019). This report did not specify which undergraduate students (i.e., year in school) were included in the data just that the students had declared the CSD major. For some schools this could have included first, second, third, and fourth-year students but for other programs it may have only included third and fourth-year students. Is the diversity of CSD students similar to the overall diversity of undergraduates at one university?

1.4.2   The shift from high school to college

Figures for the University of Pittsburgh in Fall 2017 showed that 1,197 (30%) first-time first-year students identified as either nonwhite or white and Hispanic/Latino. The racial terms used in this paper were chosen for consistency purposes in order to be able to compare this with data from the United States Census Bureau or other organizations. White, non-Hispanic students still made up the majority of this population, comprising 70% and accounting for 2,822 students (University of Pittsburgh, 2018). Of the total 4,019 first-year undergraduate students, the percentage of students declaring an interest in CSD in that first year was about <1%, or 17 students. The number may not tell the whole picture because students at this university are not required to declare their major until the end of their second year. This small number was made up of 16 white and 1 nonwhite

student. Why are students from a range of backgrounds not choosing to major in CSD earlier or at all?

The research for a future career or major can begin in high school or even before. In 2013 there were 53.7 million school-age children in the United States. School-age children are between five and seventeen-years old. White children comprised 53% of this population, while 14% were Black children, 24% were Hispanic children, 5% were Asian children, 1% were American Indian/Alaska Native children, <1% Pacific Islander children, and children who identify as belonging to two or more races accounted for 4% of this population. Both the percentages of White children and Black children in this population decreased from the year 2000, while the percentages of Hispanic, Asian, and those of two or more races increased. Percentages of Pacific Islander children and American Indian/Alaska Native children stayed consistent between 2000 and 2013 (Musu-Gillette et al., 2016). Approximately two-thirds of students in urban high schools are minority students, but this percentage can increase to up to 80% of students depending on geographic location (Schneider, 2017).

1.4.3 Selecting a CSD profession

Are high school students aware of CSD professions? Is it a marketing issue? Or that the field looks like it is for one particular demographic? Diversity throughout the educational system is a narrowing funnel. Diverse high schools are followed by colleges that are less diverse. Semi-diverse colleges are followed by even less diverse graduate schools and programs. Graduate schools and programs eventually produce a health care field that lacks diversity across the range of areas.

1.5   RESEARCH QUESTIONS

1.5.1   Aim

Current students are in the best position to contribute to our knowledge of when/why the filtering of students from a range of backgrounds may occur. First and second-year undergraduate students are a valuable population to focus on initially. Students are exploring classes and majors they may have not been exposed to before, so this can be a transformative time that can influence changes in their plan. They may be able to give important information about this process and the factors they consider. The research questions posed were:

1. What majors do first and second-year students select?

2. What motivates academic major and career choices?

3. Why do students choose (or not) to pursue a CSD profession?

1.5.2   Clinical and Educational Significance

After more than two decades of declared attention to diversity in the professions of speech-language pathology and audiology, there has been little impact on recruitment and retention of clinicians from diverse backgrounds. At the end of 2016, ASHA reported that 7.9% of members and associates identified as belonging to a racial minority, which is barely double the 3.6% minority members reported over 30 years prior in 1984 (ASHA, 2017b; Cole, 1985). Investigating when and why diversity reduces across the high school to graduate school continuum may give us vital information about more effective approaches to reach and engage diverse populations. This would support a more diverse student body and professional workforce. Such a development

would optimize care for our patients, families, and colleague professions to help bridge health care

disparities.

2.0   METHODS

To investigate the range of student backgrounds entering the CSD professions, a survey was sent to undergraduate participants in their first and second year of study at various colleges and universities in Pennsylvania. Three main questions of this study were investigated through the survey: (1) what majors do first and second-year students select; (2) what motivates academic major and career choices; and, (3) why do students choose (or not) to pursue a CSD profession? Analysis of this information provided insight into what areas of study students are selecting at the beginning stages of college, what lead them down that path, and what continues to motivate their decisions.

2.1   PARTICIPANTS

2.1.1   First and Second-Year Students

Participants were enrolled in one of seventeen different colleges/universities in Pennsylvania as either a first or second-year student. The seventeen schools were chosen because they all had undergraduate programs in CSD. The schools were Bloomsburg University of Pennsylvania, California University of Pennsylvania, Clarion University of Pennsylvania, Duquesne University, East Stroudsburg University, Edinboro University of Pennsylvania, Geneva College, Indiana University of Pennsylvania, LaSalle University, Lebanon Valley College, Marywood University, Misericordia University, Pennsylvania State University, Temple University, Thiel College,

University of Pittsburgh, and West Chester University. Students had to be eighteen years or older at the time of participation. There were no exclusionary criteria based on demographic information besides year in school. There was no ethnically based inclusion or exclusion criteria for participants. They were not required to be enrolled in a major associated with CSD since their selection of a major was also being recorded and analyzed.

2.2   SURVEY

Participants were contacted/recruited either via an email sent to them by a member of the staff at their institution or via a link posted by a staff member in a closed Facebook group for their class at their institution. Each staff member was either employed at the university in some capacity related to admissions/student affairs or they were a contact in the CSD department at each of the schools. Staff members were found via their institution's website or known contacts of the thesis advisors (Dr. Leslie and Dr. Lundblom). In addition, the Associate Director of the Office of Cross Cultural and Leadership Development at the University of Pittsburgh, Richard Fann II, helped to distribute the survey to an email list to which he belonged. This list had a diversity focus and included contacts from the other schools in Pennsylvania. The Associate Director of the Office of Student Life at the University of Pittsburgh, Melissa Warthen, has worked with the First Year Experience programs and New Student Programs. She assisted in distributing the survey to many students via Facebook groups for first and second-year students. Selected populations were targeted; however, responses from groups clearly associated with diversity were not secured (i.e., a Pitt Pride email list). Staff members were contacted via email and were asked to distribute the survey to students, thus served as gate keepers for the survey. The gate keepers were important in

that they allowed for participants to be recruited without any type of influence from the research team.

Using multiple modes of communication with prospective participants was crucial to the success of the survey. Some college students may not have regularly checked their emails or they may have frequented social media instead or vice versa. The students were invited to take the survey if they met the qualifications and they were asked to share the survey with other first and second-year students.

2.2.1 Qualtrics

The survey was created on Qualtrics which is the University of Pittsburgh's choice of a secure web-based service. Through Qualtrics we can gather data, protect it, and analyze the responses. A Qualtrics link was included in the email inviting students to participate in the study. Questions on the survey addressed different demographic information such as the participant's ethnic/racial background, level of education attained by their primary caregiver(s), and how they would describe their hometown (urban, rural, etc.). The participants were also asked about their college major selection and how they looked for a major while in high school and/or college. They were then informed of the professions of speech-language pathology and audiology and were asked to give their opinions on the professions. The question types included multiple choice, ranking, scaling, and free text. The full survey can be found in Appendix A.

2.2.2   Human Research Protection Office

The Human Research Protection Office (HRPO), formerly the Institutional Review Board, at the University of Pittsburgh reviewed this study. The survey design was classified under the heading, "Tests, Surveys, Interviews, or Observations", considered a minimal risk exempt review under HRPO. The HRPO found that the study met the requirements of exempt status under section 45 CFR 46.101(b)(2) on May 21, 2018. Funded in part by an ASHA Multicultural grant, Drs. Leslie and Lundblom are currently investigating the limited diversity of SLP graduate program applicants in their program, as well as identifying the social and institutional barriers that impact recruitment and retention efforts of diverse students.

2.3   DATA ANALYSIS

Every question from the survey was developed to answer one of the research questions or to collect demographic information from participants. Different question types – such as free text – allowed for additional information to be collected because the student could give their own input instead of selecting a pre-written option. Due to skip logic some questions were not seen by certain students based on answers to previous questions. Most of the questions on the survey *required* (the student had to give an answer to continue with the survey) the participant to provide an answer, five questions *recommended* (reminded the student that an answer was missing but did not require one to continue) that an answer was provided, and two questions were neither. Some participants may not have felt comfortable reporting some items such as race/ethnicity. The questions were numbered in the survey as Q[n] to allow for clear links with the study in Appendix A. Q3 did not

fit into the demographics category or with the research aims as it just had participants confirm whether they were 18 years or older. Participants were not allowed to move past Q3 if they were under the age of 18.

2.3.1   Characterizing Populations

The questions from the survey related to characterizing population demographics were Q4 through Q16. Q4 provided a drop-down list of the colleges and universities in Pennsylvania that had been contacted and students selected their school. Students indicated whether English was their primary language in Q5 by selecting: "Yes", "No (if no, what is your primary language?)", "I am bilingual (list both)", or "I am multilingual (list all)." The last three options had free text boxes to allow for participants to provide more information. In Q6 participants selected their racial category: "American Native / Alaskan Native", "Asian", "Black / African American", "Native Hawaiian or Other Pacific Islander", "White", and "More than one (if so list)" (with option for free text). Q7 asked participants to select whether they identify as "Hispanic or Latino" or "not Hispanic or Latino." In Q8 participants choose the age range to which they belonged: 18-20, 21-23, 24-26, 27-29, 30-39, 40-49, 50-59, 60-65, or 66+. Q9 asked to which gender the participant most identified: "Male", "Female", "Transgender Male", "Transgender Female", "Gender Variant/Non-Conforming", "Prefer Not to Answer", and "Other" (with option for free text).

In Q10 participants selected the statement that best described their hometown: Urbanized Area (greater than 50,000 people), Urban Cluster (between 2,500 and 50,000 people), or Rural (less than 2,500 people). This method of classification of areas was developed and used by the U.S. Census Bureau for the 2010 Census (United States Census Bureau, 2018b). This question was asked because participants from more urban areas may have had more exposure to an SLP or

audiologist since there would be more CSD professionals in that area. For each selection there were different corresponding Pennsylvania towns that participants could reference. For example, Philadelphia was listed under Urbanized Area, Shippensburg under Urban Cluster, and the Rural selection just specified that it encompassed all territories that did not qualify as an urban area. Towns, cities, and areas in Pennsylvania were chosen as examples because the participants were more likely to be familiar with them as they go to school in Pennsylvania.

Q11 provided 5 statements and asked the participants to select the ones that applied to them: "I graduated from a high school where many of the enrolled students are eligible for free or reduced price lunches", "I am an individual who receives public assistance or I'm from a family that receives public assistance (e.g., food stamps, Medicaid, public housing)", "I am from a school district where 50% or less of graduates go to college or where college education is not encouraged", "English is not my primary language", and "None of these statements apply to me." This question was developed based on a question asked in the 2018 CSDCAS graduate school application. It aimed to learn more about the potential socioeconomic status of participants. Socioeconomic status could possibly have had an impact on the student's health care experience or their access to resources related to career/vocational aspirations (American Psychological Association [APA], 2019).

Q12 through Q16 asked participants for information about their primary caregiver(s) and their respective educational status. This question was also based on a question from the 2018 CSDCAS graduate school application. The educational status of a primary caregiver might have possible implications toward socioeconomic status as a low SES has been correlated with lower educational achievement (APA, 2019). The definition given for a primary caregiver was "the person that you spent your formative years with." Q12 asked participants to identify their primary

caregiver and told them that they would be asked this question again if they have a second primary caregiver. Participants could select one of the options in Q12 for primary caregiver: Mother, Father, Parent, Aunt, Uncle, Grandparent, Elder sibling, Neighbor, Adoptive parent, Foster parent, and Other (with option for free text). Q13 asked for participants to select the highest level of education obtained by the primary caregiver they identified in Q12: High school / GED, Vocational training (e.g., mechanic, plumber, electrician, cosmetologist, etc.), Some college, Associate's degree, Bachelor's degree, Graduate degree, Doctorate degree, and N/A. Q14 was a "yes" or "no" question that asked participants whether or not they had a second primary caregiver. Both Q15 and Q16 were only displayed to participants who had indicated on Q14 that they had a second primary caregiver. If a participant selected "No" on Q14 they were taken to the next section of the survey. Q15 and Q16 were the same as Q12 and Q13 relevant to the participant's second primary caregiver.

2.3.2 Research Question 1

What majors do first and second-year students select?

Survey participants were asked questions related to the selection of their college major (Q18, Q19, Q23, and Q24). In Q18, participants were asked if they knew their intended major when they selected their undergraduate university or college. The answer options were "yes" and "no." The participants were asked to write their intended major in a free text box in Q19. Both Q23 and Q24 were only presented to the participants who had previously selected "No" on Q18. Q23 asked participants if they had a general idea of what they want to major in. The options given to the participants were: "Definitely yes", "Probably yes", "Might or might not", "Probably not", and "Definitely not", Q24 asked participants to select the major fields they are currently most interested in: Business, Education, Engineering, Fine Arts, Health-related, Languages/Linguistics,

Mathematics/Computing, Natural Science, Pre-Med, Social Science, Social Work, and Other (with option for free text).

2.3.3   Research Question 2

What motivates academic major and career choices?

The questions in the survey that addressed this research question had to do with how students discovered different majors/careers and why they chose them (Q20, Q21, Q22, and Q25). Q20 was displayed to the participants who had previously selected "Yes" on Q18 (knowledge of intended major at undergraduate application). They were asked to identify the primary way that they became aware of their chosen career field by selecting one of the options provided or using a free text box: "I had a personal or family experience with the field", "Someone I know (i.e., parent, adult, friend, student) suggested I major in this field", "My high school guidance counselor suggested this career", "I completed a career survey and this was a suggestion", "My college advisor suggested this career", "A college course I took introduced me to this career", "I learned about this career from a university student organization", "My university career placement office suggested this career", "I learned about this career on a website", "I observed a professional in this field", and "Other" (free text). Both Q21 and Q22 were displayed to participants who had selected "No" for Q18. In Q21 participants were asked to select the way(s) in which they have been searching for a college major. Participants were allowed to select as many or as few boxes as they wanted. The options were: "Researching online", "Reading college guides", "Speaking with guidance counselor", "Discussing with a parent/guardian", "Speaking to friends, roommate(s), etc.", "Taking different classes", and "Other" (free text). Q22 presented a slider that allowed participants to select how many hours they spend during the average week researching different majors, career-

paths, and/or schools. The options ranged from 0 to 20 hours. In Q25 participants were able to rank the most important factors influencing their choice of major in order from most important (1) to least important (4). The options were: "Graduate school requirement", "Perceived difficulty of major", "Salary of future career", "Parent/guardian input", and "Other" (free text).

2.3.4   Research Question 3

Why do students choose (or not) to pursue a CSD profession?

Q26 to Q31 addressed this research question. In Q26 the participants were asked to share what they thought an audiologist does via free text. In Q27 the participants were given a description of audiology and were asked to choose how likely they would be to pursue this profession following reading the description. The description was as follows:

> Audiology is the science of hearing, balance, and related disorders. Hearing and balance disorders can be assessed, treated, and rehabilitated by an audiologist. Audiologists are health care professionals who provide patient-centered care in the prevention, identification, diagnosis, and evidence-based treatment of hearing, balance, and other auditory disorders for people of all ages.

> (ASHA, 2019c)

The options given to the participants were: "Extremely likely", "Somewhat likely", "Neither likely nor unlikely", "Somewhat unlikely", and "Extremely unlikely." Q28 and Q29 were similar for speech-language pathology. The description of speech-language pathology in Q29 was:

> Speech disorders occur when a person is unable to produce speech sounds correctly or fluently, or has problems with their voice or resonance. Language disorders occur when a person has trouble understanding others (receptive language), or

26

sharing thoughts, ideas, and feelings (expressive language). Swallowing disorders occur when a person has difficulties with either sucking, chewing, swallowing (or other issues regarding eating/drinking) following a traumatic event, neurological disease, cancer, or surgery. Speech-language pathologists (SLPs) work to prevent, assess, diagnose, and treat speech, language, social communication, cognitive-communication, and swallowing disorders in children and adults.

(ASHA, 2019c)

Q30 and Q31 were free text response options for students to share why they would and would not want to pursue either of the CSD careers.

3.0   RESULTS

Data was collected between November 9th, 2018 and January 26th, 2019. A total of 118 students

started the survey – 103 students completed it, and 15 closed it without answering any questions.

The answers to most survey questions are presented using graphs and text. Some free text question

results are presented in text or in tables with frequency counts. The responses of first and second

year students were not separated – participants were simply asked to select the age range to which

they belong. There does not always seem to be as much of a difference between first and second-

year undergraduate students as there is between this academic group and high school students or

third-year undergraduate students. As shown by the results, a person's year in school does not

guarantee that they are a certain age.

3.1   SPLIT DATA

There were two main groups into which the participants were placed – Group 1 (responses 1-41)

and Group 2 (responses 42-103). There was a problem with Q11 on the survey for Group 1. When

they were asked to select the statements that applied to them, there was no option to select if none

of the statements applied. The statements for the question were: "I graduated from a high school

where many of the enrolled students are eligible for free or reduced price lunches", "I am an

individual who receives public assistance or I'm from a family that receives public assistance (e.g.,

food stamps, Medicaid, public housing)", "I am from a school district where 50% or less of

graduates go to college or where college education is not encouraged", and "English is not my

primary language." This was a forced response question, meaning that participants were required to make a selection in order to move forward in the survey. This condition could have resulted in skewed data which will be kept separate from the Group 2 data. Some data gathered from Group 1 through other questions will still be analyzed as this group included the only participants from colleges/universities besides the University of Pittsburgh who were mostly CSD majors. The issue was fixed for Group 2's responses as they were given the option to select "None of these statements apply to me." Group 1 is referred to as the Restricted Response Group.

There was another issue in the survey issued to the Restricted Response Group. Q26 asked participants to describe what they thought audiologists do and Q28 asked the same thing about SLPs. While the participants in this group were answering Q26 and Q28, the descriptions of each career (in Q27 and Q29) were visible. Thus, it is likely that some participants in this group may have looked at the descriptions and written simpler yet similar answers to the ones provided in the other questions. Even if this was the case, the majority of participants in the Restricted Response Group reported a major related to Communication Science and Disorders (CSD, speech-language pathology, and/or audiology), so they may have used prior knowledge to answer the question regardless of being able to see the definition. Due to the issues with the survey sent to the Restricted Response Group, their data will be reported and examined, but most of the major analysis will be reserved for Group 2.

Group 2 was split into two groups: Group NS ("No Statements"; n = 38) and Group SS ("Selected Statement"; n = 24). Group NS consisted of the participants who had selected the option that none of the statements applied to them. Group SS consisted of the participants who had selected at least one of the statements in Q11. This further analysis based on the answers to Q11 was completed because this question was the main question on the survey that gathered data on

socioeconomic status. The data from each of the survey questions were split and analyzed this way in order to make sure the socioeconomic status marker from Q11 was taken into account.

3.2   GENERAL DEMOGRAPHICS

The following tables and charts show the demographic information collected from first and second-year students through the survey. Some of the questions did not require the participant to choose an answer and if they did not select an answer, their non-response is shown below as "No Response" The tables are divided into two columns of responses to accommodate the split data previously mentioned. The charts are primarily 100% stacked columns that represent and compare the responses from multiple groups. The charts are ideal for visual representation because they add up to 100% and show the different proportions of responses between groups.

3.2.1   Data of Entire Group (n = 103)

There were 103 students who participated in the survey. The Restricted Response Group had 41 participants and Group 2 had 62 participants. The demographic information collected from participants was age, gender, college/university, race, ethnicity, hometown, primary language, and the education level of their primary caregiver(s). Q8 asked participants to select their age range and 91 of 103 (88%) participants belonged in the 18-20 age range. In the Restricted Response Group, 38 of 41 (93%) participants were 18-20 years old and in Group 2, 53 of 62 (86%) participants were 18-20 years old. The next largest age range was 21-23 years old with 9 of 103 (9%) participants. This age range was more common in Group 2, with 7 of 62 participants (11%)

selecting this as opposed to 2 of 41 (5%) participants in the Restricted Response Group. A total of 2 of 103 (2%) participants identified as between the ages of 27-29, one in each group. Only 1 participant of the 103 (1%) participants selected the 30-39 age range, a member of Group 2.

Out of the 103 participants there were 88 (85%) who identified as female, 12 (12%) who identified as male, 2 (2%) who identified as gender variant/non-conforming, and 1 (1%) who identified as transgender male. In the Restricted Response Group (n = 41) there were 36 (88%) participants who identified as female, 3 (7%) who identified as male, 1 (2%) who identified as gender variant/non-conforming, and 1 (2%) who identified as transgender male. In Group 2 (n = 62) there were 52 (84%) participants who identified as female, 9 (15%) who identified as male, and 1 (2%) who identified as gender variant/non-conforming (see Figure 2).
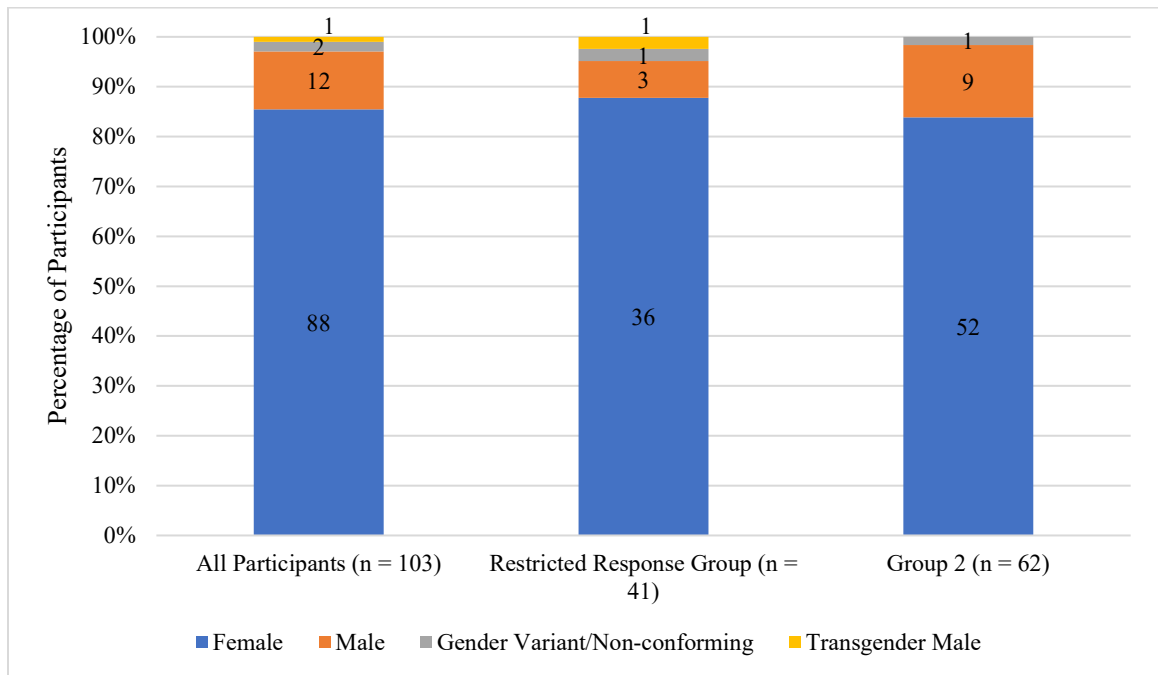
Figure 2. Gender Identity of Participants

For racial category: 87 out of 103 (84%) participants selected White, 13 (13%) selected Asian, 2 (2%) selected more than one, and 1 (1%) chose not to answer. In the Restricted Response Group (n = 41), 40 (98%) participants selected White and 1 (2%) selected Asian. In Group 2 (n = 62), 47 (76%) participants selected White, 12 (19%) selected Asian, 2 (3%) selected more than one, and 1 (2%) chose not to answer. Of the 2 participants who selected more than one racial category, 1 person identified as "White and Black" and 1 identified as "Asian, White" (see Figure 3).
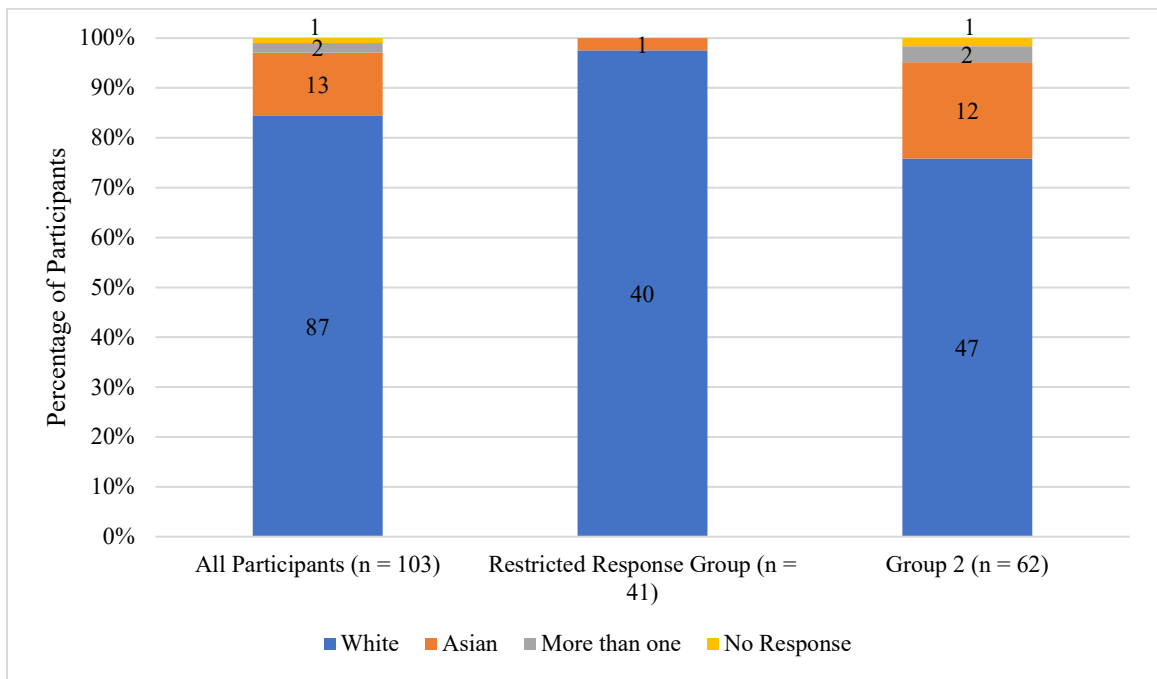
Figure 3. Racial Identity of Participants

When asked in Q7, 101 of 103 (98%) total participants reported that they were not Hispanic or Latino, 1 (1%) was Hispanic or Latino, and 1 (1%) chose not to answer. In the Restricted Response Group (n = 41), 40 (98%) responses were for not Hispanic or Latino and 1 (2%) was for Hispanic or Latino. The participant who identified as Hispanic or Latino also identified as White. In Group 2 (n = 62), 61 (98%) responses were for not Hispanic or Latino and 1 (2%) chose not to answer (See Figure 4).
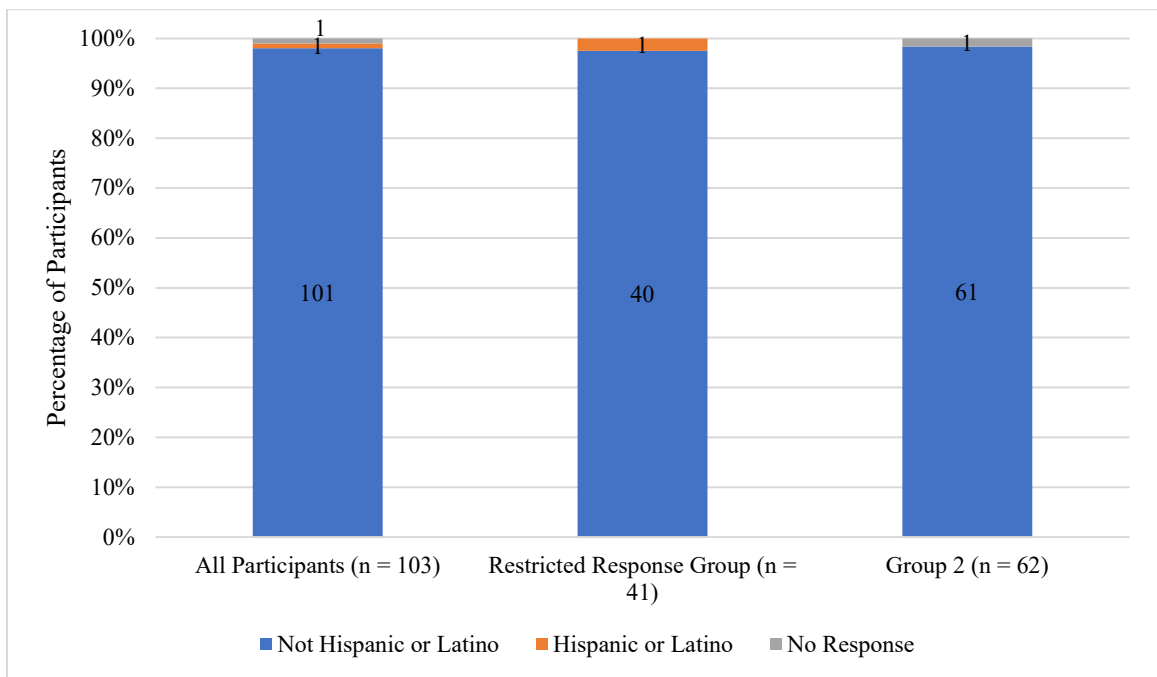
Figure 4. Ethnicity of Participants

In Q5 the majority of participants (93%) reported that English was their primary language. The other 7 (7%) participants reported being bilingual. The following languages were reported: Tagalog, Korean, and Hindi. Only 1 (2%) participant from the Restricted Response Group (n = 41) identified as bilingual, reporting Tagalog as their second language. In Group 2 (n = 62), 6 (10%) participants identified as bilingual. Of the 6 responses 3 (5%) reported their second language as Tagalog, 2 (3%) Korean, and 1 (2%) Hindi. When asked in Q11 to select which statements applied to them, none of the participants selected "English is not my primary language" (see Figure 5).
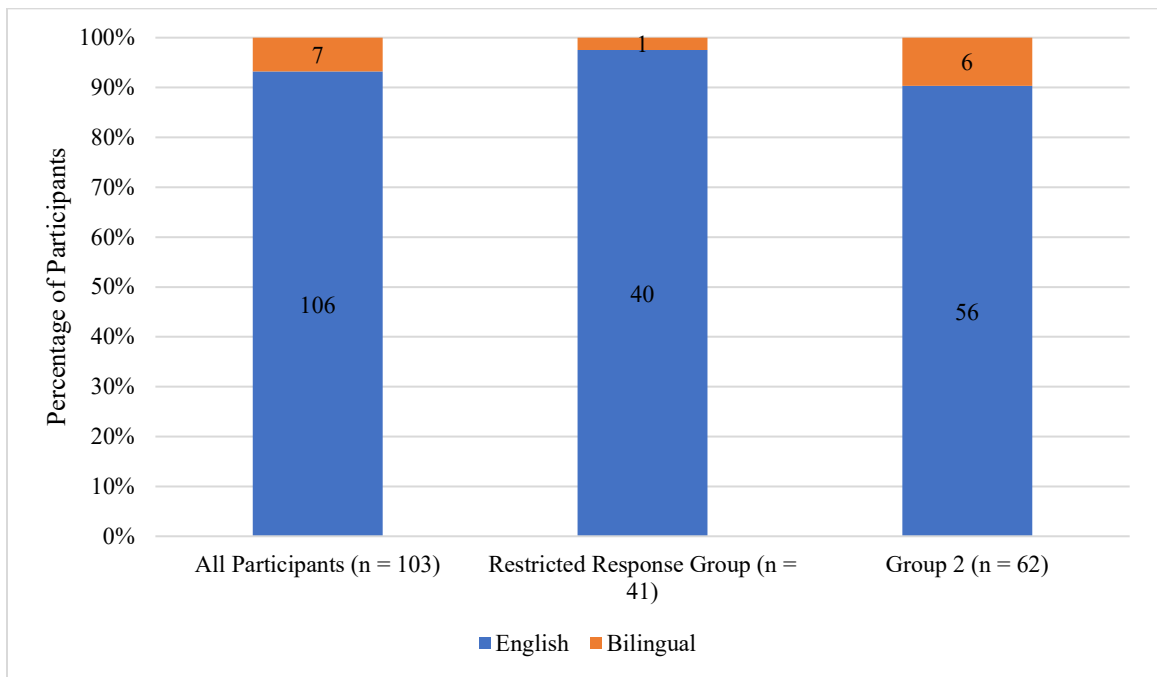
Figure 5. Primary Language of Participants

In Q4 participants were asked to select the school they currently attend from the drop-down list provided. The survey was sent to the 17 colleges and universities in Pennsylvania with an undergraduate program in CSD. Out of 103 responses, 73 (71%) were the University of Pittsburgh, 22 (21%) were Clarion University of Pennsylvania, 6 (6%) were Indiana University of Pennsylvania, 1 (1%) was California University of Pennsylvania, and 1 (1%) person chose not to answer. Specifically in the Restricted Response Group (n = 41), 12 (29%) responses were from the University of Pittsburgh, 22 (54%) were from Clarion University of Pennsylvania, 6 (15%) were from Indiana University of Pennsylvania, and 1 (2%) was from California University of Pennsylvania. In Group 2 (n = 62), 61 (98%) responses came from the University of Pittsburgh and 1 (2%) participant chose not to answer (see Figure 6).
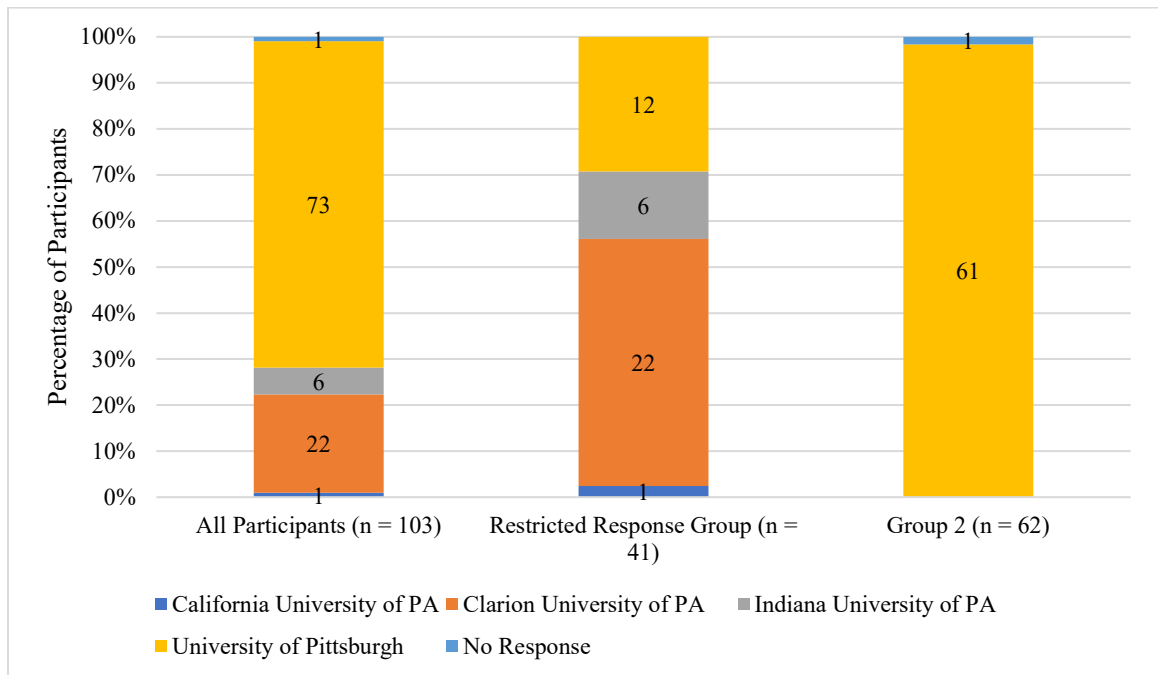
Figure 6. Colleges/Universities of Participants

In Q10 participants were asked to select the description that best fitted their hometown. Of the 103 total responses, 25 (24%) chose Urbanized Area, 52 (51%) chose Urban Cluster, and 26 (25%) chose Rural. Of the responses for the Restricted Response Group (n = 41), 5 (12%) chose Urbanized Area, 19 (46%) chose Urban Cluster, and 17 (41%) chose Rural. Of the responses for Group 2 (n = 62), 20 (32%) chose Urbanized Area, 33 (53%) chose Urban Cluster, and 9 (15%) chose Rural.

In Q12, participants identified their primary caregiver (the person they spent their formative years with). Of the 103 total participants, 86 (84%) selected "mother" as their primary caregiver, 8 (8%) chose "parent", 7 (7%) chose "father", 1 (1%) chose "uncle", and 1 (1%) chose "adoptive parent." In the Restricted Response Group (n = 41), 34 (83%) participants chose "mother", 5 (12%) chose "parent", 1 (2%) chose "father", and 1 (2%) chose "uncle." In Group 2 (n = 62), 52 (84%) participants chose "mother", 3 (5%) chose "parent", 6 (10%) chose "father", and 1 (2%) chose "adoptive parent." In Q13 participants reported the highest level of education attained by the caregiver they identified in Q12 (see Figure 7).
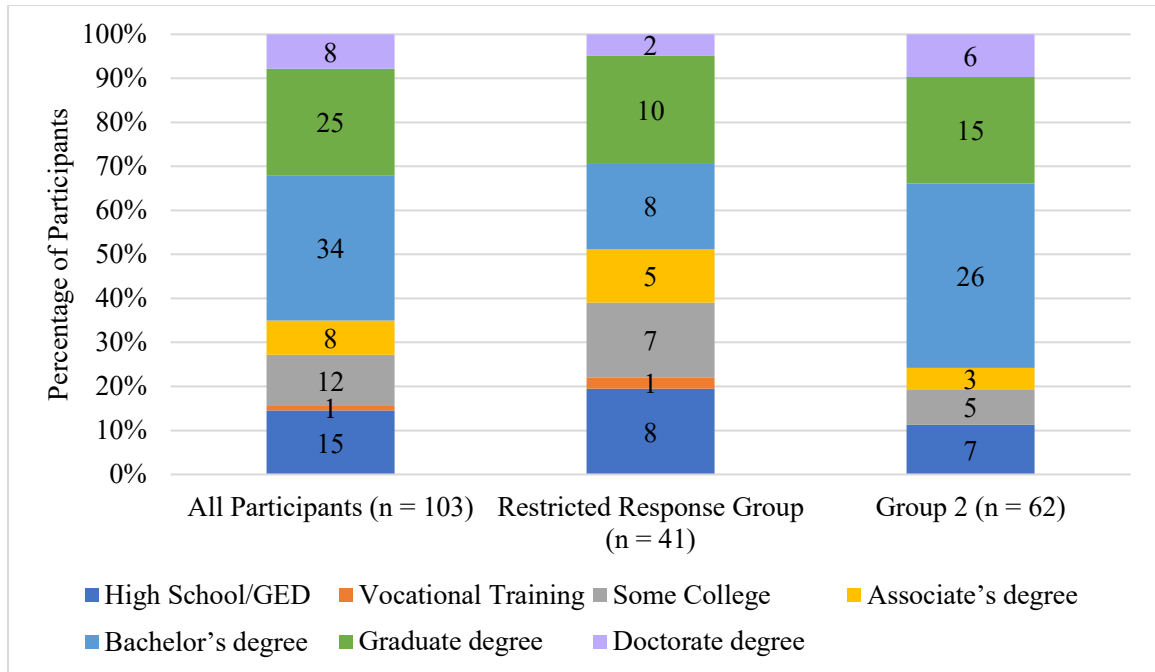
Figure 7. Highest Level of Education by Primary Caregiver of Participants

Q14 asked participants if they had a second primary caregiver and if they selected "yes", Q15 asked participants to identify their second primary caregiver. Of the 103 total participants, 75 (73%) chose "father", 6 (6%) chose "mother", 3 (3%) chose "parent", 1 (1%) chose "adoptive parent", 2 (2%) did not answer, and 16 (16%) reported having no second primary caregiver. In the Restricted Response Group (n = 41), 30 (73%) chose "father", 2 (5%) chose "mother", 1 (2%) chose "parent", 1 (2%) did not answer, and 7 (17%) reported having second primary caregiver. Of the participants in Group 2 (n = 62), 45 (73%) chose "father", 4 (6%) chose "mother", 2 (3%) chose "parent", 1 (2%) chose "adoptive parent", 1 (2%) did not answer, and 9 (15%) reported not having a second primary caregiver. In Q16 participants reported the highest level of education attained by the second primary caregiver they identified in Q15 (see Figure 8).
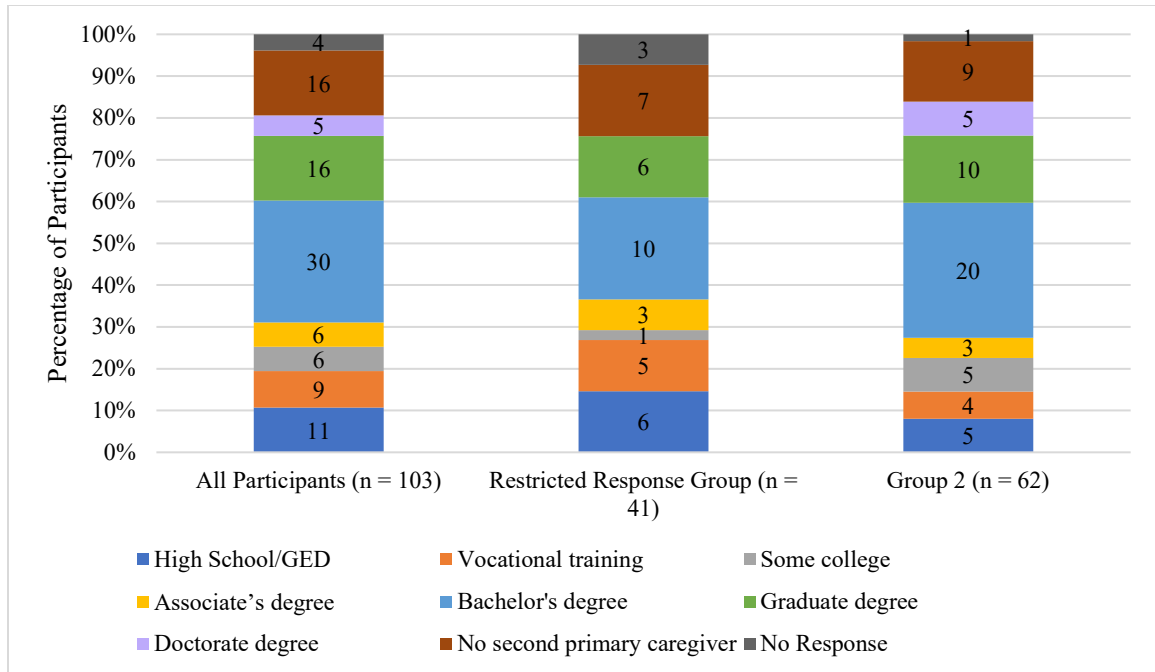
Figure 8. Highest Level of Education by Second Primary Caregiver of Participants

In Q11, participants in the Restricted Response Group were not given the option to select "None of these statements apply to me." This was a force response question – meaning that the participants had to select an option before they were allowed to move on to the next question. Consequently the results from the Restricted Response Group for Q11 were skewed and will not be compared to the results from Group 2. There were 62 participants in Group 2 but participants could select multiple statements so the total number of responses is greater than 62 (see Figure 9).
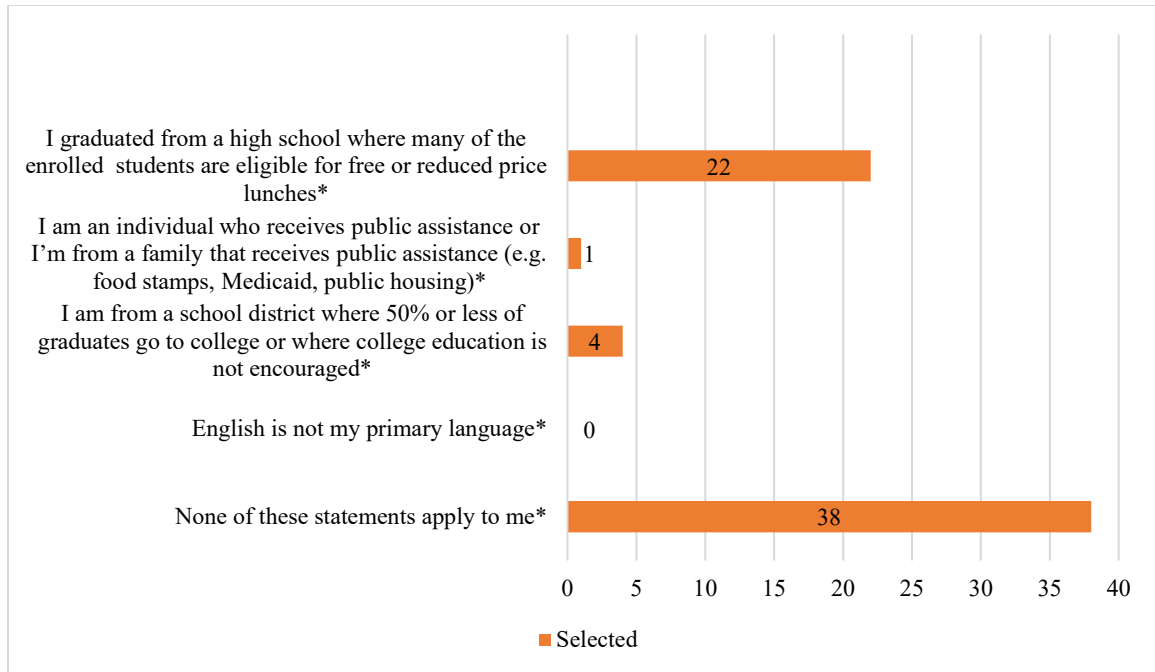
Figure 9. Q11 Statements Selected by Main Group (n = 62)

Note: The multi-select feature was used for Q11 – the total numbers do not reflect the number of participants since they could pick multiple options.

3.2.2   Data from Main Group (n = 62)

Group 2 represents the 62 participants who had the version of Q11 which allowed for a no-response: "None of these statements apply to me." This group was broken into Group NS ("No Statements") which represents the 38 participants who said that none of the statements in Q11 applied to them, and Group SS ("Selected Statement"), which represents the 24 participants who selected one or more of the statements in Q11.

In Group NS (n = 38), 35 (92%) participants selected the 18-20 option and 3 (8%) participants selected the 21-23 option. In Group SS (n = 24), 18 (75%) participants chose the 18-20 option, 4 (17%) participants chose 21-23, 1 (4%) chose 27-29, and 1 (4%) chose 30-39.

In Group NS (n = 38), 29 (76%) participants identified as female, 8 (21%) as male, and 1 (3%) as gender variant/non-conforming. In Group SS (n = 24), 23 (96%) participants identified as female and 1 (4%) identified as male (see Figure 10).
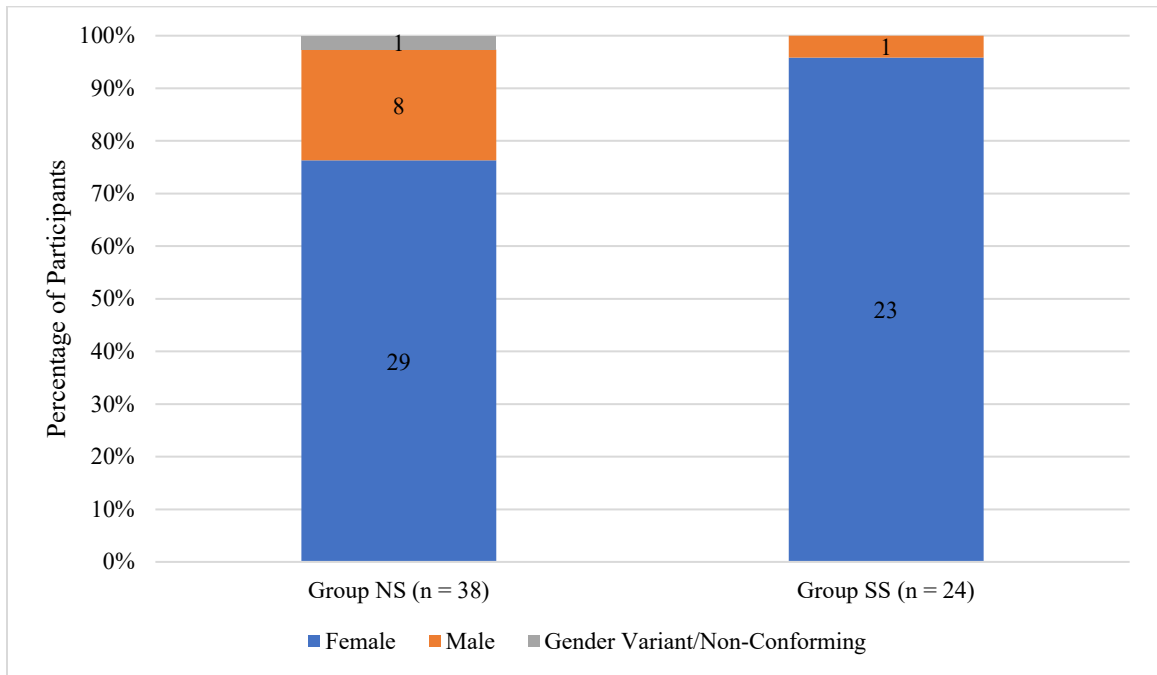
Figure 10. Gender Identity of Main Group

In Group NS (n = 38), 31 (82%) participants selected White and 7 (18%) selected Asian. In Group SS (n = 24), 16 (67%) participants selected White, 5 (21%) selected Asian, 2 (8%) selected more than one, and 1 (4%) chose not to answer. Of the 2 participants who selected more than one racial category, 1 person identified as "White and Black" and 1 identified as "Asian, White" (see Figure 11).
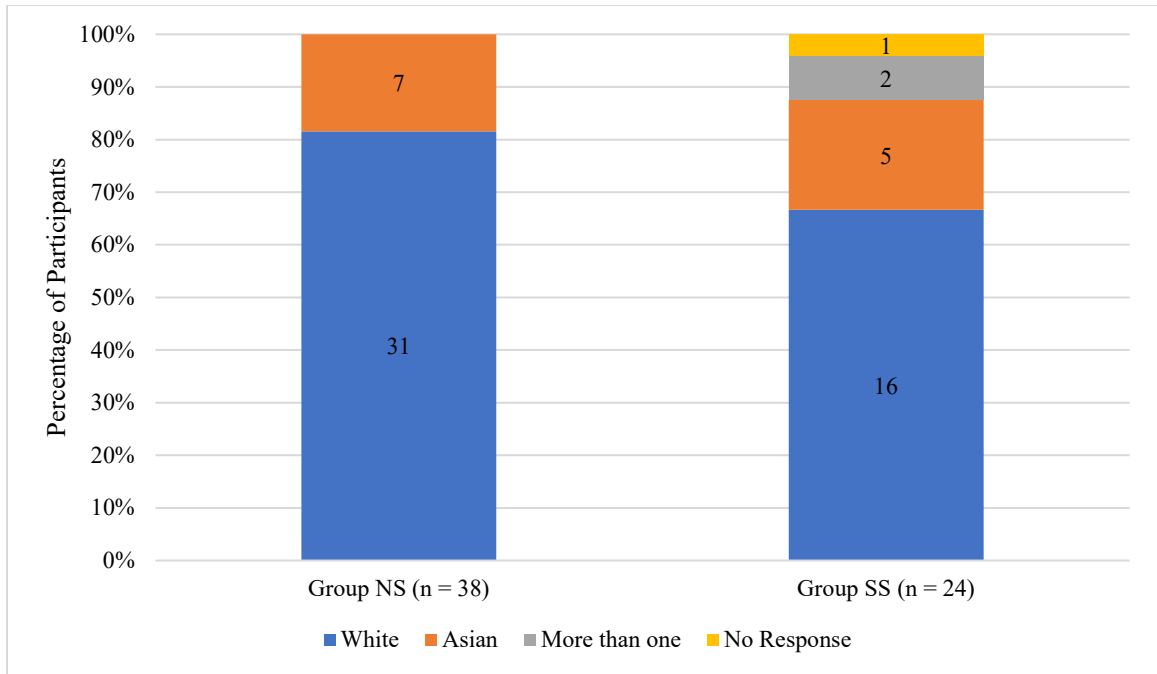
Figure 11. Racial Identity of Main Group

All responses from Group NS (n = 38) were not Hispanic or Latino. For Group SS (n = 24), 23 (96%) participants were not Hispanic or Latino and 1 (4%) chose not to answer (see Figure 12).
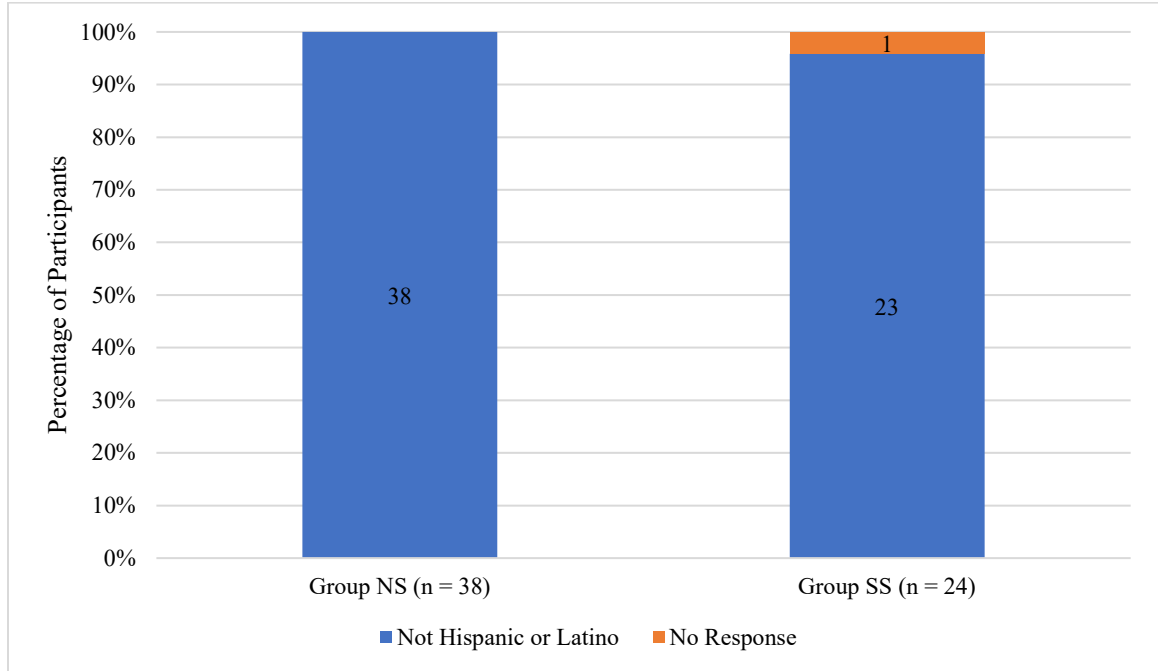
Figure 12. Ethnicity of Main Group

In Group NS (n = 38), 4 (11%) participants identified as being bilingual (Tagalog – 3; Hindi – 1) and 34 (89%) said English was their primary language. In Group SS (n = 24), 2 (8%) participants identified as being bilingual (Korean) and 22 (92%) said English was their primary language. When asked in Q11 to select which statements applied to them, none of the participants selected "English is not my primary language" (see Figure 13).
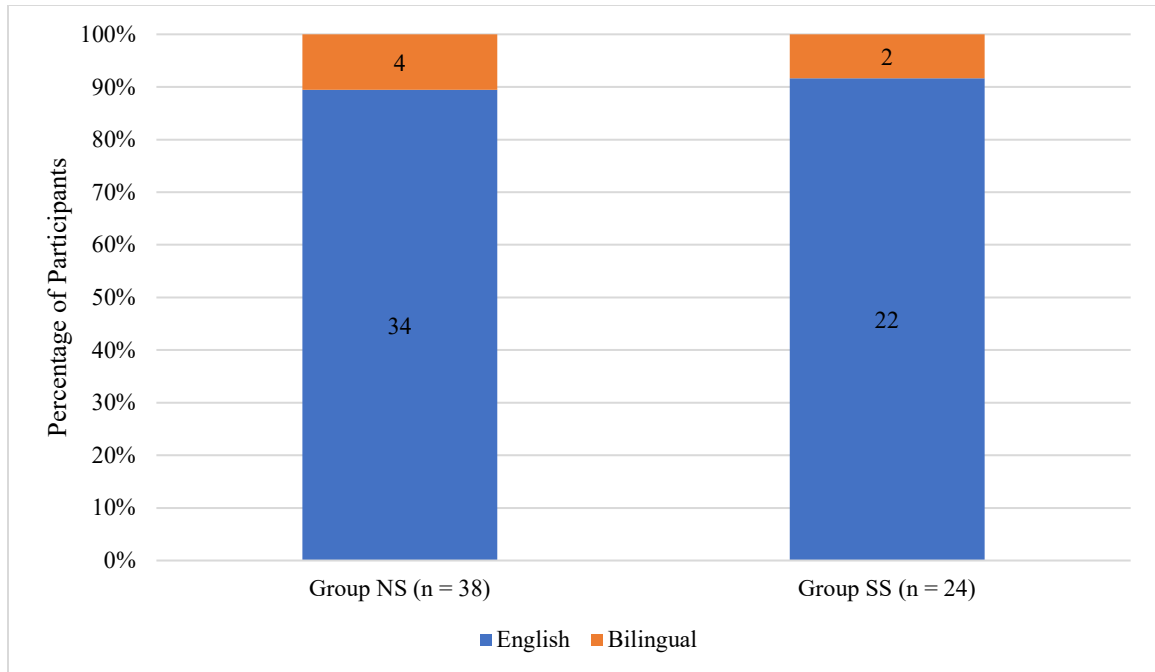
Figure 13. Primary Language of Main Group

In Q4 participants were asked to select the school they currently attend from the drop-down list provided. All of the responses from Group NS (n = 38) and Group SS (n = 24) were the University of Pittsburgh except 1 (4%) participant from Group SS chose not to answer.

In Q10 participants were asked to select the description that best matched their hometown. In Group NS (n = 38), 11 (29%) responses were Urbanized Area, 24 (63%) were Urban Cluster, and 3 (8%) were Rural. In Group SS (n = 24), 9 (37.5%) responses were Urbanized Area, 9 (37.5%) were Urban Cluster, and 6 (25%) were Rural.

In Q12 participants identified their primary caregiver (the person they spent their formative years with). In Group NS (n = 38), 33 (87%) participants chose "mother", 2 (5%) chose "father", 2 (5%) chose "parent", and 1 (3%) chose "adoptive parent." In Group SS (n = 24), 19 (79%) participants chose "mother", 4 (17%) chose "father", and 1 (4%) chose "parent." In Q13

participants reported the highest level of education attained by the caregiver they identified in Q12 (see Figure 14).
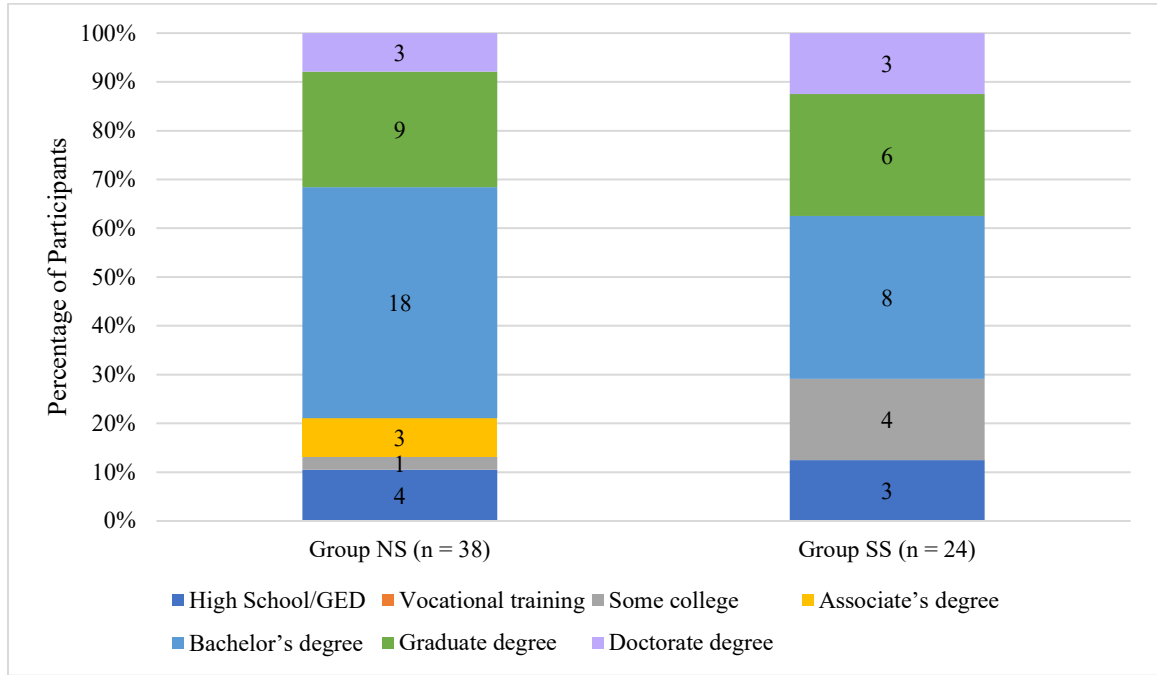
Figure 14. Highest Level of Education by Primary Caregiver of Main Group

Q14 asked participants if they had a second primary caregiver and if they selected "yes", Q15 asked participants to identify their second primary caregiver. In Group NS (n = 38), 30 (79%) participants chose "father", 1 (3%) chose "mother", 1 (3%) chose "parent", 1 (3%) chose "adoptive parent", 1 (3%) did not answer, and 4 (11%) reported not having a second primary caregiver. In Group SS (n = 24), 15 (63%) participants chose "father", 3 (13%) chose "mother", 1 (4%) chose "parent", and 5 (21%) reported not having a second primary caregiver. In Q16 participants reported the highest level of education attained by the second primary caregiver they identified in Q15 (see Figure 15).
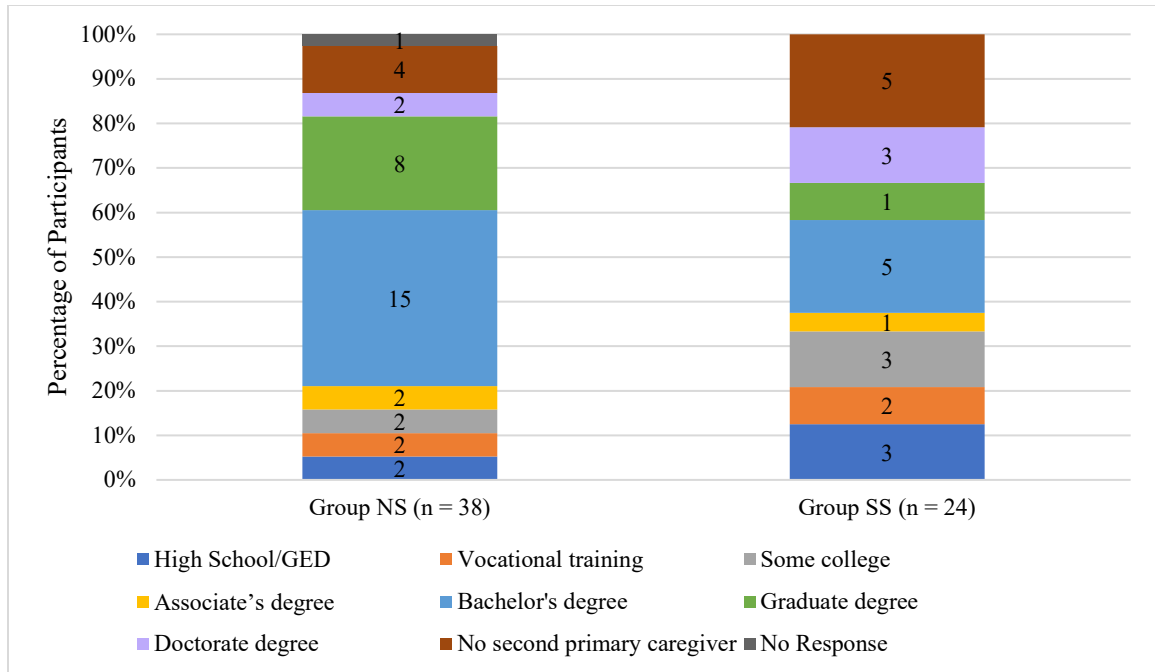
Figure 15. Highest Level of Education by Second Primary Caregiver of Main Group

In Q11 participants were able to select the statements that applied to them. Group 2 had the option of selecting the option "None of these statements apply to me." In Group 2 (n = 62), 38 (61%) participants said none of the statements applied to them – this is Group NS. The other 24 (39%) participants in Group 2 selected one or more of the statements – this is Group SS (see Figure 16).
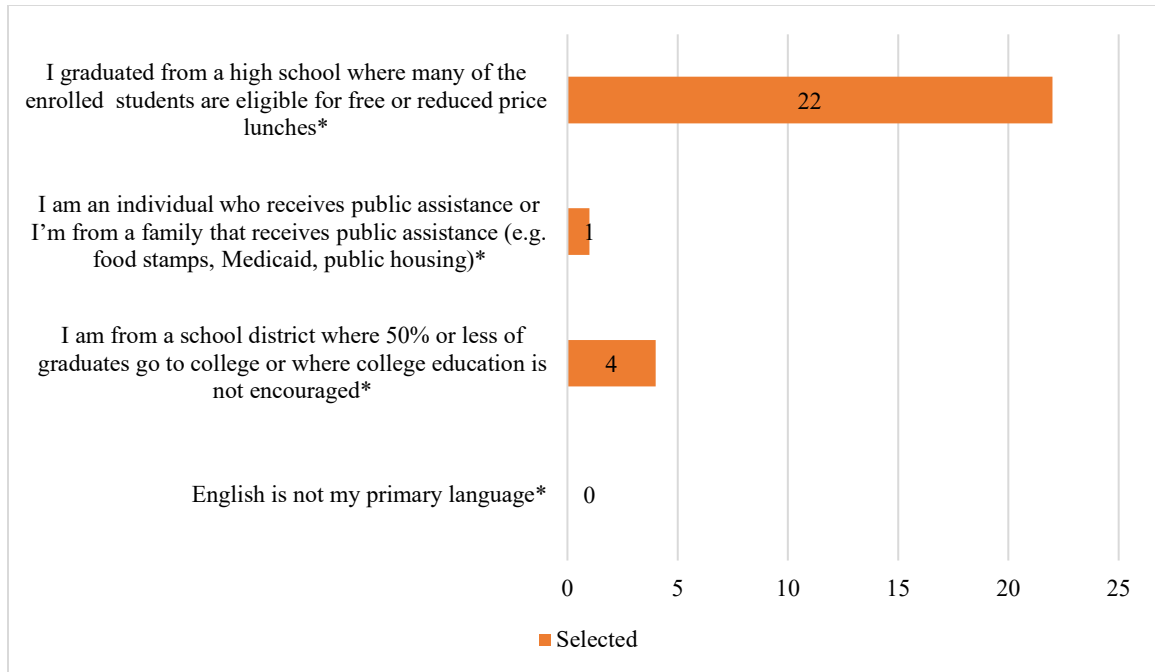
Figure 16. Q11 Statements Selected by Group Selected Statement (n = 24)

Note: The multi-select feature was used in this questions – the total numbers do not reflect the number of participants since they could pick multiple options.

The demographic characteristics and their possible implications regarding participant answers to the rest of the survey will be addressed in the discussion.

3.3   RESEARCH QUESTION 1

What majors do first and second-year students select?

The survey participants were asked questions related to the selection of their college major (Q18, Q19, Q23, and Q24). Some of the questions did not require the participant to choose an answer and if they did not select an answer, their non-response is shown below as "No Response." The

tables are divided into two columns of responses to accommodate the split data: Restricted Response Group and Group 2.

3.3.1 Data of Entire Group (n = 103)

In Q18, participants reported whether or not they knew their intended major when they selected their undergraduate university or college. Of the 103 total participants, 77 (75%) said "yes", 24 (23%) said "no", and 2 (2%) chose not to answer. In the Restricted Response Group (n = 41), 32 (78%) participants said "yes", 8 (20%) said "no", and 1 (2%) chose not to answer. In Group 2 (n = 62), 45 (73%) participants said "yes", 16 (26%) said "no", and 1 (2%) chose not to answer (see Figure 17).

Figure 17. Knowledge of Intended Major of Participants

All participants were asked to report their intended major using a free text box in Q19. The majority of participants in the Restricted Response Group reported a CSD-related major whereas the popular majors in Group 2 included Biology, Engineering, Psychology, and Business. Table 1 reports the responses from the Restricted Response Group (n = 41) with the number of people who reported each major. Table 2 reports the responses from Group 2 (n = 62) with the number of people who reported each major in Q19.

Table 1. Intended Majors of Restricted Response Group (n = 41)

# of Participants per Major	Intended Major
26	Speech-Language Pathology / Audiology / Speech-Language Pathology and Audiology / Communication Science and Disorders
12	Did not report
1	Chemical Engineering, Pharmacy, Rehabilitation Science

Table 2. Intended Majors of Main Group (n = 62)

# of Participants per Major	Intended Major
11	Biology (1 pre-med, 1 Molecular Biology)
7	Engineering (2 Mechanical, 1 Bioengineering, 1 Chemical, and 1 Computer)
5	Psychology, Business (2 Finance, 1 Marketing, 1 Supply Chain Management)
3	Communication Science and Disorders, Neuroscience, Political Science
2	Chemistry, Emergency Medicine, Mathematics-Economics, Natural Science
1	Biochemistry, Communications & Political Science (double major), English (pre-law), English Literature, Environmental Studies, Film Production, History & Political Science (double major), Media & Professional Communications, Music Education, Nursing, Pharmacy, Physics, Pre-Dentistry, Russian, Did not report

Of the 103 participants, 24 indicated in Q18 they did not know their major. They were shown Q23 and Q24 to gather more information about potential majors of interest. Q23 asked if

participants had a general idea of what they want to major in. In the Restricted Response Group (n = 8/41): 7 (87.5%) said "definitely yes" and 1 (12.5%) said "probably yes." In Group 2 (n = 16/62), 4 (25%) said "definitely yes", 7 (44%) said "probably yes", 1 (6%) said "might or might not", and 4 (25%) did not answer.

Q24 asked participants to select the major fields they are currently most interested in. They were allowed to select as many or as few boxes as they wanted. Table 3 represents the frequency counts of the major fields that participants showed interest in.

Table 3. Major Fields of Interest of Participants

Major Fields	Restricted Response Group (n = 8/41)	Group 2 (n = 16/62)
Health-related	6	5
Languages/Linguistics	3	1
Education	2	3
Fine Arts	1	3
Pre-Med	1	3
Social Science	1	3
Natural Science	0	4
Business	0	2
Mathematics / Computing	0	2
Other	1 (Occupational Therapy)	2 (Communications / PR or Film; Music)

Note: The multi-select feature was used in this question – the total numbers do not reflect the number of participants since they could pick multiple options.

3.3.2 Data from Main Group (n = 62)

Group 2 represents the 62 participants who had the correct version of Q11 that included: "None of these statements apply to me." This group was broken into Group NS ("No Statements")

which represents the 38 participants who said that none of the statements in Q11 applied to them, and Group SS ("Selected Statement"), which represents the 24 participants who selected one or more of the statements in Q11.

In Q18, participants reported whether or not they knew their intended major when they selected their undergraduate university or college. In Group NS (n = 38), 29 (76%) participants said "yes", 8 (21%) said "no", and 1 (3%) chose not to answer. In Group SS (n = 24), 16 (67%) participants said "yes" and 8 (33%) said "no" (see Figure 18).
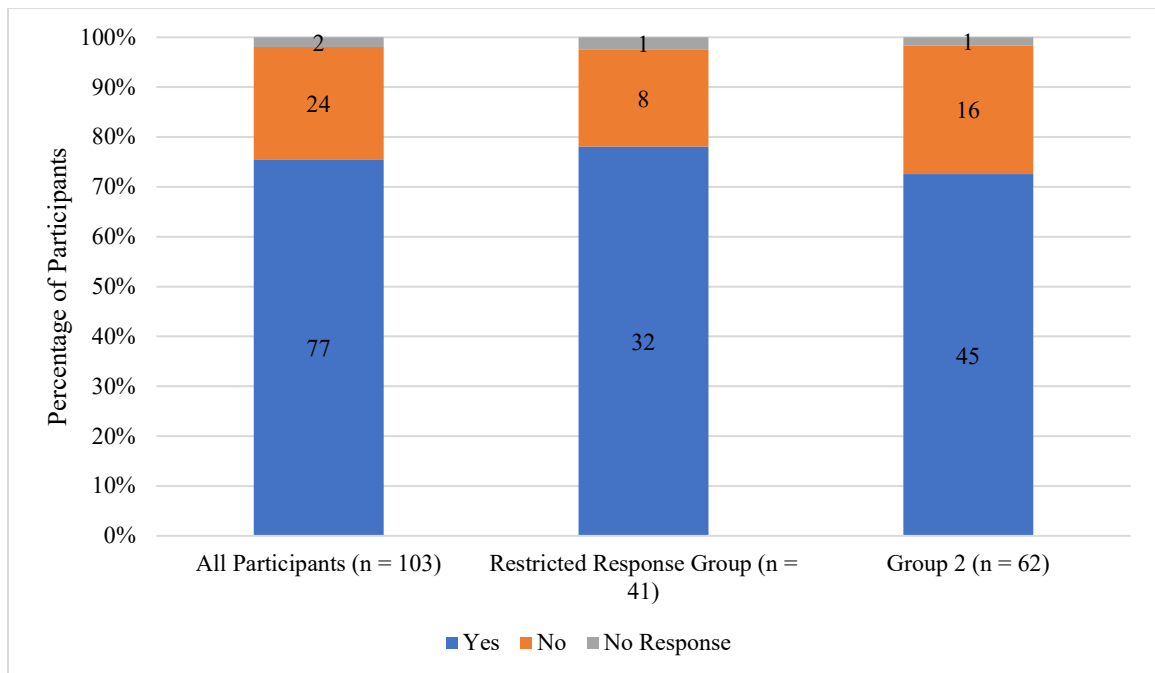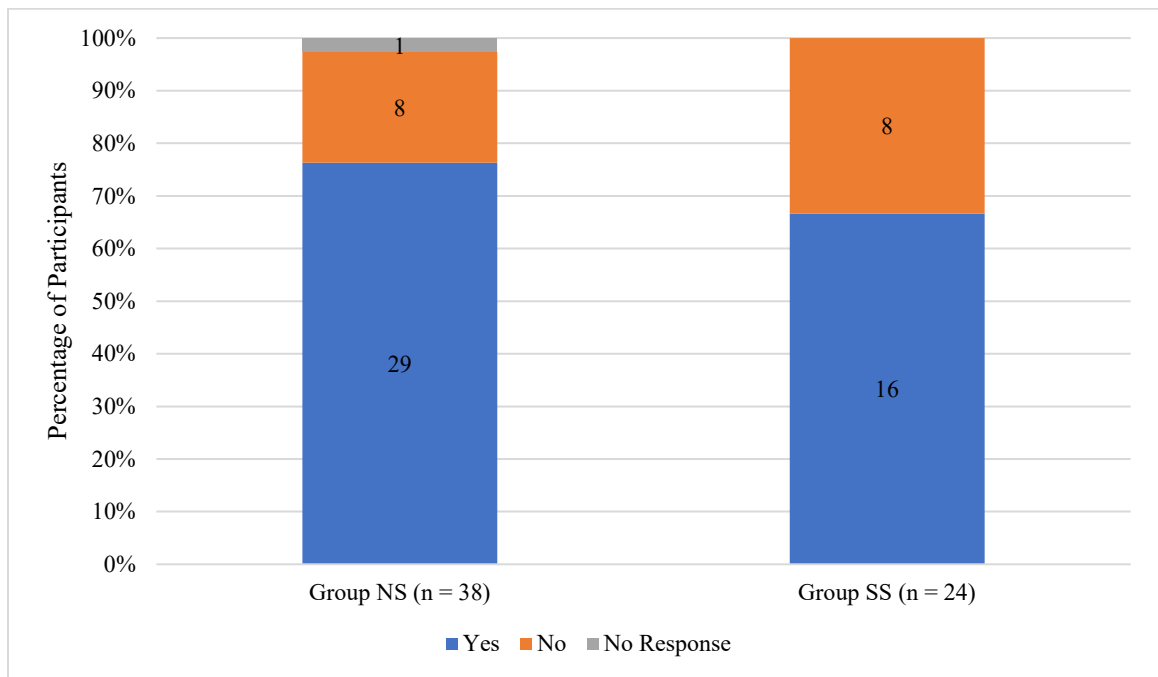

Figure 18. Knowledge of Intended Major of Main Group

Participants were asked to report their intended major using a free text box in Q19. Biology was the most popular major among Groups NS and SS, followed closely behind by Engineering. Table 4 reports the responses from Group NS (n = 38) with the number of people who reported

each major. Table 5 reports the responses from Group SS (n = 24) with the number of people who reported each major in Q19.

Table 4. Intended Majors of Group No Statements (n = 38)

# of Participants per Major	Intended Major
6	Biology (1 pre-med)
4	Engineering (2 Mechanical and 1 Computer), Business (2 Finance and 1 Marketing)
2	Communication Science and Disorders, Natural Sciences, Neuroscience, Psychology
1	Biochemistry, Communications & Political Science (double major), Computer Science, Emergency Medicine, English (pre-law), English Literature, Environmental Science, Film Production, History & Political Science (double major), Mathematics-Economics, Media and Professional Communications, Nursing, Pharmacy, Political Science, Pre-Dentistry, Did not report

Table 5. Intended Majors of Group Selected Statement (n = 24)

# of Participants per Major	Intended Major
5	Biology (1 Molecular Biology)
3	Engineering (1 Bioengineering and 1 Chemical Engineering), Psychology
2	Chemistry, Political Science
1	Communication Science and Disorders, Computer Science, Emergency Medicine, Mathematics-Economics, Music Education, Neuroscience, Physics, Russian, Supply Chain Management

Q23 and Q24 were presented to the participants who selected "No" on Q18 when asked if they knew their intended major when selecting their undergraduate college or university. Q23 asked if participants had a general idea of what they want to major in. In Group NS (n = 8/38), 3 (37.5%) participants selected "definitely yes", 2 (25%) selected "probably yes", 1 (12.5%) selected "might or might not", and 2 (25%) chose not to answer. In Group SS (n = 8/24), 1 (12.5%)

participants selected "definitely yes", 5 (62.5%) selected "probably yes", and 2 (25%) chose not to answer.

Q24 asked participants to select the major fields they are currently most interested in. They were allowed to select as many or as few boxes as they wanted (see Table 6).

Table 6. Major Fields of Interest of Main Group

Major Fields	Group NS (n = 8/38)	Group SS (n = 8/24)
Health-related	2	3
Languages/Linguistics	0	1
Education	1	2
Fine Arts	1	2
Pre-Med	1	2
Social Science	2	1
Natural Science	2	2
Business	1	1
Mathematics / Computing	1	1
Other	1 (Communications / PR or Film)	1 (Music)

Note: The multi-select feature was used in this question – the total numbers do not reflect the number of participants since they could pick multiple options.

3.4   RESEARCH QUESTION 2

What motivates academic major and career choices?

How do students discover different majors/careers and why do they chose them (Q20, Q21, Q22, and Q25)? The following graphs and charts account for the collected information related to Research Question 2.

3.4.1   Data of Entire Group (n = 103)

Q20 was displayed to the participants who had previously selected "Yes" on Q18 when asked whether or not they knew their intended major when they selected their undergraduate university or college. In the Restricted Response Group (n = 41), 32 (78%) participants said "yes" and in Group 2 (n = 62), 45 (73%) participants said "yes." The participants were asked to identify the primary way that they became aware of their chosen career field by selecting one of the options provided or using a free text box. Participants were allowed to select only one option. There were 6 participants who had selected the "Other" option and wrote their own answers (see Figure 19).

Figure 19. Source of Major/Career Awareness of Participants

Both Q21 and Q22 were displayed to participants who had selected "No" for Q18 when asked whether or not they knew their intended major when they selected their undergraduate

53

university or college. In the Restricted Response Group (n = 41), 8 (19.5%) participants said "no" and in Group 2 (n = 62), 16 (26%) participants said "no." In Q21 participants were asked to select the way(s) in which they have been searching for a college major. Participants were allowed to select as many or as few boxes as they wanted. The frequency counts of their responses are reported in a bar chart below (see Figure 20).
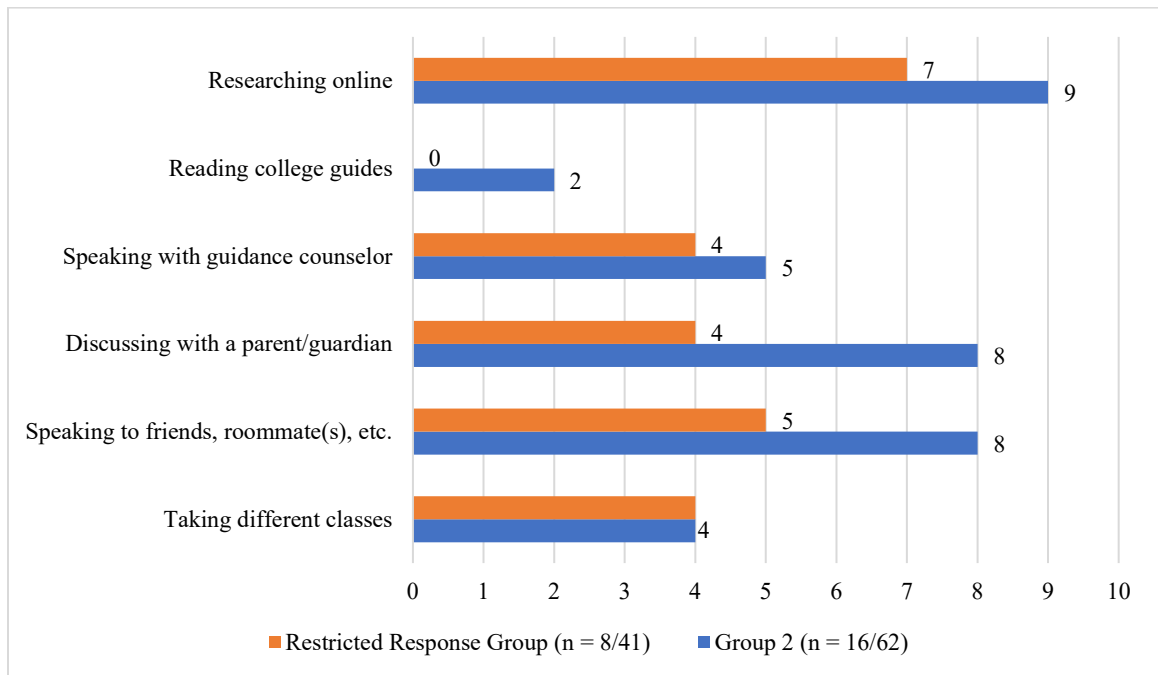
Figure 20. Search for Major by Participants

Note: The multi-select feature was used in this question – the total numbers do not reflect the number of participants since they could pick multiple options.

Q22 presented a slider that allowed participants to select how many hours they spend during the average week researching different majors, career-paths, and/or schools. The options ranged from 0 to 20 hours. Of the Restricted Response Group (n = 8/41) participants who answered this question, 1 (12.5%) person reported spending 1 hour, 4 (50%) reported 2 hours, 2 (25%) reported 3 hours, and 1 (12.5%) reported spending 8 hours per week. Of the Group 2 (n = 16/62)

participants who answered this question, 2 (12.5%) people reported spending 1 hour, 2 (12.5%) reported 2 hours, 3 (19%) reported 3 hours, 4 (25%) reported 5 hours, and 1 (6%) reported spending 7 hours per week.

In Q25 participants ranked the most important factors influencing their choice of major from most important (1) to least important (4). The options were: "Graduate school requirement", "Perceived difficulty of major", "Salary of future career", and "Parent/guardian input." There was a fifth option called "Other" that provided a free text box if participants wanted to rank something that was not already listed. If a participant did not choose to rank "Other" then it was defaulted to the bottom of the list. The options ranked least important cannot be compared because some participants ranked "Other", resulting in five ranks, but most participants left "Other" by default at the bottom. Thus, we cannot be sure if the participant had another reason but chose not to write it in the text box or if they had no fifth reason. The Restricted Response Group (n = 41) had 36 participants and Group 2 (n = 62) had 56 participants report rankings (see Figure 21 and Figure 22). In the Restricted Response Group the 4 participants who had ranked "Other" as most important reported reasons including personal interest and helping others. In Group 2 there were 18 participants who ranked "Other" as most important. Most of the reported reasons included passion for or interest in a certain subject. Figure 21 represents the frequency counts for how many people in the Restricted Response Group assigned each reason to a particular ranking. Figure 22 presents data for Group 2. Figure 23 represents the frequency counts for what was ranked most important to participants for both the Restricted Response Group and Group 2.
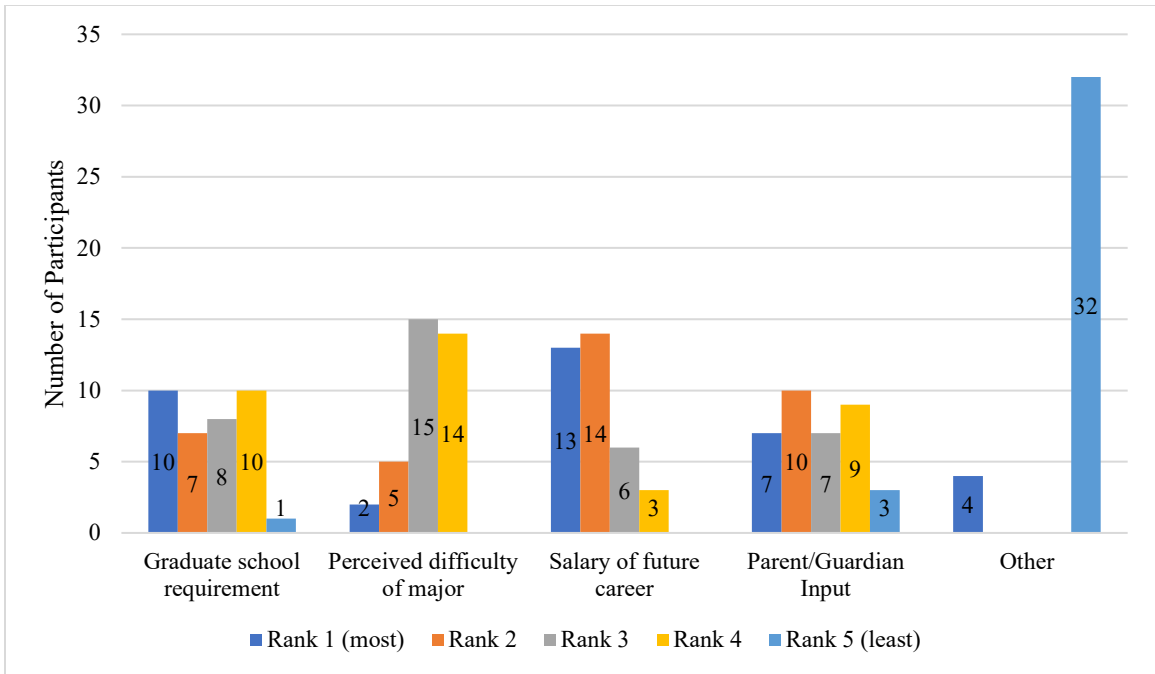
Figure 21. Importance of Influencing Factors for Restricted Response Group (n = 36/41)

Figure 22. Importance of Influencing Factors for Main Group (n = 56/62)
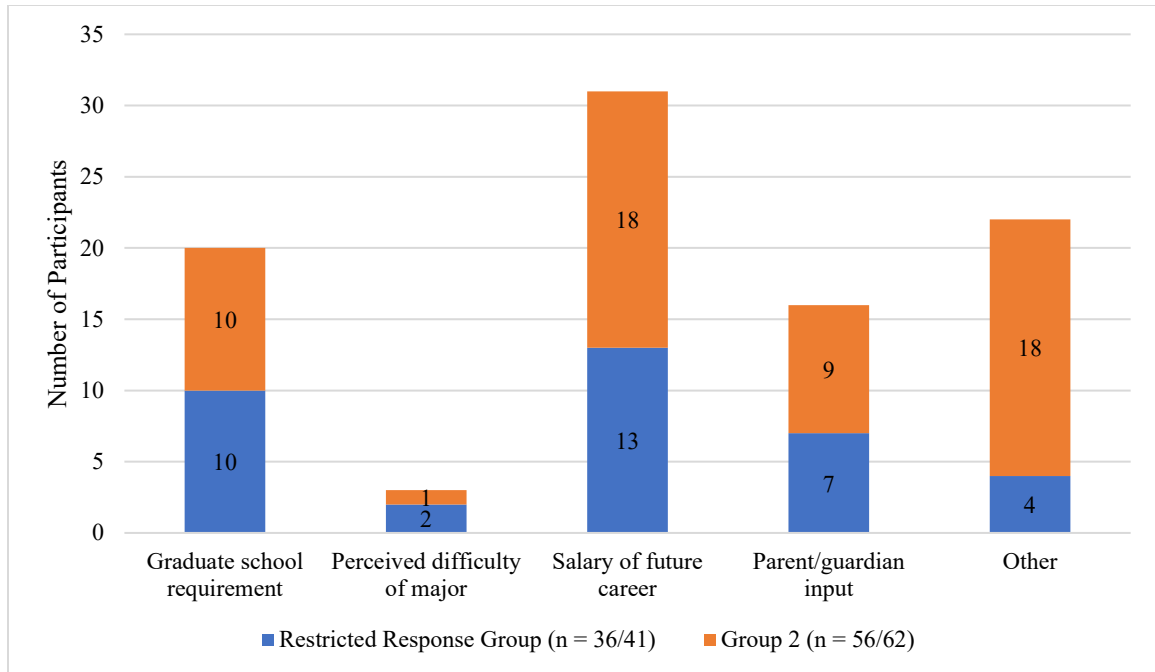
Figure 23. Most Important Influential Factor to Participants

3.4.2 Data from Main Group (n = 62)

Group 2 was broken into Group NS ("No Statements applied to me") with 38 participants, and Group SS ("Selected Statements") with 24 participants.

Q20 was displayed to the participants who had previously selected "Yes" on Q18 when asked whether or not they knew their intended major when they selected their undergraduate university or college. In Group NS (n = 38), 29 (76%) participants said "yes" and in Group SS (n = 24), 16 (67%) participants said "yes." The participants were asked to identify the primary way that they became aware of their chosen career field by selecting one of the options provided or using a free text box. Participants were allowed to select only one option. The frequency counts of their responses are reported in a bar chart below (see Figure 24).
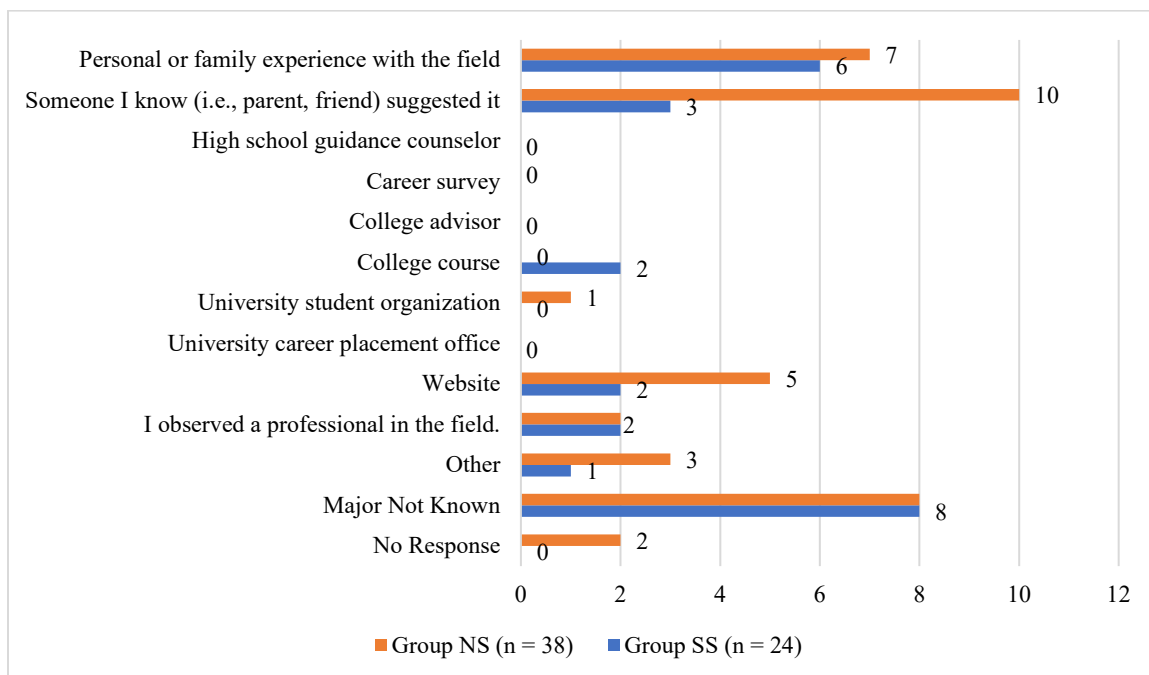
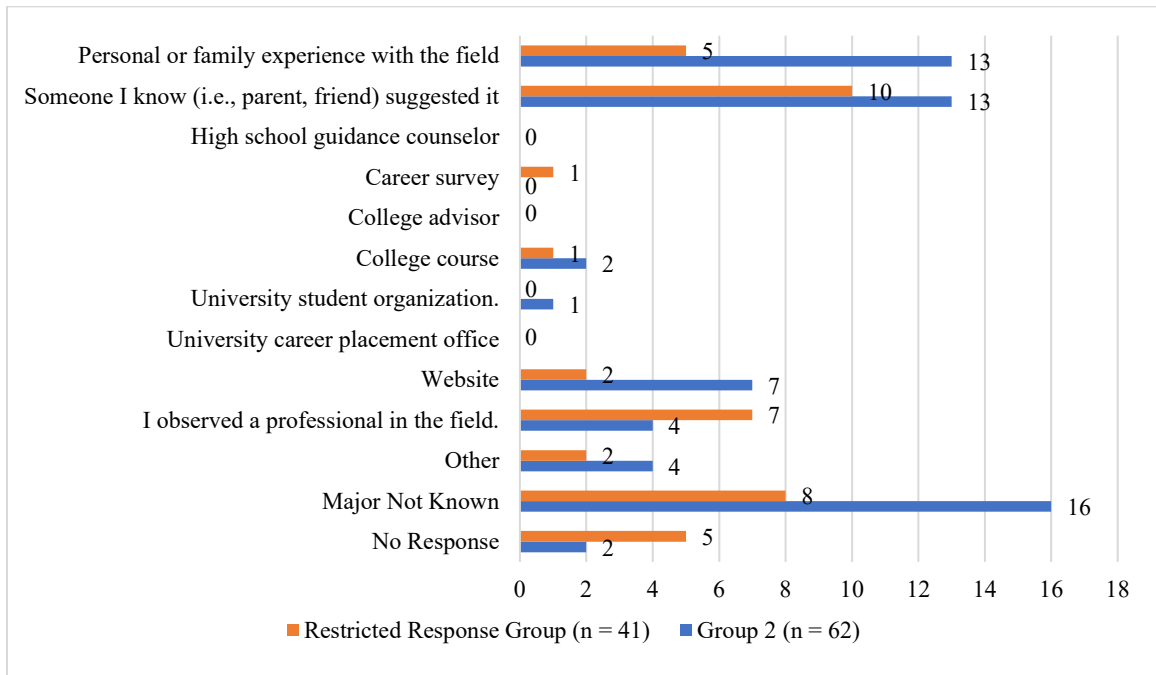**Figure 24. Source of Major/Career Awareness of Main Group**

Q21 was displayed to participants who had selected "No" for Q18 when asked whether or not they knew their intended major when they selected their undergraduate university or college. In Group NS (n = 38), 8 (21%) participants said "no" and in Group SS (n = 24), 8 (33%) participants said "no." In Q21 the 16 participants were asked to select the way(s) in which they have been searching for a college major. Participants were allowed to select as many or as few boxes as they wanted. The frequency counts of their responses are reported in a bar chart below (see Figure 25).
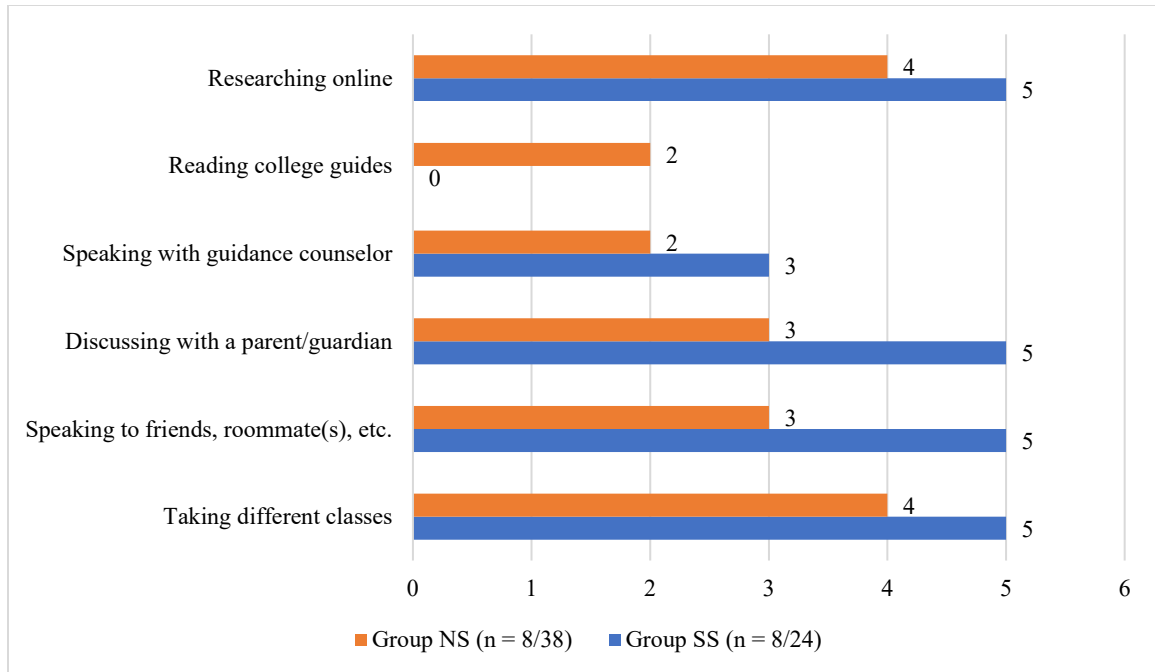
Figure 25. Search for Major by Main Group

Note: The multi-select feature was used in this questions – the total numbers do not reflect the number of participants since they could pick multiple options.
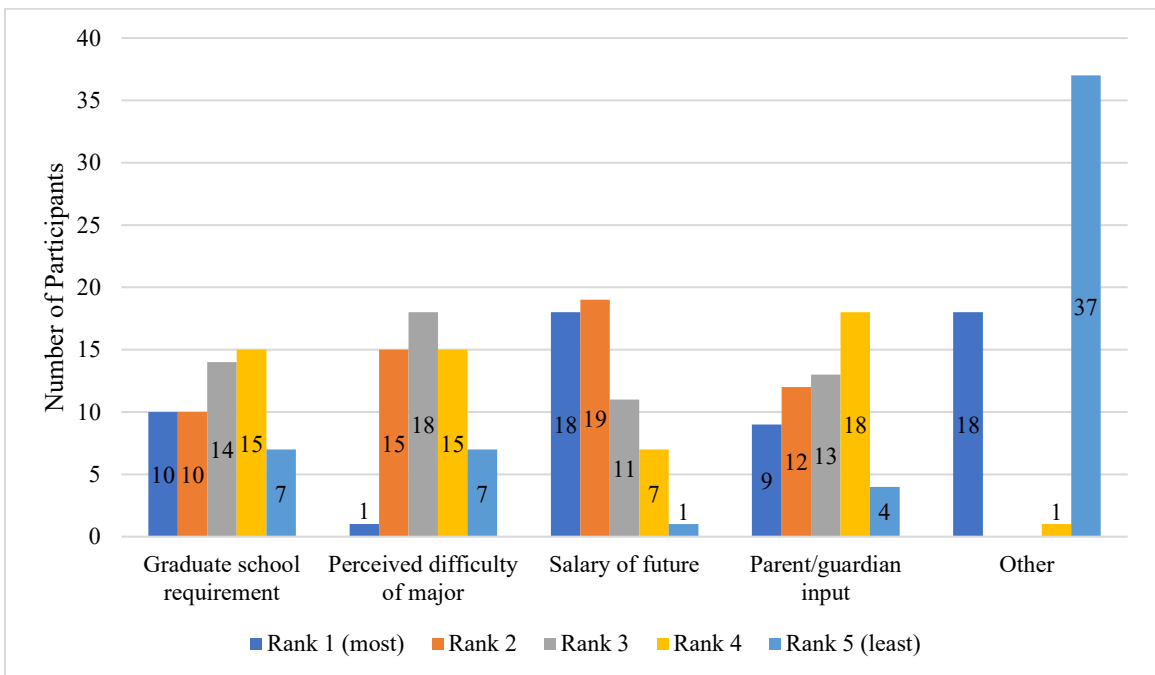
Q22 was displayed to participants who had selected "No" for Q18 when asked whether or not they knew their intended major when they selected their undergraduate university or college. It presented a slider that allowed participants to select how many hours they spend during the average week researching different majors, career-paths, and/or schools. The options ranged from 0 to 20 hours. In Group NS (n = 8/38): 2 (25%) people reported spending 1 hour, 1 (12.5%) person reported 2 hours, 2 (25%) people reported 3 hours, 1 (12.5%) person reported spending 5 hours per week, and 2 (25%) participants did not answer. In Group SS (n = 8/24): 1 (12.5%) person reported spending 2 hours, 1 (12.5%) reported 3 hours, 3 (37.5%) people reported 5 hours, 1 (12.5%) person reported spending 7 hours per week, and 2 (25%) participants did not answer.

In Q25 participants ranked the most important factors influencing their choice of major from most important (1) to least important (4). The options were: "Graduate school requirement", "Perceived difficulty of major", "Salary of future career", and "Parent/guardian input." There was a fifth option called "Other" that provided a free text box if participants wanted to rank something that was not already listed. If a participant did not choose to rank "Other" then it was defaulted to the bottom of the list. The options ranked least important cannot be compared because some participants ranked "Other", resulting in five ranks, but most participants left "Other" by default at the bottom. Thus, we cannot be sure if the participant had another reason but chose not to write it in the text box or if they had no fifth reason. Group NS (n = 38) had 34 participants report and Group SS (n = 24) had 22 of participants report a ranking (see Figure 26 and Figure 27). Figure 26 represents the frequency counts for how many people in Group NS assigned each reason to a ranking. Figure 27 presents data for the same question but collected from Group SS. Figure 28 represents the frequency counts for what was ranked most important to participants for both Group NS and Group SS.
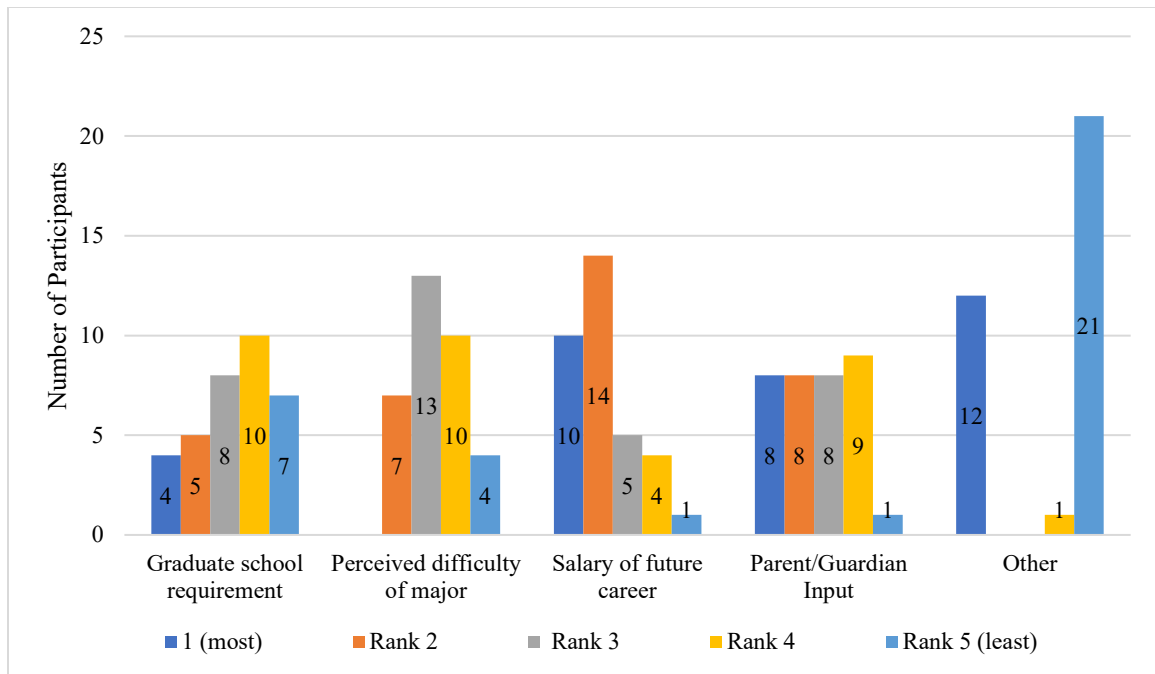
Figure 26. Importance of Influencing Factors for Group No Statements (n = 34/38)

There were 13 people in Group NS (n = 34/38) that had ranked "Other" – 1 participant ranked it 4th and 12 ranked it 1st. The participant who ranked it 4th did not provide a reason. Some responses from the 12 participants who ranked "Other" as most important include:

- *"personal relevance"*

- *"enthusiasm toward the subject"*

- *"Like the subject"*

- *" I felt the work was important"*

- *"Interest"* (response from three different participants)

- *"Job security/good application of my skills"*
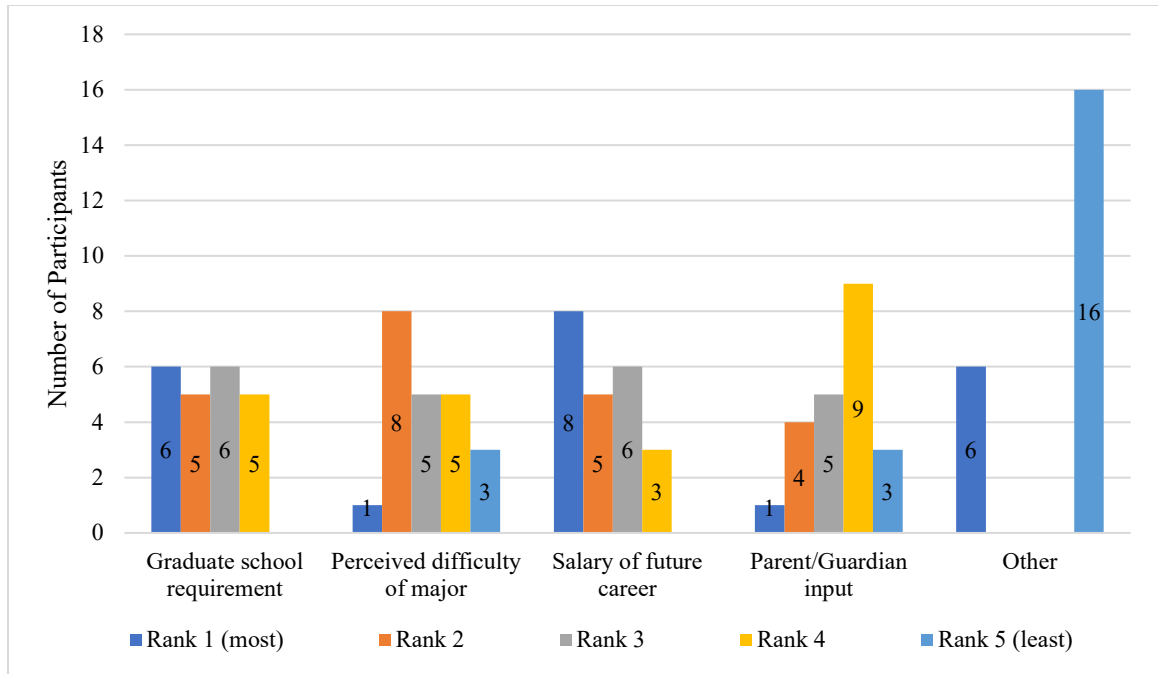
Figure 27. Importance of Influencing Factors for Group Selected Statement (n = 22/24)

There were 6 participants from Group SS 9n= 22/24) that had ranked "Other" as most important. Their reasons were:

- *"Sense of fulfillment"*

- *"I enjoy it"*

- *"How much I want to pursue something I love"*

- *"future career/my interests"*

- *"Interest in subject"*

- *"Involvement in medicine"*
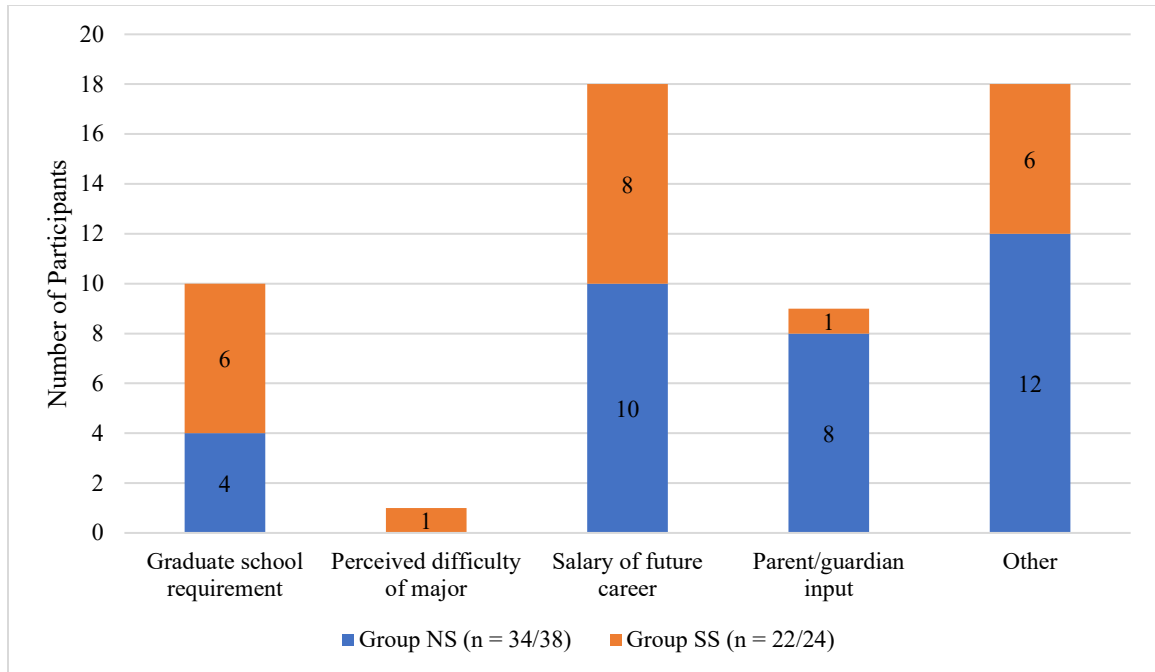
Figure 28. Most Important Influential Factor to Main Group

3.5   RESEARCH QUESTION 3

Why do students choose (or not) to pursue a CSD profession?

The questions in the survey that addressed this research question addressed how students perceived speech-language pathology and audiology, as well as why they either would or would not pursue them (Q26 through Q31). The Restricted Response Group and Group 2 will be reported separately due to an error in the version of the survey distributed to the Restricted Response Group. Some themes and indicative quotes are reported in this section but the complete list of free text responses for Q26-Q31 collected can be found in Appendix B.

3.5.1   Data from Restricted Response Group

Restricted Response Group – Audiology

Q26 asked Restricted Response Group (n = 41) participants to describe what they thought audiologists do and 36 responses were received. This group had the version of the survey that displayed the description of audiology from Q27 underneath the free text box in Q26. Thus it is possible but not guaranteed that participants read that material before answering. This is why the responses for this group are reported separately from Group 2's data. The Restricted Response Group was also comprised mostly of CSD majors. Every response recorded mentioned hearing, ears, and/or related terms. Some definitions were simple and did not provide many details. Below are some examples of responses:

- *"Hearing Testing"*
- *"Hearing doctors"*
- *"Test hearing and evaluate how we hear."*

Other definitions were more developed, such as:

- *"It depends. Some do VNR or balance testing by checking the eyes and auditory reflux.* [*sic*] *They also help many ages with hearing aids. Some are paired with ENTs to provide the best diagnosis of patients"*
- *"Test and diagnose hearing for hearing loss, degree of hearing loss, fit hearing aids, help people with hearing loss deal with alternate ways to communicate"*
- *"Deal with conditions relating to the anatomy and physiology of the ear including hearing, balance, and infections."*

After participants had shared their thoughts regarding audiology, a standard definition was shown in Q27:

Audiology is the science of hearing, balance, and related disorders. Hearing and balance disorders can be assessed, treated, and rehabilitated by an audiologist. Audiologists are health care professionals who provide patient-centered care in the prevention, identification, diagnosis, and evidence-based treatment of hearing, balance, and other auditory disorders for people of all ages.

(ASHA, 2019c)

Participants were asked how likely they would be to pursue audiology after reading the description. The Restricted Response Group's (n = 41) responses were: 4 (10%) chose "extremely likely", 18 (44%) chose "somewhat likely", 7 (17%) chose "neither likely nor unlikely", 7 (17%) chose "somewhat unlikely", and 5 (12%) people chose not to answer (see Figure 29).
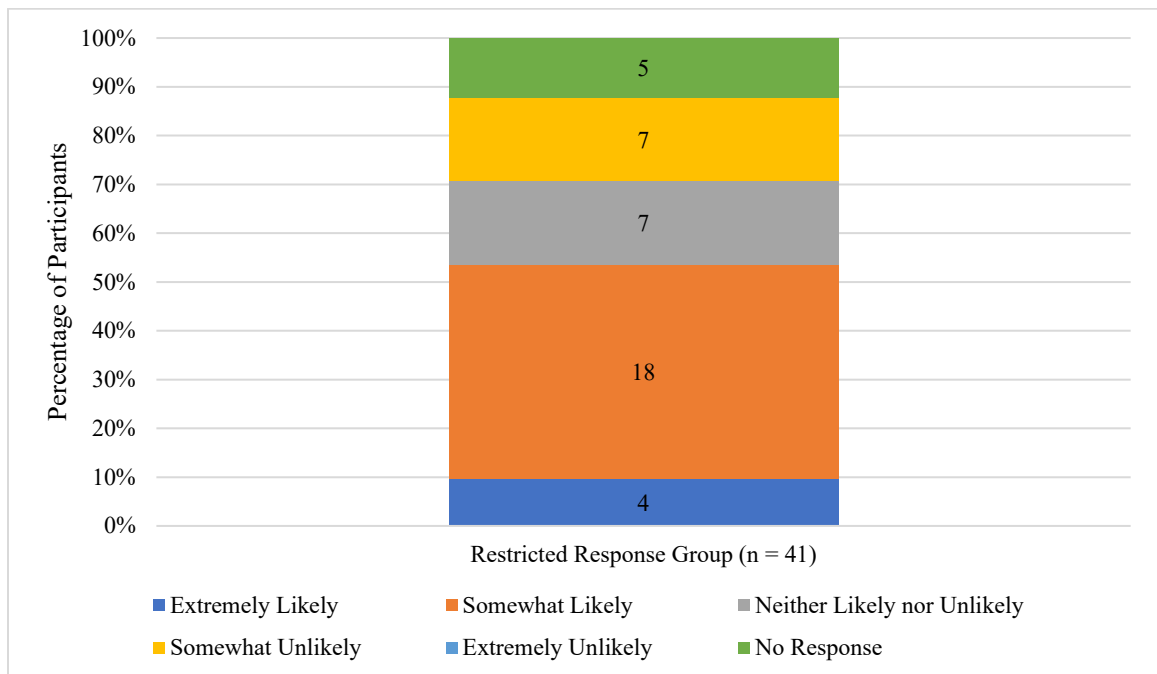
Figure 29. Restricted Response Group Interest in Audiology

65

Restricted Response Group – Speech-Language Pathology

Q28 asked Restricted Response Group (n = 41) participants to describe what they thought SLPs do and 36 responses were received. This group had the version of the survey that displayed the description of speech-language pathology from Q29 underneath the free text box in Q28. Thus it is possible but not guaranteed that participants read that material before answering. This is why the responses for this group are reported separately from Group 2's data. This group was also comprised mostly of CSD majors. Some answers were vaguer ("They help people mostly with their mouth area") whereas others had more depth ("Help people with various communication disorders or swallowing disorders function. They do this by assessment, therapy, and prevention"). Over half of the responses specifically mentioned that SLPs treat disorders. Exactly half of the responses mentioned only speech, language, and/or communication. Of the 36 responses, 17 mentioned swallowing or a related disorder.

In Q29, participants were given the following description of the profession of speech-language pathology:

> Speech disorders occur when a person is unable to produce speech sounds correctly or fluently, or has problems with their voice or resonance. Language disorders occur when a person has trouble understanding others (receptive language), or sharing thoughts, ideas, and feelings (expressive language). Swallowing disorders occur when a person has difficulties with either sucking, chewing, swallowing (or other issues regarding eating/drinking) following a traumatic event, neurological disease, cancer, or surgery. Speech-language pathologists (SLPs) work to prevent,

assess, diagnose, and treat speech, language, social communication, cognitive-communication, and swallowing disorders in children and adults.

(ASHA, 2019c)

Participants were asked how likely they would be to pursue speech-language pathology after reading the description. Specifically in the Restricted Response Group (n = 41), 31 (76%) participants chose "extremely likely", 3 (7%) chose "somewhat likely", 1 (2%) chose "neither likely nor unlikely", 1 (2%) chose "somewhat unlikely", and 5 (12%) people chose not to answer (see Figure 30).
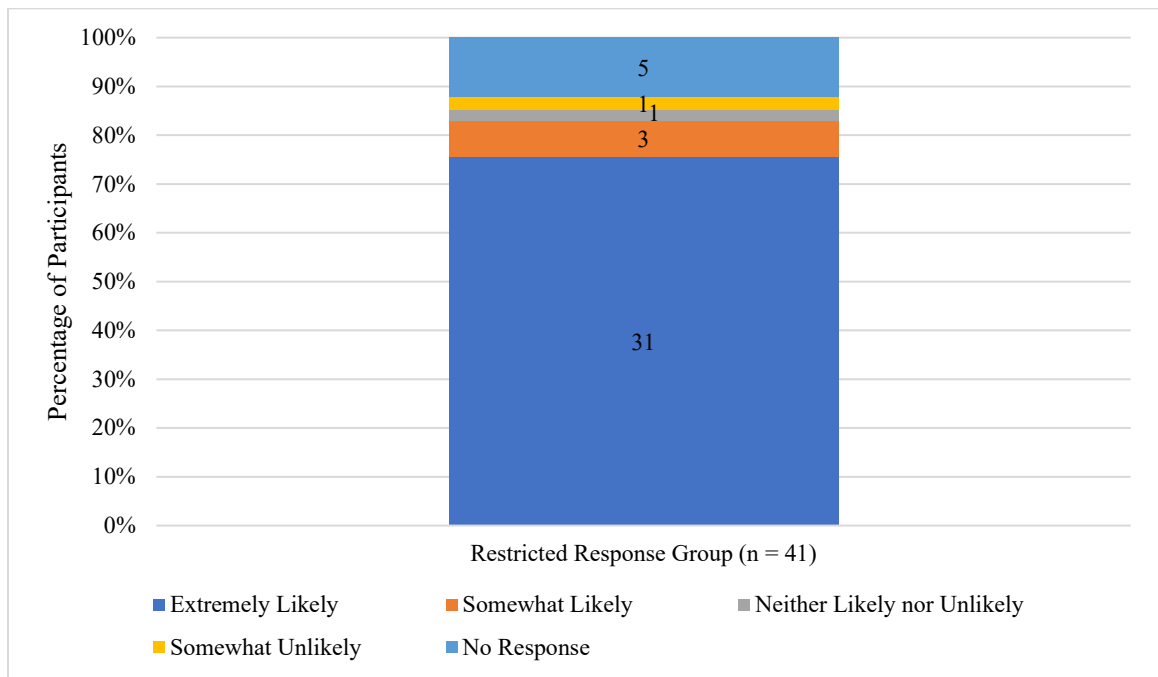
Figure 30. Restricted Response Group Interest in Speech-Language Pathology

Restricted Response Group – Pursuing CSD Professions

Q30 asked why Restricted Response Group participants (n = 41) would want to pursue a career in either audiology or speech-language pathology. There were 36 participants from the Restricted

Response Group who answered the question. Some of the responses presented personal experiences as reasoning, such as:

-*"To help people like my nephew, he has autism and is non verbal* [*sic*]. *His team included the speech and language pathologist has* [*sic*] *helped him communicate better extending his vocabulary with signing and some words"*

-*"Growing up i had childhood apraxia and i want to help people who are going through what i* [*sic*] *went through"*

-*"I went to an audiologist as a child and they changed my life. I want to do that for someone else."*

Of the 36 responses, 22 mentioned the word "help" and the appeal of assisting others. Many responses also included that the fields seemed interesting. Some responses noted that the fields appear to be fulfilling and impactful. Below are some examples of responses:

-*" I have always had a passion for helping people. I want to be on the rehab side of things, to help them regain something that has been lost. Communication is what makes us human, and it is highly complex, so I can spend my career helping others, while growing myself as a professional and as a person."*

-*" I find it very interesting and would love to help people with these problems in the future."*

-*"I want to help people and the English language fascinated me"*

Quite a few responses mentioned reasons related to job security and the prospect of a growing field. Some of responses were:

-*"The demand in the fields and the interest of how we communicate. And how much of an*

impact that has on our lives"

-"These fields provide career stability, it involves helping people, and I have experience as a patient of both a speech pathologist and an audiologist"

-"I would like to work in a school and I am also very interested in language and human communication. They have nice employment rates and are paid well"

In Q31, Restricted Response Group participants (n = 41) were asked to provide some reasons why they would not want to pursue a career in either audiology or speech-language pathology. There were 36 responses to the question. There were 11 participants who reported having no reasons for not pursuing either one or both of the careers. There were 11 responses that mentioned the perceived difficulty and/or length of the graduate school requirement with audiology most often mentioned specifically with this reason. Below are some examples of responses:

-"For audiology, it requires four years of grad school which is something I am not interested in doing."

-"Audiology is too long"

-"It is so hard to do and the schooling is so lengthy."

Some participants mentioned that they would not like to pursue one career over the other due to lack of interest or a specific area of practice. Below are some examples of responses:

-"I don't really go for the swallowing disorders. They confuse me and there's many things to go wrong"

-"I am more interested in speech language pathology than audiology."

-*"I love the science behind Audiology, but the practice itself is too mundane for my tastes."*

3.5.2   Data from Main Group

Group 2 – Audiology

Q26 asked Group 2 (n = 62) participants to describe what they thought audiologists do and 56 responses were received. There were 16 responses that mentioned studying topics related to hearing, sound, audio, and/or disorders. There were 4 responses that specifically mentioned listening (to logistics, to sound, etc.). In 11 responses, participants specifically mentioned helping people who have a hearing loss or an auditory disorder. Some examples of responses include:

-*"Help the hard of hearing and deaf"*

-*"Work with people who have hearing issues"*

-*"Give assistance/training to those with impaired hearing"*

-*"Study and help people with audio related issues in the body or research patterns"*

Another common theme among the responses was the mention of diagnosing and treating. A few participants established audiologists as specialized medical professionals:

-*"Medical professionals who deal with problems of the ear & associated hearing"*

-*"Along the lines of an ENT doctor, deal specifically with hearing"*

-*"Specialist in treating disorders related to the auditory system"*

- *"an ear doctor (AuD, PhD, or Masters, no MDs)"*

After participants had shared their thoughts regarding audiology, a standard definition was shown in Q27:

Audiology is the science of hearing, balance, and related disorders. Hearing and balance disorders can be assessed, treated, and rehabilitated by an audiologist. Audiologists are health care professionals who provide patient-centered care in the prevention, identification, diagnosis, and evidence-based treatment of hearing, balance, and other auditory disorders for people of all ages.

(ASHA, 2019c)

Participants were asked how likely they would be to pursue audiology after reading the description. In Group 2 (n = 62), 8 (13%) participants chose "somewhat likely", 21 (34%) chose "neither likely nor unlikely", 14 (23%) chose "somewhat unlikely", 12 (20%) chose "extremely unlikely", and 7 (11%) participants did not answer (see Figure 31).
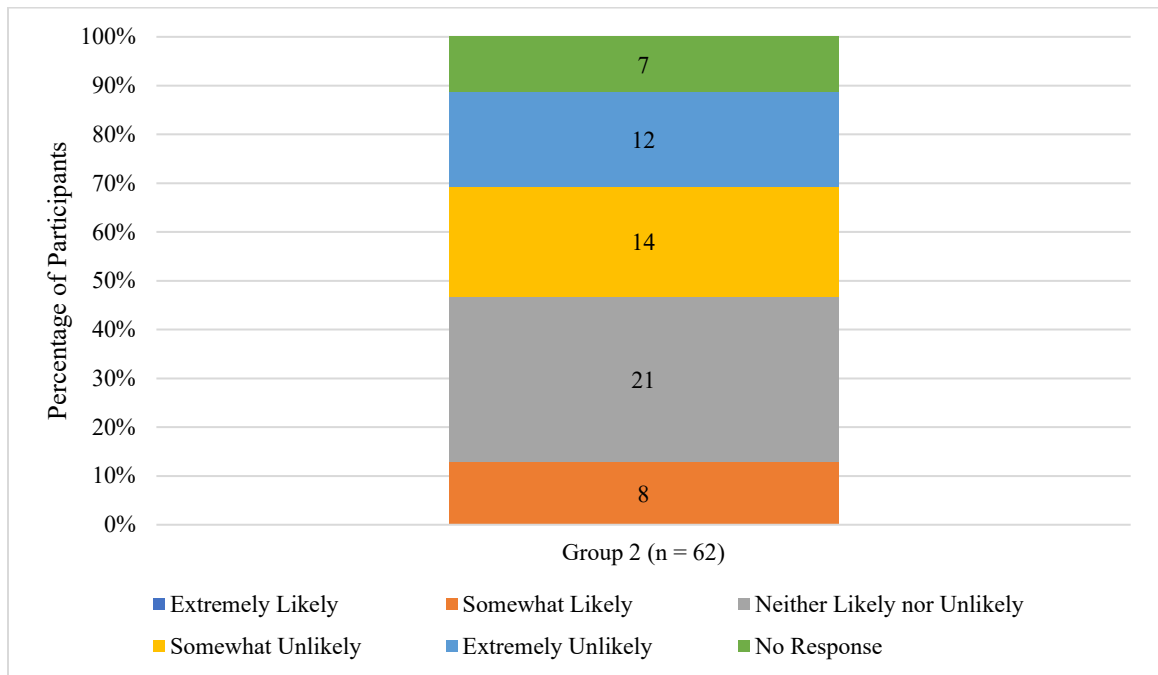
Figure 31. Main Group Interest in Audiology

71

Group 2 – Speech-Language Pathology

Q28 asked Group 2 (n = 62) participants to describe what they thought SLPs do and 55 responses were received. Nearly all of the responses mentioned speech, language, and/or communication. None of the responses mentioned swallowing or a related disorder. A few responses specified certain populations that SLPs may work with, for example:

- *"help children with speech and hearing disabilities"*

- *"Help with children with speech deficiencies"*

- *"Someone who helps people with disabilities speak"*

Many of the responses mentioned that SLPs "help" individuals but they did not specify how they provide this help, for example:

- *"help people with their speech"*

- *"Help people better their speech"*

- *"Help to repair speech impediments"*

- *"Help people learn how to speak efficiently"*

- *"Help diagnose speech related disorders"*

There were only 6 responses that specifically mentioned diagnosing disorders. The words "therapy" or "therapist" were mentioned in 7 of the responses. Below are some examples:

- *"research and perform speech therapy"*

- *"Work with people who have speech issues by therapy"*

- *"I believe speech-language pathologists are therapist who work with patients who suffer in speech."*

In Q29, participants were given the following description of the profession of speech-language pathology:

Speech disorders occur when a person is unable to produce speech sounds correctly or fluently, or has problems with their voice or resonance. Language disorders occur when a person has trouble understanding others (receptive language), or sharing thoughts, ideas, and feelings (expressive language). Swallowing disorders occur when a person has difficulties with either sucking, chewing, swallowing (or other issues regarding eating/drinking) following a traumatic event, neurological disease, cancer, or surgery. Speech-language pathologists (SLPs) work to prevent, assess, diagnose, and treat speech, language, social communication, cognitive-communication, and swallowing disorders in children and adults.

(ASHA, 2019c)

Participants were asked how likely they would be to pursue speech-language pathology after reading the description. In Group 2 (n = 62), 1 (2%) participant chose "extremely likely", 8 (13%) chose "somewhat likely", 18 (29%) chose "neither likely nor unlikely", 11 (18%) chose "somewhat unlikely", 17 (27%) chose "extremely unlikely", and 7 (11%) participants did not answer (see Figure 32).
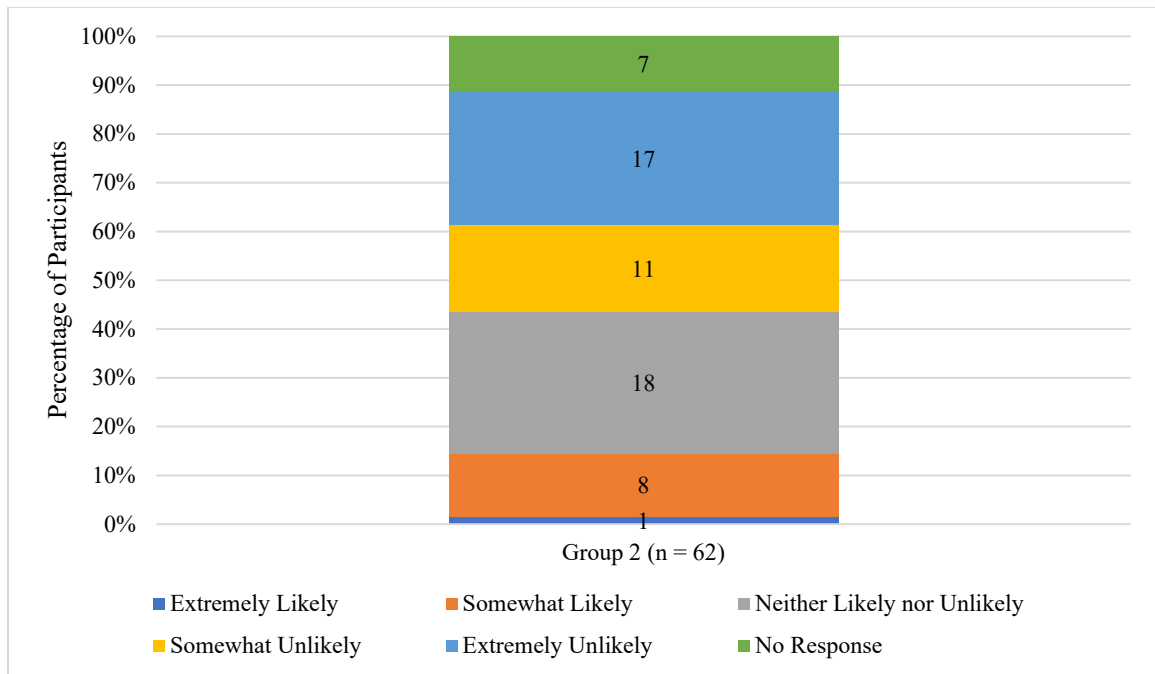
Figure 32. Main Group Interest in Speech-Language Pathology

Group 2 – Pursuing CSD Professions

Q30 asked why Group 2 participants (n = 62) would want to pursue a career in either audiology or speech-language pathology. There were 55 participants who responded to Q30. About 14 of the responses mentioned at least part of the reason would be because CSD careers were related to health care, the medical field, and/or patient care. Some examples include:

- *"I am interested in the health field and with both these careers I would be doing something that I am interested in, along with helping others."*

- *"I am interested in the medical field, diagnosing and treating patients"*

- *"Medically related, helping people in need"*

- *"Working to provide patient oriented care, close interaction with many different people"*

Salary/money was listed as a reason by 10 participants. Over half of the responses mentioned that CSD careers were appealing because they help the well-being of others and it seems rewarding. Many participants mentioned a combination of salary and helping others. Some examples of responses are:

-*"Helping people, good money, rewarding"*

-*"Salary, reputation, help others"*

-*"Good salary, helping others"*

-*"the opportunity to help others, salary, diverse and ever-changing workplace (not a desk job)"*

Personal interest/appeal was listed by 11 participants. A few participants specified that they did not have any interest at all in pursuing either of speech-language pathology or audiology.

In Q31, Group 2 participants (n = 62) were asked to provide some reasons why they would not want to pursue a career in either audiology or speech-language pathology. There were 55 participants who responded to Q31. Over half of the responses mentioned a lack of interest in the careers or a greater interest in a different field. Some examples of responses are:

-*"I am not interested or adept to the science field"*

-*"I don't want to work in a medical/personal care environment."*

-*"I'm more passionate about dentistry"*

-*"I'm more interested in the mental health field"*

A couple of responses specified that certain settings were more appealing (e.g., "I am currently more interested in working in a hospital setting"). There were 7 responses that mentioned pursuing

the careers would take too much time and/or schooling. There were some responses that said the salary was unappealing, the required schooling seemed difficult, or the participant's skillset fitted neither field – for example:

- *"I get frustrated sometimes when I cannot help someone right away, and I also hate seeing people in pain.*"
- *"My career as a clinical psychologist can help people in the way I'm best at"*
- *"I am not good at science-related fields and I have other interests*"

3.5.3 Further Analysis of Main Group

Group NS and Group SS – Audiology

Group 2 was broken into Group NS ("No Statements") which represents the 38 participants who said that none of the statements in Q11 applied to them, and Group SS ("Selected Statement"), which represents the 24 participants who selected one or more of the statements in Q11.

Q26 asked participants to describe what they thought audiologists do and 34 people responded from Group NS (n = 38). Nearly all of the responses mentioned either hearing, sound, and/or ears. Many of the responses were vague in nature, such as:

- *"something with hearing"*
- *"study sound"*
- *"diagnose and treat ear troubles."*

Many participants identified audiologists as professionals who help people with a hearing loss, for example:

- *"Help people with hearing and other cognitive disorders"*

76

-*"Give assistance/training to those with impaired hearing"*

-*"Determine hearing problems of individuals."*

There were numerous responses that aimed to identify what it is audiologists study as opposed to who they work with, such as:

-*"Study how people hear things"*

-*"Study physics of sound/acoustics"*

-*"Study and research listening disabilities."*

There were 22 participants from Group SS (n = 24) who answered Q26. This group had the highest number of responses that did ***not*** mention the words "hearing" or "ear." There were numerous responses that aimed to identify what it is audiologists study, such as:

-*"Study audio"*

-*"Study sound and how the ear processes sound"*

-*"People who study hearing."*

There were 4 responses that tried to describe how an audiologist was a medical professional:

-*"an ear doctor (AuD, PhD, or Masters, no MDs)"*

-*"Specialist in treating disorders related to the auditory system"*

-*"doctors/professionals who work with people with hearing problems"*

-*"Along the lines of an ENT doctor, deal specifically with hearing."*

In Q27, participants were provided the following description of the profession of audiology:

> Audiology is the science of hearing, balance, and related disorders. Hearing and balance disorders can be assessed, treated, and rehabilitated by an audiologist. Audiologists are health care professionals who provide patient-centered care in the prevention, identification, diagnosis, and evidence-based treatment of hearing, balance, and other auditory disorders for people of all ages.
>
> (ASHA, 2019c)

Participants were asked how likely they would be to pursue audiology after reading the description. Of the 38 participants in Group NS, 8 (21%) chose "somewhat likely", 11 (29%) chose "neither likely nor unlikely", 7 (18%) chose "somewhat unlikely", 8 (21%) chose "extremely unlikely", and 4 (11%) participants did not answer. In Group SS, 10 (42%) of the 24 participants chose "neither likely nor unlikely", 7 (29%) chose "somewhat unlikely", 4 (17%) chose "extremely unlikely", and 3 (13%) participants did not answer (see Figure 33).
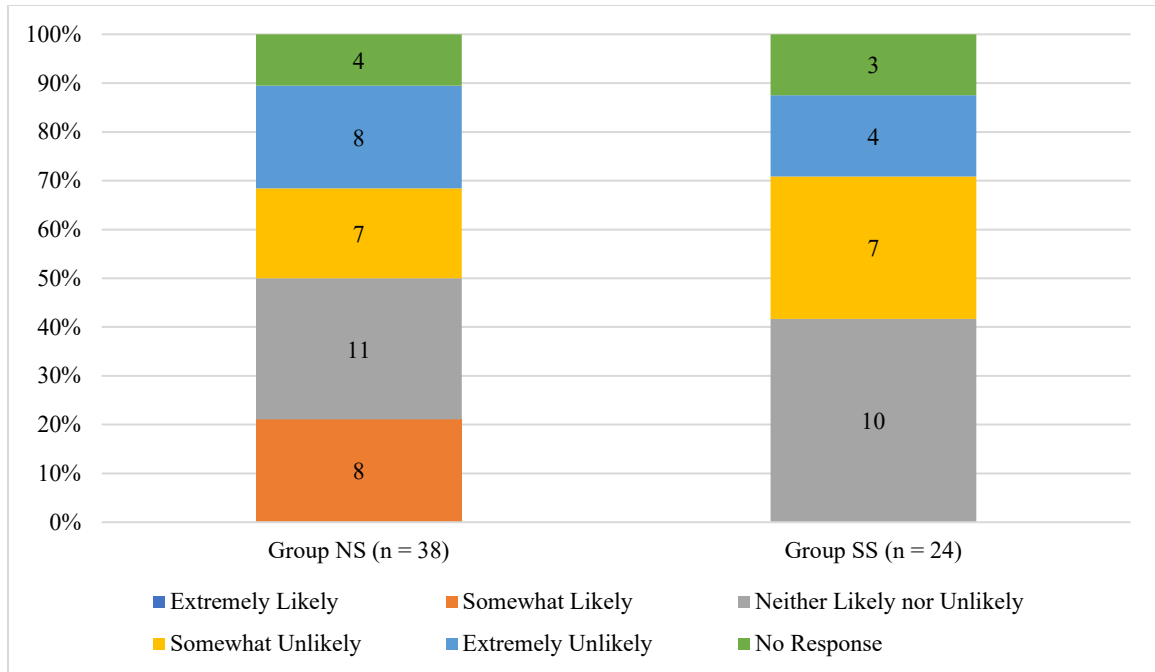
Figure 33. Comparison of Group No Statement and Group Selected Statement Interest in Audiology

Group NS and Group SS – Speech-Language Pathology

Q28 asked participants to describe what they thought speech-language pathologists do and 35 participants responded from Group NS (n = 38). Nearly all of the responses mentioned the word "speech." Many responses also contained the words "language" and/or "communication." None of the responses mentioned swallowing or a related disorder. There were 23 responses that specifically used the word "help" or "assist" in regard to patients. Some responses were simple, for example:

- *"speech therapy"*

- *"help people with their speech"*

- *"treat communication disorders."*

Some responses attempted to define what SLPs study, such as:

-"Study how people talk"

-"Study how speech and language form in the brain"

-"study cultures and their languages, the advantages and differences of both."

There were 21 participants from Group SS (n = 24) who answered the question. None of the responses mentioned swallowing or a related disorder. There were 15 responses in which participants only mentioned speech in regard to the job description of an SLP. The overwhelming majority of responses see an SLP as someone who helps people with speech issues. Some of the responses included:

-"Help people with speech problems (due to speech impediments, hearing difficulties, etc.)
speak clearly"

-"Someone who helps people with disabilities speak"

-"Doctors who work with people who have a speech disorder"

"study speech and language."

In Q29, participants were given the following description of the profession of speech-language pathology:

Speech disorders occur when a person is unable to produce speech sounds correctly or fluently, or has problems with their voice or resonance. Language disorders occur when a person has trouble understanding others (receptive language), or sharing thoughts, ideas, and feelings (expressive language). Swallowing disorders occur when a person has difficulties with either sucking, chewing, swallowing (or other issues regarding eating/drinking) following a traumatic event, neurological

disease, cancer, or surgery. Speech-language pathologists (SLPs) work to prevent, assess, diagnose, and treat speech, language, social communication, cognitive-communication, and swallowing disorders in children and adults.

(ASHA, 2019c)

Participants were asked how likely they would be to pursue speech-language pathology after reading the description. In Group NS (n = 38), 1 (3%) participants chose "extremely likely", 7 (18%) chose "somewhat likely", 10 (26%) chose "neither likely nor unlikely", 5 (13%) chose "somewhat unlikely", 11 (29%) chose "extremely unlikely", and 4 (11%) participants did not answer. Of the participants in Group SS (n = 24), 1 (4%) chose "somewhat likely", 8 (33%) chose "neither likely nor unlikely", 6 (25%) chose "somewhat unlikely", 6 (25%) chose "extremely unlikely", and 3 (13%) participants did not answer (see Figure 34).
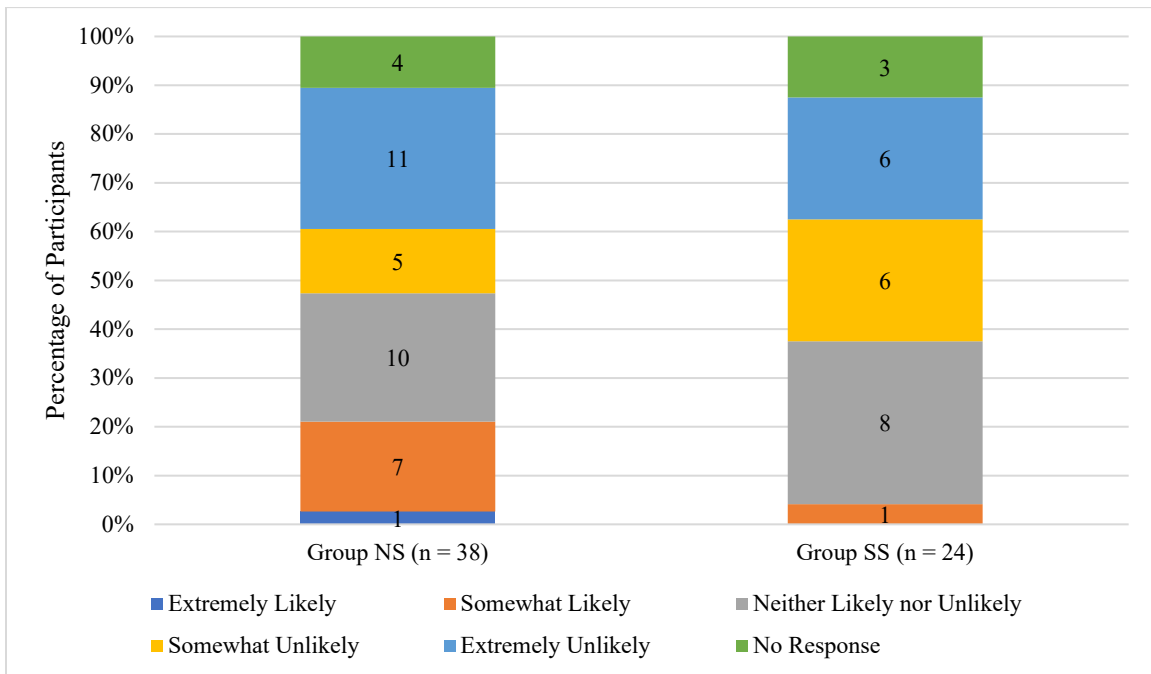
Figure 34. Comparison of Group No Statement and Group Selected Statement Interest in Speech-Language Pathology

Group NS and Group SS – Pursuing CSD Professions

In Q30, participants were asked to provide some reasons why they would want to pursue a career in either audiology or speech-language pathology. There were 34 participants from Group NS (n = 38) who answered the question. Nearly half of the responses specifically mentioned the appeal of being able to help others or have an impact on another person's life. A few responses mentioned a personal connection to one of the fields:

- *"I have hearing issues"*

- *"I know people in both of those fields who enjoy their work, and it is a rewarding field and very interesting"*

- *"To help others (i have had speech therapy)."* [*sic*]

There were 3 responses that mentioned either money, financial reasons, or salary. About 10 of the responses specifically mentioned the fields seeming interesting and many mentioned the appeal of patient care.

For Q30, there were 21 participants from Group SS (n = 24) who responded. There were 7 responses that specifically mentioned "salary" or having an interest if the career paid well. The medical/health care field was listed as an appealing factor in 7 responses. Many responses mentioned the appeal of helping people and/or the careers seeming rewarding. Some of the responses included:

- *"It is rewarding, there is a need in the field, and it utilizes medical knowledge"*

- *"the opportunity to help others, salary, diverse and ever-changing workplace (not a desk job)"*

-*"I knew someone personally affected."*

In Q31, participants were asked to provide some reasons why they would not want to pursue a career in either audiology or speech-language pathology. There were 34 participants from Group NS (n = 38) who answered the question. About 23 responses mentioned either a lack of interest in the CSD fields/medical career or a greater interest in a different field. There were 3 responses that mentioned the salary being a deterrent. There were 5 responses that mentioned pursuing either career would take too much time and schooling. Some other responses included:

-*"Ears gross me out and I'm not good at pronunciation"*

-*"Not particularly interested in science, and I'm not a very patient person"*

-*"I would not want to work in healthcare because the services aren't accessible to everyone."*

There were 21 participants from Group SS (n = 24) who responded to Q31. About 11 responses mentioned either a lack of interest in the CSD fields or a greater interest in another field. There were 4 responses that mentioned the required schooling or the process to become one seemed difficult. Some responses included:

-*"I tend to be attracted to high pace work atmospheres but both of these professions don't seem to fit in that category"*

-*"It is not familiar. Need more information"*

-*"little personal connection."*

4.0 DISCUSSION

To our knowledge, this is the first study to investigate undergraduate interest in the CSD related professions. Some students enter college knowing what they want to pursue as a major, and others decide a major based on exposure early in their college careers. The responses from first and second-year college students indicate that more students becoming familiar with the CSD professions prior to college may help to increase the number of diverse students choosing to major in CSD. While simply increasing the diversity of students and clinicians does not lead to a group of professionals that are culturally aware, it is an important step to take in order for the field to make progress in that direction.

4.1 DEMOGRAPHICS OF PARTICIPANTS

The majority of participants were 18-20 years old (88%), female (85%), white (84%), and not Hispanic or Latino (98%). This participant profile is strikingly similar to that of the typical student studying speech-language pathology or audiology, and the typical professional with a CSD career. A majority of participants also reported English as their primary language (93%) and their school as the University of Pittsburgh (71%). About half of all participants reported living in an Urban Cluster (an area between urban and rural), about a quarter were from an Urbanized Area, and about a quarter were from a Rural location (all determined by population). More populated areas could mean more exposure to different professionals, such as SLPs or audiologists.

The majority of participants identified their mother (84%) as their primary caregiver and their father (73%) as their second primary caregiver. This may have been due to mother being listed before father on the list provided to participants, so people may have chosen mother because it was the first option. There were 16 participants who reported not having a second primary caregiver. The most common reported highest level of education obtained by a primary caregiver was a bachelor's degree, followed by a graduate degree, and high school/GED. The most common reported highest level of education obtained by a second primary caregiver was a bachelor's degree, followed by a graduate degree, and high school/GED. There was greater variety among the highest levels of education obtained by the second primary caregivers than the first primary caregivers. This could be because participants may be more inclined to list their primary caregiver with a higher degree first, leading to a larger variety in degrees earned for their second primary caregivers (if they have one).

In one question participants were provided with a list of statements related to socioeconomic status and were instructed to select all of the statements that applied to them. The responses from the Restricted Response Group could not be analyzed because there was no "none of these statements apply to me" option for the participants to select in order to move on in the survey; therefore, participants from the group who moved on in the survey may have chosen a statement even if it did not apply to them, thus skewing the results. This statement was added as an option for participants in Group 2.

There were 24 of 62 participants who had selected statements, the most popular (n = 22) being: "I graduated from a high school where many of the enrolled students are eligible for free or reduced priced lunches." While selecting this statement does not guarantee that the participant is from a lower socioeconomic status, it can provide insight to background based on the area and

population in which the person was exposed to during high school, but it is not indicative of individual status. There were 4 students who selected: "I am from a school district where 50% or less of graduates go to college or where college education is not encouraged." When there is a lack of emphasis on continuing on to higher education, students can often be misguided or not have the resources they need to pursue this option fully. This could result in a lack of advice and guidance, particularly from staff members at school and/or authoritative figures such as parents. There was one student who selected: "I am an individual who receives public assistance or I'm from a family that receives public assistance (e.g. food stamps, Medicaid, public housing)". This statement best depicted a participant's socioeconomic status, because it captured the participant within the family unit with exclusion of tertiary socioeconomic factors.

4.2   RESEARCH QUESTION 1

What majors do first and second-year students select?

The majority of the participants (84%) reported that they knew their intended major when they selected their undergraduate college/university. The students who reported this were not shown any questions about searching for a college major, however that could have been an oversight on our part because students can switch majors. While it is common to change majors after having started college due to exposure to higher level classes and a broader variety within education, most students did say that they had already chosen their major when selecting a college. This means that recruiting undergraduates to choose a particular major can be useful if the student is undecided or looking to change majors, but generally speaking it is too late. The recruitment of students to a

CSD career should begin before students select their undergraduate college/university. Students who think they know what major they want to pursue may apply to particular colleges with good reputations for that field. Thus this could limit their chance of exposure to other programs and decrease their chance of changing direction in their academic career.

Many colleges and universities have undergraduate CSD programs, but most do not – which could have a negative effect on an undergraduate student who wants that to be their major. If a student were to select a college that did not have an undergraduate program in CSD but wanted to pursue SLP or audiology, they would have two options: (1) transfer to a school with a CSD program or (2) complete a post-baccalaureate program to take the pre-requisite courses for graduate school. A student may consider this too daunting of a change or too expensive even if they had interest to pursue speech-language pathology or audiology. While in many college programs there is room to take extra classes that may interest a student, some programs have a rigid plan of study that does not allow for exploratory classes. If a student selects a major/program that is designed this way, they may not have the opportunity to be exposed to CSD. This is why it is important to attempt to recruit individuals who have yet to select their college/university and also potentially their major.

The participants were also asked to report their intended major using a free text box. The majority of participants in the Restricted Response Group were CSD majors (n = 26/41). The 3 students who had written other majors reported majors in the STEM field. In Group 2 (n = 62), the most popular major reported was Biology, Engineering was second-most reported, and both Psychology and Business were third-most reported. While there were arts majors listed such as English Literature, Russian, and Music Education, many of the majors were related to science and/or health care. This shows that the overall group of participants were more or less mainly

interested in science and/or health care which could have presented a bias in their perceptions of and attitude towards either speech-language pathology or audiology. There was no part of the survey that asked participants what career they wanted to pursue through their undergraduate major. This would have been an informative question because although many people reported Biology as their major, some participants may want to be medical doctors and others may want to be researchers in a lab.

Participants who had reported they did not know their intended major when selecting their undergraduate college/university were asked if they had a general idea of what they want to major in. Most of the participants shown this question said that they did generally have an idea of what to major in, except for one student who said they *might* know. This shows that even if some students are unsure about a major before college, they typically pick one early on in their college career. Students did not report if they were first or second-year students, so it cannot be determined how each participant's academic status/seniority influenced how certain they were about their major.

The same group of students were asked to select the major fields they had the most interest in from a list. The most popular choice in each group was Health-related – almost all of the Restricted Response Group participants and slightly over a quarter of Group 2 participants selected this. Languages/Linguistics and Education were also relatively popular options for the Restricted Response Group. Since most of the participants in this group were CSD majors, all three options could have been more appealing to them. In Group 2 Natural Science was second most popular, followed by Education, Fine Arts, Pre-Med, and Social Science.

Most first and second-year students tend to select their intended major prior to choosing their undergraduate college/university. Popular majors were related to either science and/or health

care. Students that report not knowing their major when selecting their school generally already have an idea of what they would like to major in. The students who reported not knowing their major claimed interest in fields such as Health-related, Natural Science, and Education.

4.3 RESEARCH QUESTION 2

What motivates academic major and career choices?

Most (n = 77/103) participants reported that they knew their intended major when they selected their undergraduate university or college. The participants who reported this were then asked to identify the primary way they became aware of their chosen career field. The most popular choice was that someone the participant knew suggested the career to them. This demonstrates that people who are close with a student (i.e., parents, friends) and know them well may have a strong influence on important decisions the student makes. A person close to the student may be familiar with a career that the student may be unaware of. The acquainted person may expose the student to a career the student may not have considered otherwise. The second most popular choice was a personal or family experience with the field. Many young children have similar career aspirations, because they are constantly being exposed to the same professions, such as: doctors, teachers, and police officers. If a person has an impactful experience with a particular profession or knows someone in a certain field, they may wish to pursue that career in the future. In regard to speech-language pathology and audiology, not everyone (especially if they are young) may realize who certain professionals are and what their job entails. There may be an SLP at a school, but if a student does not know anyone who needs speech services or does not need it themselves they may

never come into contact with the SLP. A child may have a grandparent who experiences a hearing loss and receives hearing aids from an audiologist, but depending on their age that child may not be aware of the situation.

Two other common choices were the observation of a professional in the field and the use of the internet/website(s). There was no free text box for participants to explain what they meant by observing a professional in the field. Some participants may have meant that after researching careers they found one they were interested in, observed a professional, and decided the career was for them. Others may have meant that they came across a profession (perhaps accidentally) through observation, realized it interested them, and decided to pursue the career. Many students found their chosen major/career on a website. The advancement of technology over the past couple decades has changed the landscape of major and career searches. There are numerous websites that offer career quizzes, information, and more about nearly every career that students can explore and research. Many students may use websites as a way to begin the search for a major/career they would enjoy and then choose to learn more about the field in other ways. It is probable that most students searching for a major use a combination of sources in order to make the most informed decision possible.

Of the 103 total participants, 24 reported that they did not know their intended major when they selected their college/university. The participants were then asked to select the ways in which they have been searching for a major. They were allowed to select as many or as few choices that applied to them. The most popular choice was researching online, followed by taking different classes, speaking to friends/roommates, discussing with a parent/guardian, and speaking with a guidance counselor. The most common trend is that students are speaking to other people about what their major should be. This relates back to more people being aware of the CSD careers. How

can speech-language pathology and audiology become suggestions if they are unfamiliar to the people providing the advice? If CSD careers are being suggested as ideas to students, then the student may be able to take general education classes to explore if either would be a good fit.

The 24 participants who reported not knowing their intended major when selecting a college were asked to select the number of hours they spend during the average week researching different majors, career-paths, and/or schools using a scale. The smallest amount of time selected was 1 hour and the largest was 8 hours. Half of the 8 participants who responded in the Restricted Response Group reported spending 2 hours on average. Of the 16 participants from Group 2, 3 people reported 3 hours and 4 people reported 5 hours. College students have hectic schedules often filled beyond academic work with extracurricular activities and/or jobs, so they do not always have the extra time to research majors/careers. Second-year students may report spending more time researching this than first-year students because they have less time left to decide. The question specified "average week" but students may spend a much higher amount of time focusing on this during the summer months away from school or during breaks between semesters.

In Q25 participants given options to rank the most important factors influencing their choice of major in order from most important (1) to least important (4). The options were: "Graduate school requirement", "Perceived difficulty of major", "Salary of future career", and "Parent/guardian input". Participants could also use the extra ranking option of "Other" (free text) if they so wished. The Restricted Response Group seemed to mainly take salary into account when choosing a career and they did not seem to care as much about the perceived difficulty of a major. Both graduate school requirement and parent/guardian input appeared to be at relatively consistent ranking levels, not really demonstrating an influence in a particular direction.

In Group 2 the most common highest ranking was both "other" and future salary, the most common second ranking was also salary, the most common third ranking was perceived difficulty of major, and the most common fourth ranking was parent/guardian input. Many of the reasons listed when "other" was ranked highly mentioned personal interest and passion/fulfillment. While this group made interest a priority, they did not lose focus on having good future salary prospects. While students may look to a parent/guardian for advice, they showed that the advice given may not make all the difference when it is time to make a decision. This could be related to the more important factor of personal interest. If participants are more concerned with what interests them, it may not matter as much what their parent/guardian has to say about it. This group did not seem overly concerned with graduate school requirements nor perceived difficulty of their major.

The age of the participants could play into what factors are important. Even though the responses were from first and second-year students, they were not all in the same age range. Students who are older may not rely on their parents like younger students, therefore they may not value parent/guardian input nor care about how easy or difficult a major seems. They may focus on future salary and if they need to attend graduate school because older students may be paying for their education on their own. Overall, students do not seem to be overly concerned with the perceived difficulty of a major and if there are graduate school requirements; however, they do seem to focus on picking a major that will lead them to a well-paying job in the future.

The biggest motivators for students selecting an undergraduate major were future salary and personal interest. Most students were discovering their major from someone they know or personal experiences. For students who did not know their intended major prior to college, many reported spending multiple hours during the average week looking for one. This included doing research online and speaking with others as the main ways they were exploring different career

ideas. While many students report someone they know, such as a parent, suggesting a major for them, parent/guardian input was not as influential in the actual selection of a major.

4.4   RESEARCH QUESTION 3

Why do students choose (or not) to pursue a CSD profession?

Participants were asked to describe what they thought an audiologist does. The Restricted Response Group had the version of the survey that displayed the description of audiology from Q27 underneath the free text box in Q26; therefore, some participants unfamiliar with audiology could have adapted that description for their own answer instead of making an educated guess. The Restricted Response Group was also mostly CSD majors, so they should have been able to provide more accurate and/or detailed descriptions of audiology. There were more responses in Group 2 than the Restricted Response Group that did not mention hearing, the ear, and/or related terms. Participants were not asked if they were previously familiar with audiology, which could have provided insight into their responses. Many of the responses were simple and similar to one another. While there were some detailed responses that mentioned the majority of responsibilities and roles of an audiologist, there was no response that captured the profession completely. This could have been due to lack of knowledge, but it could have also been attributed to participants wanting to finish the survey quickly, thus not giving an answer their full effort. It also would have been unrealistic to think that participants would provide a fully representative description of a profession.

The next question had provided a brief description of audiology/an audiologist. Participants were then asked to select how likely they would be to pursue this profession. The most common answer was "neither likely nor unlikely", followed by "somewhat likely", "somewhat unlikely", "extremely unlikely", and "extremely likely." When broken down into the separate groups, the Restricted Response Group (mostly CSD majors) had the only participants who selected "extremely likely" and most of the "somewhat likely" responses – which was predictable, given their intended major. Most of the Group 2 responses were neutral or negative toward pursuing audiology (76%). A few responses, particularly in Group 2, identified audiologists as medical professionals in some capacity as well as mentioning diagnosing and treatment. This was interesting considering Group 2's general interest in health care but lack of interest in audiology. That disconnect could possibly be due to lack of interest or misconception about the role of an audiologist. Perhaps providing a simplified description of a complex profession that performs versatile work was not the best strategy to elicit this information from participants. The participants, particularly people who were not swayed in one particular direction, could have benefited from a more detailed description or a short video showing the different settings an audiologist may work in and the various populations they assist.

Participants were then asked to complete the same questions for speech-language pathology. The Restricted Response Group had the version of the survey that displayed the description of speech-language pathology from Q29 underneath the free text box in Q28; therefore, some participants unfamiliar with speech-language pathology could have adapted that description for their own answer instead of making an educated guess. The Restricted Response Group was also mostly CSD majors, so they should have been able to provide more accurate and/or detailed descriptions of speech-language pathology. This could have also made a difference in what areas

of the profession were mentioned by participants. For example, swallowing and/or a related disorder was only mentioned by almost half of the Restricted Response Group participants but no one in Group 2 mentioned it.

In Group 2 most of the responses mentioned speech and/or language, but this could have been attributed to those words being in the title of the profession. A large number of participants used the word "help" in their description. This showed that many people see it perceived it as a profession dedicated to assisting others, particularly individuals who benefit from extra support and services. Many responses were vague when they used the word "help" by not explaining how SLPs help people. The word "help" is generally undescriptive in this case, as most professions could use that term in one way or another to describe what they do. The responses were probably guesses from people who assumed that an SLP is some type of professional but were unsure of what SLPs do. Some participants demonstrated a narrowed view of the profession, specifying that SLPs help children, people with disabilities, or people with special needs. Even if a participant only mentioned speech in their description many times it was vague or focused on one or two aspects of speech such as fluency. It seemed as though Group 2 in particular was unaware of the broadness of the scope of practice for SLPs and unfamiliar with the profession in general. This could be because participants have never needed/known someone who needed SLP services before, never researched this career in general, or had a limited knowledge of this career based on past experiences/education.

The next question had provided a brief description of speech-language pathology/pathologist. Participants were then asked to select how likely they would be to pursue this profession. There were 32 responses for "extremely likely" and all but 1 of them belonged to the Restricted Response Group (mostly CSD majors). There was only 1 response from the

95

Restricted Response Group that was negative ("somewhat unlikely") but this could be because this participant would rather pursue audiology. In Group 2 (n = 62), most responses were either neutral or negative. The Restricted Response Group appeared to be much more interested overall in pursuing speech-language pathology than Group 2. This could partially be attributed to Group 2 having more participants that had reported intended majors not related to science and/or health care than the Restricted Response Group. Similar to audiology, participants could have benefitted from a more detailed description or being shown a short video showing the different settings that SLPs may work in and the various populations they assist.

The 103 participants were asked to provide reasoning via free text for why they would be interested in pursuing a career in speech-language pathology and audiology. A common theme among responses was the appeal of helping others in a profession that seems to be rewarding. People enjoy feeling as though they are making a difference, and this can be an important factor when selecting a career path. This is related to a few other responses that mentioned participants having personal experiences with either an SLP or audiologist that would make the participant want to impact the lives of others in similar ways. Many responses from the Restricted Response Group (mostly CSD majors) included the idea that communication is an integral part of life and being involved with that is important. Many students mentioned liking the idea of being in the medical/health care field and working with patients. The perception of a good salary in the field was mentioned by about 14 responses, mostly from Group 2. Personal interest/general appeal was listed as a reason in numerous responses from each of the groups. There were a few responses in Group 2 that stated they did not have any reasons to want to pursue either of the CSD careers, which was to be expected. Pursuing a CSD career is not for everyone but it is interesting that some individuals had no reasons at all. This could have been because this question was near the end of

the survey and participants just wanted it to be over, they truly had no reasons, or they did not feel like writing down any answers.

The participants were then asked to use a free text box to provide reasons for why they would not want to pursue a CSD career. This group was mostly comprised of CSD majors who have already decided that they want to pursue, but some still provided reasons that could dissuade them. Nearly one-third of participants in the Restricted Response Group stated that they had no reasons to not pursue a career in this field. Some of the participants in this group specified that they would want to pursue either audiology over speech-language pathology and vice versa while others made specifications about areas of the field they would not want to pursue (e.g., swallowing). Many students in this group also mentioned that graduate school appears to be difficult and/or takes a long amount of time to complete. None of the participants specifically mentioned the cost of attending more years of schooling although this could have been part of their reasoning. Over half of the responses for Group 2 mentioned a lack of interest in either or both of the fields. Some participants did not specify that they were uninterested in the fields, just that they were more interested in a different career. Some responses indicated that other settings were more appealing (e.g., working in a hospital); however, it is unclear whether participants with that opinion were unaware that either SLPs or audiologists could work in a variety of settings, such as a hospital. This could imply that other participants also had misconceptions about where, how, and with whom SLPs and audiologists practice. Participants were not informed of the amount of time/schooling required to become a professional in audiology or speech-language pathology, yet quite a few participants mentioned pursuing CSD careers would take too much time and/or schooling. It is unclear whether or not participants knew the actual amount of schooling required, if they look it up during the survey, or if they assumed it would take a long time. A few responses

indicated the salary was unappealing. The average salary of either career was not provided to the participants on the survey. This means that participants drew this conclusion either from their own research of the average salary of both professions or it could have been the perceived reputation of salaries for particular allied health fields.

4.5   GENERAL THOUGHTS ON MAIN GROUP

Group NS (no SES marker statements applied; n = 38) and Group SS (one or more SES marker statements applied; n = 24) were largely similar with a couple of exceptions. Generally speaking, neither group was rich in diversity. Group NS did have a higher percentage of participants in the 18-20 years age range than Group SS. Group SS had a higher number of older students which could have influenced whether or not they were paying for college themselves. All but one of the participants in Group SS were female, whereas about three-quarters of the participants in Group NS were female. Both groups had mainly White, as well as, many Asian participants but Group SS had two participants of more than one race capturing a minuscule amount of racial diversity. There were bilingual participants in each group – 3 in Group NS that spoke Tagalog, 1 in Group NS that spoke Hindi, and 2 in Group SS that spoke Korean.

All participants in Group 2 attended the University of Pittsburgh. Pennsylvania state-related universities, including the University of Pittsburgh, have the third highest average tuition rates among any state in the U.S. (Schackner, 2017). Therefore, it may be more difficult to have participants from a lower socioeconomic status respond to the survey. It could have been beneficial to ask the participants to report the main way that they pay for school. Some students may only be able to attend thanks to scholarship and/or financial aid. This also means that reaching diverse SES

individuals is more difficult. It could be beneficial to survey students at community colleges who are looking to transfer to a four-year college or university.

Urban clusters, followed by Urbanized areas, and then Rural areas were the most popular descriptions of hometowns of participants. Participants from more urban areas may have an increased probability of exposure to SLPs and audiologists due to a higher density in their area. Both groups had "mother" as the most common selection for primary caregiver, but more people chose "father" in Group SS compared to Group NS where the same number of participants selected "father" and "parent." There were 9 participants in Group 2 (n = 62) that reported not having a second primary caregiver – 4 were in Group NS and 5 were in Group SS. Although Group SS only had 1 more participant than Group NS that reported this, the percentage was nearly double that of Group NS. The lack of a second primary caregiver could give implications about an individual's SES. Some of the participants could have been living on one parent's paycheck and/or assisting their sole primary caregiver financially. The majority of participants (73%) in both Group NS and Group SS reported their father as their second primary caregiver.

In response to the highest level of education earned by the primary caregiver, both groups' most common choices were bachelor's degree and graduate degree. Group NS's next most common responses were high school/GED, an associate's degree and doctorate degree (same %), and some college. Group SS's next most common responses were some college, followed by high school/GED and doctorate degree (same %). There was a greater variety in the highest level of education earned by each group's second primary caregiver. Raw numbers were fairly similar between the two groups, but the most common level of education in each group was a bachelor's degree. Group NS also had a much higher raw number/percentage of second primary caregivers with a graduate degree. A higher level of educational, especially a completed degree, can typically

99

imply that a person earns a higher salary; however, because someone has a degree does not mean that they use it nor indicate salary level. Also, given generational differences an adult may have chosen their current profession and entered either with or without a degree, but now at least some form of higher education is becoming more expected in some professions. That being said, a caregiver's educational status may play a significant role in whether or not an individual pursues higher education or additional schooling.

Although the same number of participants in Group NS and Group SS selected "no" when asked if they knew their intended major when they selected their undergraduate university or college, Group SS reported a higher percentage for this due to its smaller group size. About one-fifth of Group NS and one-third of Group SS reported not knowing their intended major when selecting a school. Biology was the most popular intended major reported by each group. Engineering and Psychology were also popular among both groups. Group NS seemed to have more non-STEM majors, but this could be skewed based on the larger sample size compared to Group SS. The 16 participants who had not known their intended major before college were asked if they had a general idea of what to major in. The majority of responses in both groups were "definitely yes" or "probably yes." There was 1 participant in Group NS who reported "might or might not." The two groups did not have any major differences when the same participants were asked to select the major fields they are most interested in.

Participants who had reported that they knew their intended major when selecting an undergraduate college/university were asked to identify the primary way they became aware of this major/career. Around the same number of participants in each group reported having a personal or family experience in the field. In Group NS (n = 38), 10 participants reported having someone they know suggest this career to them whereas only 3 participants in Group SS (n = 24)

reported the same primary source. Students in the latter group may experience a lack of guidance and advice when it comes to important decision making. More participants from Group NS than Group SS reported their primary source was a website, which could mean that the students may have had more resources and time to be able to research majors online. Exposure to a career can be very influential when it is time to choose a career to pursue. If someone does not know a career exists, they will not know that it is an option they have.

The eight students in Group NS and the eight students in Group SS who reported not knowing the intended major when entering college were asked how they were searching for a college major. The two most popular options were researching online and taking different classes. The next most common options were discussing with a parent/guardian and speaking to friends, roommates, etc. It appeared as though in Group SS the participants were most likely using more than one resource due to 23 selections being made by 8 people, whereas in Group NS 17 selections were made by 8 people. This could be for a variety of reasons including participants in Group SS feeling a greater sense of pressure to find the right major so they use a combination of more resources in an attempt to figure it out. Half of the 8 Group SS participants reported spending 5 or more hours on average weekly searching for a major whereas 3 of 8 Group NS participants reported spending 1-2 hours on average. Group SS may have felt greater pressure to find a major due to the financial pressure of paying for school, thus they were putting more time into a search.

The two groups were asked to rank the following factors in order from most important (1) to least important (4): "Graduate school requirement", "Perceived difficulty of major", "Salary of future career", and "Parent/guardian input." They had the option of ranking "Other "(free text) if they wanted to list something else. The option that was most often ranked highest in Group NS was "other" and the answers specifically had to do with personal interest being of utmost

101

importance, followed by future salary and then parent/guardian input. Group SS most often found the salary of the future career to be most important, followed by graduate school requirement and "other"/personal interest (same %) to be important. This could hypothetically be attributed to their socioeconomic status. Students from a lower SES may see future salary as most important, especially if paying back loans or paying their way through school is involved. This scenario could also tie into if extra years of schooling is involved, such as a graduate degree. If a student from a higher SES does not have to worry as much about money, they may be able to put personal interests above financial interests when choosing a major. They may also be more willing to spend the money to go on to graduate schooling. If a student from a higher SES is more likely to have a parent/guardian assisting them with paying for their education, they may be more willing to take that person's opinion into consideration – thus ranking it higher.

Participants in each group were asked to describe what they thought an audiologist does. The responses were not overly different between the two groups, but more responses in Group NS than Group SS mentioned either "hearing" or "ears." Many responses between the two groups mentioned "audio" and "listen" which could have been guesses derived from the title of the profession. Many participants in both groups tried to identify what it is audiologists study as opposed to what they do for patients. After being provided with a description of audiology, about three-quarters of participants who responded chose either a neutral or negative response. The only positive responses belonged to Group NS.

Participants in each group were asked to describe what they thought SLPs do. Essentially close to all of the responses included "speech" and some included "language" and/or "communication." Just as with audiology, the responses could have been vague guesses derived from the title of the profession. It appeared as though people generally had an underdeveloped

view of speech-language pathology. After being provided with a description of speech-language pathology, nearly three-quarters of participants who responded had a neutral or negative response. Most of the positive responses belonged to Group NS. This means that all but 1 participant who had selected an SES marker statement had a neutral or negative view on pursuing audiology or speech-language pathology. It is interesting to note that the group with a potential lower SES had less interest in pursuing a CSD career than that of Group NS.

When asked to provide reasons for pursuing audiology or speech-language pathology, 30% of Group SS responses mentioned the salary whereas nearly 9% of Group NS responses mentioned salary. This difference between groups could potentially be attributed to their potential socioeconomic status. Common themes among both groups was the appeal of helping others, being in the medical/health care field, and having a rewarding/fulfilling career. The most common reason for not pursuing either profession was either a lack of interest or a greater interest in a different field. Another relatively common deterrent was the requirement/length of graduate school. This requirement and its length were not mentioned in the survey so it is unclear whether the responses were just based on perceptions from participants or if they had previously researched either career.

Overall, differences between Group NS and Group SS were not significant enough to warrant a statement that the SES marker statements are an accurate indicator of SES and its influence on higher education decision-making. It did seem to come into play a bit when reasoning behind choices was being discussed, particularly in regard to salary and/or graduate school requirement.

4.6   EDUCATIONAL AND CLINICAL SIGNIFICANCE

While ASHA has taken strides in attempting to increase the recruitment and retention of minority students in CSD programs, the next question to ask is: Is the recruitment of students occurring too late? While they have developed brochures directed at diverse populations, it seems as though ASHA has generally made mentoring and reaching out to high school students an afterthought. Should ASHA be focusing on recruiting students before they reach higher education? Seeing as students begin to research careers and professions while still in high school, it may be worth establishing programs that can spark a student's interest in a CSD profession earlier in their education timeline. This is particularly important before the student reaches a point in their education where they have already developed a deeper interest in another field or they think it is too late to begin to pursue being an SLP or audiologist.

If individuals are recruited earlier prior to applying to college, it is likely that they will seek to attend a college/university with an undergraduate major in CSD. This could help reduce worries related to the process of becoming an SLP or audiologist taking too much time or being too much of a hassle to switch majors later in their collegiate career, particularly if a CSD program only offers certain classes once per academic year.

If there are more students from a variety of backgrounds studying to become audiologists and SLPs, this will in time change the composition of the field. Ideally the diversity of clinicians would be able to progress to match the diversity of the general population. This could in turn play an integral role in the progression to an increasingly culturally diverse and aware workforce that is well-equipped to work with multiple populations. Some videos were released in the United Kingdom that showcased different professions aimed towards children as young as seven years

old. Videos like the ones produced in the U.K. could help foster an early interest in speech-language pathology and/or audiology. This could help with problems of exposure to the field.

4.7   LIMITATIONS

The participants were relatively homogenous. All of the participants attended school in Pennsylvania and they were mostly white, female, and not Hispanic or Latino. A more accurate overview of first and second-year students in college would include responses from students of various races/ethnicities, gender identities, and socioeconomic statuses who attend schools in other areas of the country. There is already a funneling going on at the educational stage at which we based this survey. Disenfranchised people, such as populations with low literacy rates, are excluded from participating in the survey and we do not get to receive their input. It is difficult to draw a conclusion from a smaller group that is homogenous and be able to apply it to a larger, more diverse group of people.

Relying on staff members and students at colleges and universities with which the research team had no affiliation proved to be a limitation for this study. There were many schools that did not have any participants. Staff members had been contacted. Without staff members contacting students about the survey, it was difficult to have a trusted gatekeeper at the schools who was willing to distribute the survey. It is also hard to rely on a lot of students to take the time out of their schedules to take a survey, no matter the length. Some students may have tried to see how long the survey was or only answer a few questions before deciding not to continue.

The ability to go back to previous pages and/or questions already answered could have been a limitation in regard to Q26 and Q28. Q26 asked participants to use the free text box to

explain what they thought an audiologist does and Q27 was on the next page for participants from Group 2 with a description of audiology. Q28 was the same question except it was about SLPs and Q29 had the description of speech-language pathology. If a participant was not confident in their answers or provided an answer they thought was incorrect to either Q26 or Q28 after they had read the descriptions in Q27 and Q29, they could go back and alter their answers. For participants in the Restricted Response Group, there was a display issue where the descriptions provided in Q27 and Q29 were displayed directly under the text boxes in Q26 and Q28, respectively. Both situations could have led to more participants appearing to know what an audiologist or SLP does than what is accurate.

4.8   FURTHER RESEARCH

Limited progress has been made over the last 30 years in regard to increasing diversity in speech-language pathology and audiology. With an educational system and society that is ever-evolving, ASHA must address recruitment and retention of diverse students and professionals. This is not only essential to the growth of our professions but it is also our responsibility as health care professionals who serve the diverse populations that comprise this country.

This area of research would greatly benefit from additional studies aimed at high school-aged students and perhaps even younger. Surveying individuals under the age of 18 would be more difficult in regard to conducting research. While it is useful to have input from first and second-year students enrolled in a college/university, most students have already finished researching different majors and careers at that point. Being able to survey school-aged children (mostly high school students) could mean learning more about the strategies behind choosing a college, major,

and/or career path. Learning more about this age group and how they access information about higher education and professions would allow ASHA to alter their marketing to be more effective. This could possibly include a wide range of approaches from utilizing social media to visiting different schools to speak with students in person.

If this particular age group were to be researched again for a related topic, it may be worth separating the first and second-year students into separate studies and/or surveys. This would be beneficial, because first-year students may be more likely to be undecided than second-year students. Second-year students typically have more experiences and have taken more classes than first-year students – meaning they may have already been exposed to and/or explored multiple majors/careers.

Another group that it would be useful to survey would be undergraduate and graduate students from historically under-represented groups who have already chosen to pursue CSD as well as members of under-represented groups who are ASHA professionals. It would be worth knowing how individuals from under-represented groups became aware of the field(s) and what they think may be the most effective ways to recruit more diverse students.

5.0   CONCLUSION

The professions of speech-language pathology and audiology are extremely homogenous –
particularly in regard to race/ethnicity and gender. While simply increasing the diversity of
clinicians does not lead to a group of professionals that are culturally aware, it is an important step
to take in order for the field to make progress in that direction. A field of professionals that is
diverse goes back to the educational system. As the high school to graduate school continuum goes
along, diversity (particularly among race/ethnicity) is that of a narrowing funnel. Each stage in the
educational process serves as a filter before the next step. Diverse high school student bodies lead
to less diverse undergraduate student bodies which lead to even less diverse graduate programs –
ultimately resulting in homogenous career fields. While ASHA has tried to address this issue over
the past two decades, little progress has been made. Most of their efforts have been targeted at
undergraduate students but this is most likely too late – most students begin researching different
career paths before they enter college.

Why are diverse high school students choosing not to pursue speech-language pathology
or audiology? Data collected from first and second-year students enrolled in colleges/universities
show that there is a general lack of knowledge or skewed perception about the CSD professions.
How is the average high school student who has never been exposed to either career supposed to
know this field exists if even students who are enrolled in colleges with a CSD major lack a full
understanding of this field? The lack of recruitment and marketing toward high school students is
seen in the data from first and second-year students. While some students have no interest in
pursuing a CSD career, there may be numerous individuals who would like to pursue a CSD career
but are unaware that they exist. In order for diversity within the field to increase, more steps should

be taken to recruit high school students into the field. The recruitment strategies should take into account reasons why students choose to pursue particular careers (e.g., salary, graduate school requirement, and interest). Cultural awareness is not dependent on a person belonging to a particular race, ethnicity, or culture; however, once ethnic and cultural diversity in the CSD field increase, so does the prospect of developing a group of professionals better equipped to effectively serve the diverse population of the nation.

FIRST AND SECOND-YEAR STUDENT SURVEY

Q1 This questionnaire is voluntary and anonymous. No identifying information will be collected about participants. The survey will take you 10 to 15 minutes to complete. This survey poses a series of questions that aim to explore how factors impact a student's decision making process in regards to undergraduate education. You may stop at any point if you no longer want to participate.

We will be giving away 10 Amazon gift cards worth $20 to participants in a random drawing. If you want to be entered, there will be a spot at the end of the survey to collect your name and e-mail address.

Q2 The following set of questions is about your background.

_____

Q3 By completing this survey, I confirm that I am 18 years of age or older.

1.0 Yes (1)

2.0 No (3)

_____

Q4 Where do you attend college/university?

▼ Bloomsburg University of Pennsylvania (1) ... West Chester University (17)

_____

Q5 Is English your primary language?

3.0 Yes (1)
4.0 No (if no, what is your primary language?) (2) _____
5.0 I am bilingual (list both): (4) _____
6.0 I am multilingual (list all): (3) _____

Q6 Select your racial category:

7.0 American Native / Alaskan Native (1)
8.0 Asian (2)
9.0 Black / African American (3)
10.0 Native Hawaiian or Other Pacific Islander (5)
11.0 White (4)
12.0 More than one (if so list) (6) _____

Q7 What is your ethnicity?

13.0 Hispanic or Latino (1)
14.0 Not Hispanic or Latino (2)

Q8 Please select your current age range.

15.0 18-20 (1)
16.0 21-23 (2)
17.0 24-26 (3)
18.0 27-29 (4)
19.0 30-39 (5)
20.0 40-49 (6)
21.0 50-59 (7)
22.0 60-65 (8)
23.0 66+ (9)

Q9 To which gender do you most identify?

24.0   Male (1)

25.0   Female (2)

26.0   Transgender Male (3)

27.0   Transgender Female (4)

28.0   Gender Variant/Non-Conforming (5)

29.0   Prefer Not to Answer (6)

30.0   Other: (7) _____

Q10 How would you describe your hometown?

31.0   Urbanized Area (greater than 50,000 people) - e.g. Philadelphia, PA; Pittsburgh, PA; Allentown, PA; Harrisburg, PA; Bloomsburg, PA; Gettysburg, PA; Altoona, PA (1)

32.0   Urban Cluster (between 2,500 and 50,000 people) - e.g. Indiana, PA; Shippensburg, PA; Slippery Rock, PA; Lock Haven, PA; Butler, PA (2)

33.0   Rural (less than 2,500 people) - encompasses all territories not classified as an urban area (3)

Q11 Select all statements that apply to you.

I graduated from a high school where many of the enrolled students are eligible for free or reduced price lunches. (1)

I am an individual who receives public assistance or I'm from a family that receives public assistance (e.g. food stamps, Medicaid, public housing). (2)

I am from a school district where 50% or less of graduates go to college or where college education is not encouraged. (3)

English is not my primary language. (4)

None of these statements apply to me. (5)

Q12 Who was your primary caregiver? By primary caregiver, we mean the person that you spent your formative years with. Pick one. If you have two primary caregivers, there will be a second question.

34.0   Mother (1)
35.0   Father (2)
36.0   Parent (3)
37.0   Aunt (4)
38.0   Uncle (5)
39.0   Grandparent (6)
40.0   Elder sibling (7)
41.0   Neighbor (10)
42.0   Adoptive parent (11)
43.0   Foster parent (9)
44.0   Other (8) _____

Q13 What is the highest level of education attained by your primary caregiver?

45.0   High school / GED (4)
46.0   Vocational training (e.g., mechanic, plumber, electrician, cosmetologist, etc.) (11)
47.0   Some college (5)
48.0   Associate's degree (6)
49.0   Bachelor's degree (7)
50.0   Graduate degree (8)
51.0   Doctorate degree (9)
52.0   N/A (10)

Q14 Do you have a second primary caregiver?

53.0   Yes (4)
54.0   No (5)

Q15 Who was your second primary caregiver?

55.0   Mother (1)
56.0   Father (2)
57.0   Parent (3)
58.0   Aunt (4)
59.0   Uncle (5)
60.0   Grandparent (6)
61.0   Elder sibling (7)
62.0   Neighbor (10)
63.0   Adoptive parent (11)
64.0   Foster parent (9)
65.0   Other (8) _____

Q16 What is the highest level of education attained by your second primary caregiver?

66.0   High school / GED (4)
67.0   Vocational training (e.g., mechanic, plumber, electrician, cosmetologist, etc.) (11)
68.0   Some college (5)
69.0   Associate's degree (6)
70.0   Bachelor's degree (7)
71.0   Graduate degree (8)
72.0   Doctorate degree (9)
73.0   N/A (10)

End of Block: Demographic Info

Start of Block: College Major/Aspirations

Q17 The following set of questions is about your undergraduate decision-making regarding

your major.

Q18 Did you know your intended major when you selected your undergraduate university or college?

74.0 Yes (23)
75.0 No (24)

Q19 What is your intended major?

_____

Q20 What was the primary way you become aware of this career field? (Select one.)

76.0 I had a personal or family experience with the field. (1)
77.0 Someone I know (i.e., parent, adult, friend, student) suggested I major in this field. (2)
78.0 My high school guidance counselor suggested this career. (3)
79.0 I completed a career survey and this was a suggestion. (4)
80.0 My college advisor suggested this career. (5)
81.0 A college course I took introduced me to this career. (6)
82.0 I learned about this career from a university student organization. (7)
83.0 My university career placement office suggested this career. (8)
84.0 I learned about this career on a website. (9)
85.0 I observed a professional in the field. (10)
86.0 Other: (11) _____

Q21 How are you searching for a college major?

Researching online (1)
Reading college guides (2)
Speaking with guidance counselor (3)
Discussing with a parent/guardian (4)
Speaking to friends, roommate(s), etc. (5)
Taking different classes (6)
Other: (7) _____

Q22 During the average week, how many hours do you spend researching different majors,

career-paths, and/or schools?

	0	5	10	15	20
()					

Q23 Do you have a general idea of you what to major in?

87.0 Definitely yes (1)
88.0 Probably yes (2)
89.0 Might or might not (3)
90.0 Probably not (4)
91.0 Definitely not (5)

Q24 What major fields are you currently most interested in?

Business (1)
Education (2)
Engineering (3)
Fine Arts (4)
Health-related (5)
Languages / Linguistics (6)
Mathematics / Computing (7)
Natural Science (8)
Pre-Med (9)
Social Science (10)
Social Work (11)
Other: (12) _____

Q25 Please rank the most important factors influencing your choice of major in order from

most important (1) to least important (4).

_____ Graduate school requirement (1)
_____ Perceived difficulty of major (2)
_____ Salary of future career (3)
_____ Parent/guardian input (4)
_____ Other: (5)

Q26 What do you think audiologists do?

_____

Q27 Audiology is the science of hearing, balance, and related disorders. Hearing and balance disorders can be assessed, treated, and rehabilitated by an audiologist. Audiologists are health care professionals who provide patient-centered care in the prevention, identification, diagnosis, and evidence-based treatment of hearing, balance, and other auditory disorders for people of all ages.

After reading this career description, how likely would you be to pursue this profession?

92.0 Extremely likely (1)
93.0 Somewhat likely (2)
94.0 Neither likely nor unlikely (3)
95.0 Somewhat unlikely (4)
96.0 Extremely unlikely (5)

Q28 What do you think speech-language pathologists do?

_____

Page ——————————————————————————————————————

Break

Q29 Speech disorders occur when a person is unable to produce speech sounds correctly or fluently, or has problems with their voice or resonance. Language disorders occur when a person has trouble understanding others (receptive language), or sharing thoughts, ideas, and feelings (expressive language). Swallowing disorders occur when a person has difficulties with either sucking, chewing, swallowing (or other issues regarding eating/drinking) following a traumatic event, neurological disease, cancer, or surgery. Speech-language pathologists (SLPs) work to prevent, assess, diagnose, and treat speech, language, social communication, cognitive-communication, and swallowing disorders in children and adults. After reading this career description, how likely would you be to pursue this profession?

97.0   Extremely likely (1)
98.0   Somewhat likely (2)
99.0   Neither likely nor unlikely (3)
100.0   Somewhat unlikely (4)
101.0   Extremely unlikely (5)

Q30 What are some reasons you would want to pursue a career in either of these fields?

_____

Q31 What are some reasons you wouldn't want to pursue a career in either of these fields?

_____

Q53 Please add your name and e-mail if you wish to be entered into the drawing for the Amazon gift card.

_____

119

Q32 You are about to submit the survey, if you would like to review your responses, please go back now. Thank you for your time.

.

APPENDIX B

FREE RESPONSE DATA FROM PARTICIPANTS

Q26 – Restricted Response Group Responses:

- *Test hearing and evaluate how we hear*
- *Help people who are hard of hearing.*
- *fit hearing aids, test for hearing loss, differential diagnosis, work with speech pathologists*
- *work with peoples [sic] hearing*
- *Decide if a person has a hearing disorder.*
- *I think audiologists diagnose and treat individuals with hearing and balance disorders.*
- *deals with the humans ears. hearing lost etc.*
- *Hearing Testing*
- *Audiologists examine and determine disorders in the ear.*
- *Hearing doctors*
- *They screen, evaluate and treat hearing loss and hearing related impairments.*
- *Help people who have auditory disorders. They identify, diagnose, and treat these disorders.*
- *study the way people hear and how it affects not only their ability to participate in society but also how there could be hereditary diseases and other complications.*
- *test hearing, fit hearing aids, council people who are hard of hearing etc.*
- *I think audiologists help people with hearing difficulties find optimal technologies or therapists for them.*
- *Fit for hearing aids, evaluate clients (hearing screenings)*
- *Audiologists diagnose, screen, and evaluate patients for hearing loss*
- *Assess and treat indivuals [sic] who have problems with hearing, balance, etc.*
- *Help assess someone's hearing*
- *Deal with the ears and sinuses can adjust hearing ads and such*
- *Audiologists provide care for those with health issues in the ear*
- *Test and diagnose hearing for hearing loss, degree of hearing loss, fit hearing aids, help people with hearing loss deal with alternate ways to communicate*

- *From my knowledge they study the workings of the ear and how it functions along with all the pathologies that can occur*
- *Hearing screenings, hearing aid fittings, diagnosing hearing impairment, and treating hearing disorders.*
- *Help people with hearing loss or who are deaf and balance disorders*
- *Screen for hearing impairments, address and diagnose hearing impairments, and provide therapy*
- *They study hearing & help those with hearing disabilities*
- *Professional who diagnoses and treats people with hearing problems*
- *Test hearing and provide assistive technology when appropriate*
- *Deal with conditions relating to the anatomy and physiology of the ear including hearing, balance, and infections.*
- *It depends. Some do VNR or balance testing by checking the eyes and auditory reflux. They also help many ages with hearing aids. Some are paired with ENTs to provide the best diagnosis of patients.*
- *Audiologists benefit the lives of people by helping them with any kind of auditory disorders. They are able to help someone with one of the biggest things we take for granted daily.*
- *Help those who are hearing impaired*
- *Evaluate, diagnose and treat hearing impairments and balance disorders*
- *Help people with hearing impairments*
- *Audiologists are professionals who are trained to evaluate hearing loss and related disorders*

Q26 – Group 2 Responses:

Note: The asterisk (*) indicates that a response belongs to Group NS.

- **Diagnose and treat hearing disorders*
- **Help people with hearing and other cognitive disorders*
- **Help the hard of hearing and deaf*
- *diagnose and assist people with auditory issues*
- **Something with hearing*
- *Listen to logistics*
- *Listen to audio*
- **something with sound and hearing*
- **Study how people hear things*
- **Study and help people with audio related issues in the body or research patterns*
- *Diagnose disorders of the auditory system*

- *Help people with hearing disabilities/issues
- Treat conditions related to the ear/hearing
- *I would guess that they study our ears and how we perceive sound.
- *Something with hearing
- *Figure out and study people's hearing problems.
- Something with hearing
- *Study and research listening disabilities
- Something involving hearing
- *deal with disease of hearing and balance
- Listen to things
- I believe audiologists are in charge of diagnosing and taking care of people's hearing.
- *speech therapy
- *Study hearing
- *Give assistance/training to those with impaired hearing
- *Study hearing and help people with hearing impairments
- *Someone who studies hearing and disorders associated
- I don't know
- *Work with hearing impaired individuals
- *Medical professionals who deal with problems of the ear & associated hearing
- *someone who deals with hearing/balance problems
- Study sound
- *Work with people who have hearing issues
- *Diagnose and treat ear troubles
- *No clue
- *Study physics of sound/acoustics
- People who study hearing.
- Study sound and how the ear processes sound
- an ear doctor (AuD, PhD, or Masters, no MDs)
- Study audio
- *help people with hearing issues
- doctors/professionals who work with people with hearing problems
- specialize in hearing, deaf
- Along the lines of an ENT doctor, deal specifically with hearing
- Specialist in treating disorders related to the auditory system
- *Help people with hearing
- Help people hear and understand what they hear, use hearing aids or cochlear implants, diagnose hearing problems
- *Study hearing. Most likely to do with the issues with hearing in people.

- *Help with earring/the earring impaired?*
- **Help people who have trouble hearing*
- **Work with hearing problems*
- **Determine hearing problems of individuals*
- *analyze hearing etc*
- **study the science of audio*
- **Study sound*
- *Something with listening*

Q28 – Restricted Response Group Responses:

- *Teach and assist people who can't communicate well or at all to communicate better than they were before*
- *They help people mostly with their mouth area.*
- *help people with speech disfluencies, swallowing disorders, language loss due to a stroke, disabilities, or children slow to develop language*
- *work with people that have a speech disorder*
- *Aid people with different disorders to a normal speaking pattern.*
- *I think they diagnose and treat speech, language and swallowing disorders.*
- *diagnose and treat communication disorders*
- *Help correct speech disorders*
- *SLP's assess and treat communication and swallowing disorders.*
- *Speed doctor*
- *They screen, evaluate, and treat disorders of language, speech, and swallowing.*
- *Help people with various communication disorders or swallowing disorders function. They do this by assessment, therapy, and prevention.*
- *study how people form words and speak, how people swallow and can help rehabilitate people if they are diagnosed with a speech impediment.*
- *help people with speech and swallowing disorders*
- *They help people with speech (or anything realted [sic] such as swallowing) speak and communicate well in day-to-day life.*
- *Evaluate, assess, and treat speech and/or language disorders*
- *Diagnose and treat patients with communication difficulty to articulate speech properly*
- *Assess and treat indivuals [sic] with disorders in speech, swallowing, etc.*
- *Allow individuals communicate better*
- *Diagnos [sic], treatment plans, aid in treatments for speech and swallowing*
- *Speech-Language pathologists aid those with speech disorders*

- *Test and diagnose communication and swallowing disorders, help people express themselves after a disease, surgery, event, etc, causes them to have a language disorder*
- *They help with breaks in the communication chain and also assist in everyday functions such as eating and swallowing*
- *Speech pathologists can diagnose, treat, and rehabilitate those with a speech or language disorder. They can also work with technology to perform swallowing exams as well as assistive language techonology. [sic]*
- *Help people with stutters, speech impediments, lisps, deafness and have hearing aids/Cis, and help them learn how to speak clearly also boosting their confidence :) they also can help premature babies learn to swallow as well as help kids with swallowing issues or who need help with feeding tubes in the hospital, etc.*
- *Identify speech, language, or swallowing disorders and provide therapy for them to enhance overall communication skills*
- *They help people to speak more fluently than when they came in*
- *Treat specific speech disorders*
- *Assist individuals in successfully communicating through therapy*
- *Work with a variety of cases involving any speech or language mechanisms and related conditions (dysphagia)*
- *They help people with speech problems such as stuttering to aphasia. There are many different ages involved.*
- *Speech-language pathologists better peoples [sic] lives daily by helping people with communication disorders. Not only do they affect the speech of the person, they are also a counselor that guides them through the process and treatment.*
- *Help those with speech and language disorders*
- *Diagnose and treat an assortment of disorders from language, speech, swallowing and also work with cognition, memory etc*
- *Help people with their speech, intonation, pitch, literacy skills, etc.*
- *They help treat communication disorders*

Q28 – Group 2 Responses:

Note: The asterisk (*) indicates that a response belongs to Group NS.

- **diagnose, evaluate, and treat speech and language disorders*
- **Assist and study people who have speech disorders/impediments*
- **Help people with speech impediments*
- *diagnose and assist people with speech impediments*
- **Help those with trouble speaking or have language barrier*
- *Help people better their speech*

125

- *Study disease*
- **help children with speech and hearing disabilities*
- **Study how people talk*
- **Help people develop coherent speaking patterns*
- *Diagnose and treat disorders of speech*
- **Study language/speech issues*
- *Treat conditions related to speech [sic], language, interpretation, and understanding*
- **I would guess that they deal with helping those who cannot speak or cannot speak well, learn to speak.*
- **Help with children with speech deficiencies*
- **help people with their speech*
- *They study speech and can diagnose speech impediments*
- **Study how people communicate using words and language*
- **Therapy with help those with speech disorders overcome them*
- **deal with communication disorders*
- *I believe speech-language pathologists are therapist who work with patients who suffer in speech.*
- **speech therapy*
- **Study speech and help with speech impairments*
- **Give assistance/training to those with speech impediments*
- **Study and help people with speech delays/impairments or special needs*
- **Help treat speech and language disorders*
- *I don't know*
- **Work with people who have speech issues by therapy*
- **Help people with speech impediments to change their abnormal patterns*
- **someone who deals with language/communication disorders*
- *Speech therapy*
- **Treat communication disorders*
- **Study/help communication*
- **Help to repair speech impediments*
- **Study how speech and language form in the brain*
- *People who study speech and speech disorders*
- *They help rehabilitate/teach people with speaking disorders (or people who have suffered injuries rendering their ability to speak weak) how to speech (again)*
- *Someone who helps people with disabilities speak*
- *research and perform speech therapy*
- **help improve speech fluency*
- *Doctors who work with people who have a speech disorder*
- *communication and language*

- *Treat patients with speech impediments or speech related disorders*
- *Speech and language therapist*
- **Help individuals with their speech*
- *Help people with speech problems (due to speech impediments, hearing difficulties, etc.) speak clearly*
- **Help people with speech issues talk. Study how speech works, etc.*
- *Help people learn how to speak efficiently*
- **Help when someone is not up to standard in their ability to speak*
- **Help people who have speech impediments*
- **Help diagnose speech of individuals*
- *study speech and language*
- **study cultures and their languages, the advantages and differences of both*
- **Help people with speech disorders*
- *Help diagnose speech related disorders*

Q30 – Restricted Response Group Responses:

- *To help people like my nephew, he has autism and is non verbal [sic]. His team included the speech and language pathologist has helped him communicate better extending his vocabulary with signing and some words.*
- *I want to help people of all ages.*
- *I love working with kids and individuals with special needs and have always had an interest in pursuing a career in healthcare.*
- *they are both every interesting and are careers that will help others*
- *I find it very interesting and would love to help people with these problems in the future.*
- *I want to help people and give back to the community.*
- *Growing up i [sic] had childhood apraxia and i [sic] want to help people who are going through what i [sic] went through*
- *It interests me*
- *I wanted to help others.*
- *very interested in the focus*
- *I have always had a passion for helping people. I want to be on the rehab side of things, to help them regain something that has been lost. Communication is what makes us human, and it is highly complex, so I can spend my career helping others, while growing myself as a professional and as a person.*
- *I want to help others be able to communicate effectively. I believe that communication is an integral part of being a happy, satisfied individual.*
- *Both are geared towards helping people live their day to day lives in more comfort.*
- *very rewarding, more human interaction than pharmacy*

- *I would like to work in a school and I am also very interested in language and human communication. They have nice employment rates and are paid well.*
- *great salary, ability to work in many different areas, ability to make a difference in others' lives*
- *Fulfillment, interest, perceived effect on lives of others, salary*
- *To work with children and make a difference in their lives*
- *I knew I wanted to go into the health field but wasn't sure exactly, my mom is a physical therapist and works hand in hand sometimes with speech pathologists so I shadowed one and I love with she did*
- *The demand in the fields and the interest of how we communicate. And how much of an impact that has on our lives*
- *These fields provide career stability, it involves helping people, and I have experience as a patient of both a speech pathologist and an audiologist*
- *I want to study in the rehabilitation sciences school as an aspiring speech-language pathologist, I think helping someone improve their communication is extremely important in their everyday lives.*
- *I saw the effect that a speech therapist can have on a person and I would love to be able to help people with such basic aspects of life that we take for granted*
- *I love working with kids, and I enjoy helping others.*
- *I want to work with kids and help them become more confident in their voices and speech. I also would love to*
- *To help individuals who are in need; enhance my knowledge on the language and hearing systems of the body*
- *They are interesting, have good pay and a good job outlook. They are also satisfying to people who want to help others. I couldn't do nursing or anything like that, so this is along those lines but without the bodily fluids.*
- *I get to be more involved with special needs children and I had similar experience as a kid*
- *I want to help people and the English language fascinated me*
- *An intense interest in speech and language and other related conditions as well as having the opportunity to work with people on the spectrum that are struggling like I have.*
- *I went to an audiologist as a child and they changed my life. I want to do that for someone else.*
- *One of my biggest passions is helping people and with either of these careers I will be able to have a major impact on the lives of others.*
- *I want to help children*
- *Interested in the material*
- *I enjoy helping others and I want to work in pediatrics*
- *Helping people*

Q30 – Group 2 Responses:

Note: The asterisk (*) indicates that a response belongs to Group NS.

- *Because they have different sub areas so you can work with a specific population and you can also help treat people
- *N/A
- *I am very interested in the health field and helping people and these fields fall into that category
- they seem to pay well
- *To help others
- I knew someone personally affected.
- It's in the health field
- *to help people
- *They sound interesting
- *Helping people, good money, rewarding
- It is rewarding, there is a need in the field, and it utilizes medical knowledge
- *The benefit of helping others.
- Salary, reputation, help others
- *Good salary, helping others
- *Medical field
- *these careers help other people.
- The saray [sic]
- *I enjoy volunteering and jobs that involve patient contact
- *Patient care is appealing to me
- *personal interest, finance reasons
- I am interested in the health field and with both these careers I would be doing something that I am interested in, along with helping others.
- *helping others
- *I have hearing issues
- *It would a fulfilling career, knowing that you had a positive impact on someones [sic] life. Could change someone's life for the better
- *I know people in both of those fields who enjoy their work, and it is a rewarding field and very interesting
- *Seem interesting, still get patient communication
- Sounds interesting
- *I like medicine
- *Both of them help people

129

- *personal interest
- *I am interested in the medical field, diagnosing and treating patients*
- *Working to provide patient oriented care, close interaction with many different people
- *To help others (i [sic] have had speech therapy)
- *Interest
- *I think how balance and the ear are related is interesting
- *STEM based jobs typically earn a lot of money and it can sometimes be easier to find jobs in those fields.*
- *I dont [sic]*
- *availability of (well paying [sic]) jobs, altruisim [sic]*
- *It seems rewarding*
- *None
- *the opportunity to help others, salary, diverse and ever-changing workplace (not a desk job)*
- *If salary is high*
- *Medical related, get to help people*
- *Medically related, helping people in need*
- *To help other people communicate better
- *I am not very interested in a clinical or health related job.*
- *It would be nice to be able to help others.
- *If I were to pursue a career in this field, I'd want to do it to help others.*
- *It helps people, it sounds investigative and interesting
- *I like helping people and for SLP working in a school with kids would be cool
- *They sound very intresting [sic]. My cousin is one
- *involvement in medicine*
- *interesting topic
- *I haven't studied any biology
- *It aids in the wellbeing of others*

Q31 – Restricted Response Group Responses:

- *The idea of the wrong diagnosis*
- *None.*
- *For audiology, it requires four years of grad school which is something I am not interested in doing.*
- *can be a very tough career field*
- *Grad School.*
- *The years of schooling*

130

- *i* [sic] want *to pursue a career in these fields*
- *Science and Memorization difficulty*
- *I was afraid of not being accepted into grad school.*
- *none*
- *I love the science behind Audiology, but the practice itself is too mundane for my tastes.*
- *The schooling process is going to be very long, but in the end worth it.*
- *I am interested in becoming an occupational therapist, so while having either of these backgrounds would be excellent for that neither are really my intended job career.*
- *n/a*
- *Grad school I hear is very difficult, also I'm not as much interested in working in a hospital.*
- *having to frequently move around*
- *None :)*
- *Difficulty of the major and degree required*
- *There are no reasons*
- *N/A*
- *Perhaps if the coursework is above my skill level*
- *I am more interested in speech language pathology than audiology.*
- *Audiology is a little too specific for me and it is more difficult since you need to obtain your doctorate to practice.*
- *It would be hard to work with some cases of patients recovering from horrible illness. It would make me sad, but it is still something I want to do.*
- *N/a*
- *Graduate school requirement*
- *It is so hard to do and the schooling is so lengthy.*
- *Maybe it's limited*
- *None*
- *Difficulties with my own communication related to being on the autism spectrum.*
- *I don't really go for the swallowing disorders. They confuse me and there's many things to go wrong.*
- *I can not* [sic] *think of anything that wouldn't make me want to be a speech pathologist.*
- *I prefer not to do lots of science with audiology*
- *Audiology is too long*
- *Sometimes parents aren't as worried as they should be when their child is developmentally behind*
- *I don't have any reason why I wouldn't*

Q31 – Group 2 Responses:

Note: The asterisk (*) indicates that a response belongs to Group NS.

- *Time consuming, not the best salary
- *I am not interested or adept to the science field
- *I am currently more interested in working in a hospital setting
- I'm not interested in either audiology or speech-language assistance
- *Interest
- It doesn't interest me.
- Not in my interests
- *i [sic] am not very interested in anatomical subjects
- *They do not interest me enough
- *I have no desire to take medical and science classes
- I am more passionate about neurology
- *I'm not interested in pursuing a medical career.
- Not very interesting
- *I don't want to work in a medical/personal care environment.
- *Hard college classes, hard to find a job
- *I am not specifically interested in doing those sorts of things for a career.
- I prefer math and no grad school
- *I have already decided that I want to pursue something else
- *I don't have as much interest
- *too much time
- I tend to be attracted to high pace work atmospheres but both of these professions don't seem to fit in that category.
- *lots of school
- *Ears gross me out and I'm not good at pronunciation
- *Not particularly interested in science, and I'm not a very patient person
- *Grad school requirements, salary, interested in emergency medicine more
- *I'm more passionate about dentistry
- It is not familiar. Need more information
- *I am not extremely interested in speech disorders.
- *My career as a clinical psychologist can help people in the way I'm best at
- *i [sic] feel like i dont have the time to really pursue it
- Not broad enough and not enough chemistry involved
- *Not interested in working with either communication or hearing/balance disorders
- *I don't feel extremely passionate about either
- *Salary

132

- *I do not want to pursue any medical caregiving careers*
- *I'm not very interested in STEM and definitely want to be pursuing something I can see myself loving for the rest of my life.*
- *They're not in my interests*
- *I have can better help people (and pay for my degree) by perusing a BS in chem*
- *Science is tough*
- **Not interested*
- *I am not good at science-related fields and I have other interests*
- *It is not something I'm very interested*
- *Required additional schooling, slow pace and seeing the same thing every day doesn't appeal to me*
- *Difficult process to become one*
- **Not personally inclined toward working in medicine*
- *I am already pursuing a career in a different field.*
- **Just not in my interests.*
- *I get frustrated sometimes when I cannot help someone right away, and I also hate seeing people in pain.*
- **I would not want to work in healthcare because the services aren't accessible to everyone*
- **I have no interest in hearing problems*
- **Im* [sic] not *a medical/ science based thinker*
- *little personal connection*
- **other aspirations*
- **I haven't studied any biology*
- *I'm more interested in the mental health field*

REFERENCES

American Academy of Audiology (AAA). (2004, January). *Scope of Practice*. Retrieved from https://www.audiology.org/publications-resources/document-library/scope-practice

American Psychological Association. (2019). Education and Socioeconomic Status. Retrieved from https://www.apa.org/pi/ses/resources/publications/education

American Speech-Language-Hearing Association. (2016). *Scope of practice in speech-language pathology* [Scope of Practice]. Available from www.asha.org/policy/.

American Speech-Language-Hearing Association (ASHA). (2017a). *Cultural Competence*. Retrieved from https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935230&section=Overview

American Speech-Language-Hearing Association (ASHA). (2017b). *Highlights and Trends: Member and Affiliate Counts, Year-End 2016*. Retrieved from https://www.asha.org/uploadedFiles/2016-Member-Counts.pdf

American Speech-Language-Hearing Association. (2018). *Scope of practice in audiology* [Scope of Practice]. Available from www.asha.org/policy/.

American Speech-Language-Hearing Association (ASHA). (2019a). About S.T.E.P. Retrieved from https://www.asha.org/Students/mentoring/step/AboutSTEP/

American Speech-Language-Hearing Association (ASHA). (2019b). About the American Speech-Language-Hearing Association (ASHA). Retrieved from https://www.asha.org/about/

American Speech-Language-Hearing Association (ASHA). (2019c). Learn About the CSD Professions. Retrieved from https://www.asha.org/Students/Learn-About-the-CSD-Professions/

American Speech-Language-Hearing Association (ASHA). (2019d). Learn About the CSD Professions: Audiology. Retrieved from https://www.asha.org/Students/Audiology/

American Speech-Language-Hearing Association (ASHA). (2019e). Minority Student Leadership Program (MSLP). Retrieved from https://www.asha.org/Students/MSLP-Award/

American Speech-Language-Hearing Association (ASHA). (2019f). Pennsylvania Licensing Requirements for Audiologists and Speech-Language Pathologists. Retrieved from https://www.asha.org/advocacy/state/info/PA/licensure/

American Speech-Language-Hearing Association (ASHA). (2019g). S.T.E.P. Program Mission and Vision. Retrieved from https://www.asha.org/Students/mentoring/step/vision/

American Speech-Language-Hearing Association (ASHA). (2019h). Self-Assessment for Cultural Competence. Retrieved from https://www.asha.org/practice/multicultural/self/

American Speech-Language-Hearing Association (ASHA). (2019i). The Office of Multicultural Affairs (OMA). Retrieved from https://www.asha.org/practice/multicultural/about/

Burns, C., Barton, K., & Kerby, S. (2012, July). The State of Diversity in Today's Workforce. Retrieved from Center for American Progress: https://cdn.americanprogress.org/wp-content/uploads/issues/2012/07/pdf/diversity_brief.pdf

Churchill, S. E. (2019). *A homogenous field in a diverse nation: Fostering cultural awareness in SLP graduate students* (Master's thesis, University of Pittsburgh, Pittsburgh, United States of America). Retrieved from http://d-scholarship.pitt.edu/36601/1/Churchill%20Thesis%20SC%20FINAL%20ETD%204.24.19.pdf

Cohn, D., & Caumont, A. (2016, March 31). 10 demographic trends that are shaping the U.S. and the world. Retrieved from Pew Research Center: http://www.pewresearch.org/fact-tank/2016/03/31/10-demographic-trends-that-are-shaping-the-u-s-and-the-world/

Cole, L. (1985, June). *Racial/Ethnic Demography of the ASHA Membership.* American Speech-Language-Hearing Association (ASHA).

Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association. (2013). 2014 Standards for the Certificate of Clinical Competence in Speech-Language Pathology. Retrieved from http://www.asha.org/Certification/2014-Speech-Language-Pathology-Certification-Standards/

Council of Academic Programs in Communication Sciences and Disorders & American Speech-Language-Hearing Association. (2019). Communication sciences and disorders (CSD) education survey national aggregate data report: 2017–2018 academic year. Retrieved from www.capcsd.org and www.asha.org

Egede L. E. (2006). Race, ethnicity, culture, and disparities in health care. *Journal of general internal medicine*, 21(6), 667–669. doi:10.1111/j.1525-1497.2006.0512.x

Fox, J. (2017, August 17). The Jobs Most Segregated by Gender and Race. Retrieved from Bloomberg: https://www.bloomberg.com/view/articles/2017-08-16/the-jobs-most-segregated-by-gender-and-race

Franca, M.C., Smith, L.M., Nichols, J.L., & Balan, D.S. (2016). Culturally diverse attitudes and beliefs of students majoring in speech-language pathology. *CoDAS,28*(5), 533-545. doi:10.1590/2317-1782/20162015245

Geiger, A. (2017, October 25). Many minority students go to schools where at least half of their peers are their race or ethnicity. Retrieved from Pew Research Center:

https://www.pewresearch.org/fact-tank/2017/10/25/many-minority-students-go-to-schools-where-at-least-half-of-their-peers-are-their-race-or-ethnicity/

Greater Good Science Center at the University of California, Berkeley. (2019). Diversity Defined. Retrieved from https://greatergood.berkeley.edu/topic/diversity/definition#what-is

Grumbach, K., & Mendoza, R. (2008, March/April). Disparities In Human Resources: Addressing The Lack Of Diversity In The Health Professions. *Health Affairs, 27*(2), 413–422. Retrieved from https://www.healthaffairs.org/doi/10.1377/hlthaff.27.2.413

Institute of Medicine of the National Academies. (2013). *U.S. Health in International Perspective: Shorter Lives, Poorer Health* (Issue brief). Retrieved from http://www.nationalacademies.org/hmd/~/media/Files/Report%20Files/2013/US-Health-International-Perspective/USHealth_Intl_PerspectiveRB.pdf

Jackson, R. L. & Hogg, M. A. (2010). Culture, ethnicity, and race. *Encyclopedia of identity* (pp. 186-189). Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781412979306.n60

Lowell, S. Y., Vigil, D. C., Abdelaziz, M., Edmonds, K., Goel-Sakhalkar, P., Guiberson, M., . . . Scott, D. (2018). Pathways to Cultural Competence: Diversity Backgrounds and Their Influence on Career Path and Clinical Care. *Perspectives of the ASHA Special Interest Groups*. doi:10.1044/persp3.SIG14.30

Merriam-Webster. (2019). Diversity. Retrieved from https://www.merriam-webster.com/dictionary/diversity

Musu-Gillette, L., Robinson, J., McFarland, J., KewalRamani, A., Zhang, A., & Wilkinson-Flicker, S. (2016). Status and Trends in the Education of Racial and Ethnic Groups 2016. Retrieved from Washington, D.C.: https://nces.ed.gov/pubs2016/2016007.pdf

National Academies of Sciences, Engineering, and Medicine. (2017). *Communities in action: Pathways to health equity*. Washington, DC: The National Academies Press. doi: 10.17226/24624.

Pennsylvania Department of State. (2019). State Board of Examiners in Speech-Language Pathology and Audiology. Retrieved from https://www.dos.pa.gov/ProfessionalLicensing/BoardsCommissions/Speech-Language%20Pathology%20and%20Audiology/Pages/default.aspx

Pietranton, A. A. (2019, May). Strategic Objective #6: Increase the Diversity of Membership. Retrieved from https://www.asha.org/About/governance/CEO-Updates/CEO-Update-May-2019/

Schackner, B. (2017, October 25). Report finds Pa. universities third most-expensive in nation. Retrieved from https://www.post-gazette.com/local/2017/10/25/College-costs-college-board-state-related-universities-Pitt-Penn-State-Temple-Lincoln-tuition-Pennsylvania/stories/201710240108

Schneider, J. (2017, August 25). The Urban-School Stigma. Retrieved from https://www.theatlantic.com/education/archive/2017/08/the-urban-school-stigma/537966/

United States Census Bureau. (2016). *Quick facts United States*. Retrieved from https://www.census.gov/quickfacts/fact/table/US/RHI225216#viewtop

United States Census Bureau. (2018a, March 7). Hispanic Origin. Retrieved from https://www.census.gov/topics/population/hispanic-origin/about.html

United States Census Bureau. (2018b, November 26). 2010 Census Urban and Rural Classification and Urban Area Criteria. Retrieved from https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural/2010-urban-rural.html

University of Pittsburgh Information Technology. (n.d.). Online Survey System (Qualtrics). Retrieved from https://www.technology.pitt.edu/services/qualtrics-survey-service

University of Pittsburgh Institutional Research. (2018). Common Data Set 2017-2018. Retrieved from https://pre.ir.pitt.edu/wp-content/uploads/2018/07/Pittsburgh-Campus-CDS_2017-2018-2.pdf

Weissbourd, R., Thacker, L., & Team, M. C. C. (2014). *Turning the Tide: Inspiring Concern for Others and the Common Good through College Admissions*. Retrieved from http://mcc.gse.harvard.edu/files/gse-mcc/files/20160120_mcc_ttt_report_interactive.pdf?m=1453303517

Wilson-Stronks, A., Lee, K. K., Cordero, C. L., Kopp, A. L., & Galvez, E. (2008). *One Size Does Not Fit All: Meeting The Health Care Needs of Diverse Populations.* Retrieved from Oakbrook Terrace, IL: The Joint Commission.