Aligning Voice and Communication with Identity – A Survey on Transgender and Gender Diverse Populations

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Aligning Voice and Communication with Identity – A Survey on Transgender and Gender Diverse Populations

by

Rachel T. Chalom

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Speech-Language Pathology Department of Communication Science & Disorders College of Behavioral and Community Sciences University of South Florida

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Dedication

I’d like to begin my dedication by thanking the incredible individuals who came in and shared bits of themselves through personal stories and laughter. Thank you for your courage and vulnerability. Thank you to the folx who participated in the survey at home. Without you, this research would not be possible. This is for the trans and gender diverse folx. To the “T” in LGBT. To those trans folx within the binary and outside of it. For the constant fight to be seen. The never-ending battle to be heard. For the call to action for access to services, equal treatment, and safe spaces. This is for the folx who lost their lives just for being who they are. This is for Tony McDade, Dustin Parker, Neulisa Luciano Ruiz, Yampi Méndez Arocho, Monika Diamond, Lexi, Johanna Metzger, Serena Angelique Velázquez Ramos, Layla Pelaez Sánchez, Penélope Díaz Ramírez, Nina Pop. For all the other gender queer folx who lost their lives. For those who died, but their gender identities were not reported, this is for you too. To the trailblazers who started the LGBTQIA+ revolution. To the gender queer folx who contributed to the 1969 Stonewall uprising. To those who marched tirelessly fighting for gay rights just to not be recognized by the rest of the community. To Marsha P. Johnson. To Stormé DeLarverie. To Sylvia Rivera. To Diana Hemingway. To Christine Jorgensen. To Crystal LaBeija. To Christioher Lee. To the kings and the queens and the non-binary performers. I see you. Your time is now. Your voices will be heard.

"Like racism and all forms of prejudice, bigotry against transgender people is a deadly carcinogen. We are pitted against each other in order to keep us from seeing each other as allies. Genuine bonds of solidarity can be forged between people who respect each other's differences and are willing to fight their enemy together. We are the class that does the work of the world and can revolutionize it. We can win true liberation."

- Leslie Feinbern, Transgender Activist and Author
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Abstract

Purpose: This research has two goals. The first goal is to examine transgender (TG) and gender diverse (GD) voice and communication functioning and the impact of voice on their everyday lives. The second goal is to examine the knowledge, attitudes, and beliefs speech-language pathologists (SLP) have about the TG and GD community and to investigate the relationship between self- and listener-perception and its correspondence to quality of life (QoL).

Methods: A total of 59 participants took part in this research. The research was separated into two parts, the first included 24 TG and GD individuals who participated in a Qualtrics survey, 15 of which recorded their voice for listener-perception. The second part included 35 SLPs who participated in a Qualtrics survey.

Results: Dissatisfaction of voice and communication and its dissonance to gender identity negatively impacted TG and GD individuals’ QoL. Roughly 46% of SLPs indicated that TG and GD education was not addressed within their SLP master’s curriculum. Roughly 14% of SLPs indicated they feel pronouns to be unrelated to the success of therapy and the same percentage of SLPs reported feeling somewhat uncomfortable and very uncomfortable providing therapy to the TG and GD population. Increased dissatisfaction of TG and GD voice QoL scores correlated to an increased severity and inconsistency CAPE-V score.

Discussion: Action is needed to provide person-centered, quality, and comprehensive care for TG and GD individuals. Increased education, cultural humility, and research to develop a standardized procedure model will improve evaluation and treatment for TG and GD clients.
and their overall quality of life. Other areas of GD research (e.g., psychosocial and physiological effects of voice on testosterone, social communication style, and QoL) should be explored.
Chapter 1
Introduction

Terminology

Sex: refers to the genetic factors that make up an individual. Depending on their biology, a person may be assigned as male, female, or intersex at birth.

Gender: a multifaceted term that refers to a set of cultural constructs created by society. It can be defined by three characteristics: an individual’s body, identity, and social presentation. These concepts are integrated with an individual’s sense of self as well as society’s perception (Gender Spectrum, n.d.).

Transgender (TG): refers to individuals who consistently identify with a different gender than with the sex they were assigned at birth (American Academy of Child and Adolescent Psychiatry, 2017). Transgender can be used interchangeably with the term “trans.”

Gender diverse (GD): refers to individuals who do not identify with a gender within the binary of male or female. They may see themselves to fall somewhere on a spectrum of gender and can be interchangeably used with terms gender ambiguous, gender-neutral, and non-binary (Transstudent, n.d.).

Transmasculine: “sometimes shortened to “transmasc,” can refer to both transgender men and nonbinary people. For someone to be transmasculine, it means that their true self is more

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aligned with masculinity than is represented by the gender that was assigned to them when they were born.” (Converse, n.d.).

**Transfeminine**: “means that someone is transgender in the direction of femininity, but not necessarily female” (Converse, n.d.).

**Cisgender**: The opposite of transgender, the cisgender population do identify as their sex assigned at birth. Transstudent (n.d.) describes cisgender as an adjective and is not indicative of an individual’s sexual orientation.

To date, an accurate percentage of individuals who are transgender (TG) and gender diverse (GD) in the United States is unknown. This can be attributed to the absence of a nationwide collection tool for reporting gender identity that includes options such as TG female or TG male (Miller, 2015). A study conducted at the Williams Institute estimated the incidence rates for age-specific TG individuals to be 0.7% for young adults between the ages of 18-24, 0.6% for adults between the ages of 25-64, and 0.5% for adults over 65 (Flores, Herman, Gates, & Brown, 2016). However, these percentages may not account for the entirety of the TG and GD population due to several factors such as stigmas surrounding gender diversity or fear of disclosing gender identity. As the reported and estimated incidence of TG and GD individuals increases, a need for well-informed and culturally competent health care professionals arises.

**Importance of Voice and Communication Style**

An individual’s voice and communication style is an integral part of their core identity, “in a hearing-speaking world, it bridges a communicative connection to others, so that we can form relationships, express desire or protest, and tell and retell our unique story” (Mills & Stoneham, 2017, p 21). TG and GD individuals may experience instances of being misgendered or wrongly perceived by society based on their voice and communication. Additionally, these
individuals may experience gender dysphoria or distress due to the inconsonance between sex and gender identity (DSM-5; American Psychiatric Association, 2013). TG and GD individuals with gender dysphoria may choose to socially transition (e.g., using affirmed gender pronouns and bathrooms), medically transition (e.g., sex change surgery and/or hormone treatment) or a combination of both to mitigate the symptoms of gender dysphoria.

Speech-language pathologists (SLPs) can play an important role in establishing a sense of congruency and authenticity between voice and communication style and gender identity by providing accurate evaluation and treatment. Aligning voice and communication to gender identity may subsequently alleviate symptoms of gender dysphoria (ASHA, n.d). It is important to note that it may not be the goal of the client to “pass” or be perceived as their affirmed gender identity by society, but instead to find comfortability and an authentic representation of how they perceive their own affirmed gender identity (Hancock & Haskin, 2015).

**Effects of Intervention Methods on Speech Production**

The source-filter theory has been largely used to describe speech production. Briefly, there are two major components that give rise to the speech output; the “source”, which is the vocal fold vibration, or the sound spectrum generated by the larynx, and the “filter”, which modulates this sound spectrum in the vocal tract (Fant, 1971). There are anatomical differences between cisgender males and females, and TG populations in both the vocal folds and vocal tract which lead to corresponding changes in the perception of voice characteristics such as pitch and resonance as well as revealed in the acoustic measurements (e.g., fundamental frequency or f0, formant frequencies). The changes in the TG population are often due to surgical or hormonal treatment. Furthermore, studies on voice production indicate that vocal fold length, mass, and tension are primary contributors to changes in pitch and resonance (Kim, 2020).
Surgical procedures such as anterior commissure advancement (ACA) cricothyroid approximation (CTA), and Wendler glottoplasty (GP) can be used to modify the above-mentioned vocal fold parameters to achieve the desired vocal feminization (Kelly, Hertegård, Eriksson, Nygren & Södersten, 2018; Tucker, 1985). For example, a study by Kim (2020) reports that vocal fold length should be shortened 25% to correspond with a cisgender female resonant frequency and vocal thickness should be thinned more than 20% in width to correspond with a cisgender female f0 range. Data from Kelly et al. (2018) suggested that with CTA surgery, the minimum f0 increased (lowest possible phonation), however, the maximum f0 (highest possible phonation) decreased, which resulted in reduced pitch variance. Reduced pitch variance may not be an optimal outcome because it restricts the ability to achieve a natural female speaking range. It has been shown that only 31% of individuals who underwent CTA reported a passable female vocal range (Kim, 2020). Indeed, data on patient-reported post-operative satisfaction (via TSEQ, VHI, or other metrics) has been varied. For example, while one study reported a 58% satisfaction rate, another study reported 85% for CTA surgery (Neumann & Welzel, 2004; Yang, Palmer, Meltzer, Murray, & Cohen, 2002). Similar contradictory findings have been reported for other surgical methods such as laser reduction glottoplasty (Orloff, Mann, Damrose, & Goldman, 2006; Koçak, et al., 2010). It is likely that since most of the surgeries target vocal feminization, higher satisfaction may be reported if improvements were observed in pitch or f0 measures.

Research has been conducted to compare the effects of GP with and without voice therapy (Casado, Rodríguez-Parra, & Adrián, 2016). TG women who underwent the surgery and had voice therapy reported higher TSEQ scores. Although vocal-feminization surgery alters f0, altering f0 alone may not be the sole predictor of vocal satisfaction and other patterns related to
voice (e.g., resonance, intonation, voice quality) which are often targeted in voice therapy, may play a greater role in improving vocal satisfaction (Mcneill, Wilson, Clark, & Deakin, 2008; Meister, Kühn, Shehata-Dieler, Hagen, & Kleinsasser, 2016). Additionally, only 1% have undergone phonosurgery compared to 14% of TG women who underwent voice therapy as per the 2015 U.S TG survey. Furthermore, only 18% desired phonosurgery in contrast to 48% who desired voice therapy (James et al., 2016). These results from prior literature support the importance of voice therapy in addition to surgical methods.

According to the World Professional Association for Transgender Health (WPATH) Standards of Care (SOC), hormones should be adjusted to the individual’s goal, therefore individuals may seek a spectrum of feminization/masculinization treatments (Coleman et al., 2012). Estrogen hormone replacement therapy (HRT) can be taken to increase estrogen production and decrease testosterone production, however, the estrogen HRT does not feminize voice. Testosterone can be taken to increase testosterone levels and decrease estrogen levels. Unlike estrogen, testosterone does affect the voice. Evidence suggests that the use of testosterone causes the larynx to lower, resulting in a lower f0 (Nygren, Nordenskjöld, Arver, & Södersten, 2016). A longitudinal study examining the effects of f0 on testosterone correlated f0 values with the cisgender male speaking range after 12 months of treatment (Nygren et al., 2016). Despite f0 values in the cisgender male range, the treatment of testosterone correlated to vocal dissatisfaction in 24% of participants (Nygren et al., 2016). These participants reported difficulty with their voice (including vocal fatigue, vocal instability, strained and hoarse vocal quality, restrictions in pitch variance, and projection of voice) and subsequently received voice therapy (Nygren et al., 2016).
GD individuals assigned female at birth (AFAB) may self-administer hormones and then discontinue testosterone treatment once the preferred pitch is achieved (Hardell, 2017). This method of treatment includes either administering testosterone for a shorter period at a regular dosage or taking a lower dosage for a longer period (Hastings, 2016). It should be noted that the GD population AFAB may not want testosterone treatment, but instead may seek voice and communication therapy (Azul, Hancock, & Nygren, 2020). Interventions for vocal feminization focused on increasing f0 by its perceptual component, pitch (Hancock & Helenuis, 2012). An increased f0 correlated to increased perceived femininity. Another component in judging femininity in voice is resonance and is often targeted by SLPs in their therapy. Traditionally, resonance that comes from the chest is subjectively perceived as male resonance, whereas resonance that comes from the head or face is subjectively perceived as female resonance.

**Speech Characteristics in Transgender Women**

A large number of studies have focused on the perceptual and acoustic characteristics of TG women. A detailed review of all these studies is beyond the scope of this work and hence we have highlighted some of the key findings. To identify the potential acoustic and perceptual measures that are best suited for vocal feminization protocols, Owen & Hancock (2010) obtained speech samples from 20 TG women and 10 cisgender women and subjected these to ratings by the speakers and 25 listeners. Mean f0 and semitone range were strongly related to the speaker and listener-rated femininity when compared to noise-to-harmonics ratio or perturbation measures such as jitter and shimmer. Furthermore, listener-rated femininity strongly correlated with the speaker’s self-rated femininity (Owen & Hancock, 2010). Another study explored the most prominent set of acoustic predictors of gender attribution (as men, women, or ambiguous); perceived masculinity and femininity, and perceived vocal naturalness (Hardy, Rieger, Wells, &
Boliek, 2018). Results from a regression analysis identified mean f0 as a significant predictor for a person to be perceived as female vs. male (as the mean f0 increased, the chance of being identified a woman also increased). F0, average formant frequency, and sound pressure level (SPL) were identified as significant predictors of masculinity and femininity ratings (where high f0 and average formant frequency were associated with feminine ratings and higher SPL data were related to more masculine ratings). Similarly, f0, average formant frequency, and rate of speech were identified as significant predictors of vocal naturalness (f0 was negatively related whereas average vowel formant and RoS were positively related). Research has also examined how the acoustic-perceptual measures relate to voice-related quality of life in this population. For example, Dacakis, Oates, and Douglas (2017) examined associations between Transsexual Voice Questionnaire (TVQ)MtF scores and (1) voice femininity and (2) acoustic measures related to pitch and voice quality. The authors concluded that the higher the self-perception of voice femininity, the less negative vocal impact TG women experience (Dacakis et al., 2017). However, no significant correlations emerged between acoustic voice data and TVQMtF scores.

**Speech Characteristics in Transgender Men**

A comprehensive review conducted by Azul, Nygren, Södersten, & Neuschaefer-Rube (2017) emphasized the limited research examining the voice functioning of transmasculine individuals. Hancock, Childs, and Irwig (2017) examined vocal function and self-perception of voice for TG men administering testosterone. The authors reported that phonational frequency range was maintained, however, it was decreased by 7 to 8 semitones. Perceptually, a negative correlation was reported between mean f0, frequency range, and self-perception of gender related to voice. There are sparse data on longitudinal effects of testosterone therapy on the voices of TG men (Cler, Mckenna, Dahl, & Stepp, 2019; Irwig, Childs, & Hancock, 2016; Nygren et al.,
Irwig et al. (2016) investigated the degree of voice deepening for seven TG men administering testosterone intramuscularly. A baseline voice assessment was administered before beginning testosterone and voice assessments continued throughout at the 3, 6, 9, and 12-month mark. Results suggested that there were four patterns in vowel and reading: minimal f0 deepening over 0-3 months, f0 deepening over 0-6 months, continued f0 deepening over 3-9 months, and f0 deepening at a similar rate over 12 months. The study concluded majority of individuals administering testosterone should expect most of the voice deepening to occur within 6-9 months, however, results may vary based on the individual. These results were consistent with the Nygren et al. (2016) study which indicated a cisgender male f0 range after 12 months. A longitudinal case study by Cler et al. (2019) examined the degree of voice deepening, vocal tract length, voice quality, and perception of gender in a transmasculine individual during his first year of the testosterone treatment on a bi-weekly basis. The steepest change in vowel and speaking f0 occurred between 2-3 months, resulting in a f0 of the cisgender male range by the end of the 12 months. Acoustic measures indicated that the participant’s vocal tract increased by 0.6 cm in length, similar to that of a male vocal tract during puberty. Though a voice-related quality of life measure was not utilized, results suggested that vocal quality did not impact daily activity. Finally, listeners perceived a male voice after the participant had been on testosterone for roughly 37 weeks or 9 months. In addition to the acoustic-perceptual measures, Wong (2017) investigated the satisfaction of transmasculine voices through an online survey. Survey results concluded that there are diverse voicing and communication needs in this transmasculine population and there is limited research on their quality of life as they relate to both verbal and non-verbal communication.
Quality of Life

A comprehensive assessment of voice necessitates measurements beyond the acoustic and perceptual domains; one that measures an individual’s perception of voice and its impact on everyday life (Dacakis et al., 2013). For the cisgender population, several scales such as Voice Handicap Index (VHI), Voice-Related Quality of Life (VRQoL), Voice Activity and Participation Profile (VAPP) and the Voice Symptom Scale (VoiSS) are available (Deary, Wilson, Carding, & Mackenzie, 2003; Hogikyan & Sethuraman, 1999; Jacobson et al., 1997; Ma & Yiu, 2001). Only one self-reported scale has been developed for the TG population and specifically for the male to female transsexuals (TVQ\textsuperscript{MtF}). The TVQ\textsuperscript{MtF} evolved from an extensive review of the existing Transgender Self-Evaluation Questionnaire (TSEQ; Adler, Hirsch, & Mordaunt, 2006). Quality of life using TSEQ and TVQ\textsuperscript{MtF} has indicated that self-perceived ratings of likability and femininity/masculinity are strongly related and that treatment outcomes need to be evaluated accordingly (Dacakis et al., 2017; Hancock, 2017; Hancock, Krissinger, & Owen, 2011). Results from a retrospective study that examined voice and communication treatment and their acoustic, perceptual, and quality of life outcomes in 25 TG female individuals reported the need for inclusion of other domains such as language, non-verbal communication (Hancock & Garabedian, 2013).

There is a dearth of literature examining voice and communication experiences of GD individuals. The first goal of the current study is to create a self-reported questionnaire that examines both TG and GD individuals to evaluate QoL that extends beyond the voice domain. The survey included the following components: self-perception and perception of others, voice congruency, modified TVQ\textsuperscript{MtF} and TSEQ, mental health, pragmatics/other behaviors, and knowledge of voice and communication services.
The modified TVQ_Mtf and TSEQ questions were adapted appropriately to include TG men and GD participants to obtain a scaled score representing QoL related to voice and gender identity. TG and GD individuals demonstrating symptoms of gender dysphoria may have other coexisting mental health concerns, i.e. anxiety, depression, personality disorders (Coleman et al., 2012). Therefore, questions regarding mental health were addressed to holistically assess the individual that will aid in proper referrals to a multidisciplinary team of professionals. Additionally, gaining insight about vital components of mental health concerns the best quality of care from the SLP. Due to the lack of research examining non-verbal communication in the TG and GD population, questions regarding pragmatics and other behaviors were assessed. Furthermore, a social communication congruency (SCC) scaled score was calculated to measure QoL related to social communication. Finally, a knowledge of voice and communication services section was included to examine awareness of voice and communication therapy, alternatives utilized, and satisfaction of alternatives. Additionally, an open-ended question was included to outline components of considerations for SLPs to make when treating TG and GD individuals.

The development of a psychometric, self-reported questionnaire for TG and GD individuals to measure voice and communication experiences would aid in the process of formalizing the role the SLP has within the TG and GD population.

**Role of a Speech-Language Pathologist**

The WPATH SOC version 7 recommended that at a minimum, SLPs working with the TG and GD population receive specialized training, seek basic knowledge regarding possible medical treatments, have awareness of possible psychosocial issues, and become familiar with gender-affirming protocols (i.e. utilizing client’s pronouns and name; Coleman et al., 2012). Among many other suggestions, Alder et al. (2019) recommended providing education about this
population at the graduate school level. Providing education to SLPs at the graduate level is the first of many steps to address preconceived negative beliefs and bridge knowledge gaps. However, it is imperative that SLPs embrace cultural humility. Tervalon and Murray-García (1998) describe cultural humility as challenging the “…traditional notion of competence in clinical training…” Cultural humility embodies the concept of life-long self-assessment and critical self-reflection in an ever-evolving effort to do better. Subsequently, action must be taken to enact change for the TG and GD community. The American Speech-Language-Hearing Association (ASHA), the governing body of SLPs and audiologists within the United States, created a Code of Ethics to guide professionals in the field (ASHA, 2016). The very first rule within the ASHA Principle of Ethics states, “Individuals shall provide all clinical services and scientific activities competently” (ASHA, 2016). However, literature reports indicated that SLPs feel as though they are not equipped with the proper clinical skills to provide voice and communication services to the LGBTQ population (Hancock & Haskin, 2015). This study investigated the knowledge and attitudes of 279 SLPs regarding the LGBTQ population through an online survey. Forty-seven percent of participants reported that voice and communication services for TG and GD individuals were not incorporated in their master’s program. Participants who were graduate/clinical fellows were better versed with LGBTQ terminology, however, they still lacked comfort in the role the SLP has in providing services to the LGBTQ community. SLPs who had additional years of experience had more comfort than knowledge and felt increased negativity towards the TG group. These feelings of negativity could be attributed to “…societal gender norms and lack of knowledge…” about TG and GD individuals. Indeed, only 19% of SLPs received training in TG voice and communication therapy (Matthews, Olszewski, & Petereit, 2019). Studies examining perceptual voice and speech features of TG and GD
individuals are also largely limited to naïve listeners rather than SLPs. To our knowledge, only two studies (Hancock & Helenuis, 2012; Schwarz et al., 2018) have examined listener perception of TG and GD voices by SLPs and both these studies are limited by small sample size (N = 2).

More recently, surveys distributed in 2015 and 2018 by an SLP, Jordan Jakomin, indicated that not all graduate schools included the topic of TG voice and communication as a part of their academic or clinical coursework. Jordan referenced the ASHA Standards for Accreditation to explore a possible solution, “there needs to be clearer guidelines on including TG voice and communication for SLP graduate school curriculums.” He suggested integration of material to include anywhere between an introduction of the subject in a 2-hour presentation in a voice disorders class or incorporating it within an elective course at the university (J. Jakomin, personal communication, April 22, 2020). An effort to foster cultural and clinical knowledge regarding gender identity/gender expression must be implemented to provide the highest quality of person-centered care.

There is a paucity of literature examining SLP’s knowledge and attitudes about the TG and GD population and perception of voices of TG and GD individuals. **The second goal of the current study** is to create an online survey for SLPs that examines several voice and communication features along with general knowledge about TG and GD individuals. The following communicative components were examined: resonance, pitch, prosody, nonverbal, and physical appearance. These ratings allow insight on perception for SLPs to consider during treatment. Understanding specific concerns related to voice congruency will help build the foundation for voice and communication treatment to this under-served but important population.
Chapter 2

Methods

This study was approved by the University of South Florida Institutional Review Board (Pro00040432)

Research Goal 1: To create a self-reported questionnaire that examines both TG and GD individuals to evaluate QoL that extends beyond the voice domain.

Two TG and GD participant groups were included in answering question 1 of this study. Both these groups were recruited through social media (University of South Florida (USF) trans+ student union), and advertisements posted around the university as well as sent through emails. All participants were considered eligible for the study if they met the following requirements: spoke fluent English, between 18 and 40 years of age, identified as TG or GD, reported normal hearing abilities, a healthy voice without a history of neurogenic communication disorder, or significant smoking history. TG and GD participant group 1 (PG1) comprised of 15 TG and GD members of the community, one of whom was determined to be ineligible. Therefore, 14 TG and GD participants took part in the study as a “speaker”. Prior to the experiment, PG1 were prompted to complete a paper consent form that indicated their voluntary participation to provide vocal and non-vocal samples (see Appendix A). After signing the consent form, PG1 were screened for their hearing through pure tone audiometric thresholds (less than 20 dB HL at 500, 1000, 2000, and 4000 Hz) in the Speech Motor Systems (SMS) lab located in the Department of Communication Sciences and Disorders at USF. After the PG1 passed the hearing screening, their vocal and non-vocal behaviors were recorded using a Shure WH20 microphone (placed at a
45-degree angle from their mouth and with a 4-5 cm mic-mouth distance) connected to a Lenovo laptop through Komplete Audio 6 interface and on to Audacity software. PG1 were asked to (1) sustain vowel /a/ for approximately 5 seconds, (2) speak on a topic of their choice, (3) read Consensus Auditory-Perceptual Evaluation for Voice (CAPE-V; Kempster et al., 2009) sentences, (4) say a commonly used phrase in which they are not perceived as their gender identity, and (5) cough and laugh. Once PG1 completed the audio recordings, they were encouraged to complete the questionnaire, *Voice and Communication Survey for Transgender and Gender Diverse Populations*, utilizing the web-based survey tool, Qualtrics (see Appendix C) following the online consent form (see Appendix B). Participants used the desktop computer in the SMS lab to complete the online consent and questionnaire. However, one participant in PG1 did not complete the survey due to a conflict of interest (N: 14 - 1 = 13). In addition to the Qualtrics survey responses from 13 PG1, 10 additional TG and GD individuals completed the Qualtrics survey on their computers, phones, and tablets on their own time (PG2). For questions 1-42, full data set of 23 participants were taken, however, for further analysis of questions 43-68, data set of 22 participants were taken because one additional participant did not finish the survey.²

**Research Goal 2: To create an online survey for SLPs that examines several voice and communication features along with general knowledge about TG and GD individuals.**

Three-tiers of SLPs participated in the questionnaire, *Perceptions of Transgender and Gender Diverse Populations for Speech-Language Pathologists* (see Appendix F), totaling 35 recorded responses. The survey incorporated the following components: demographics, a question regarding TG voice and communication in the master’s curriculum, attitudes and

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² Data for the unfinished survey participant were incorporated into the study due to diverse demographic information
beliefs, and listener-perception. The first tier included 35 SLPs who at the very least completed through the question regarding TG voice and communication in master’s curriculum sections. The following tiers included an overlap of participants. The second tier included 27 SLPs who completed at least through the attitudes and beliefs section. The third tier included 11 SLPs who completed all components of the survey. SLPs were recruited through social media (Facebook groups – LGBTQ+ Speech Language Pathologists, Medical SLP forum, SLPs for Evidence Based Practice, Feminist SLPs, Speech Pathologists at Large, “l’gasp: glbtq” caucus of audiologists and speech language pathologists, Gender Spectrum Voice & Communication) and via email. The participants were included if they were between the ages of 25 and 60, fluent English speakers, and certified SLPs. Participants were excluded if they reported the presence of speech, language, cognitive, hearing, psychological, or neurological disorders. All SLPs completed the questionnaire following the online consent form (see Appendix E) on their personal electronic devices (computers, phones, tablets).
Chapter 3

Results

Research Goal 1: To create a self-reported questionnaire that examines both TG and GD individuals to evaluate QoL that extends beyond the voice domain.

Demographic Information

In this section, the demographic information for 23 participants is presented as pie charts for race, gender identity, and percentage of presentation.

The race of the participants included 81.48% Caucasian/White, 7.41% African American/Black, 7.41% Asian, 3.7% Native Hawaiian/Pacific Islander (see Figure 1).

Figure 1. Response to question 3, “What is your race?”
Among the participants who were included in the study, 54.17% identified as Non-Binary, 16.67% identified as other including Transmasculine, Non-Binary Transmasculine, Situational Stealth Transgender Female, Genderqueer/Transmasculine/Transgender Male, 16.67% identified as Stealth Male, 8.33% identified as Transgender Female, 4.17% identified as Transgender Male (see Figure 2).

![Pie Chart Image]

**Figure 2.** Response to question 5, “What’s your gender identity?” A text box for “other” option was provided: 1 Transmasculine, 1 Non-binary Transmasculine, 1 Situational Stealth Transgender Female, 1 Genderqueer/Transmasculine/Transgender Male

Among the participants, 41.67% reported to present as their gender identity by using their pronouns full time (100%), 33.33% between half to full time (50%-100%), 12.50% about half of the time (50%), 12.50% less than half (50%) the time (see Figure 3).
To effectively analyze the impact of voice and communication functioning on the everyday lives of TG and GD individuals, the following topics were posed: self-perception and perception of others, voice congruency, modified TVQ^{MtF} and TSEQ, mental health, pragmatics/other behaviors, knowledge of voice and communication services.

**Self-Perception and Perception of Others**

In considering self-perception and perception of others, question 22 asked TG and GD individuals to rank the importance of the following components of communication: resonance, pitch, prosody, nonverbal, and physical appearance. Of the data collected, 63.7% of TG and GD individuals ranked self-perception of physical appearance and nonverbal communication to be very important. Data collected on physical appearance and nonverbal communication yields importance to SLPs as they are within the realm of communication services to be provided. TG
and GD individuals sequentially rated self-perception of resonance, pitch, and prosody to be very important (see Figure 4).

**Figure 4.** Response to question 22 “Rate the importance of how you perceive your gender expression in regard to...“(Adapted from Access and Barriers to SLP Services for Gender Diverse People survey)

In response to question 21, TG and GD individuals were asked to rate the same parameters based on the perception of others. Results indicated that nonverbal communication and physical appearance were found to be very important for 50% of individuals. TG and GD
individuals sequentially rated perception of others of pitch, resonance, and prosody to be very important (see Figure 5).

Figure 5. Response to question 21, “Rate the importance of how others perceive your gender expression in regard to...” (Adapted from Access and Barriers to SLP Services for Gender Diverse People survey)
In response to question 26, “please rate the importance in affirming your gender identity”, 95.83% of participants reported that it is very important and important that their gender identity is affirmed (see Figure 6).

![Figure 6. Response to question 26, “Please rate the importance in affirming your gender identity”](image)

**Voice Congruency**

In response to question 24, “my current voice matches my gender identity and fits me authentically and congruently,” only 16.67% of the participants reported voice congruency all of the time. Meanwhile, in response to question 25, “how often are you misgendered on the phone?” 41.67% of the participants reported being misgendered all of the time while speaking on the phone (see Figure 7).
Figure 7. Response to question 25 “How often are you misgendered on the phone?” Survey provided an option for comment to allow for inclusion of answers. Comment answers included, “I can really only think of two or three times in the last 6 months or so” and “Never, because I use she/her pronouns as well.”

**Modified TVQ<sup>MtF</sup> and TSEQ**

To represent an overview of voice congruency QoL for the TG and GD population, scaled scores for TVQ<sup>MtF</sup> and TSEQ adaptation questions were calculated (see Appendix C) for TVQ<sup>MtF</sup> and TSEQ adaptation questions (numbers 30-39, 41 & 42). The total possible scaled score of the TVQ<sup>MtF</sup> and TSEQ question was 33. The following scale was used: score of 0 - never or rarely, 1 - sometimes, 2 - often, 3 - usually or always. The scores suggest that the higher the number, the more dissatisfaction with the congruency of voice and gender identity. Of the participants, 7 of the 24 scored 15 or higher, indicating that dissatisfaction with the congruency of voice and gender identity highly negatively impacts the QoL of 29% of TG and GD individuals.
**Pragmatics/Other Behaviors**

Of the participants, only 17.39% reported never being misgendered in face-to-face situations. In response to question 46, “how important is your social communication in affirming your gender identity?” the participants reported that it was 86.96% important (ranging from very important to somewhat important).

To represent an overview of SCC QoL for the TG and GD population, scaled scores for SCC questions were calculated (see Appendix C) for SCC adaptation questions (numbers 48-49, 51-53, & 56). The total possible scaled score of the SCC questions was 18. The following scale was used: score of 0 - never or rarely, 1 - sometimes, 2 - often, 3 - usually or always. The scores suggest that the higher the number, the more dissatisfaction with the congruency of social communication and gender identity. Of the participants, 11 of the 23 scored a 10 or higher, indicating that the dissatisfaction with the congruency of social communication and gender identity highly negatively impacts 48% of TG and GD individuals. When examining the relationship between self-perception of physical appearance/nonverbal communication and SCC, over half of the participants ranked self-perception of physical appearance and nonverbal communication to be very important, supporting the statement that the highly rated SCC scores suggest a negatively impacted QoL for the TG and GD population.

**Mental Health**

Regarding mental health, several questions were posed. In response to question 65, “have you experienced loss of interest?” adapted from Beck's Depression Inventory, 1996, 43.48% reported feeling less interested in people than they use to be. In response to question 66, “in the last month, how often have you felt nervous and ‘stressed’” 47.83% reported feeling nervous and stressed fairly often and 30.43% reported feeling nervous and stressed very often (see Figure 8).
Figure 8. Response to question 66. “In the last month, how often have you felt nervous and ‘stressed’” (Perceived Stress Scale, 1983).

Of the 14 participants who reported their current voice matching their gender identity and fitting them authentically and congruently, 9 reported satisfaction with their life. In response to question 62, “during the past 4 weeks, have you accomplished less than you would like and/or had difficulty performing work (e.g. took extra effort). Please select all that apply” 43.75% reported accomplishing less than they would like (see Figure 9).
Figure 9. Response to question 62, “During the past 4 weeks, have you accomplished less than you would like and/or had difficulty performing work (e.g. took extra effort).”

In response to question 67, “I am satisfied with my life” adopted from The Satisfaction with Life Scale, 1985, the participants with the highest 3 TSEQ scaled scores reported slightly agree, slightly disagree, disagree.

Knowledge of Voice and Communication Services/Comments

In response to question 57, “what do you know about voice and communication services offered by speech-language pathologists/speech therapists to assist with gender presentation?” 73.91% of participants reported having knowledge of voice and communication services provided by SLPs, but never partaking in services and 26.09% reported having no knowledge of voice and communication services for gender presentation. Among the participants, 30.43% of the population used another service to change their voice and communication such as videos and applications on a smartphone. When asked to rate satisfaction with the alternative source of services, 57.14% of the participants reported feeling somewhat satisfied and not very satisfied.
The participants were provided an option to leave a comment in response to the following question: “what would you like for speech-language pathologists to consider when working with the transgender community?” Comments were divided into the following categories: cultural considerations - gender inclusivity, knowledge of the TG and GD experience (non-binary vs binary), accessibility, knowledge of treatment/evaluation (See Appendix D).

Research Goal 2: To create an online survey for SLPs that examines several voice and communication features along with general knowledge about TG and GD individuals.

Demographic Information

In this section, the demographic information of the first tier of SLPs (N = 35) is presented as pie charts for race, gender identity, and clinical experience with a TG and/or GD client.

In response to question 17, “what is your race?” the race of the SLPs included 83.33% Caucasian/White, 11.11% Asian, 2.78% African American/Black, 2.78% Hispanic (see Figure 10)
Figure 10. Response to question 17, “What is your race?”

In response to question 22, “what is your gender identity?” The first tier of SLPs reported the following: 80.56% - Cisgender Female, 8.33% - Cisgender Male, 5.56% - Non-Binary, 2.78% - Transgender Female, and 2.78% - Gender Non-Conforming (see Figure 11).
**Figure 11.** Response to question 22, “What is your gender identity?” A text box for “other” option was provided: gender nonconforming, she/her pronouns

Among the first tier of SLPs, in response to question 24, “have you had experience providing voice and communication therapy to a gender diverse client?” 48.28% reported having experience providing voice and communication therapy to TG and/or GD clients, 48.28% reported no experience, and 3.45% reported having theoretical knowledge, but no clinical experience (see **Figure 12**).
Figure 12. Response to question 24, “Have you had experience providing voice and communication therapy to a gender diverse* client? *including transgender/non-binary population?” A text box for “other” option was provided: “I only have theoretical knowledge, no clinical experience.”

In this section, results for all three tiers of SLP participants are displayed and discussed. The following topics are addressed: TG voice and communication addressed in master’s curriculum, attitudes and beliefs, and perception of TG and GD voices.

**TG Voice and Communication Addressed in Master’s Curriculum**

A study investigating knowledge, training, and attitudes of SLPs and the TG population indicated that 19% of SLPs received training in TG voice and communication therapy (Matthews, Olszewski, & Peterite, 2019). Similarly, in the current study, a small percentage of tier one SLPs reported TG voice and communication therapy being addressed in their master’s curriculum. Among the data, 8.57% reported some instruction in practicum, and 37.14% reported some instruction in class (see Figure 13). The treatment of voice and communication therapy for
TG and GD individuals is 100% within the SLP’s scope of practice, however, survey results show that 46% of our SLPs reported no academic or clinical coursework on TG and GD individuals. The dissonance between percentages desperately calls for a need for increased education and training in SLP master’s programs. It should be noted that previous research had focused on TG individuals within the binary. This research incorporates all TG and GD individuals within and outside of the binary, across the spectrum of voice and communication.

Figure 13. Response to question 21, “Was transgender voice and communication addressed in your SLP Master’s Degree curriculum?” A text box for “other” option was provided: Two participants responded: “minimally within class, more within practicum/internships”, one participant responded, “I did my masters on transgender voice and communication intervention.”

To investigate age as a contributing factor, tier one SLPs were separated into the following generational categories: Baby Boomers (55-73 years old), represented 20% of the population sampled, Generation X (39-54 years old), represented 34% of the population sampled, and Millennials (23-38 years old), represented 46% of the population sampled. Of
the data collected, 29% of Baby Boomers indicated TG voice and communication therapy being addressed some in class/practicum, 25% of the Generation X SLPs indicated TG voice and communication therapy being addressed some in class/practicum, and 88% of Millennials reported TG voice and communication therapy being addressed some in class/practicum. While the trend is that as younger generations attend an SLP master’s program, TG voice and communication is more likely to be addressed, 12% of Millennials still reported it not being addressed at all. An increase of TG and GD education provided within the master’s curriculum may be attributed to a rise in books and articles that focus on TG and GD voice and communication.

**Attitudes and Beliefs**

The second tier of SLPs (N = 27) completed an attitudes and beliefs section. SLPs were asked to rank the important considerations they might make when providing voice and communication therapy to a TG or GD client. The considerations were sequentially ranked as follows: gender dysphoria, presentation percentage, other (i.e. motivation, client values, underlying voice disorders), and support system (see Table 1).

**Table 1.** Ranked TG and GD Considerations for SLPs

<table>
<thead>
<tr>
<th></th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gender dysphoria</td>
</tr>
<tr>
<td>2</td>
<td>Presentation percentage (how often the client presents as their gender identity at work, at home, with friends or family)</td>
</tr>
<tr>
<td>3</td>
<td>Other (i.e. motivation, client values, underlying voice disorders)</td>
</tr>
<tr>
<td>4</td>
<td>Support system</td>
</tr>
</tbody>
</table>

Among tier two SLPs surveyed, 82.14% reported considering pronouns as very important, however, 14.29% reported considering pronouns to be unrelated to the success of
therapy (see Figure 14). An SLP not considering pronouns can result in an unsafe, unsuccessful therapy experience for the TG and GD individuals.

**Figure 14.** Response to question 214, “While treating a gender diverse client, how important would you consider their pronouns to the success of therapy?”

In response to question 213, “what is your comfort level with providing voice and communication therapy to the gender diverse population?” Roughly 14% reported feeling somewhat uncomfortable and very uncomfortable.

To assess possible service and research gaps, the following question was asked: “if you have experience providing voice and communication therapy to a transgender client, please list any service/research gaps in the space provided.” A summary of SLPs responses are provided:

1. Lack of research: more thorough research on treatment outcomes (behavioral and medical) is needed for TG masculine individuals not administering testosterone.
2. Access barriers:

   a. Insurance coverage for services

   b. Quality comprehensive, compassionate care from a team of educated professionals

   c. More thorough research on evaluative and therapeutic techniques should be further developed for non-binary individuals.

**Perception**

A conventional CAPE-V evaluation for dysphonic voice typically requires SLPs to evaluate overall severity, breathiness, roughness, strain, pitch, and loudness on a visual-analog scale of 100 mm. SLPs also rate if dysphonia was consistent or intermittent within and across multiple speech tasks. The third tier of SLPs (N = 11) evaluated 14 TG and GD voices on the modified CAPE-V where parameters relevant to the TG and GD population were included; overall voice quality, pitch, loudness, resonance, syntax, and non-speech vocalizations. SLPs rated these parameters based on severity and consistency. Severity was rated on a 4-point scale: 0 - not deviant, 1 - mildly deviant, 2 - moderately deviant, 3 - severely deviant. Consistency was rated as 0 - consistent and 1 - intermittent. It should be noted that the higher the score, the higher the percentage of intermittency. The following formula was utilized to obtain a total CAPE-V percentage:

\[
\text{Severity total} = \sum \left( \frac{\text{individual severity score}}{\text{severity total}} \right) \times 100,
\]

\[
\text{Intermittency total} = \sum \left( \frac{\text{individual intermittency score}}{\text{intermittency total}} \right) \times 100,
\]

- **Severity total**

  11 (number of SLP listeners) x 3 (highest possible value) x 6 (parameters) = 198

- **Intermittency total**

  11 (number of SLP listeners) x 1 (highest possible value) x 6 (parameters) = 66
This CAPE-V percentage score will be used for further analyses. The relationship between listener-perception (via CAPE-V score) and self-perception (via TG and GD QoL score; see page 22) was analyzed. QoL percentage was calculated with the following formula:

\[ \text{QoL percentage} = \left( \frac{\text{individual voice QoL score}}{\text{voice QoL total}} \right) \times 100, \]

Here dissatisfaction of QoL represents increased dissatisfaction with congruency of voice and gender identity. Results indicated a poor negative correlation between SLP’s perception of TG and GD communicative abilities and QoL dissatisfaction rated by the TG and GD individuals themselves \((r = -0.02)\). However, as shown in Figure 15, although SLPs’ judged TG and GD voice as less deviant (narrow range of CAPE-V scores from 10 to 50), TG and GD individuals reported a wide range of dissatisfaction of QoL.

![Figure 15. TG and GD QoL VS CAPE-V Score](image)
This research acknowledges the spectrum of GD voices and their unique variability. TG and GD individual’s self-perception of their ideal voice was compared to SLP’s perception of gender identity based on the vowel phonation and connected speech tasks. TG and GD individuals rated their ideal voice on a spectrum of 0-10 where a score of 0 represented the most masculine voice, a score of 5 represented an androgynous voice, and a score of 10 represented the most feminine voice (see Figure 16).

**Figure 16. Ideal Voice Scale**

SLPs rated their perception of gender identity by choosing one of the following options on their survey: male, female, and ambiguous. In addition, data on TG and GD’s self-reported gender identity and their QoL are also depicted in Table 2 for comparison. Perceived gender identity rating of the SLPs indicates the predominantly rated identity (mode across the 11 SLPs).
Table 2. A Comparison between TG and GD Ideal Voice Score, Gender Identity, QoL Dissatisfaction Score, and SLP Listener Perceived Gender Identity

<table>
<thead>
<tr>
<th>Participant Number</th>
<th>Ideal Voice Score</th>
<th>Gender Identity</th>
<th>QoL Dissatisfaction Score</th>
<th>Listener Perceived Gender Identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG and GD</td>
<td>TG and GD</td>
<td>TG and GD</td>
<td>TG and GD</td>
<td>SLP</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>Non-Binary</td>
<td>27%</td>
<td>Male</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Non-Binary</td>
<td>45%</td>
<td>Female, however, /a/ phonation perceived lower than in connected speech sample</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>Non-Binary</td>
<td>51%</td>
<td>Male</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>TG Male</td>
<td>9%</td>
<td>Male</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>Non-Binary</td>
<td>18%</td>
<td>Female</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>TG Female</td>
<td>52%</td>
<td>Ambiguous</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>Trans Masculine</td>
<td>30%</td>
<td>Ambiguous</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>Non-Binary</td>
<td>70%</td>
<td>Female</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
<td>Non-Binary</td>
<td>18%</td>
<td>Female</td>
</tr>
<tr>
<td>11</td>
<td>9</td>
<td>TG Female</td>
<td>21%</td>
<td>Male/Ambiguous</td>
</tr>
<tr>
<td>12</td>
<td>5</td>
<td>Non-Binary</td>
<td>12%</td>
<td>Female</td>
</tr>
<tr>
<td>13</td>
<td>8</td>
<td>Situational-Stealth Transgender Female</td>
<td>61%</td>
<td>Male</td>
</tr>
<tr>
<td>14</td>
<td>4</td>
<td>Non-Binary</td>
<td>24%</td>
<td>Female</td>
</tr>
<tr>
<td>15</td>
<td>6</td>
<td>Non-Binary</td>
<td>12%</td>
<td>Female</td>
</tr>
</tbody>
</table>

For many TG and GD participants, there was a discrepancy between self- and listener-perceived gender identity as well as TG and GD ideal voice score. This was also reflected in the corresponding QoL scores. For example, Participant 9 identified as non-binary with an ideal voice of 3 (between masculine and androgynous). However, they were perceived as female by most of the SLPs. Additionally, participant 9 reported the highest dissatisfaction QoL score of 70%. On the contrary, gender-voice congruency for participant 5 was consistent across self- and
listener perception and was reflected as a lower QoL dissatisfaction score. Misgendering TG and GD individuals by their voice negatively impacts their QoL and hence SLPs need to prioritize attaining maximum gains in achieving this congruency in their treatment plan.

In addition to these subjective responses, to facilitate direct comparison, the listener’s perception of gender identity was converted to scores that matched ideal voice scores (0-10) provided by the TG and GD participants. SLPs responses were coded as: male = 0; female = 10; ambiguous = 5. In addition, ambiguous to male was provided a numeric score of 2.5, ambiguous to female was provided a score of 7.5, and responses from 11 SLPs were then averaged. Once scores were computed for SLP’s perception, the difference between TG and GD ideal voice scores and listener perception scores were calculated for understanding relationships with the dissatisfaction of QoL. The higher the difference scores represented more incongruency between self-perceived ideal voice and listener-perceived voice. Results, as shown in Figure 17, indicated a moderate relationship between the difference of voice scores and dissatisfaction of QoL (r = 0.50). As the difference between ideal voice scores increased, TG and GD participant’s dissatisfaction of QOL score increased.

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3 Quantified scores do not accurately represent the wide spectrum of TG and GD voices. They were calculated in this research study for analysis purposes. Ambiguous to male and ambiguous to female scores represent an estimate between listener perception of /a/ phonation and connected speech sample.
Additionally, SLPs were asked to rate parameters of pleasantness and naturalness on a score from 1 to 10, where 1 represented unpleasant or unnatural and 10 represented most pleasant or most natural. Pleasantness was defined as “satisfaction of overall sound quality perceived by the listener” (Siedenburg, Saitis, Popper, & Fay, 2019, p. 269). Naturalness was defined as “conformity of rate, rhythm, intonation, and stress patterns to the syntactic structure of the utterance” (Vojtech, Noordzij, Cler, & Stepp, 2019). The following formula was utilized to obtain total pleasantness and naturalness percentage:

\[
\text{Dissatisfaction of QoL} = \frac{\text{individual pleasantness or naturalness score}}{\text{pleasantness or naturalness total}} \times 100, \quad \text{where}
\]

\[
\text{Pleasantness total} = 11 \times (\text{number of SLP listeners}) \times 10 \times (\text{highest possible value}) = 110
\]
Naturalness total

11 (number of SLP listeners) x 10 (highest possible value) = 110

Pleasantness and naturalness ratings of TG and GD individuals within the binary (e.g., TG male and transmasculine) were compared to their ideal voice and listener perception of voice scores (see Table 3).

**Table 3.** Difference between Voice Scores and Pleasantness and Naturalness Ratings

<table>
<thead>
<tr>
<th>Participant Number</th>
<th>Gender Identity</th>
<th>Difference between Voice Scores</th>
<th>Pleasantness</th>
<th>Naturalness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TG and GD</strong></td>
<td><strong>TG and GD</strong></td>
<td><strong>TG/GD &amp; SLP</strong></td>
<td><strong>SLP</strong></td>
<td><strong>SLP</strong></td>
</tr>
<tr>
<td>5</td>
<td>TG Male</td>
<td>2</td>
<td>78%</td>
<td>72%</td>
</tr>
<tr>
<td>7</td>
<td>TG Female</td>
<td>5.3</td>
<td>70%</td>
<td>72%</td>
</tr>
<tr>
<td>8</td>
<td>Trans Masculine</td>
<td>1.8</td>
<td>71%</td>
<td>64%</td>
</tr>
<tr>
<td>11</td>
<td>TG Female</td>
<td>5.8</td>
<td>72%</td>
<td>87%</td>
</tr>
<tr>
<td>13</td>
<td>Situational-Stealth Transgender Female</td>
<td>6.4</td>
<td>81%</td>
<td>83%</td>
</tr>
</tbody>
</table>

The TG male and trans masculine participants (both administering testosterone) displayed a small difference between listener perception of voice and ideal voice score and received high pleasantness and naturalness ratings. Whereas TG female participants displayed a larger difference between ideal voice and listener perception of voice scores and were received a lower pleasantness and naturalness ratings.
For the same TG and GD participants, relationships between hormone treatment and dissatisfaction of QoL score, CAPE-V score, self- and listener-perceived ideal voice difference scores were also analyzed (see Table 4). Both participants 5 and 8, reported administering testosterone and displayed a lower dissatisfaction of QoL score, lower CAPE-V rating, smaller differences between the voice scores. This relationship suggests that individuals administering testosterone experience an overall higher quality of life as related to voice congruency.

Table 4. HRT and TG and GD QoL

<table>
<thead>
<tr>
<th>Participant Number</th>
<th>Administering HRT</th>
<th>Dissatisfaction of QoL</th>
<th>CAPE-V Score</th>
<th>Difference between Voice Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG and GD</td>
<td>TG and GD</td>
<td>TG and GD</td>
<td>SLP</td>
<td>TG/GD &amp; SLP</td>
</tr>
<tr>
<td>5</td>
<td>Yes, Testosterone</td>
<td>9%</td>
<td>29%</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Yes, Estrogen</td>
<td>52%</td>
<td>46%</td>
<td>5.3</td>
</tr>
<tr>
<td>8</td>
<td>Yes, Testosterone</td>
<td>30%</td>
<td>31%</td>
<td>1.8</td>
</tr>
<tr>
<td>11</td>
<td>Yes, Estrogen</td>
<td>21%</td>
<td>33%</td>
<td>5.8</td>
</tr>
<tr>
<td>13</td>
<td>Yes, Estrogen</td>
<td>61%</td>
<td>13%</td>
<td>6.4</td>
</tr>
</tbody>
</table>
Chapter 4

Discussion

The WPATH SOC (2012) emphasizes the validity of each person’s gender identity and recognizes the journey for congruency with voice and communication. The majority of research has focused on exploring perceptual and acoustic components of transgender individuals within the binary. SLPs who provide voice and communication services for individuals who do not identify within the binary, such as GD individuals AFAB, have a multifaceted role (Azul, et al., 2020). Contemporary research suggests that careful considerations of voice function need to be made including categories of forces, “identified as having affected the participants’ voice function”: individualized agency, professional practices, and supra-individual biocultural mediation (Azul et al., 2020). Within these categories, the following domains need to be addressed: speaker practice (to include self-evaluation and self-care of voice practices), professional practice (to include surgery, medication, professional voice support, and other professional support), conversation partner practice (to include evaluation of speaker voice function), supra-individual biocultural mediation (to include vocal demands, normative practices, and other biocultural forces; Azul et al., 2020). Despite the recent literature supporting considerations for treatment and evaluation of GD individuals AFAB, there is a lack of research exploring considerations for treatment and evaluation of GD individuals assigned male at birth (AMAB). Therefore, the purpose of this research was to investigate the self-perception and listener-perception of various general health and voice/speech attributes of TG and GD community and their correspondence to QoL. The research also examined SLP knowledge,
attitudes, and beliefs of TG and GD individuals. These two goals were achieved through survey research through the use of two self-reported questionnaires. The first survey addressed to TG and GD individuals determined voice and communication functioning and the impact of voice on everyday lives. The second survey addressed SLPs’ knowledge and attitudes of the TG and GD community. This survey also included a listener-perception component that allowed SLPs to rate voice and speech characteristics of TG and GD individuals.

**TG and GD Impact of Voice and Communication Functioning and Their Everyday Lives**

The voice congruency results suggested that dissatisfaction with the congruency of voice and gender identity highly negatively impacts QoL of 29% of TG and GD participants. This dissonance between voice and gender identity leads to greater distress and may worsen symptoms of gender dysphoria subsequently negatively impacting QoL. According to ASHA (n.d) integrating an authentic and congruent voice and communication style for TG and GD individuals will lessen symptoms of gender dysphoria. The vocal dissatisfaction of QoL scores varied among TG male, female, and gender diverse individuals.

TG individuals administering testosterone reported dissatisfaction with voice congruency and gender identity. This result coincided with prior research that reported vocal dissatisfaction among 24% of participants administering testosterone (Nygren et al., 2016). Though this population reported dissatisfaction, the percentages were relatively low compared to the other TG and GD subgroups. Despite TG and GD populations administering HRT, they still report dissatisfaction of QoL related to voice. This warrants voice and communication services from an SLP to help improve voice congruency and therefore improve vocal QoL. SCC results indicated that dissatisfaction with the congruency of social communication and gender identity highly negatively impacted 48% of TG and GD participants. As indicated in the introduction, there is a
lack of research examining the social communication domain. It is within the SLPs’ scope of practice to address social communication including pragmatics, body language, language differences (i.e. syntax, word choice, and response length).

**Mental Health**

Questions regarding mental health were included in the survey to holistically assess the TG and GD individuals. Factors including stress, nervousness, life satisfaction, and its impact on everyday performance can contribute to a decline in mental health status. Forty-three to seventy-eight percent of TG and GD individuals reported having mental health issues. Gaining insight into these components of mental health through a couple of simple survey questions allows for the best quality of care from the SLP. SLPs can counsel clients regarding QoL of voice and communication, however, given this information, the SLP should make proper referrals to mental health professionals when needed.

**SLPs Knowledge, Attitudes, and Beliefs**

Roughly 46% of SLPs indicated that TG and GD education was not addressed within their SLP master’s curriculum, however, 14% reported pronouns to be unrelated to the success of therapy and the same percentage reported feeling a range of comfortability (somewhat uncomfortable and very uncomfortable) providing therapy to this population. These results coincide with previous research suggesting the need for increased TG and GD education in the master’s curriculum, increased practicum experience, and SLPs to seek continuing education (Hancock & Haskin, 2015). Increased exposure to voice and communication therapy for TG and GD individuals within their master’s program will help to eradicate preconceived negative beliefs and provide the highest quality of person-centered care.
**Self- and Listener-Perception and its Implications on QoL**

In this current study, results indicated a poor negative correlation between CAPE-V scores and dissatisfaction of QoL scores. Such discrepancies between self- and listener-perception and/or QoL are common in the literature examining other voice pathologies as well (Eadie et al., 2011)

The discrepancy of TG/GD and SLP perception is important to consider in voice and communication therapy regarding QoL. It is vital for the SLP to integrate the goals of the individual’s ideal and authentic voice in addition to treating any voice disorders if present.

An ideal voice scale was created and presented to the TG and GD participants for the purpose of this study. The ideal voice scale was converted to scores and a moderate relationship examining the difference between ideal self and listener perceived voice scores and dissatisfaction of QoL was indicated. As the difference between the ideal voice scores increased, TG and GD participant’s dissatisfaction of the QOL scores increased. The ideal voice scale could be utilized as a tool to be presented within the voice and communication evaluation by the SLP. This scale would be particularly useful for those individuals not within the binary to indicate their ideal voice on a spectrum.

**Limitations**

To our knowledge, this was the first study to investigate the implications of QoL beyond the domain of voice for TG and GD individuals, and investigate SLPs perception of TG and GD voice and communication, however, the following limitations were identified. The research included an ideal voice scale that was presented to the TG and GD population, however, a scale in the same format (0-10 rating) was not presented to SLPs to rate TG and GD participants’ gender identity. In this initial investigation, a modified version of CAPE-V was used to suit the
needs of the study (comparing TG/GD and SLP), however, the traditional 100 mm visual-analog scale by SLPs would have provided fine-grained and additional results. One participant in the TG and GD group was identified to have a mild degree of hearing loss, however, data were still included within the study given that data was primarily survey-based and that the mild degree of hearing loss may not have affected speech recordings. Other limitations included small sample size and limited data collected from TG and GD Black, Indigenous, People of Color (BIPOC). Data were collected from individuals between the ages of 18-29 and results do not reflect data from TG and GD individuals across the age ranges.

**Future Directions**

Though TG and GD individuals share similarities, they should be recognized as different subsectors within a larger community. It should not be the expectation of the SLP that their TG and GD client fit within the binary, male or female, especially for those who identify as GD. Therefore, future research should include GD populations and voices, in addition to TG populations. The percentage of TG voice and communication therapy being addressed within the master’s SLP curriculum is rising, however, there is a need to include GD individuals within the curriculum as well. The same ideology should apply to trainings and considerations for SLPs.

As seen in this study, the TG and GD sample size and race were limited to include 24 participants, 18.52% of which identified as BIPOC. Future research should include a larger sample size as well as TG and GD individuals that are more racially and ethnically diverse. The data analyzed and discussed reflect the results of a white majority and do not incorporate other factors that disproportionately affect TG and GD BIPOC. Specifically, within the black community, systemic inequalities include wealth disparities, being denied access to or being subjected to bias regarding resources (i.e. lower quality health care) and opportunities (i.e.}
students’ access to challenging classes; Bridges, n.d; Lofton & Davis, 2015). Furthermore, BIPOC are disproportionally subjected to violence. A heartbreaking majority of TG and GD deaths due to violence have been reported of being from communities of color (Human Rights Campaign, 2020). This disparity desperately needs to be addressed to break down systemic inequalities BIPOC face every day.

Future research should also focus on the accessibility barrier TG and GD individuals face in receiving necessary services such as voice and communication therapy. Moreover, access barriers of TG and GD BIPOC should be further investigated.

A standardized scale to measure TG and GD specific experience as examined in this research, i.e. voice congruency and social communication QoL scale, should be further developed. For example, investigation of the relevance of gold standard evaluative and therapeutic techniques that are currently being utilized by SLPs (e.g. resonant voice therapy, pitch biofeedback, etc.) to GD individuals. Additional research is also warranted in other aspects of communication (i.e. social communication, non-speech vocalizations, and body language) along with voice. Knowledge from such scales would facilitate the development of a larger standardized procedure model for evaluating voice and communication for TG and GD clients. Furthermore, the development of a standardized set of evaluative and therapeutic procedures would normalize voice and communication therapy for TG and GD individuals. This would begin to break down barriers to (1) include healthcare coverage of voice and communication therapy, (2) formalize the TG and GD education within SLP master’s curriculums to foster awareness and knowledge, and (3) provide comprehensive, quality, and compassionate care to TG and GD individuals.
References


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doi:10.1016/j.jvoice.2016.05.005


doi:10.1007/s00405-016-4420-8


doi:10.1016/j.jvoice.2019.03.006


https://doi.org/10.1016/S0892-1997(99)80010-1


Jakomin, J. (2020, April 22). [Telephone interview].


Appendix A:

Speaker Informed Consent Form

Overview: You are being asked to take part in a research study. The information in this document should help you to decide if you would like to participate. The sections in this Overview provide the basic information about the study. More detailed information is provided in the remainder of the document.

Study Staff: This study is being led by Rachel Chalom. This person is called the Principal Investigator. However, other research staff may be involved and can act on behalf of the person in charge. She is being guided in this research by Supraja Anand, Ph.D. Other approved research staff may act on behalf of the Principal Investigator. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail Rachel Chalom at rachel.chalom@mail.usf.edu, or at anand-smslab@usf.edu

Study Details: This research has the following objectives: a) to examine voice and communication functioning and the impact of voice on everyday lives with the use of a self-reported questionnaire aimed towards transgender/gender diverse (TG/GD) individuals and b) to examine the amount of knowledge that speech language pathologists have about the TG/GD community in the evaluation and treatment process with the use of a self-reported questionnaire. You will be asked to provide recordings of your voice that will be used to survey speech-language pathologist’s assessment of TG/GD voices.

Participants: You are being asked to take part in this study as a “speaker” because either you are transgender or gender diverse and we are examining your voice functioning, the impact of your voice on everyday life (including components such as stress and depression) as well as the social, pragmatic aspect that encompasses overall communication.

Voluntary Participation: Your participation is voluntary. You do not have to participate and may stop your participation at any time. There will be no penalties or loss of benefits or opportunities if you do not participate or decide to stop once you start. Your decision to participate or not to participate will not affect your job status, employment record, employee evaluations, or advancement opportunities. Your decision to participate or not to participate will not affect your student status, course grade, recommendations, or access to future courses or training opportunities.

Benefits, Compensation, and Risk: Participation will help further knowledge about insight on design of an all-inclusive assessment tool for TG/GD community
You will be compensated $10 in the form of an Amazon Gift Card for your participation. This research is considered minimal risk. There will be no additional costs to you as a result of being in this study. However, you will be responsible for the cost of travel to and from the study site. Minimal risk means that study risks are the same as the risks you face in daily life.

Confidentiality: Results from this study will be disseminated via presentations and/or publications, however, we will not use any identifiable data. Only members approved by the Institutional Ethics Board (IRB) will have access to your records. All data will be kept confidential by securing them in locked cabinets or password-protected computers on safe USF servers.

**Why are you being asked to take part?**

You are being asked to take part in the study to gather information to measure voice functioning, the impact of voice on everyday lives (including components such as stress and depression) as well as the social, pragmatic aspect that encompasses overall communication. This information will be collected and analyzed to create an all-inclusive, reliable tool for measuring your communication experiences when being seen by a speech-language pathologist.

**Study Procedures:**

You will first read this form, clarify any questions with the Principal Investigator or research staff and sign this form. You will then complete short hearing screening test. These voice will be used as part of a in which your voice sample will be heard by who the survey.

If you take part in this study, you may be asked to:

1. Perform speech tasks such as vowel phonations, reading words, sentences, passages, speaking on a topic of your choice, picture description and/or responding to some general questions (e.g. Tell me about your favorite vacation).
2. Perform non-speech tasks such as coughing or laughing.

Instructions and practice trials with feedback will be given to help you understand the task. You will be provided multiple breaks in between to avoid fatigue. You can also request breaks if you experience fatigue at any time. The recordings will be scheduled at your convenience. All recordings will be collected in the Speech Motor Systems (SMS) Lab located in the Department of Communication Sciences and Disorders. The primary investigator will review the test data gathered on a weekly basis to ensure the integrity of the data.

The data for this project will be kept confidential. During this process, subject confidentiality will be maintained through the use of a coding system. After completion of the informed consent form, each participant will be identified through a numerical code so that the informed consent is the only document linking the individual to the study. All information (excel sheet linking participant details such as name, age, and sex with a code number and audio recordings) and audio recordings saved under the unique codes) saved in computers will be password protected.
All documents will be assigned a subject code/number (e.g., any paper collected during speech recording session) to protect the subjects’ identities. Information will not be released without written permission of the participant, except as necessary for monitoring by IRB. The locked box of information will be stored for at least six years following the completion of the study per USF IRB and HIPAA requirements. All the audio recordings will be kept forever and not destroyed.

**Total Number of Participants**

A maximum of 30 individuals will take part in this USF study as “speakers”.

**Alternatives / Voluntary Participation / Withdrawal**

You do not have to participate in this research study.

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study.

If you are an employee, your decision to participate or not to participate will not affect your job status, employment record, employee evaluations, or advancement opportunities.

If you are a student, your decision to participate or not to participate will not affect your student status.

**Benefits**

The potential benefits of participating in this research study include:

Your participation will help further knowledge about insight on design of an all-inclusive assessment tool for the TG/GD community.

**Risks or Discomfort**

The following risks may occur:
- Speakers may experience minor discomfort from wearing microphone.

**Compensation**

You will be compensated $10 in the form of an Amazon gift card if you complete all the tasks during your visit.

**Costs**

It will not cost you anything take part in the study. However, you will be responsible for the cost of travel to and from the study site.
Conflict of Interest Statement

There is no conflict of interest.

Privacy and Confidentiality

Your voice sample will be accessible through a Qualtrics link for a period of time, however, we will do our best to keep other identifiable records private and confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Certain people may need to see your study records. These individuals include:

- The research team, including the Principal Investigator, study coordinator, and all other research staff.
- Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the right way. They also need to make sure that we are protecting your rights and your safety.
- Any agency of the federal, state, or local government that regulates this research. This includes the Department of Health and Human Services (DHHS) and the Office for Human Research Protection (OHRP).
- The USF Institutional Review Board (IRB) and its related staff who have oversight responsibilities for this study, and staff in USF Research Integrity and Compliance.

Your information or samples collected as part of the research, even if identifiers are removed, will NOT be used or distributed for future research studies.

We may publish what we learn from this study. If we do, we will not include your email address. We will not publish anything that would let people know who you are.

What if new information becomes available about the study?

During the course of this study, we may find more information that could be important to you. This includes information that, once learned, might cause you to change your mind about being in this study. We will notify you as soon as possible if such information becomes available.

When voice samples are collected and analyzed, there is the chance of finding something unexpected. The results from the voice samples we collect in this research study may not be the same as what you would receive as a part of your regular health care. Because of this, you will not be informed of any unexpected findings. The results of your voice samples will not be placed in your medical record. If you believe you are having symptoms that may require care, you should contact your primary care physician.

You can get the answers to your questions, concerns, or complaints.
If you have any questions, concerns or complaints about this study, call Supraja Anand at 813-974-3213. If you have questions about your rights, complaints, or issues as a person taking part in this study, call the USF IRB at (813) 974-5638 or contact by email at RSCH-IRB@usf.edu.

Authorization to Use and Disclose Protected Health Information (HIPAA Language)

The federal privacy regulations of the Health Insurance Portability & Accountability Act (HIPAA) protect your identifiable health information. By signing this form, you are permitting the University of South Florida to use your health information for research purposes. You are also allowing us to share your health information with individuals or organizations other than USF who are also involved in the research and listed below.

In addition, the following groups of people may also be able to see your health information and may use that information to conduct this research:

- All designated review committees such as the Principal Investigator, study coordinator, and all other research staff.
- The USF Institutional Review Board (IRB) their related staff who have oversight responsibilities for this study, including staff in USF Research Integrity and Compliance and the USF Health Office of Clinical Research.
- Data Safety Monitoring Boards or others who monitor the data and safety of the study.

Anyone listed above may use consultants in this research study, and may share your information with them. If you have questions about who they are, you should ask the study team. Individuals who receive your health information for this research study may not be required by the HIPAA Privacy Rule to protect it and may share your information with others without your permission. They can only do so if permitted by law. If your information is shared, it may no longer be protected by the HIPAA Privacy Rule.

By signing this form, you are giving your permission to use and/or share your health information as described in this document. As part of this research, USF may collect, use, and share the following information:

- Your research records
- Your contact information, including your e-mail address
- Your voice sample

You can refuse to sign this form. If you do not sign this form you will not be able to take part in this research study. However, your care outside of this study and benefits will not change. Your authorization to use your health information will not expire unless you revoke (withdraw) it in writing. You can revoke your authorization at any time by sending a letter clearly stating
that you wish to withdraw your authorization to use your health information in the research. If you revoke your permission:

• You will no longer be a participant in this research study;

• We will stop collecting new information about you;

• We will use the information collected prior to the revocation of your authorization. This information may already have been used or shared with others, or we may need it to complete and protect the validity of the research; and

• Staff may need to follow-up with you if there is a medical reason to do so.

To revoke your authorization, please write to: Principal Investigator

For IRB Study # Pro00040432 Communication Sciences and Disorders University of South Florida
4202 Fowler Ave, PCD 1017
Tampa, FL 33620
Email: suprajaanand@usf.edu
Ph: 813-974-3213

While we are conducting the research study, we cannot let you see or copy the research information we have about you. After the research is completed, you have a right to see the information about you, as allowed by USF policies.

Consent to Take Part in Research and Authorization for the Collection, Use and Disclosure of Health Information

I freely give my consent to take part in this study and authorize that my health information as agreed above, be collected/disclosed in this study. I understand that by signing this form I am agreeing to take part in research. I have received a copy of this form to take with me.

_________________________________________________________________________________________

Signature of Person Taking Part in Study Date [Authorization]

_________________________________________________________________________________________

Printed Name of Person Taking Part in Study

Statement of Person Obtaining Informed Consent and Research Authorization

I have carefully explained to the person taking part in the study what he or she can expect from their participation. I confirm that this research participant speaks the language that
was used to explain this research and is receiving an informed consent form in their primary language. This research participant has provided legally effective informed consent.

Study ID:Pro00040432 Date Approved: 9/9/2019

________________________________________________________________________

Signature of Person Obtaining Informed Consent

________________________________________________________________________

Printed Name of Person Obtaining Informed Consent

__________________________
Date
Appendix B:

Informed Consent Form for Qualtrics Survey: A Survey on Transgender and Gender Diverse Populations

Overview: You are being asked to take part in a research study. The information in this document should help you to decide if you would like to participate. The sections in this Overview provide the basic information about the study. More detailed information is provided in the remainder of the document.

Study Staff: This study is being led by Rachel Chalom. This person is called the Principal Investigator. However, other research staff may be involved and can act on behalf of the person in charge. She is being guided in this research by Supraja Anand, Ph.D. Other approved research staff may act on behalf of the Principal Investigator. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail Rachel Chalom at rachel.chalom@mail.usf.edu, or at anand-smslab@usf.edu

Study Details: This research has the following objectives: a) to examine voice and communication functioning and the impact of voice on everyday lives with the use of a self-reported questionnaire aimed towards transgender/gender diverse (TG/GD) individuals and b) to examine the amount of knowledge that speech language pathologists have about the TG/GD community in the evaluation and treatment process with the use of a self-reported questionnaire. The purpose of this study is to further knowledge about design of an all-inclusive assessment tool for the TG/GD community. You will be asked to take a short survey online in which you will answer questions about demographics, perception, pragmatics/other behaviors, voice treatment, general health, and mental health.

Participants: You are being asked to take part in this study because either you are in the transgender or gender diverse population, between 18-40 years of age. We are examining the impact of voice and communication on your everyday life.

Voluntary Participation: Your participation is voluntary. You do not have to participate and may stop your participation at any time. There will be no penalties or loss of benefits or opportunities if you do not participate or decide to stop once you start. Your decision to participate or not to participate will not affect your job status, employment record, employee evaluations, or advancement opportunities. Your decision to participate or not to participate will not affect your student status, course grade, recommendations, or access to future courses or training opportunities.
Benefits, Compensation, and Risk: Participation will help further knowledge about insight on design of an all-inclusive assessment tool for TG/GD community.

You will not be compensated for your participation. This research is considered minimal risk. There will be no additional costs to you as a result of being in this study. Minimal risk means that study risks are the same as the risks you face in daily life.

Confidentiality: Even if we publish the findings from this study, we will keep your study information private and confidential. Anyone with the authority to look at your records must keep them confidential.

**Why are you being asked to take part?**

You are being asked to take part in the study in order to gather information to measure voice functioning, the impact of voice on everyday lives (including components such as stress and depression) as well as the social, pragmatic aspect that encompasses overall communication via the survey. This information will be collected and analyzed in an effort to create an all-inclusive, reliable tool for measuring your communication experiences when being seen by a speech-language pathologist.

**Study Procedures:**

You will first read this form. You will then complete the Voice and Communication Survey for Transgender and Gender Diverse Populations on Qualtrics link. This survey will address the following sections: demographics, perception, questions adopted/adapted from the Transsexual Voice Questionnaire, pragmatics/other behaviors, voice treatment, general health, and mental health. Information gathered from this survey will measure overall voice and communication functioning. The duration of the survey will not exceed 1 hour.

The primary investigator will review the test data gathered on a weekly basis to ensure the integrity of the data. The data for this project will be kept confidential. All information (excel sheet linking participant details such as name, age, and sex and responses on the survey will be assigned to a code number during aggregated analysis and saved in password protected computers on secure USF server, Information will not be released without written permission of the participant, except as necessary for monitoring by IRB.

**Benefits and Risks**

You will receive no benefit from this study. This research is considered to be minimal risk.

**Compensation**

You will be not compensated for participating in the study.

**Privacy and Confidentiality**
We will do our best to keep your records private and confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Certain people may need to see your study records. These individuals include:

- The research team, including the Principal Investigator, study coordinator, and all other research staff.

- Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the right way. They also need to make sure that we are protecting your rights and your safety.

- Any agency of the federal, state, or local government that regulates this research. This includes the Department of Health and Human Services (DHHS) and the Office for Human Research Protection (OHRP).

- The USF Institutional Review Board (IRB) and its related staff who have oversight responsibilities for this study, and staff in USF Research Integrity and Compliance.

Your information or samples collected as part of the research, even if identifiers are removed, will NOT be used or distributed for future research studies.

We may publish what we learn from this study. If we do, we will not include your name. We will not publish anything that would let people know who you are.

It is possible, although unlikely, that unauthorized individuals could gain access to your responses. Confidentiality will be maintained to the degree permitted by the technology used. No guarantees can be made regarding the interception of data sent via the Internet. However, your participation in this online survey involves risks similar to a person’s everyday use of the Internet. If you complete and submit an anonymous survey and later request your data be withdrawn, this may or may not be possible as the researcher may be unable to extract anonymous data from the database.

**Contact Information**

If you have any questions, concerns or complaints about this study, call Supraja Anand at 813-974-3213. If you have questions about your rights, complaints, or issues as a person taking part in this study, call the USF IRB at (813) 974-5638 or contact by email at RSCH-IRB@usf.edu.

We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are. You can print a copy of this consent form for your records.

I freely give my consent to take part in this study. I understand that by clicking I agree that I am consenting to take part in research and I am 18 years of age or older.
Appendix C:

Voice and Communication Survey for Transgender and Gender Diverse Populations

Q1 What is your email address?

_________________________________________________________

Q2 What is your age?

________________________________________________________________

Q3 What is your race (can select more than one)
   African-American/Black (1)
   □ Asian (2)
   □ Caucasian/White (3)
   □ Middle Eastern/North African (4)
   □ Native American/Alaska Native (5)
   □ Native Hawaiian/Pacific Islander (6)
   □ Prefer not to specify (7)
   □ Other, please specify (8) _______________________________________

Q5 What is your gender identity?

Note: Stealth is a term that transsexual (post medical transition) or transgender individuals may choose to use. It is defined by their decision to not reveal their transsexual/transgender status to others (for example, coworkers, friends, neighbors, etc.); this is referred to as “going stealth” or
“being stealth.” (LGBT Terminology, n.d.) Trans individuals who are stealth may present as cisgender.

- Stealth Male (1)
- Stealth Female (2)
- Transgender Male (3)
- Transgender Female (4)
- Non-Binary (5)
- Other (e.g., Transfeminine, Transmasculine), Please specify (6)

Q6 What are your pronouns?

- He/him/his (1)
- She/her/hers (2)
- They/them/theirs (3)
- I am pronoun indifferent (4)
- Other, please specify (5)

Q7 When did you start presenting as your gender identity?

- Less than 2 years ago (1)
- More than 2 years ago (2)
- I do not yet present as my gender identity (3)
- Other, please specify (4)
Q8 What percentage of the time do you express your gender identity by using your pronouns?

- Less than 50% of the time (1)
- About 50% of the time (2)
- Between 50% - 100% of the time (3)
- Full time (100% of the time) (4)

Q10 Do you smoke cigarettes?

- I currently smoke cigarettes (1)
- I have smoked cigarettes in the past (2)
- I have never smoked cigarettes (3)

Display This Question:

- If Do you smoke cigarettes? = I currently smoke cigarettes
- Or Do you smoke cigarettes? = I have smoked cigarettes in the past

Q11 On average, how many PACKS per DAY did you smoke in the past year?

- I have not smoked in the past year (1)
- Less than 0.5 (2)
- 0.5 – 1 (3)
- More than 1 (4)
- Less than 10 cigarettes per week (5)
Q12 Are you participating in hormone treatment? (e.g., testosterone, estrogen)

- Yes, I am currently taking hormones (1)
- Not currently, but I would like to at some point (3)
- No, and not currently interested (4)
- Not currently, but in the past I have taken hormones (please specify the amount of months) (2) ______________________________
- Other, please specify (5) ______________________________

Display This Question:
If Are you participating in hormone treatment? (e.g., testosterone, estrogen) = Yes, I am currently taking hormones
Or Are you participating in hormone treatment? (e.g., testosterone, estrogen) = Not currently, but in the past I have taken hormones (please specify the amount of months)

Q13 Are/were you administering the hormone treatment consistently?

- Yes, I am/was administering treatment as prescribed (1)
- No, please specify (2) ______________________________

Display This Question:
If Are you participating in hormone treatment? (e.g., testosterone, estrogen) = Yes, I am currently taking hormones
Or Are you participating in hormone treatment? (e.g., testosterone, estrogen) = Not currently, but in the past I have taken hormones (please specify the amount of months)
Q14 Did testosterone change your speaking voice as you expected it to?

- I had expected a faster change (1)
- I had expected a larger change (2)
- The change was as I expected in both size and time course (3)
- Other, please specify (4) ________________________________________________

Display This Question:
If Are you participating in hormone treatment? (e.g., testosterone, estrogen) = Yes, I am currently taking hormones
Or Are you participating in hormone treatment? (e.g., testosterone, estrogen) = Not currently, but in the past I have taken hormones (please specify the amount of months)

Q15 How soon after taking testosterone did you notice your speaking voice change?

- Within 0-3 months (1)
- Within 3-6 months (2)
- Within 6-9 months (3)
- Within 9-12 months (4)
- Other, please specify (5) ________________________________________________

Display This Question:
If Are you participating in hormone treatment? (e.g., testosterone, estrogen) = Yes, I am currently taking hormones
Or Are you participating in hormone treatment? (e.g., testosterone, estrogen) = Not currently, but in the past I have taken hormones (please specify the amount of months)
Q17 How soon after taking testosterone did others notice your speaking voice change?

- Within 0-3 months (1)
- Within 3-6 months (2)
- Within 6-9 months (3)
- Within 9-12 months (4)
- Other, please specify (5) __________________________________________________

Q16 Have you had surgery to change how your voice sounds?

- Yes, I have had surgery (1)
- No, I have not had surgery (2)
- No, but I am considering having surgery to change how my voice sounds (3)

Q18 Have you ever had voice and communication services offered by speech-language pathologists/speech therapists?

- Yes, I have had voice and communication therapy with a speech-language pathologist in the past (1)
- Yes, I am currently in voice and communication therapy with a speech-language pathologist (2)
- No, I have not had voice and communication therapy with a speech-language pathologist (3)
- No, I have not had voice and communication therapy with a speech-language pathologist, but I feel as though it would be useful (4)

Display This Question:

If Have you ever had voice and communication services offered by speech-language pathologists/speech... = Yes, I have had voice and communication therapy with a speech-language pathologist in the past

Or Have you ever had voice and communication services offered by speech-language pathologists/speech... = Yes, I am currently in voice and communication therapy with a speech-language pathologist
Q19 What techniques were used in voice and communication therapy with a speech-language pathologist?

Display This Question:

If Have you ever had voice and communication services offered by speech-language pathologists/speech... = Yes, I have had voice and communication therapy with a speech-language pathologist in the past

Or Have you ever had voice and communication services offered by speech-language pathologists/speech... = Yes, I am currently in voice and communication therapy with a speech-language pathologist

Q20 What degree of usefulness would you rate your experience in voice and communication therapy?

○ Very useful (1)

○ Somewhat useful (2)

○ Not useful (3)

○ Comments (4) ____________________________________________
Q21 Rate the importance of how **others** perceive your gender expression in regards to...
(Adapted from Access and Barriers to SLP Services for Gender Diverse People survey)

<table>
<thead>
<tr>
<th></th>
<th>Not important (1)</th>
<th>Minimally Important (2)</th>
<th>Moderately Important (3)</th>
<th>Important (4)</th>
<th>Very Important (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch (highness or lowness in voice) (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Resonance (bass of voice) (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Prosody (patterns of stress and intonation in a language) (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Nonverbal (body language) (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Physical appearance (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q22 Rate the importance of how **you** perceive your gender expression in regards to... *(Adapted from Access and Barriers to SLP Services for Gender Diverse People survey)*

<table>
<thead>
<tr>
<th></th>
<th>Not important (1)</th>
<th>Minimally Important (2)</th>
<th>Moderately Important (3)</th>
<th>Important (4)</th>
<th>Very Important (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch (highness or lowness in voice) (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resonance (bass of voice) (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prosody (patterns of stress and intonation in a language) (3)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Nonverbal (body language) (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical appearance (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q23 I have accepted my gender identity *(Adapted/Adopted from Transgender Congruence Scale, 2012)*

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)
Q24 My current voice matches my gender identity and fits me authentically and congruently

- All the time (1)
- Most of the time (2)
- Some of the time (3)
- Never (4)
- Comment (5) ________________________________________________

Q25 How often are you misgendered on the phone?

- All the time (1)
- Most of the time (2)
- Some of the time (3)
- Never (4)
- Comment (5) ________________________________________________

Q26 Please rate the importance in affirming your gender identity

- Very Important (1)
- Important (2)
- Somewhat Important (3)
- Not at all Important (4)

Q27 Please mark your ideal voice

<table>
<thead>
<tr>
<th></th>
<th>Masculine</th>
<th>Androgynous</th>
<th>Feminine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideal</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
Q74 The following questions have been adopted/adapted from the Transsexual Self-Evaluated Questionnaire (2006) and Transsexual Voice Questionnaire (2013)

Q30 My voice makes it hard for me to be identified as my gender identity

- Usually or always (1)
- Often (2)
- Sometimes (3)
- Never or rarely (4)

Q31 When I speak, the pitch of my voice does not vary enough

- Usually or always (1)
- Often (2)
- Sometimes (3)
- Never or rarely (4)

Q32 I have to concentrate to make my voice sound the way that I want it to sound

- Usually or always (1)
- Often (2)
- Sometimes (3)
- Never or rarely (4)
Q34 I feel discriminated against because of my voice
- Usually or always (1)
- Often (2)
- Sometimes (3)
- Never or rarely (4)

Q35 People have difficulty hearing me in a noisy room
- Usually or always (1)
- Often (2)
- Sometimes (3)
- Never or rarely (4)

Q36 I feel that my voice gets in the way of me living as my gender identity
- Usually or always (1)
- Often (2)
- Sometimes (3)
- Never or rarely (4)

Q37 I am self-conscious about how strangers perceive my voice
- Usually or always (1)
- Often (2)
- Sometimes (3)
- Never or rarely (4)
Q38 I speak less often and I avoid speaking in public because of my voice
   - Usually or always (1)
   - Often (2)
   - Sometimes (3)
   - Never or rarely (4)

Q39 I feel frustrated with trying to change my voice
   - Usually or always (1)
   - Often (2)
   - Sometimes (3)
   - Never or rarely (4)

Q41 I use a great deal of effort to speak
   - Usually or always (1)
   - Often (2)
   - Sometimes (3)
   - Never or rarely (4)

Q42 I am less outgoing because of my voice
   - Usually or always (1)
   - Often (2)
   - Sometimes (3)
   - Never or rarely (4)
Q43 My current use of social communication matches my gender identity

Note: Social communication is the use of language in social contexts. Social communication skills include the ability to vary speech style and appropriately use the rules for verbal and nonverbal communication (“Social Communication,” n.d.)

- All the time (1)
- Most of the time (2)
- Some of the time (3)
- Never (4)
- Comment (5) ________________________________________________

Display This Question:

If My current use of social communication matches my gender identity Note: Social communication is t... = Most of the time

And My current use of social communication matches my gender identity Note: Social communication is t... = Some of the time

And My current use of social communication matches my gender identity Note: Social communication is t... = Never

And My current use of social communication matches my gender identity Note: Social communication is t... = Comment
Q44 Please mark your use of social communication at this point in time where 10 represents your best hopes of ideal social communication.

Note: Social communication is the use of language in social contexts. Social communication skills include the ability to vary speech style and appropriately use the rules for verbal and nonverbal communication ("Social Communication," n.d.)

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

Q45 How often are you misgendered in face-to-face situations?

- All the time (1)
- Most of the time (2)
- Some of the time (3)
- Never (4)
- Comment (5) ______________________________________________________
Q46 How important is your social communication in affirming your gender identity?

- Very Important (1)
- Important (2)
- Somewhat Important (3)
- Not at all Important (4)

Q48 When I laugh, cough, or sneeze, I sound like my sex assigned at birth

- Never or rarely (1)
- Sometimes (2)
- Often (3)
- Usually or always (4)

Q49 When talking to others do you use a lot of vague or empty words such as ‘you know what I mean’ instead of the right word?

- Never or rarely (1)
- Sometimes (2)
- Often (3)
- Usually or always (4)
Q51 When talking to others, do you tend to use more adverbs (e.g. terribly, awfully) in your speech?

- Never or rarely (1)
- Sometimes (2)
- Often (3)
- Usually or always (4)

Q52 When talking to others, do you tend to interrupt?

- Never or rarely (1)
- Sometimes (2)
- Often (3)
- Usually or always (4)

Q53 Do you use language to express content more than emotion?

- Never or rarely (1)
- Sometimes (2)
- Often (3)
- Usually or always (4)
Q55 How do you sit?

- With my legs crossed (taking up less space) (1)
- With my legs opened (taking up more space) (2)
- With my legs parallel while sitting (3)
- Other, please specify (4) ______________________________

Q56 Do you use hand gestures to convey a message?

- Never or rarely (1)
- Sometimes (2)
- Often (3)
- Usually or always (4)

Q57 What do you know about voice and communication services offered by speech-language pathologists/speech therapists to assist with gender presentation?

- I have not had voice and communication services from a speech-language pathologist, but I have had surgery to change the pitch of my voice (1)
- I have knowledge of voice and communication services provided by speech-language pathologists, but I’ve never had these services myself (4)
- I have had voice and communication services provided by a speech-language pathologist for this reason (5)
- I have never heard of voice and communication for gender presentation (6)
Q59 Have you used any other services to change your voice and/or communication besides speech therapy with a speech-language pathologist?

☐ Yes (1)

☐ No (2)

Display This Question:
If Have you used any other services to change your voice and/or communication besides speech therapy... = Yes

Q58 What other services have you used to change your voice and/or communication besides speech therapy with a speech-language pathologist? (check all that apply)

☐ Application on smartphone (1)

☐ Online voice programs (2)

☐ Videos (e.g., YouTube) (3)

☐ Friend or mentor in the LGBTQIA+ community (4)

☐ Counselor, psychologists, therapist (5)

☐ Books (6)

☐ Other, please specify (7)

Display This Question:
If Have you used any other services to change your voice and/or communication besides speech therapy... = Yes
Q60 Please rate your satisfaction with the results of this other service

- Very satisfied (1)
- Somewhat satisfied (2)
- Not very satisfied (3)
- Not satisfied (4)

Q61 In general, would you say your health is

- Excellent (1)
- Very good (2)
- Good (3)
- Fair (4)
- Poor (5)

Q62 During the past 4 weeks, have you accomplished less than you would like and/or had difficulty performing work (e.g. took extra effort). Please select all that apply.

- Yes, I have accomplished less than I would like in the past 4 weeks (1)
- Yes, I have had difficulty performing work (2)
- No (3)

Display This Question:

If Have you ever had voice and communication services offered by speech-language pathologists/speech... = Yes, I am currently in voice and communication therapy with a speech-language pathologist
Q64 Do you share aspects of your mental health with your speech language pathologist?

- Yes (1)
- No (2)
- Comment (3) ________________________________________________

Q65 Have you experienced loss of interest? (Beck's Depression Inventory, 1996)

- I have not lost interest in other people (1)
- I am less interested in other people than I used to be (2)
- I have lost most of my interest in other people (3)
- I have lost all of my interest in other people (4)

Q66 In the last month, how often have you felt nervous and “stressed”? (Perceived Stress Scale, 1983)

- Never (1)
- Almost never (2)
- Sometimes (3)
- Fairly often (4)
- Very often (5)
Q67 I am satisfied with my life (*The Satisfaction with Life Scale, 1985*)

- Strongly agree (1)
- Agree (2)
- Slightly agree (3)
- Neither agree nor disagree (4)
- Slightly disagree (5)
- Disagree (6)
- Strongly disagree (7)

Q68 What would you like for speech-language pathologists to consider when working with the transgender community?

________________________________________________________________________________________

Q75 Any additional comments?

________________________________________________________________________________________
Appendix D:
Response to Question 68, “What would you like for speech-language pathologists to consider when working with the transgender community

<table>
<thead>
<tr>
<th>Cultural Considerations – Gender Inclusivity</th>
<th>Knowledge of the TG and GD Experience (non-binary vs binary)</th>
<th>Accessibility</th>
<th>Knowledge of treatment/evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use gender-inclusive language (singular they vs “he or she”)</td>
<td>Know that we're all different individuals and that the trans experience is not a one-size-fits-all</td>
<td>A lot of us are broke, either due to being students or underemployed. Every SLP I've met charges way too much for me to consider doing sessions with them, and I'm a lot more financially well-off than most of my peers</td>
<td>Vocal intonation and body language in communication</td>
</tr>
<tr>
<td>Everyone is different when it comes to what they want, so when working with new people really need to ask what they want from it and how they'd like to be spoken to</td>
<td>People who do not identify as cisgender don't necessarily want to conform to gender norms, even when presenting as their true gender</td>
<td>Respect and compassion</td>
<td></td>
</tr>
<tr>
<td>Hardships</td>
<td>Non-binary identities. I've heard many places only focus on MTF or FTM voice therapy but nothing for Non-binary individuals</td>
<td>How voices change depending on situations; i.e. our work voices are different than how we talk to friends, parents, what we sound like talking to ourselves</td>
<td></td>
</tr>
<tr>
<td>Using proper pronouns, being very careful about wording certain things</td>
<td>Validity of non-binary people, fluidity of labels</td>
<td>To have unbiased empathy</td>
<td></td>
</tr>
<tr>
<td>Open-mindedness</td>
<td>Being non-binary</td>
<td>Patient's interest and health is key</td>
<td></td>
</tr>
<tr>
<td>Help normalize transgender people in social settings by wearing pronoun pins, correcting the misgendering of (trans) friends, etc. Please.</td>
<td>It may be wise for online speech work to have more consideration of the patient's position. The last person I listened to was almost demanding that the patient practice yelling without asking if they were in a good physical location to do so</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not being cis is a daily challenge that interrupts every part of life. It isn't easy but that doesn't make us weak</td>
<td>Treat people like people, not statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being transgender is not a large part of my identity. Mostly, I would like to forget I ever was trans and just be seen as a woman. When it comes to my voice short of surgery or hundreds of hours of practice it'll likely not be that way for some time. The confusion will still be there for others I feel.</td>
<td>The delicate balance between a desire for &quot;passing&quot; as cisgender and embracing how we do not conform to traditional gender expectations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Have a wide range of vocal diversity just as any other person and that ought to be cultivated. There is no One size fits all when it comes to voice</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E:

Listeners Informed Consent Form

Study Title: Aligning Voice and Communication with Identity – A Survey on Transgender and Gender Diverse Populations

Overview: You are being asked to take part in a research study. The information in this document should help you to decide if you would like to participate. The sections in this Overview provide the basic information about the study. More detailed information is provided in the remainder of the document.

Study Staff: This study is being led by Rachel Chalom. This person is called the Principal Investigator. However, other research staff may be involved and can act on behalf of the person in charge. She is being guided in this research by Supraja Anand, Ph.D. Other approved research staff may act on behalf of the Principal Investigator. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail Rachel Chalom at rachel.chalom@mail.usf.edu, or at anand-smslab@usf.edu

Study Details: This research has the following objectives: a) to examine voice and communication functioning and the impact of voice on everyday lives with the use of a self-reported questionnaire aimed towards transgender/gender diverse (TG/GD) individuals and b) to examine the amount of knowledge that speech language pathologists have about the TG/GD community in the evaluation and treatment process with the use of a self-reported questionnaire. The purpose of this study is to help further knowledge and insight on design of an all-inclusive tool for the TG/GD community. You will be asked to answer questions on demographics and knowledge on TG/GD populations. Additionally, you will judge TG/GD voices across multiple speech dimensions. The survey will not exceed 1 hour.

Participants: You are being asked to take part in this study as a “listener” because you are a certified speech-language pathologist (SLP) between 25 to 60 years of age and do not have any co-morbid speech, language, cognitive, hearing, psychological, or neurological disorders.

Why are you being asked to take part? You are being asked to take part in the study to gather information on clinician knowledge of transgender and gender diverse populations regarding voice functioning, the impact of voice on everyday lives, as well as the social-pragmatic aspect that encompasses overall communication. The results from this survey will be collected and analyzed in an effort to create an all-inclusive, reliable tool for measuring communication experiences of TG/GD people.
If you take part in this study, you will first complete demographic questions and then listen and provide judgements (e.g. “intonation,” “naturalness”) on audio samples from 15 TG/GD voices. These audio samples range from less than 1 minute to 2 minutes in duration. You may judge these dimensions by selecting an option based on consistency (e.g. consistent vs intermittent) and severity (e.g. mildly deviant, moderately deviant, severely deviant, not deviant). You may respond using a computer mouse/keyboard or smart phone/tablet (use headphones for listening to audio samples). There are no correct answers in these tests. We are trying to understand how you perceive the audio samples, so your response is the answer we are trying to obtain. The duration of the survey will not exceed 1 hour. You may exit out of the survey at any time. Any progress made will be saved.

The primary investigator will review the survey data gathered on a weekly basis to ensure the integrity of the data.

**Voluntary Participation:** Your participation is voluntary. You do not have to participate and may stop your participation at any time. There will be no penalties or loss of benefits or opportunities if you do not participate or decide to stop once you start. Your decision to participate or not to participate will not affect your job status, employment record, employee evaluations, or advancement opportunities. Your decision to participate or not to participate will not affect your student status, course grade, recommendations, or access to future courses or training opportunities.

**Benefits and Risks:** Participation will help further knowledge about insight on design of an all-inclusive assessment tool for TG/GD community, however you will not receive any direct benefit from this survey. This survey research is considered to be minimal risk.

**Compensation:** There is no compensation for participating in the study.

**Privacy and Confidentiality:** We will do our best to keep your records private and confidential. All information (excel sheet linking participant details such as name, age, sex and responses) on the survey will be assigned to a code number during aggregated analysis and saved in password protected computers on secure USF server, information will not be released without written permission of the participant, except as necessary for monitoring by IRB.

Your personal information may be disclosed if required by law. Certain people may need to see your study records. These individuals include:

- The research team, including the Principal Investigator, study coordinator, and all other research staff.

- Certain government and university people who need to know more about the study. For example, individuals who provide oversight on this study may need to look at your records. This is done to make sure that we are doing the study in the right way. They also need to make sure that we are protecting your rights and your safety.

- Any agency of the federal, state, or local government that regulates this research. This includes the Department of Health and Human Services (DHHS) and the Office for Human Research Protection (OHRP).
· The USF Institutional Review Board (IRB) and its related staff who have oversight responsibilities for this study, and staff in USF Research Integrity and Compliance.

We may publish what we learn from this study. If we do, we will not include your email address. We will not publish anything that would let people know who you are. Your information could be used and/or distributed to another investigator for future research studies without additional consent from you.

It is possible, although unlikely, that unauthorized individuals could gain access to your responses. Confidentiality will be maintained to the degree permitted by the technology used. No guarantees can be made regarding the interception of data sent via the Internet. However, your participation in this online survey involves risks similar to a person’s everyday use of the Internet. If you complete and submit an anonymous survey and later request your data be withdrawn, this may or may not be possible as the researcher may be unable to extract anonymous data from the database.

 Contact Information: If you have any questions, concerns or complaints about this study, call Supraja Anand at 813-974-3213, or email her at suprajaanand@usf.edu. If you have questions about your rights, complaints, or issues as a person taking part in this study, call the USF IRB at (813) 974-5638 or contact by email at RSCH-IRB@usf.edu.

You can print a copy of this consent form for your records. To do so you can follow the same procedures for printing a webpage.

I freely give my consent to take part in this study. I understand that by clicking I agree that I am consenting to take part in research and I am 18 years of age or older.
Appendix F:

Perceptions of Transgender and Gender Diverse Populations for Speech-Language Pathologists

Q57 Are you a Certified Speech-Language Pathologist?

○ Yes (5)

○ No (6)

Display This Question:
If Are you a Certified Speech-Language Pathologist? = Yes

Q56 Do you currently have any of the following disorders: speech, language, cognitive, hearing, psychological, or neurological?

○ Yes (1)

○ No (2)

Q1 What is your email address?

________________________________________________________________

Q5 What is your age?

________________________________________________________________
Q12 In which country do you currently reside?

▼ Afghanistan (1) ... Zimbabwe (1357)

Q15 In which state do you currently reside?

▼ Alabama (1) ... I do not reside in the United States (53)

Q17 What is your race (can select more than one)

☐ African-American/Black (1)

☐ Asian (2)

☐ Caucasian/White (3)

☐ Middle Eastern/North African (4)

☐ Native American/Alaska Native (5)

☐ Native Hawaiian/Pacific Islander (6)

☐ Prefer not to specify (7)

☐ Other, please specify (8) ________________________________________________
Q18 What's your highest level of education?

- Higher than a Master's degree (1)
- Master's Degree (2)

Q19 What is your sex assigned at birth?

- Male (1)
- Female (2)
- Intersex (3)

Q20 Which best describes you?

- SLP with 1–10 years of experience (2)
- SLP with 11–20 years of experience (3)
- SLP with over 20 years of experience (4)
- Other, please specify (1) ________________________________

Q21 Was transgender voice and communication addressed in your SLP Master’s Degree curriculum?
**You are encouraged to participate in survey regardless of transgender voice and communication therapy background!**

- Not at all (1)
- Some in class (2)
- Some in practicum (3)
- Extensively in class or practicum (4)
- Other, please specify (5) __________________________________

Q22 What is your gender identity?

- Cisgender Male (1)
- Cisgender Female (2)
- Transgender Male (3)
- Transgender Female (4)
- Non-Binary (5)
- a. Other (e.g., Transfeminine, Transmasculine), Please specify (6) __________________________________

End of Block: Demographics

Start of Block: Attitudes/Knowledge
Q24 Have you had experience providing voice and communication therapy to a gender diverse* client?  *including transgender/non-binary population

☐ Yes (1)

☐ No (2)

☐ Other, please specify (3) __________________________

Q25 What is typically included in feminization/masculinization communication and voice therapy? Please select all that apply.

☐ Target speaking F0, range, appropriate resonance to align with gender perception (1)

☐ Intonation patterns, good quality vocal production (breath support, vocal hygiene, avoids phonotraumatic behaviors) (2)

☐ Articulation (i.e. acoustic assumptions) working through speech hierarchy (3)

☐ Home practice program and frequency of visits (4)

☐ Group therapy/classes (5)

☐ Language, body language (6)

☐ I am not sure (7)

Q26 Please rank the importance of considerations you might make when providing voice and communication therapy to a gender diverse client.
Drag and drop each item to rank.

_____ Gender dysphoria (1)
_____ Presentation percentage (how often the client presents as their gender identity at work, at home, with friends or family) (6)
_____ Support system (7)
_____ Other, please specify (8)

Q214 While treating a gender diverse client, how important would you consider their pronouns to the success of therapy?

  - Very important (1)
  - Important (2)
  - Somewhat important (3)
  - Not important (4)
  - Unrelated to the success of therapy (5)

Q27 Considering your personal moral beliefs, what scenarios would be most difficult for you to provide quality services to a Lesbian, Gay, Bisexual, Transgender, Queer+ (LGBTQ+) patient? (if none, please write “none”)

Display This Question:
If Have you had experience providing voice and communication therapy to a gender diverse* client? ... = Yes

Q28 If you have experience providing voice and communication therapy to a transgender client, please list any service/research gaps in the space provided
Q213 What is your comfort level with providing voice and communication therapy to the gender diverse population? Please provide your reasoning in the space provided.

- Very comfortable (1) 
- Comfortable (2) 
- Somewhat comfortable (3) 
- Uncomfortable (4) 
- Somewhat uncomfortable (5) 
- Very uncomfortable (6) 

End of Block: Attitudes/Knowledge

Start of Block: Instructions on perception

Q231 In the following section you will listen to audio samples of 15 gender diverse voices. Press the the arrow button on audio to play, press pause button to stop audio.

In part one, you will be asked to perceive the voice as female, male, or ambiguous based on the four audio samples: /a/ phonation, connected speech*, and two non-speech vocalizations. You will be asked to make a judgement on the non-speech vocalizations in later questions.

*The connected speech audio files are between 1-2 minutes, we encourage you to listen to at least 30 seconds to make a suitable judgement.*

In part two, you will listen to the audio samples and rate parameters of voice based on the given gender identity of the individual. You will be asked to rate speech naturalness which is defined as the "rate, rhythm, intonation, and stress patterning and if it conforms to the syntactic structure of the utterance" (Yorkston, Beukelman, Strand, & Bell, 2010). You will also be asked to rate pleasantness which is defined as the satisfaction of overall sound quality perceived by the listener.

You will be asked to judge the following parameters (these definitions/descriptions were adopted from CAPE-V and ASHA.org):

**Overall Voice Quality:** Global, integrated impression of voice deviance.
Pitch: Perceptual correlate of fundamental frequency. This scale rates whether the individual's pitch deviates from normal for that person's gender, age, and referent culture. The direction of deviance (high or low) should be indicated in the blank provided above the scale.

Loudness: Perceptual correlate of sound intensity. This scale indicates whether the individual's loudness deviates from normal for that person's gender, age, and referent culture. The direction of deviance (soft or loud) should be indicated in the blank provided above the scale.

Resonance: Normal resonance is achieved through an appropriate balance of oral and nasal sound energy, based on the intended speech sound.

Syntax: Rules that pertain to the ways in which words can be combined to form sentences in a language.

Non-Speech Vocalizations: Natural sounds, such as a cough or laugh.

In addition, you will be asked to rate parameters on both consistency (consistency defined as maintaining a strong vocal quality, intermittent defined as inconsistency in vocal quality) and severity (being rated based on voice being mildly deviant, moderately deviant, severely deviant, or not deviant).

To exit the survey, press the "X" on the top corner of the web browser. Progress will be saved even if you exit out.

End of Block: Instructions on perception

Start of Block: Perception GD voice # 1

Q25 GD voice # 1:  Listen to the audio samples and answer the following question:
How do you perceive the voice?

- Female (1)
- Male (2)
- Ambiguous (3)
- If you perceive /a/ phonation differently from sentence sample, please explain here (4)

End of Block: Perception GD voice # 1

Start of Block: Perception with gender info GD voice # 1

Q63
GD voice # 1:

Gender Identity: Non-Binary

---

Q24
Rate naturalness, where 1 represents unnatural and 10 represents most natural

Drag marker to desired position.

0 1 2 3 4 5 6 7 8 9 10

Naturalness ()
Q60 Rate pleasantness, where 1 represents unpleasant and 10 represents most pleasant

Drag marker to desired position.

<table>
<thead>
<tr>
<th>Pleasantness ()</th>
</tr>
</thead>
</table>

Q25

The following answer choices have been adapted/adopted from the Consensus Auditory-Perceptual Evaluation of Voice, 2002.

Overall Voice Quality

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistent (1)</td>
<td>Intermittent (2)</td>
</tr>
<tr>
<td>Mildly Deviant (1)</td>
<td>Moderately Deviant (2)</td>
</tr>
<tr>
<td>Moderately Deviant (2)</td>
<td>Severely Deviant (3)</td>
</tr>
<tr>
<td>Severely Deviant (3)</td>
<td>Not Deviant (4)</td>
</tr>
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Please select one item in each column.

Q26

Pitch

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<th>Severity</th>
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</thead>
<tbody>
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<td>Severely Deviant (3)</td>
</tr>
<tr>
<td>Severely Deviant (3)</td>
<td>Not Deviant (4)</td>
</tr>
</tbody>
</table>
Please select one item in each column. (1)

<table>
<thead>
<tr>
<th>Q27 Loudness</th>
<th>Consistency</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consistent (1)</td>
<td>Intermittent (2)</td>
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</table>

Please select one item in each column. (1)

<table>
<thead>
<tr>
<th>Q28 Resonance</th>
<th>Consistency</th>
<th>Severity</th>
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<tbody>
<tr>
<td></td>
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<td>o</td>
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</table>
### Q30 Syntax

<table>
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<td>Mildly Deviant (1)</td>
<td>Moderately Deviant (2)</td>
</tr>
<tr>
<td>Severely Deviant (3)</td>
<td>Not Deviant (4)</td>
</tr>
</tbody>
</table>

Please select one item in each column. (1)

### Q33 Non-speech vocalizations

<table>
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<th>Consistency</th>
<th>Severity</th>
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<td>Mildly Deviant (1)</td>
<td>Moderately Deviant (2)</td>
</tr>
<tr>
<td>Severely Deviant (3)</td>
<td>Not Deviant (4)</td>
</tr>
</tbody>
</table>

Please select one item in each column. (1)

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End of Block: Perception with gender info GD voice # 1
Appendix G:

IRB Approval Documentation

9/17/19

This letter supersedes the letter dated 9/10/2019

Rachel Chalom
Communication Sciences and Disorders
18002 Richmond Place Dr Apt 2923
Tampa, FL 33647

RE: Expedited Approval for Initial Review
IRB#: Pro00040432
Title: Aligning Voice and Communication with Identity – A Survey on Transgender and Gender Diverse Populations

Study Approval Period: 9/9/2019- 9/9/2020

Dear Ms. Chalom:

On 9/9/2019, the Institutional Review Board (IRB) reviewed and APPROVED the above application and all documents contained within, including those outlined below. Please note this study is approved under the 2018 version of 45 CFR 46 and you will be asked to confirm ongoing research annually in place of a full Continuing Review. Amendments and Reportable Events must still be submitted per USF HRPP policy.

Approved Item(s):

Protocol Document(s):
Aligning Voice and Communication with Identity – A Survey on Transgender and Gender Diverse Populations Protocol.docx

Consent/Assent Document(s)*:
SB Adult Minimal Risk_SPEAKERSVERSION3.docx.pdf
SB_TG_GD Survey ConsentREV.docx**
SB_Listeners_Survey ConsentREV.docx**

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent documents are valid until the consent document is amended and approved. **Survey coversheets are not stamped.

It was the determination of the IRB that your study qualified for expedited review which includes activities that: (1) present no more than minimal risk to human subjects, and (2) involve
only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45 CFR 46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your study qualifies for a waiver of the requirements for the documentation of informed consent for this online survey as outlined in the federal regulations at 45 CFR 46.117(c), which states that an IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it finds any of the following: (1) That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject (or legally authorized representative) will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern; (2) That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context; or (3) if the subjects or legally authorized representatives are members of a distinct cultural group or community in which signing forms is not the norm provided that the research presents no more than minimal risk of harm to subjects and provided there is an appropriate alternative mechanism for documenting that informed consent was obtained.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB via an Amendment for review and approval. Additionally, all unanticipated problems must be reported to the USF IRB within five (5) business days.

We appreciate your dedication to the ethical conduct of human subjects research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

[Signature]

Kristen Salomon, Ph.D., Chairperson
USF Institutional Review Board