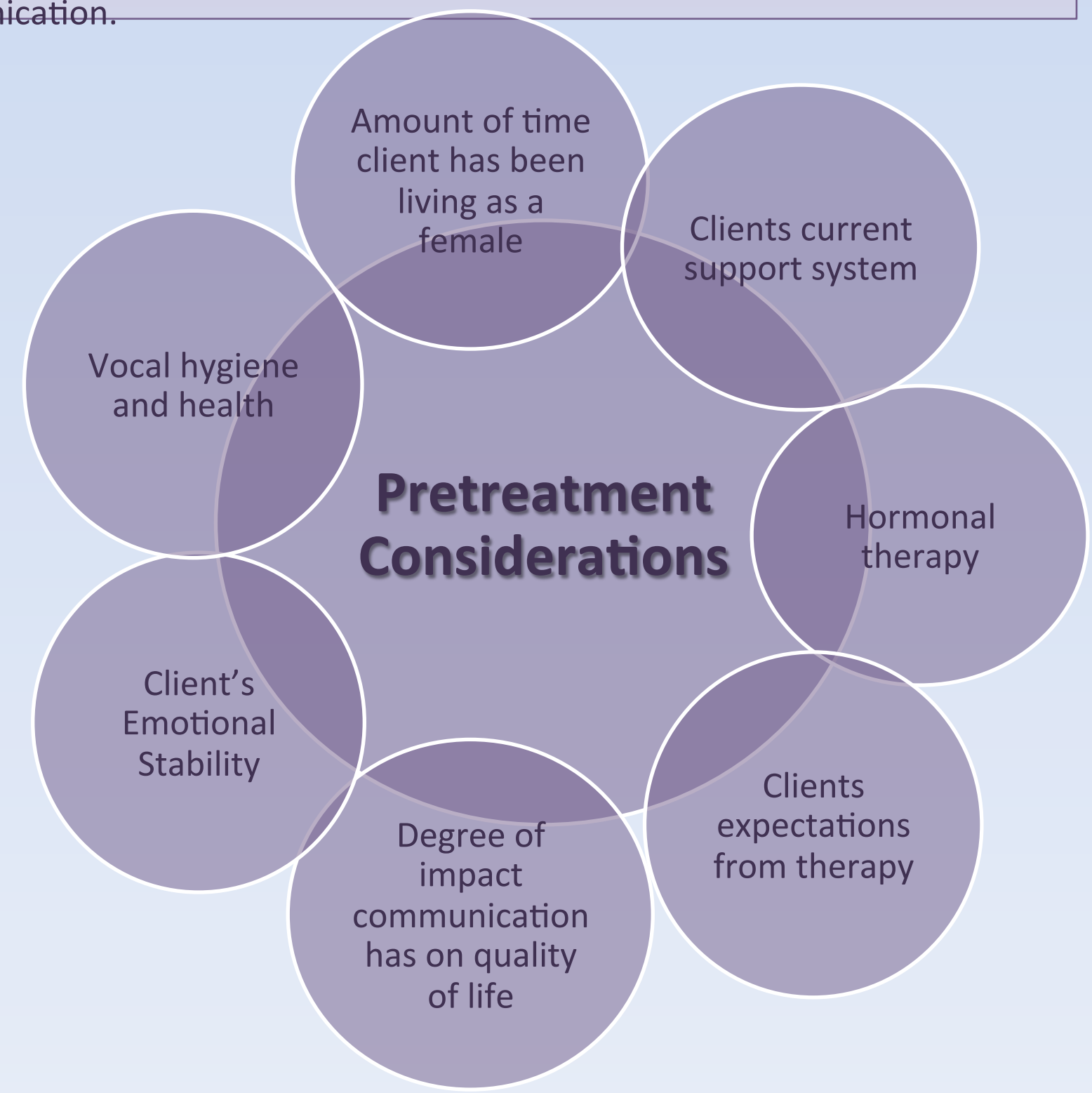


INTRODUCTION

An individual's form of communication can influence how others may interact with them. In perspective, imagine waking up day after day and not feeling a sense of belonging in your own body. This sensation of confusion and discomfort is a critical factor in the lives of transgender people, up until they are diagnosed with gender identity disorder. Diagnosis of gender identity disorder does not alleviate the life-long struggle of self-discovery and acceptance, but it begins the journey to finding that satisfaction and increased quality of life. After diagnosis, transgender individuals have many decisions to make when it comes to their lifestyle. Given the emotional distress transgender people experience, in order to make the appropriate choices there are many professionals who will assist and educate them through the transition process. The professional team includes a psychiatrist, medical practitioner, counselor, speech-language pathologist, and in some cases surgeons for sexual reassignment.; all the above mentioned professionals play a significant role in the lives of transgender people because transgender people are often alone during their transition process due to negative reactions or rejection from family and friends. Transgender people seeking speech services are often male-to-female transgender. Male-to-female transgenders are more commonly noted seeking speech services because hormonal therapy does not directly influence the feminization of voice. Male-to-female transgender often feel that their voice counteracts the transition process because their masculine voice quality does not align with their new identity. A speech-language pathologist role in male-to-female transgender voice therapy includes feminization of the client's current voice quality by targeting; fundamental frequency (pitch), breathiness, resonance, intonation, and nonverbal communication.



Nonverbal Communication

Nonverbal communication is not a direct therapy goal for increasing voice feminization, but targeting mannerisms and gestures can increase femininity visually. A 2001 study that looked to distinguish the degree of femininity through visual appearance and voice demonstrated higher femininity ratings when there was no auditory stimulus presented (Van Borsel & De Pot, 2001). Although the researchers conclusion emphasizes the importance of voice therapy, it also alluded to the importance of nonverbal communication.

Symptomatic Therapy Target	Gender Differences	Therapy Approaches
Fundamental Frequency	Fundamental frequency (F_0) refers to the rate of vocal fold vibration also known as cycles per second (CPS). The rate of vocal fold vibration is measured in hertz (Hz). According to Hancock and Helenius (2012) a biological males F_0 is close to 110 Hz and a biological female F_0 is near 220 Hz.	Hancock and Helenius (2012) stated that the primary goal of male-to-female transgender intervention is to increase F_0 because perceptually it influences femininity the most. Although it would be ideal to increase the MTF clients F_0 to 220 Hz, biologically it is vocally abusive; however, Hancock and Helenius propose a gender neutral range which requires increasing the MTF clients F_0 to approximately 155 – 165 Hz. The gender neutral range is optimal and realistic therapy goal because it is the point in which both femininity and masculinity can be defined equally.
Resonance	Resonance is the site of phonatory vibration of the voice. Males typically have a deeper tone to their voice quality because their resonance resides at the level of the larynx also known as chest resonance (Hancock & Helenius, 2012). Females resonance is more forward and is located in the front of the oral cavity, resulting in a brighter tone. Females are considered to have a ringing head resonance (as cited in Hancock & Helenius, 2012).	A study on the effectiveness of oral resonance therapy by Carew and Dacakis (2007) presented three vocal tract manipulation techniques that increase the perception of a feminine voice. Biologically women have smaller vocal tracts which results in higher formant frequencies. In order to increase formant frequencies, MTF transgender clients need to manipulate the vocal tract through the use of lip spreading, anterior tongue carriage, and lowering of tongue (Carew & Dacakis, 2007). The study specifically focused on the productions of /a/, /i/, and /ʌ/. Lowering of the tongue revealed increases in formant 1 with degree of tongue fronting resulted in increases in formant 2, and lip spreading showed increases in formant 3.
Breathiness	Breathiness is the perception of friction in the voice caused by the incomplete closure of the vocal folds (Van Borsel & Janssens, 2009). Researchers in a 2009 Belgium study looked into the influence of breathiness in a feminine voice quality through the production of /a/. Listeners from the study rated the breathy production of /a/ to be more feminine than the non-breathy productions (Van Borsel & Janssens, 2009).	When attempting to increase fundamental frequency, many male-to-female transgender clients may experience laryngeal tension which could lead to vocal fatigue or abuse. Easy onset is a technique utilized to warm-up or cool-down the laryngeal and vocal fold muscles after long periods of loud phonation. Easy onset is the slow and gentle production of sounds which is effective in getting a client to think about their breathing and phonation (Adler & Hirsch et al., 2006, p. 154). By utilizing easy onset, a male-to-female client will not adduct their vocal folds as forcefully, therefore increase breathy quality. Easy onset is often seen in therapy for stuttering to decrease frequency of disfluencies, and in female-to-male transgender therapy for the reduction of harsh glottal attacks (Adler & Hirsch et al., 2006, p. 155).
Intonation	Because intonation is the rising and falling patterns of pitch, intonation and pitch work simultaneously. Intonation alone can influence the form of an utterance (Adler & Hirsch et al., 2006, p. 181); in comparison to males, females' intonation patterns are characterized by more upward intonations. In order to emphasize utterances males often utilize loudness instead of pitch (Adler & Hirsch et al., 2006, p. 183)	The ideal therapy approach for intonation therapy is the walk-jump-step-fall (WJSF) intonation approach. WJSF is the break down of standard American English language patterns and can help male-to-female transgender clients sound more natural when working on intonation (Adler & Hirsch et al., 2006, p. 184).

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