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Communicative Congruence and Communicative Dysphoria:

A Theory of Communication, Personality, and Identity

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Abstract

Purpose: We present a theoretical framework that formalizes and defines the constructs of *communicative congruence* and *communicative dysphoria* that is rooted within a comprehensive and mechanistic theory of personality.

Background: Voice therapists have likely encountered a patient who states that a therapeutic target voice "isn't *me*." The ability to accurately convey a person's sense of self, or identity, through their voice, speech, and communication behaviors seems to have high relevance to both patients and clinicians alike. However, to date, we lack a mechanistic theoretical framework through which to understand and interrogate the phenomenon of congruence between one's communication behaviors and their sense of self.

Results: We review the initial notion of congruence, first proposed by Carl Rogers. We then review several theories on selfhood, identity, and personality. After reviewing these theories, we explain how our proposed constructs fit within our chosen theory, the Cybernetic Big Five Theory of Personality. We then discuss similarities and differences to a similarly named construct, the Vocal Congruence Scale. Next, we review how these constructs may come to bear on an existing theory relevant to voice therapy, the Trans Theoretical Model of Health Behavior Change. Finally, we state testable hypotheses for future exploration, which we hope will establish a foundation for future investigations into communicative congruence.

Conclusion: To our knowledge, the present paper is the first to explicitly define communicative congruence and communicative dysphoria. We embed these constructs within a comprehensive and mechanistic theory of personality and, in doing so, hope to provide a rigorous and comprehensive theoretical framework that will allow us to test and better understand these proposed constructs.

Introduction

Voice-specialized speech-language pathologists should be well-accustomed to hearing patients report that a new target voice essentially "isn't me" or "doesn't sound like me." This situation can be easy or challenging to navigate, depending on the individual patient. It is also commonly reported in society that "everyone hates the sound of their voice," (Dodgson, 2018; Jaekl, 2018; Parikh, 2020; Stillman, 2016; White, 2018) which might also come to bear on a patient's experience in voice therapy. The aim of this paper is to present these two examples of lived experiences—which we will refer to as *communicative congruence* and *communicative dysphoria*—in both theoretical and practical terms, to lay a foundation for future work.

The first example, in which a patient complains that a target communication behavior somehow "isn't me," reflects a sub-optimal level of what have termed communicative congruence. The concept of psychological congruence dates back to the 1950's, when it was introduced by Carl Rogers, the founder of Humanistic Psychology (1957, 1959). Rogers defined congruence as a state in which a person's experience matches and is integrated with their self-concept (1959). In the context of voice pathology, the construct has been anecdotally but not empirically represented to date.

Of some relevance to voice pathology, the construct of psychological congruence has been examined in gender-diverse individuals whose gender identity varies from their sex assigned at birth. Specifically, transgender people who experienced higher levels of congruence reported fewer symptoms of anxiety and depression and scored higher on indices of well-being, life meaning, and satisfaction with life (Kozee et al., 2012). However, Kozee's congruence scale fully excluded any reference to communication at all. The evidence that psychological congruence for some (but not all) transgender people hinges on communication is incontrovertible. However, the importance of communication to a sense of congruence is not unique to the transgender community. Cisgender people (i.e., those whose gender identity is consistent with their assigned sex at birth) also experience a sense of congruence. Feeling more congruent correlates with increased feelings of authenticity, happiness, and overall life satisfaction (Mikulincer &

Peer-Goldin, 1991; Reich et al., 2012; Schlegel et al., 2011; Sherman et al., 2011). To our knowledge, no one has explicitly examined the communicative aspects of psychological congruence.

Relatedly, sometimes a person "hates the way they sound" when they talk or when they hear recordings of their own speech, which exemplifies what we term communicative dysphoria. Generally, the term dysphoria refers to feelings of significant distress, unease, and/or dissatisfaction. The term used herein, communicative dysphoria, is a conceptual expansion of the term vocal dysphoria. We elected to use the term "communicative" instead of "vocal" here for a couple of reasons. First, vocal dysphoria and vocal euphoria are terms that are deeply meaningful to members of the transgender and nonbinary communities for their utility in describing their lived experiences.[1] While we and numerous members of the transgender, nonbinary, and/or meta-gender community believe the experience of vocal and communicative dysphoria can be experienced by anyone irrespective of gender identity (Helou, 2021), we are sensitive to the possibility that some might view our use of the term or concept as an appropriation.[2] Second, the term vocal dysphoria suggests that only voice is the portion of speech that causes discord, when a number of speech features might be perceived and relevant to one's lived experience. For instance, a person might dislike the way they communicate because of their unique resonance, speaking pitch, dysfluency, dialectal variations, the presence of a lisp, or even the robotic and stylistically limited output often produced by alternative and augmentative communication devices. Thus, communicative dysphoria seems a more appropriate term to encompass all the things that might bring one psychological pain and discomfort (i.e., dysphoria) in their experience of their own communication behaviors.

[1] The authors wish to acknowledge their friends, colleagues, clients, and patients who are members of the transgender and nonbinary communities. The work represented herein stemmed in large part from the authors' work in gender affirming voice and communication services, and they have thus been guided and educated in no small part by these individuals.

[2] While we believe that both cisgender and transgender individuals can experience a sense of dysphoria, the magnitude of dysphoria possibly experienced by trans and nonbinary individuals due to interlocking systems of oppression should not be equated to the possible communicative dysphoria a cisgender person experiences due to communicative incongruence.

Related to the concept of communicative dysphoria, previous investigations have explored responses to "vocal confrontation," which involves one's response to a recording of their speech played back to them unexpectedly. Holzman and Rousey demonstrated that people differ in their responses to hearing their own voice and speech. Some subjects produced positive reactions while others produced negative reactions (1966). Likewise, people differed in their galvanic skin response, electromyography of the frontalis muscle (a reliable gauge of negative emotionality), and vasoconstriction responses when a recording of their speech was unexpectedly played back in a series of recordings (Holzman et al., 1966). The authors categorized the subjects as psychophysiological "reactors" or "nonreactors" to hearing themselves unexpectedly on a recording (Holzman et al., 1966). Importantly, these two studies recruited speakers who were "moderately familiar" with their voices, suggesting that familiarity does not dampen the reactions observed to listening to one's own voice and speech (Holzman et al., 1967). We suspect that how congruent one feels their communication is with their sense of self might mediate how someone responds to vocal confrontation. It stands to reason that people who experience high levels of communicative congruence may hold a positive regard towards their voice and speech and might not display increased physiological stress responses when unexpectedly hearing a recording of them speaking, while individuals who are incongruent will react negatively and display a relatively greater or longer-lasting physiological stress response.

Having presented communicative congruence and dysphoria cursorily, we will now build a theoretical framework that elaborates upon, links, and distinguishes each construct. This theoretical framework will be rooted in theory and evidence from literature in personality psychology and science. Since a number of possible schemas are available for us to pin these constructs onto, we will describe the top contenders briefly, then elaborate on our chosen schema in greater detail. We will also discuss how the two constructs might hold clinical significance in communication science and disorders, as well as relevance to frameworks specific to voice therapy, such as the transtheoretical model of health behavior

change. We will also disambiguate our construct of communicative congruence from the similarly-named construct of vocal congruence presented by Crow et al. (2019). Finally, we will propose some testable hypotheses generated through this theoretical framework. We hope this work will be of value to a growing number of investigators in the field of CSD who seek to understand the relationship between voice and identity, and how this relationship influences voice therapy outcomes.

2. Identity and Communication

Self and identify are much-studied concepts that cannot be fully addressed within the scope of this paper. Drawing from writings by Oyserman et al. (2012), at the simplest level and in the present context, self and identity refer to the clear feeling or sense that something is "about me." Most theories about self and identity operate on the assumption that individuals care about themselves, desire to know who they fundamentally "are," and can apply the knowledge they develop about themselves to navigate and understand the world around them (Oyserman et al., 2012). It is predicted that one's sense of self will influence their motivations, how they derive meaning about themselves and others, how they think, what behaviors they engage in, how they feel they can regulate themselves, and their ability to regulate their own mindset and actions (Oyserman et al., 2012).

Swann & Buhrmester (2012) discuss how patterns that reinforce one's sense of self become compellingly attractive or magnetic for an individual. They note that as an individual establishes and maintains patterns of living, they begin to coalesce those patterns into stable self-views, which imparts to them a strong sense of coherence. Even if behavioral patterns become uncomfortable or even harmful to the individual, they tend to seek those feelings of coherence by adhering to the established self-views that produce them. These claims might resonate with voice-specialized speech-language pathologists, who are often tasked with helping patients modify communication behaviors that no longer serve their best purposes, but that are nonetheless difficult to break free from.

Communication is defined as a process by which information is exchanged between individuals through a common system of symbols, signs, or behaviors (Merriam-Webster, n.d.). Broadly, communication has several forms: linguistic, non-linguistic, verbal, or non-verbal. Communication can be transmitted visually, orthographically, haptically, and auditorily, and it is done quite regularly. People wear brand name clothes as status symbols and style their hair to communicate traits about themselves. A person can verbally communicate their identity in a declarative manner (e.g., "I'm a Southerner"), through non-verbal means (e.g., wearing a shirt with a graphic of their state and/or flag), or via dialectal variations (e.g., using a southern accent). Conversely, a person from the South who does not center a Southern identity may actively strive to avoid any or all Southern-signaling behaviors. Individuals might "code switch" using voice, speech, linguistic features, and/or jargon to signify identity, or through some combination of these elements.

While many people use verbal communication as their primary modality for language, we also intend for the proposed constructs to also be inclusive of people who use non-verbal communication and language systems like American Sign Language, or other non-traditional forms of communication such as augmentative and alternative communication (AAC) devices. For instance, an ethnographic study of teenage AAC users emphasized the important relationship between one's speech-generating device and their identities (Wickenden, 2010, 2011). Indeed, the fact that companies exist to provide AAC users with voice and speech features that are tailored to their own identities (e.g., gender, sexual orientation, age) (Patel & Threats, 2016) reinforces the relevance of communicative congruence and communicative dysphoria to all communicators, irrespective of modality. The present paper aims to describe communicative congruence as comprehensively as possible, yet centers voice and speech behaviors as exemplars.

Self-schemas might be built around any number of things, including race or ethnicity, age, weight, academic standing, professional or social roles, gender, and much more. People act in ways that fit their

self-schemas, i.e., that feel consistent with their identities (Hosany & Martin, 2012). We describe people whose communication behaviors are consistent with their identity as having *communicative congruence*. We expect that this experienced congruence could occur purposefully and dynamically, changing on a situation-to-situation or even moment-by-moment basis. However, there may be times when a person chooses to endure communicative incongruence to achieve a social goal. For instance, a woman of color whose sense of self is most congruent when speaking in African American Vernacular English may still use a Standard American English dialect to avoid potential social penalties from her primarily white professional colleagues. If this communicative incongruence is great enough in magnitude or endures for too long, the resulting communicative dysphoria may negatively impact that person's core sense of self and well-being. Increasingly, more attention is being paid to the mental toll code-switching can take on minoritized identities (Adikwu, 2020; Durkee & Williams, 2015; Gaines, 2020). We propose that communicative incongruence may be one psychological process behind these negative effects.

Further, what happens when a person's communication is highly inconsistent with their truest sense of identity or their ability to express it? Or, what if it reflects something true about them that they wish was not true? People with aphasia, a linguistic disorder as a result of a neurocognitive impairment, frequently experience depression (Ashaie et al., 2019; Kauhanen et al., 2000; Laures-Gore et al., 2020; Naess et al., 2005). While post-stroke depression is complex and multifactorial, part of this depression may be due, in part, to an individual's inability to communicate in a manner that is consistent with their sense of self. As another example, Mills et al. suggests that when AAC users whose speech generating device outputs (i.e., a "synthetic" voice) are inconsistent with the person's identity, that "this identity mismatch may impact the use and adoption of these devices and further perpetuate the divide between the user and the device" (2014, pp. 226–227). Likewise, patients with voice disorders might feel that a new therapeutic target voice "just isn't *me*". Patients with this sentiment may not generalize new voicing patterns outside of the therapy environment, might not resolve their voice disorder, or might even stop attending therapy

altogether. The presence of a voice disorder itself is known to cause dysphoric feelings in a patient sample that was presumably cisgender-dominant (Deary et al., 2010), and patients with focal laryngeal dystonia report disproportionately high levels of depression, general anxiety disorder, and social anxiety compared to vocally healthy individuals (Worthley & Simonyan, 2021). Clearly, communicative congruence can be identified across numerous clinical and real-world contexts.

3. Onto Which Frameworks Might We Pin These Constructs?

A few theoretical frameworks exist that could accommodate our proposed constructs of communicative congruence and communicative dysphoria. In this section, which is purposefully circumscribed and very far from exhaustive, we will briefly review several of the most well-aligned options before ultimately describing and justifying our top choice. We review several different frameworks because they are all compatible with our proposed constructs, and because we acknowledge that our preferred choice might prove to not be the best option. We will let time and the scientific process ultimately decide.

3.1 Social Interaction Theories

Erving Goffman was a social psychologist and sociologist who is well known for his theories about the "dramaturgical" aspects of human interaction and the various forms of "impression management" that individuals engage in to influence others' perceptions of them. In his seminal book, *The Presentation of Self in Everyday Life*, Goffman (1959) argued that individuals present themselves in a manner akin to how actors present themselves theatrically, and that these presentations tend to be polished and curated in order to present an idealized self to others around the individual. He acknowledged, though, that everyone also can have hidden, private, or fully subconscious aspects of self that are not apparent to outsiders. Goffman referred to identity management as an artistic expression, and studiously detailed scores of real-life scenarios that reinforced his ideas about self-presentation. He also referred to "spoiled identity" as

something people try to avoid, typically by withholding or hiding veridical information that might tarnish their image (Goffman, 1963). While others in our field have promoted Goffman's dramaturgical theories about social interactions and identity in the context of voice therapy (Rubino et al., 2020), we will not center the current constructs in Goffman's theoretical framing for two reasons. First, Goffman's theories were not explicitly linked to tools that would allow one to measure the phenomena of interest (e.g., a personality measure), and second, most of what Goffman proposed is largely compatible with modern personality frameworks that do accommodate testable hypotheses and are linked to valid and reliable measurement tools. For the same reasons, we will not elaborate here on other highly relevant and compatible theories such as Self-Determination Theory or Self-Verification Theory. All of these theories have merit in the context of thinking about communicative congruence and communicative dysphoria, but offer relatively fewer mechanisms for programmatic hypothesis-testing.

3.2 Identity Theory

Originating in the field of Sociology, Identity Theory proposes that one's "identity" is made up of multiple role, social, and person identities. Social identities are formed by membership to a social group (e.g., Latinx) and person identities are formed from the qualities that make a person a unique and distinct individual (e.g., charismatic public speaker). Burke & Stets define a role as "the set of expectations tied to a social position that guide people's attitudes and behavior" (2009, p. 114). For instance, let's say Sarah is a nonbinary minister whose uses they/them pronouns. As a minister, people have certain expectations and beliefs about who Sarah is and how they should act. Additionally, Sarah has their own expectations and beliefs about what it means to be a minister that will shape their attitudes and behaviors. When Sarah is with their friends and not acting in their professional role as a minister, they may talk differently than they would with a member of their congregation. Indeed, audience feedback matters greatly to self-presentation (Schlenker, 2012).

An individual's capacity for flexibility and complexity is represented in Identity Theory, which states that identity is a cybernetic mechanism. Girolami et al. define cybernetics as "a successful meta-theory to model the regulation of complex systems from an abstract information-theoretic viewpoint, regardless of the properties of the system under scrutiny" (2013, p. 757). A common and simple analogy used to demonstrate a cybernetic system is the example of air conditioning. A thermostat measures the temperature of the environment; when the environment becomes too hot, the thermostat turns on the air conditioner to influence the environment. Once the thermostat detects that the environment is at the expected temperature, the air conditioner turns off.

Likewise, Identity Theory asserts that people regulate their behaviors to enact and perform their identities. Identity Theory proposes that there are four components to enacting identity: an *input*, an *identity standard*, a *comparator*, and an *output* (shown in Figure 1). While described serially, the process itself functions as a continuous loop. Given no clear beginning or end to this ongoing cycle, we will begin with the input. The *inputs* are a person's perceptions based on sensory feedback. This feedback can be intra- or interpersonal (i.e., one observes their own actions, or how someone else responds to their actions). The goal for successfully enacting an identity is to have the input be consistent with the *identity standard*, which is the set of meanings associated with an identity and they serve as a reference point in the identity enacting process. The third component is the *comparator*, which contrasts the input (feedback) with the identity standard (goal). If a discrepancy between the input and the identity standard exists, the comparator produces an "error signal." The error signal then prompts the person to change the fourth component, the output, which are behaviors used to enact the identity. Conversely, if the comparator does not produce an error signal, then the output does not change, and the person continues performing the identity. By performing the identity in a manner that is consistent with the identity standard, the person has successfully completed identity-verification.

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Identity Theory holds that people can experience identity validation and invalidation for each of the three types of identities – person, social, and role. People whose identities are invalidated are theorized to experience anxiety, depression, and negative psychological consequences, while identity validation yields positive psychological outcomes and higher levels of self-esteem (Burke & Stets, 2009).

However, for our own purposes, Identity Theory insufficiently encodes the numerous cognitive and psychological processes that relate to identity. The four components described above are each distinct processes that deal with meaning-making in both external and internal environments. Together, these processes serve the function of "maintain[ing] perceived self-meanings within a certain range" (Burke & Stets, 2009, p. 62). This hinting at critical processes without explicitly encoding them into the theoretical framework is insufficient for accommodating communicative congruence and communicative dysphoria. Therefore, we next turn to personality science for a framework that maximally incorporates the cognitive and psychological processes used to perform and enact an identity.

[Figure 1]

3.4 Cybernetic Big Five Theory

Identity Theory is strikingly similar to the Cybernetic Big Five Theory (CB5T) (DeYoung, 2015) in both design and purpose. However, where Identity Theory falls short on accounting for critical mechanisms of identity experience, the CB5T succeeds in providing a framework for understanding the whole person that is mechanistic, synthetic, and comprehensive. Importantly, it successfully subsumes all the key features of Identity Theory that are compatible with the present work. The cybernetic systems referenced in CB5T are the same in principle as described above. CB5T is built on cybernetic principles because DeYoung postulates that personality is an "evolved cybernetic system" (2015, p. 33). In this system, the

subcortical structures of the limbic system and basal ganglia are goal achievement mechanisms comprising the "cybernetic architecture" that allow humans to engage in dynamic goal-oriented behaviors.

Like Identity Theory, CB5T is characterized by a cycle with five stages: 1) goal activation, 2) action selection, 3) action, 4) outcome interpretation, and 5) goal interpretation, shown in Figure 1. Similar to Identity Theory's identity verification cycle, the CB5T cycle occurs simultaneously except for the third stage, action. Generally, people can only perform one action or goal at a time (not to be confused with multiple motoric actions that comprise a single goal). Aside from differing terminology, the main and critical distinction between the two cycles is that the CB5T has an intermediary action selection step. Comparatively, the identity standard in Identity Theory could function as both the goal needed to enact the identity as well as informing and selecting the actions necessary to perform that identity. Thus, in this way, CB5T begins to differentiate as a more fine-grained and comprehensive theory of identity. This statement raises the question – how are identity and personality different, if at all?

To fully address that question is beyond the scope of this paper. For a thorough explanation, we direct the reader to the original CB5T paper (DeYoung, 2015). However, in brief, "personality" as a whole (not to be confused with personality traits) includes one's unique identities. As such, CB5T posits that *personality traits* and *characteristic adaptations* explain all psychological individual differences between people. Personality traits are the "collection of mechanisms that evolved to carry out the different processes associated with each stage of the [cybernetic] cycle" and characteristic adaptations are "stored in memory [as] a collection of goals, actions, and knowledge about the world" (DeYoung, 2015, p. 34). Loosely, one can think of characteristic adaptations as roughly equivalent to how we have discussed identity thus far. In section 3.4.2, we will elaborate on this statement. First, we will briefly describe personality traits and characteristic adaptations below.

3.4.1 Personality traits.

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Consistent with most modern personality theories, CB5T asserts that the Five Factor Model (FFM) of personality traits (also referred to as the Big Five: Extraversion, Agreeableness, Openness, Conscientiousness, and Neuroticism) accounts for most covariation between individuals. In addition to these five traits, CB5T probes deeper than the FFM domains and embraces an empirically derived hierarchical model of personality traits that includes "metatraits" and "aspects," shown in Figure 2. It is worth mentioning that this schematic of the trait hierarchy is an oversimplification of personality traits (see DeYoung 2015 for a comprehensive explanation).

[Figure 2]

CB5T treats personality traits as "probabilistic descriptions of relatively stable patterns of emotion, motivation, cognition, and behavior, in response to classes of stimuli that have been present in human cultures over evolutionary time" (DeYoung, 2015, p. 35). Thus, this approach to personality traits implies that even a completely error-free measurement of a personality trait will not 100% accurately predict a person's behavior in each moment. Rather, measuring a personality trait will provide predictive power for how a person is likely to act in each situation.

3.4.2 Characteristic adaptations.

A key premise of CB5T is that personality traits and characteristic adaptations allow for a comprehensive description of all the features psychologists consider to be individual psychological differences. Characteristic adaptations are defined as "relatively stable goals, interpretations, and strategies, specified in relation to an individual's particular life circumstances" that are contextualized within situations (DeYoung, 2015, p. 38). CB5T differentiates characteristic adaptations from personality traits by their substantially less universal nature. As such, this distinction allows the CB5T to accommodate

a person's identity and cultural influences. CB5T asserts that all characteristic adaptations fall into one of three categories: (1) goals, which represent a desired future state; (2) interpretations, which are factual and evaluative representations of the self and the world; and (3) strategies, the behavioral and cognitive plans, actions, skills, and habits that one uses to achieve the desired state. These three categories can be conscious or unconscious, and they dynamically inform the cybernetic system of personality as it functions in each situation across the lifetime.

To elaborate on a previously made point, a person's "identities" can be described in CB5T terms of characteristic adaptations. *Characteristic adaptations* consist of goals (identity standards), interpretations (self- and socially-defined meanings), and strategies (signs, symbols, and resources). Thus, one can conceptualize an "identity" as the coordination of one's interpretations, strategies, and goals (i.e., characteristic adaptations). This definition mirrors the same structure encoded in Identity Theory, that identities are made up of self- and socially-defined meanings, identity standards, and that people use signs, symbols, and resources to enact and perform an identity. DeYoung gives the example of getting a cup of coffee as a goal. To simply grab a cup of coffee does not mean coffee is integral to a person's identity. However, if one's interpretation is that they are an avid coffee drinker who enjoys different kinds of coffee, and they ritualistically employ a myriad of coffee brewing methods and knowledge (i.e., strategies), and their goal is to have a cup of coffee, then this person might self-identify as a javaphile. Similarly, this person's friends and family will likely also identify this person as a coffee-lover and treat them as such. Here, then, coffee itself and the act of getting it is, for some people, more expressive and symbolic of an aspect of their core identity than it is for others.

3.4.3 Metatraits and Psychological Entropy.

Human beings are remarkably adjusted to interacting with the known and unknown, or match and mismatch, the expected and unexpected. At the same time, people are generally wary of the unknown, as

the unknown can be a source of good or bad (Peterson, 1999 in DeYoung, 2015). Indeed, entropy is "the fundamental problem for any cybernetic system," as it threatens the stability of the system (DeYoung, 2015, p.46). Psychological entropy occurs when a person's predictions fail, and the state achieved is not the desired or expected state. This mismatch can be a result of (mis)interpretation or because a strategy has failed or is expected to fail.

At the very highest level of CB5T (i.e., above the big five domains) exist two metatraits, Stability and Plasticity. These metatraits are thought to influence how an individual will respond to the unknown and to entropy. Stability helps to protect existing characteristic adaptations, whereas Plasticity generates new ones. Stability allows for a person to remain stable when presented with the unknown, while Plasticity allows a person to engage and explore the unknown and integrate the new information to adapt and/or create new goals, interpretations, and strategies (i.e., characteristic adaptations).

When faced with psychological entropy, the cybernetic system can achieve expected outcomes (match) or fail to achieve the intended outcomes (mismatch). When a mismatch occurs, a person can change their strategy (try a new approach) or interpretation (a shift in thinking) without needing to abandon the goal(s) altogether. Alternatively, one could change their goal(s) to deal with the mismatch. However, if the mismatch is so severe that the old goals, interpretation, and strategies need to be abandoned, then the system has encountered an anomaly great enough to "destabilize the system." DeYoung provides the examples of losing one's job or a divorce – events that fundamentally alter at least one characteristic adaptation (if not more). The resultant increase in psychological entropy causes some degree of emotional, motivational, cognitive, and/or behavioral dysregulation, and the greater the psychological entropy, the worse the dysregulation (DeYoung, 2015, p. 49). As a result, a person's characteristic adaptation(s) no longer serve their purpose and must evolve. In order to evolve, new characteristic adaptations must be generated for a person to make sense of the world. A person generates new characteristic adaptations through exploring and trialing new behaviors and frames of mind (i.e.,

Plasticity). After enough exploration and adoption of new and better-aligned characteristic adaptations, the personality system will stabilize, the emotional dysregulation will dissipate, and the person will present with a "reconfigured personality." These changes generally promote "alignment between traits and characteristic adaptations" (DeYoung, 2015, p. 49).

People high in Stability will require a relatively larger violation of expectations to cause a disruption compared to someone lower in Stability. Similarly, people high in Plasticity will more easily adapt and create new or modify previous characteristic adaptations than someone who is low in Plasticity. These two meta-traits allow people to navigate mismatches when they occur and help stabilize the cybernetic system. These principles have implications for individuals seeking voice therapy, as we will later discuss.

Using the principles of cybernetics, a model of regulation for complex systems, CB5T offers a comprehensive and mechanistic explanation of personality that is consistent with data from neuropsychology. DeYoung acknowledges that there is room for improvement in CB5T but proposes that CB5T is a mechanistic approach to understand the whole person that should be applicable to almost every branch of psychology. As experienced clinicians can attest, even though we may work on a small set of goals with a patient, it would be a disservice to the patient if the clinician did not focus on "the whole person" while addressing the patient's goals.

3.4.4 Pinning Communicative Congruence and Communicative Dysphoria onto the CB5T Framework.

We have detailed several theoretical frameworks that might serve as foundations for our proposed constructs of communicative congruence and communicative dysphoria. We elect to use CB5T as our theoretical foundation as it is rooted in psychological processes, and it is mechanistic, comprehensive, and consistent with modern personality science. We will next discuss how our proposed constructs fit within the CB5T framework.

As we described, a mismatch or an unexpected outcome can lead to psychological entropy. Generally, these mismatches can be trivial and easily resolved with little to no psychological entropy. For instance, Sarah, an avid singer wakes up with a cold and sore throat and is unable to attend their scheduled singing lesson that day. Sarah may be disappointed and annoyed, but they are able to update their interpretation of the situation and change strategies (e.g., physical and vocal rest) to achieve their goal of feeling better so that they can achieve their other goal of singing. Now imagine a different scenario where Sarah experiences a vascular hemorrhage in one vocal fold, and they are unable to attend their scheduled singing lessons indefinitely. This mismatch could result in comparatively massive amounts of psychological entropy, which causes tremendous emotional, motivational, cognitive, and behavioral dysregulation. Will they be able to sing again? What might happen to their career as a minister where they must sing and speak for long periods of time? How will they fully express themself with a vocal instrument that is no longer fully functional? Facing the unknown, they may have to develop new characteristic adaptations to make sense of their life.

The above examples clearly demonstrate a physical mismatch. In contrast, CB5T also states that conscious and unconscious discrepancies and conflicting characteristic adaptations also lead to mismatches and psychological entropy. That is, if one's communication (a strategy) is not consistent with their conscious and/or unconscious interpretations and goals of themselves, this incongruence can be a source of dysfunction that results in psychological entropy. Again, we term this concept—one's communication being consistent with one's characteristic adaptations—communicative congruence. If one's communication is not consistent with their characteristic adaptations, then that person experiences communicative *in*congruence.

We propose that communicative congruence is a spectrum from complete incongruence to complete congruence. Furthermore, consistent with CB5T's assertation that characteristic adaptations are contextualized within situations, we propose that one's communicative congruence can vary as a function

of both time and setting. For instance, maybe a person feels their communication is more congruent when they are with their family than when they are at work. If communicative congruence indeed varies in these ways, then we also expect it to be both malleable and primeable.

If one feels their communication is incongruent either with who they feel they are *or* how they want others to see them, they may shift their interpretations of themselves or their communication, change their strategy (i.e., communicate differently), and/or change their goals to resolve the conflicting characteristic adaptations. However, if someone is unable to update their characteristic adaptations (e.g., if someone is low in the metatraits of Stability and Plasticity, or if they do not recognize that their voice and speech are malleable behaviors) they may regularly experience communicative incongruence.

We expect that experiencing communicative incongruence can lead to psychological entropy proportional to the magnitude of their experienced incongruence. That is, the more central, visceral, and inescapable one's identity is to a person — gender, for instance — the more a mismatch between that identity and their communication will be burdensome and even deeply harmful. If this psychological entropy is severe because of extreme communicative incongruence, CB5T asserts that person will experience emotional, motivational, cognitive, and behavioral dysregulation. We term this experience communicative dysphoria. To resolve this communicative dysphoria, one would have to change or develop new characteristic adaptations that reduce the incongruence, thus reducing the psychological entropy. As the psychological entropy abates, so too do the feelings of dysphoria.

The term vocal euphoria was used in the introduction, and it is tempting to place it at the opposite end of the spectrum from vocal dysphoria. This term, along with a related term, gender euphoria, seem largely used by individuals within the trans and nonbinary communities. *Gender euphoria* is used to describe the joy or euphoria experienced when one's gender identity is affirmed by their social presentation (e.g., clothing), physical appearance (e.g., hair), and/or treatment from others (e.g., being gendered correctly at the store) (*Gender Euphoria*, n.d.). *Vocal euphoria* is a specific type of gender euphoria relating

to the experience of one's voice (and, implicitly, speech and communication behaviors) feeling well-aligned with, representative of, or even a hyper-flattering version of their sense of self.

Although euphoria is the semantic opposite of dysphoria, one should not assume that communicative euphoria is an automatic byproduct of communicative congruence. In the present CB5T-based framework, we assert that a spectrum exists from complete communicative congruence to complete communicative incongruence, and that when a person's cybernetic system (i.e., personality) is unable to overcome or adjust to an experience of incongruence, psychological entropy results that might manifest as communicative dysphoria. However, the structure of the CB5T, in our interpretation, does not accommodate the idea that the opposite of dysphoria is euphoria, or that a lack of incongruence (i.e., the experience of congruence) necessarily produces feelings of euphoria. In other words, the opposite of the presence of psychological entropy in CB5T is the absence of psychological entropy. It seems the CB5T would view an experience of communicative congruence as a healthy norm or an in-balance baseline of sorts. We suspect that many people experience a fairly reliable sense of congruence and are not euphoric as a result; they are just "them" in a healthy, balanced sense. Stated differently, CB5T does not allow "bonus points" for being more congruent; solid congruence is the healthy state. So, when contemplating the technical approach to measuring communicative dysphoria along a spectrum, it seems that the opposite end should simply be anchored with a more neutral "no dysphoria" rather than "euphoria." Or, perhaps communicative dysphoria should stand alone and be measured in terms of its perceived magnitude (e.g., from "none" to "maximal," or 0 to 100).

Nevertheless, evidence exists to support a lived experience of vocal euphoria and presumably also communicative euphoria (though the latter term is not widely used by lay people of any group, to our knowledge). Through the lens of the CB5T, a sense of communicative or vocal euphoria only seems possible *if* or *when* communicative congruence is an explicit goal or desired future state. As a reminder, goals can be conscious or subconscious. If communicative congruence is a person's goal, and that goal is achieved

(e.g., being gendered correctly on the phone), then we expect the same cortical and subcortical structures relating to goal achievement and reward (e.g., the mesolimbic pathway, the amygdala) to activate (Baxter & Murray, 2002; Berkman, 2018; Joseph et al., 2016; Wasserman & Wasserman, 2020). This activation would result in the positive emotions (e.g., joy and euphoria) people associate with vocal or communicative euphoria. To summarize the foregoing discussion of the relationship between communicative dysphoria versus euphoria, communicative dysphoria seems to be indexing some magnitude of "psychological entropy," whereas communicative euphoria is linked to "goal attainment" in CB5T. In short, by virtue of each construct representing different mechanisms within CB5T, we feel they should probably not be conceptualized as two points along *one spectrum.*

4. Relevance of Communicative Congruence and Communicative Dysphoria to Voice and Speech Therapy

Personality science seeks to understand human behavior. Voice, speech, and communication are core human behaviors. Logically, we cannot remove personality out of the equation when discussing communication behaviors. As CB5T proposes, people who experience a "mismatch" in their expectations or who have conflicting characteristic adaptations will experience psychological entropy commiserate with the magnitude of the experienced incongruence. We propose that this experienced discrepancy is communicative incongruence; when no discrepancy exists, the person experiences communicative congruence. When the incongruence is severe, the resulting psychological entropy—emotional, motivational, cognitive, and behavioral dysregulation—is what we refer to as communicative dysphoria.

Clinicians are likely already familiar with these concepts. When working with a patient with a voice disorder, clinicians may hear a patient say, "this voice isn't *me*," when using a therapeutic target voice. Similarly, some transgender and non-binary individuals successfully work with a voice therapist or vocal coach to help them find their "true voice" that is aligned with their personal and gender identities. We believe these to be examples of communicative incongruence and congruence, respectively.

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Likewise, some people experience such high levels of communicative incongruence, that it leads to communicative dysphoria. As anecdotal evidence of communicative dysphoria, both authors have worked with voice clients who have had emotional breakdowns when hearing their voice played back on a recording, or strong aversion to even recording their voice at all. We also have worked with voice clients who have not participated in the basic training gestures of voice therapy and/or disengaged from voice therapy completely due to reported incongruence and associated dysphoria with their voice and speech. We suspect that the concepts of communicative congruence and communicative dysphoria have broader applications to the field of speech-language pathology.

4.1 Previous Literature on Identity and Communication

The assertion that one's voice, speech, and communication behaviors relate to one's identity is not a novel concept. Previously, writings on meta-therapy have highlighted the importance of "crafting the dialogue" of voice therapy in which the clinician explicitly builds a conceptual framework to facilitate a patient's success in voice therapy (Helou, 2017; Helou et al., 2021). Often, these discussions involve the patient's goals, expectations, strategies, understanding of themselves and the process, as well as their personal identities. By incorporating the patient's identities into voice therapy, the clinician helps the patient cultivate a communication style that is consistent with who they are, rather than arbitrarily prescribing a set of behaviors that might not be well-aligned with that person's personality.

Additionally, previous work from colleagues has begun to examine the importance of "vocal congruence" to voice by way of the Vocal Congruence Scale (VCS) (Crow et al., 2019). Although the VCS and our proposed concepts of communicative congruence and communicative dysphoria are related, key distinctions exist between the VCS and communicative congruence. First, communicative congruence and communicative dysphoria focus on communication more broadly and not only on acoustic products or interoceptive experiences of vocalization. Second, the construct of VCS differs in its theoretical approach

493 from communicative congruence and communicative dysphoria. The VCS is premised on embodiment
494 theory and focuses largely on the psychophysiological process of interoception, or bodily awareness. The
495 VCS proposes that people who feel a stronger sense of their identity will perform better on an interoceptive
496 awareness task. While it may be true that people with a stronger "sense of self" perform better on
497 interoceptive tasks, we propose that communicative congruence itself is a process that relates to
498 psychological processes affiliated with personality.

499 While these two theories differ in their theoretical nature, they are not fundamentally at odds with
500 one another – the concept of congruence may be detectable in different ways. Although the notion that
501 one's identity relates to their communication is not new, to our knowledge, we are the first to conceptualize
502 this relationship within a mechanistic and comprehensive theory of personality. By using this
503 comprehensive and mechanistic theory of personality, we have identified a psychological process that is
504 compatible with the existence of communicative congruence, and proposed a mechanistic
505 conceptualization of the motivational, cognitive, and/or emotional dysregulation that results from
506 communicative incongruence, i.e., communicative dysphoria.

507 We now shift to examining how communicative congruence may relate to previously proposed
508 concepts that facilitate success in voice therapy, namely, self-efficacy and the transtheoretical model of
509 health behavior change. We assert that communicative congruence is highly relevant to these previously
510 published concepts and voice and speech therapy more broadly. As DeYoung states, new characteristic
511 adaptations are generated "through trial and error, imitation, seeking (or at least heeding) advice from
512 others, mental stimulation of possible future states, logical analysis, divergent thinking, or some
513 combination of these and other exploratory processes" (2015, p. 49). In other words, if done correctly, the
514 voice or speech therapy room provides a rich opportunity to support one's exploration and development
515 or alteration of their characteristic adaptations. Using voice and speech therapy to directly facilitate one's

sense of communicative congruence may alleviate communicative dysphoria and facilitate better psychosocial outcomes for our patients.

4.2 Transtheoretical Model of Health Behavior Change

The transtheoretical model of health behavior change (TTM) is a theory initially designed to understand individuals who quit smoking tobacco (Prochaska & di Clemente, 1982). The TTM has since been applied to many other health behaviors including diet and exercise, HIV prevention, and voice therapy adherence (Bogg, 2008; Marcus & Simkin, 1994; Prochaska et al., 2008; Prochaska et al., 1994; van Leer et al., 2008; Wright et al., 2009). While van Leer et al. (2008) acknowledge the TTM's criticisms, overall, they conclude that the TTM is a practical model to facilitate behavior change for patients with voice disorders.

Our proposed constructs, communicative congruence and communicative dysphoria, have relevance to the TTM and voice therapy adherence. Self-efficacy is central to the TTM that helps people progress through the "stages" of behavioral change (we acknowledge that these "stages" of behavioral change are neither discrete nor linear). One source of self-efficacy is a person's psychological and emotional state. van Leer et al. (2008) state that the discomfort experienced when habituating a different vocal quality can decrease self-efficacy. Said differently, prompting patients to use a different voice quality may decrease that patient's sense of communicative congruence, resulting in a lower sense of self-efficacy. Ultimately, this lowered self-efficacy may cause a patient to disengage from voice therapy entirely.

van Leer et al. (2008) acknowledge that if a patient's low self-efficacy is the reason for poor compliance, then focusing on increasing the patient's self-efficacy is a warranted treatment strategy. We suspect that one way of increasing a patient's self-efficacy is through facilitating their sense of communicative congruence. A skillful clinician may help the patient update or shift their goals, interpretations, and strategies (i.e., characteristic adaptations) to increase the patient's sense of communicative congruence. This increased sense of communicative congruence should co-occur with an

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increase in the patient's self-efficacy, and thus lead to better compliance. Conversely, if a clinician does not focus on the patient's communicative congruence, and instead cajoles the patient into using a "healthier," but less personally congruent voice, then the patient may not generalize the different vocal quality, or they might stop engaging altogether. Similarly, if the target voice is extremely incongruent with the patient's personality, they might experience communicative dysphoria. An episode of communicative dysphoria may decrease the likelihood that the patient will generalize the target voice.

5.0 Testable Hypotheses

The present paper proposes a theoretical framework onto which we can pin the conceptual spectra of communicative congruence, communicative incongruence, and communicative dysphoria. Based on the proposed theoretical framework, we have generated several testable hypotheses that will inform future scientific inquiry. These hypotheses are listed and justified cursorily as follows.

First and foremost, we hypothesize that these constructs exist and that communicative congruence is normally distributed in the general population. While vocal dysphoria seems mostly commonly applied to the lived experience of transgender community members, we are also aware of the countless claims that members of society at large generally "hate" the sound of their own voice (Dodgson, 2018; Jaekl, 2018; Parikh, 2020; Stillman, 2016; White, 2018). Moreover, most lay individuals are incapable of making fine and accurate distinctions between features of voice, speech, language, and supralinguistic communication, and it seems reasonable to expect that for some individuals, such features are sources of psychological discord. Our second hypothesis is that communicative congruence and communicative dysphoria vary over time and situation but generally stay within an "attractor state" of sorts for most people. Individuals can experience a highly stable sense of self even as specific details about their self/identity shift (Oyserman et al., 2012), yet at the same time, the self maintains protective mechanisms that defend against change (Gecas, 1982; Greenwald, 1980; Kihlstrom & Cantor, 1984; Hazel Markus & Kunda, 1986; Swann, 1983;

Swann & Buhrmester, 2012). Third, we hypothesize that because both constructs are highly related and might be considered "adjacent," self-report of communicative dysphoria will negatively correlate to self-report of communicative congruence. Fourth, we predict that reported levels of communicative congruence will negatively correlate to measures of depression and anxiety, which would be in line with findings that these states and general self-concept are distinctly related (Gohar et al., 2016; Higgins et al., 1985; Mikulincer & Peer-Goldin, 1991; Sheldon & Kasser, 1995; van Tuijl et al., 2014). Fifth, we expect both constructs to be both malleable and primeable, which would be consistent with other experiences of self-concept (Markus & Oyserman, 1989; Trafimow et al., 1991; Triandis, 1989). Sixth, as previously argued by Helou and colleagues in the context of meta-therapy (Helou, 2017; Helou, 2019; Helou et al., 2021), we hypothesize that an individual's sense of communicative congruence and communicative dysphoria will influence voice therapy behaviors and outcomes. This hypothesis is supported by literature related to how self-concept functions as a force for action (e.g., Oyserman et al., 2012), the impact of self-efficacy on compliance (Bandura, 1977; Kaplan et al., 1984; van Leer et al., 2008), and the effectiveness of promoting identity-based motivation in intervention models (Oyserman & Destin, 2010).

Often, voice therapists center their efforts on shifting phonatory production and modifying the feel and sound of voice during speech. We propose that our field would benefit from being more thoughtful, programmatic, and evidence-based in how we prime and shift any given patient's perspectives about their voice, speech, and communication behaviors. These changes likely have the power to promote or hinder one's ability to achieve certain social goals and might come to bear on their psychological wellbeing. The proposed theoretical framework of communicative congruence and communicative dysphoria is intended to prompt deeper exploration into how a patient's therapeutic targets and goals are related to them at the level of self and identity.

6.0 Conclusions

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588 Many skilled clinicians may already focus on promoting a person's sense of communicative
589 congruence and minimizing their communicative dysphoria, either implicitly or explicitly. We propose that
590 these concepts are relevant to the science and clinical practice of speech-language pathology. In the
591 present paper we have formalized the terms communicative congruence and communicative dysphoria,
592 and mapped these concepts onto a mechanistic and comprehensive theory of personality. We hope that
593 this theoretical framework will eventually serve to inform clinical practice and scientific investigations by
594 offering testable hypotheses about these constructs.
595

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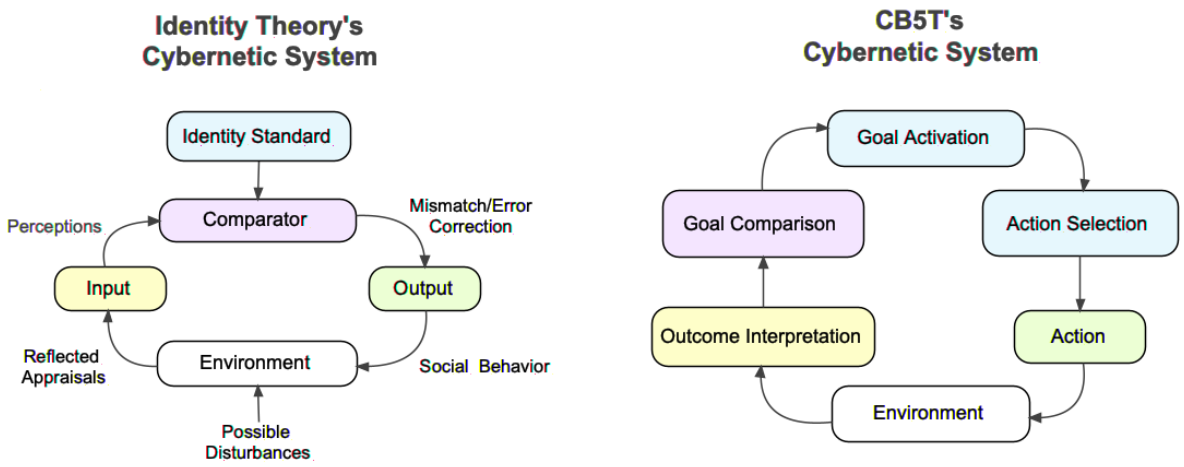
768 **Figure 1 –** A side by side comparison of the cybernetic loops of Identity Theory (Burke & Stets, 2009 – left)
769 and Cybernetic Big 5 Theory (CB5T; DeYoung, 2015 – right). Although they differ slightly, both systems
770 follow a remarkably similar structure.



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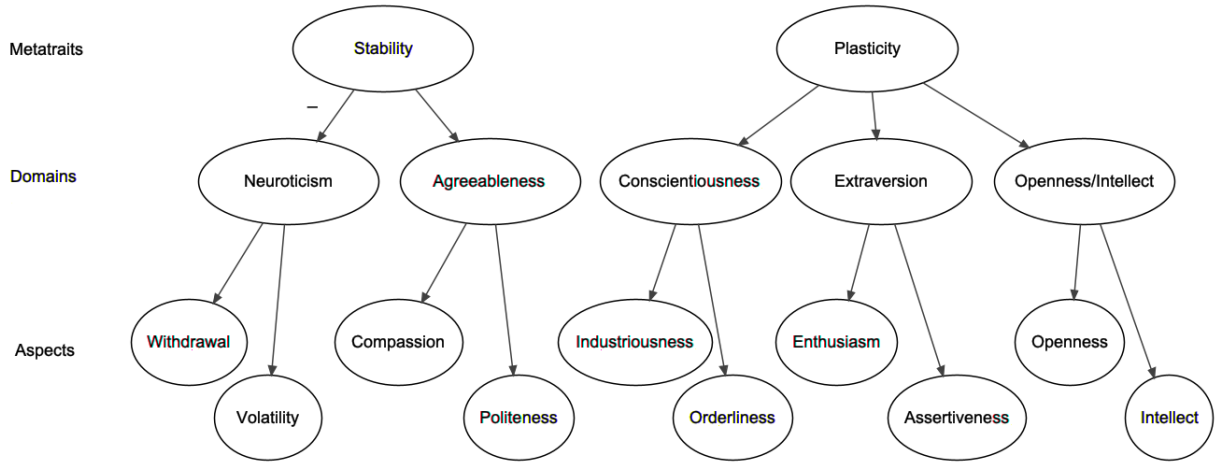
773 **Figure 2 –** The personality trait hierarchy described in DeYoung's Cybernetic Big 5 Theory of Personality
774 (2015). Neuroticism is inversely related to Stability. The "Big Five" domains together form two metatraits –
775 Stability and Plasticity. Each of the domain traits can further be separated into two respective aspects. The
776 spacing of the aspects is not meaningful



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