

THE RELATIONSHIP BETWEEN INTERDISCIPLINARY TEAM COHESION AND
BURNOUT IN COGNITIVE REHABILITATION

APPROVED BY SUPERVISORY COMMITTEE

Mary Anise, PsyD

Mona Robbins, PhD

Carlos Marquez de la Plata, PhD

Robert Kinney, PhD

Caitlin Reese, PhD

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By

CAROLYN KUNIKO CASSILL

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THE RELATIONSHIP BETWEEN INTERDISCIPLINARY TEAM COHESION AND
BURNOUT IN COGNITIVE REHABILITATION PROFESSIONALS

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Carolyn Kuniko Cassill B.S.

The University of Texas Southwestern Medical Center at Dallas, 2021

Supervising Professor: Mary Anise, PsyD

BACKGROUND: The healthcare system at large is currently experiencing unprecedented amounts of burnout (Jalili et al., 2021; Reith, 2018). Researchers are working to identify risk and protective factors (Cañadas-De la Fuente et al., 2015; Seidler et al., 2014) of burnout that might be used as points of intervention (Awa et al., 2010; Demerouti, 2015). One potential protective factor of burnout that has not been explored is interpersonal team cohesion of the interdisciplinary team. (Hellyar et al., 2019). The purpose of this study was to determine if interpersonal team cohesion was inversely related to burnout in healthcare providers.

METHODS: Emails and flyers with links to an online survey were sent to direct care staff in

a cognitive rehabilitation setting. The convenience sample included 53 participants who completed the survey. Participants answered questions regarding burnout, interpersonal team functioning, depression, anxiety, and stress. Demographic variables associated with burnout were also included (Cañadas-De la Fuente et al., 2015; Shanafelt et al., 2015). RESULTS: Twenty-six participants reported symptoms consistent with burnout. All of these participants endorsed experiencing emotional exhaustion, but no one endorsed experiencing depersonalization or diminished professional accomplishment. As such, all analyses used emotional exhaustion to examine burnout. Multiple regression was used to determine if interpersonal team cohesion predicted emotional exhaustion. While the overall model was significant ($F(6,42) = 12.55, p < .001, R^2 = .64$), only stress ($\beta = 0.68, p < .001$) and depression ($\beta = 0.34, p = .047$) were significant predictors of emotional exhaustion. Further analysis revealed that interpersonal team cohesion did significantly predict emotional exhaustion, but only with stress included as a partial mediator. CONCLUSIONS: The hypothesis that interpersonal team cohesion and burnout were inversely related to each other proved to be an oversimplification. Results of this study show that stress serves as a partial mediator between interpersonal functioning of interpersonal team cohesion and burnout, with lower team cohesion resulting in higher stress, which in turn results in higher levels of burnout. This implies that both interpersonal functioning of the interdisciplinary team and stress can be used as points of intervention for reducing or preventing burnout.

Keywords: burnout, interdisciplinary team, team functioning, cognitive rehabilitation

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LIST OF ABBREVIATIONS

CAS – Coronavirus Anxiety Scale

CRT – Cognitive Rehabilitation Therapy

DASS 21 – Depression, Anxiety, Stress Scale 21 items

MBI – Maslach Burnout Inventory

TFS – Team Functioning Survey

CHAPTER ONE

Introduction

Research has identified a “Burnout Epidemic” in the healthcare system (Reith, 2018) in which approximately 37% of physicians (Shanafelt et al., 2012), 43% of nurses (McHugh et al., 2011), and 40% of mental health professionals (K. O’Connor et al., 2018) experience burnout. Unfortunately, levels of burnout across healthcare professions continues to rise (Reith, 2018), especially with the ongoing COVID-19 pandemic (Jalili et al., 2021). Within healthcare, burnout is associated with depression, anxiety (Kumar, 2016), decreased empathy, poor relationships with patients (Garman et al., 2002; Rani Thanacoody et al., 2009), and poor physical health (Kitaoka-Higashiguchi et al., 2009; Melamed et al., 2006; Salvagioni et al., 2017). Research has increasingly turned towards identifying modifiable risk and protective factors in order to identify points of intervention to reduce or prevent burnout (Cañadas-De la Fuente et al., 2015; García-Arroyo & Amparo, 2017; Seidler et al., 2014).

Strategies for resolving burnout have been developed to address these risk and protective factors (Awa et al., 2010; Demerouti, 2015; Korczak et al., 2010), but they primarily focus on the individual (Awa et al., 2010; Moss, 2020). Since burnout is caused by poor fit between the individual and the job (Brandstätter et al., 2016), interventions have also started to include organizational changes (Cañadas-De la Fuente et al., 2015; Seidler et al., 2014). Changing the workload, workflow, and expectations for employees certainly helps (Gregory et al., 2018) as does promoting a culture of work-life balance (Rabatin et al., 2016), but these interventions largely fail to account for the interpersonal aspect of burnout (Fernet et al., 2010; Leiter & Maslach, 1988; Maslach, 1993; Maslach & Leiter, 2016a). Research

that has examined the role of interpersonal relationships in the workplace on burnout have primarily focused on supervisor-supervisee relationships (Fernet et al., 2010; Leiter & Maslach, 1988). One area of interpersonal functioning that has yet to be explored is the role of the interdisciplinary team (Hellyar et al., 2019). Interdisciplinary teams are becoming the standard of care (Kash et al., 2018; Newhouse & Spring, 2010; Petri, 2010), and significant research has been conducted showing that interdisciplinary team functioning significantly correlates with patient outcomes (Kash et al., 2018; Strasser et al., 2010, 2014). However, the relationship between interdisciplinary team functioning and provider burnout has yet to be explored (Hellyar et al., 2019). While this could serve as another point of intervention, it is important to first establish the interpersonal functioning of the interdisciplinary team, or team cohesion, as a predictive factor of burnout in healthcare providers.

One setting where interdisciplinary functioning is especially important is Cognitive Rehabilitation (Cicerone et al., 2011a; Conder et al., 1988). Since its inception, cognitive rehabilitation has involved interdisciplinary care (Cicerone et al., 2011a; Conder et al., 1988). The goal of Cognitive Rehabilitation Therapy (CRT) is to improve patient functioning across all cognitive, adaptive, and social domains following an acquired brain injury (*About Physical Medicine & Rehabilitation*, n.d.) In order to achieve this goal, providers from across disciplines must come together to provide coordinated care through the interdisciplinary team (World Health Organization, n.d.) Research on the prevalence of burnout in physical, occupational, and speech therapists is limited (Adriaenssens et al., 2015; Donohoe et al., 1993; Gupta et al., 2012; Shanafelt et al., 2015), however research has clearly demonstrated that psychiatrists (Linzer et al., 2014; Shanafelt et al., 2015; Silver & Bhatnagar, 2017),

psychologists (Dorociak et al., 2017; Simionato & Simpson, 2018), nurses (Bakker et al., 2005; İlhan et al., 2008), and case managers (Kraus & Stein, 2013) all experience significant levels of burnout. Given the intersection between the centrality of interdisciplinary teams (Cicerone et al., 2011a) and the risk for providers in this setting experiencing burnout (Adler-Milstein et al., 2020; Ashley et al., 2018; McNally et al., 2017; United Health care, 2020), cognitive rehabilitation is an ideal place to observe the interaction between interpersonal functioning of the interdisciplinary team and burnout.

CHAPTER TWO

Review of the Literature

Burnout

The History of Burnout

Burnout was first identified in the 1970's by several staff members of a community mental health clinic (Freudenberger, 1974). Freudenberger (1974) and his colleagues observed that several of the providers in the clinic were experiencing a similar constellation of physical and emotional symptoms, including exhaustion, gastrointestinal distress, shortness of breath, anger, irritability, rigidity, and depression. These symptoms typically surfaced after one year of employment and seemed to have a negative impact on their motivation and ability to remain effective in their work (Freudenberger, 1974). The clinicians later realized that these symptoms not only impacted their work, but were caused by their work (Freudenberger, 1974). Based on these observations, Freudenberger (1974) and his colleagues started to develop a theory to explain these symptoms and the effect these symptoms had on them. The clinicians theorized that most people started working at a community mental health clinic because they expected to find more reward in helping people in need than through other means, such as prestigious titles or higher incomes (Freudenberger, 1974). New clinicians started this work with idealized expectations for how much they'd be able to accomplish, such as significantly improving the lives of all their patients and always feeling positive regard for their work (Freudenberger, 1974). Unfortunately, these expectations of what their work would be like did not account for other limitations in their jobs, such as working too many hours, feeling let down by the person in

charge, feeling guilty based on the perception of not giving enough, and needing to achieve acceptance through giving (Freudenberger, 1974). The clinicians believed that burnout was precipitated by the new clinician realizing the discrepancy between their idealized expectations and the reality of the several challenges of working in a community mental health clinic (Freudenberger, 1974).

For much of the 1970's, research into burnout remained focused on the health care professions and was generally studied by observation or interview (Heinemann & Heinemann, 2017). There was a dramatic shift in the 1980's when burnout was expanded to human service jobs outside of the healthcare sector, such as customer service or office workers (Heinemann & Heinemann, 2017). With this came the development of several standardized assessments of burnout, most notably the *Maslach Burnout Inventory* (MBI) (Maslach et al., 1986) and the *Professional Quality of Life Measure* (ProQOL) (Figley, 2002; Stamm & Figley, 2009). Since the development and implementation of these tools to measure burnout, researchers have continued to refine the conceptualization of burnout.

Current Conceptualization of Burnout

Burnout continues to be defined as a reaction to work related stress (Koutsimani et al., 2019). While many researchers and clinicians agree that burnout exists as an independent construct, the nature and organization of this construct continues to be debated (Korczak et al., 2010). Several models have been proposed to explain the etiology and symptomatology of burnout. For example, the Compassion Fatigue Model (Figley, 2002) describes burnout as part of the compassion satisfaction-compassion fatigue continuum. The model proposes that providers experience one of two affective states. Those experiencing compassion satisfaction derive

pleasure from their work, while those experiencing compassion fatigue are stressed by providing care to patients. Compassion fatigue is further divided into two categories, burnout and secondary traumatic stress. Burnout is characterized by exhaustion, anger, frustration, and depression. Secondary trauma occurs when providers are exposed to vicarious trauma, such as repeatedly hearing about traumatic events from patients. The ProQOL measure was developed to assess the levels of compassion satisfaction, burnout, and secondary trauma that providers were experiencing (Stamm & Figley, 2009). Although the ProQOL has been widely used (Hundall Stamm, 2009), several studies have demonstrated poor psychometric and construct validity for the compassion fatigue, burnout, and secondary traumatic stress scales (Hemsworth et al., 2018; Heritage et al., 2018). One study proposed removing burnout from the conceptualization of compassion fatigue and making it an independent construct (Heritage et al., 2018). There are also several conceptual differences in the definitions and etiologies of burnout and compassion fatigue (Figley, 2002; Maslach et al., 1986). Compassion fatigue is the emotional reaction providers experience when they extend empathy to traumatized individuals and absorb the trauma or bear the burden of suffering for them (Figley, 2002; Sabo, 2011). Those with compassion fatigue often experience sadness, grief, depression, and symptoms of trauma such as detachment, nightmares, or hypervigilance (Showalter, 2010). On the other hand, burnout is conceptualized as a problem with individual fit with the workplace and job demands (Maslach & Leiter, 2016b; Sabo, 2011). Anyone can experience burnout, but compassion fatigue specifically occurs in the context of exposure to the trauma of others (Sabo, 2011).

The most widely used conceptualization of burnout (Korczak et al., 2010) was originally proposed by Maslach and colleagues in the 1980's (Koutsimani et al., 2019; Maslach et al.,

1986). In fact, this conceptualization is the basis for the classification of burnout as a work-related disorder in the *International Statistical Classification of Diseases and Related Health Problems, 11th Edition* (ICD-11) (World Health Organization, 2019). Maslach and colleagues defined burnout as “a prolonged response to chronic emotional and interpersonal stressors on the job” (C. Maslach & Leiter, 2016, p.315) They further defined burnout as a syndrome consisting of three components. The first component, emotional exhaustion, is defined as feeling drained, worn out, or overextended because of depleted emotional and physical resources. This factor primarily encompasses the individual stress that people experience with burnout (Maslach & Leiter, 2016b), which is strongly related to perceptions about distribution of resources within the organization (Janssen et al., 2010; López-Cabarcos et al., 2019). Higher rates of emotional exhaustion are related to perceptions that resources are not distributed in a way that meets job-related demands (López-Cabarcos et al., 2019). Higher rates of emotional exhaustion have also been associated with physiological strain, psychological strain, and feelings of helplessness (R. Lee & Ashforth, 1991). Emotional exhaustion has also been correlated with poor sleep, difficulty concentrating (Ekstedt et al., 2006), more frequent breaks at work, more complaints about work to family members, increased avoidance of interactions with people, increased engagement in solitary activities, and negative attitudes towards patients (Kahill, 1988).

The second component of burnout, depersonalization, typically develops as a response to increased emotional exhaustion (Taris et al., 2005). It involves feeling cynical or detached from one’s job which results in a negative or excessively detached response to work responsibilities (Maslach & Leiter, 2016b). In nurses, depersonalization is especially prevalent in unsafe or unhealthy working environments with poor social networks (Permarupan et al., 2020).

Depersonalization encompasses the interpersonal stress people experience with burnout, and often involves relationship problems with coworkers (Maslach & Leiter, 2016b). Because depersonalization is a response to emotional exhaustion, many of the symptoms overlap (R. T. Lee & Ashforth, 1990; Maslach et al., 1986; Taris et al., 2005). People experiencing depersonalization also experience higher physiological strain, psychological strain, and feelings of helplessness (R. T. Lee & Ashforth, 1990). Depersonalization has been correlated with emotional depletion, increased absenteeism from work, more complaints about work to coworkers, increased avoidance of people, increased engagement in more solitary activities, decreased marital satisfaction (Kahill, 1988), poorer job performance (Bakker et al., 2000), and higher rates of job turnover (Lingard, 2003).

As depersonalization increases individuals begin to experience the third component of burnout, diminished professional accomplishment (Taris et al., 2005). Diminished professional accomplishment occurs when one feels ineffective in their ability to do their job or lacks a sense of accomplishment in their work. This component encompasses the self-evaluation dimension of burnout (Maslach & Leiter, 2016b), leading to a distorted and negative self-evaluation of job fit (Nuallaong, 2013). Early career professionals (Volpe et al., 2014), Individuals experiencing diminished professional accomplishment exhibit decreased engagement in values-based behavior (e.g. spending less time with family or producing poor-quality work) (R. T. Lee & Ashforth, 1990), decreased marital satisfaction, decreased feelings of success with patients (Kahill, 1988), and increased negative affect (Thompson et al., 1993).

Burnout occurs when an individual experiences high levels of emotional exhaustion, high levels of depersonalization, or low levels of professional accomplishment (Maslach & Leiter,

2016b). Most individuals with burnout experience emotional exhaustion first, depersonalization second, and diminished professional accomplishment last (Maslach & Leiter, 2016b; Nuallaong, 2013), but some individuals may only experience one or two components of burnout at a time (Nuallaong, 2013). The levels of emotional exhaustion, depersonalization, and professional accomplishment experienced by an individual can also shift over time (Maslach & Leiter, 2016a; Nuallaong, 2013). This variability in the degree and type of components experienced contributes to the complex presentation of burnout.

Differentiating Burnout

Despite the significant amount of research demonstrating that burnout is an independent construct (Korczak et al., 2010; Koutsimani et al., 2019; Maslach & Leiter, 2016b), no consistent definition or diagnostic criteria for burnout as a mental health or medical diagnosis has been developed (Korczak et al., 2010). In the *International Classification of Diseases, 11th Edition* (ICD-11), burnout is included in the "Factors influencing the health status or contact with health services" section (World Health Organization, 2019). This means that burnout is recognized as something that can influence health, but it is not recognized as a specific disease or illness (Tavella & Parker, 2020). There is also no diagnosis for burnout in the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (American Psychiatric Association, 2013). This lack of diagnostic specificity has made it difficult for researchers and clinicians to differentiate burnout from other mental health disorders (Doulougeri et al., 2016; Kaschka et al., 2011). This lack of standardization has limited the power and generalizability of research examining burnout, which in turn has made it difficult to develop and assess evidence based therapies to treat those experiencing burnout (Tavella & Parker, 2020).

To further complicate matters, many of the symptoms people experience with burnout overlap with other mental health disorders (Bianchi et al., 2015; Koutsimani et al., 2019; Kristensen et al., 2005). One of the most cited diagnoses that overlaps with burnout is major depressive disorder (Bianchi et al., 2015; Koutsimani et al., 2019). Some of the overlapping symptoms include anhedonia, loss of energy, impaired concentration, sleep problems, fatigue, and feelings of sadness (American Psychiatric Association, 2013; Freudenberger, 1974; Kaschka et al., 2011; Koutsimani et al., 2019; Kumar, 2016; Schaufeli & Buunk, 2002). Higher rates of emotional exhaustion have also been positively correlated with depressive symptoms (Bianchi et al., 2015; Takai et al., 2009). Despite these similarities, there is a key difference between burnout and depression. Burnout is work related and situation specific, whereas depression is context free and pervades all areas of life (Iacovides et al., 2003; Maslach et al., 2001). A meta-analysis conducted by Koutsimani et al. (2019) found an association between depression and burnout, but based on the small effect size it was determined that burnout and depression were separate constructs.

Another group of diagnoses that burnout overlaps with are anxiety disorders (Koutsimani et al., 2019; W. Sun et al., 2012). Research has demonstrated that some risk factors for anxiety and burnout overlap, specifically job demands and over-commitment (Ashley et al., 2018; Seidler et al., 2014). Emotional exhaustion and cynicism have both been positively correlated with anxiety (Ding et al., 2014). Burnout and anxiety may even share underlying physiological processes. For example, research has shown that both burnout and anxiety are associated with dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis which could explain the overlapping somatic symptoms such as shortness of breath or gastrointestinal distress (Faravelli

et al., 2012; Kakiashvili et al., 2013). Even though the symptoms of burnout and anxiety overlap, the primary difference between them is the triggering factor. Burnout occurs as a reaction to workplace stressors that have already occurred, whereas anxiety is a reaction to future or predicted stress (Koutsimani et al., 2019; MacLeod & Byrne, 1996; Maslach & Leiter, 2016b). Additionally, the meta-analysis conducted by Koutsimani et al. (2019) found that the association between burnout and anxiety was present, but not significant enough to indicate that they were part of the same construct.

Because burnout is a reaction to work-related stressors, some have argued that burnout is actually a trauma or adjustment related disorder (Restauri & Sheridan, 2020). There is also an overlap in symptoms, as individuals experiencing burnout and posttraumatic stress disorder (PTSD) can experience depersonalization, fatigue, difficulties with sleep, and irritability (American Psychiatric Association, 2013; Katsavouni et al., 2016, 2016; Maslach et al., 2001; Nuallaong, 2013; Restauri & Sheridan, 2020). Higher rates of emotional exhaustion have been positively correlated with PTSD (Katsavouni et al., 2016). Despite these overlaps, there are two significant differences between burnout and PTSD. The first difference is the magnitude of the triggering stressor. PTSD occurs when a person is exposed to threatened death or serious injury (American Psychiatric Association, 2013), whereas burnout is a reaction to non-lethal stressors in the workplace (Maslach & Leiter, 2016b). The second difference is that those with PTSD often experience intrusive symptoms such as nightmares or flashbacks (American Psychiatric Association, 2013) which are not present in burnout (Maslach & Leiter, 2016b; Restauri & Sheridan, 2020). While adjustment disorder and burnout are both reactions to the environment exceeding the individual's ability to cope, some argue that adjustment disorder is too broad of a

term and that a more narrow focus on work-related stressors is necessary in order to accurately assess and intervene (Chirico, 2015).

Although not a specific medical or mental health disorder, many researchers and clinicians have compared burnout to stress (Nuallaong, 2013; Pines & Keinan, 2005). Both stress and burnout can occur when people feel emotionally and physically depleted due to an overwhelming amount of work (Leone et al., 2011). However, there is one key difference between the experience of stress and burnout. Those who are stressed typically over-engage with work, while those with burnout disengage from their work (Nuallaong, 2013).

The lack of specificity in the definition and diagnostic criteria for burnout poses many challenges and serves to highlight the complex etiological and experiential aspects of burnout (Lastovkova et al., 2018). The overlaps between burnout and other mental health disorders are noteworthy, as this seems to be indicative of a high rate of comorbidity rather than overlapping constructs (Ahola et al., 2014; Ding et al., 2014; Kakiashvili et al., 2013; Kaschka et al., 2011; Nuallaong, 2013; Restauri & Sheridan, 2020; W. Sun et al., 2012).

Burnout in the COVID-19 Pandemic

Because of the strain of the global COVID-19 pandemic on the health system, more attention than ever before has been turned to health care providers experiencing burnout (Queen & Harding, 2020; Rokach, 2020; Shah et al., 2020). Medical professionals who were already facing high workloads have been faced with an overwhelming amount of work, increasing their risk for developing burnout (Launer, 2020). Preliminary research has shown increased rates of burnout in medical professions compared to before the pandemic (E. Azoulay et al., 2020; Barello et al., 2020; Boudreau et al., 2007), as well as increased rates of comorbid anxiety,

depression, and PTSD (Carmassi et al., 2020; Sung et al., 2020). Increased isolation, prolonged wearing of personal protective equipment, sleep deprivation, longer shifts (Dimitriu et al., 2020), ethical climate of the workplace (E. Azoulay et al., 2020), workflow inefficiencies, and fear (Sasangohar et al., 2020) are all thought to be contributing to the increased prevalence of burnout.

Several researchers are attempting to quantify the impact of COVID-19 on mental health. One such measure is the *Coronavirus Anxiety Scale* (CAS) (S. Lee, 2020) which screens for dysfunctional levels of anxiety specific to the COVID-19 pandemic. These early studies are laying the groundwork for understanding how the pandemic has impacted mental health, but more time and research are necessary in order to determine the full impact (S. Lee, 2020; Yildirim & Solmaz, 2020).

Effects of Burnout

The effects of burnout are widespread and can influence several facets of health and well-being (Maslach & Leiter, 2016b). Higher rates of burnout have been associated with depression, anxiety, and in some cases suicide (Kumar, 2016). People experiencing burnout also report aggression, irritability, depressed mood, anxiety, decreased emotional control, increased tension, job dissatisfaction (Kahill, 1988), and feelings of helplessness (Ohue et al., 2011). Individuals experiencing burnout are also more likely to be avoidant, hyperactive, and impulsive (Nuallaong, 2013). Because of the depersonalization that occurs in burnout, people become less sympathetic and more callous towards others (Maslach & Leiter, 2016b). This negatively affects their interpersonal relationships with their patients, coworkers, friends, and family (Garman et al., 2002; Leiter, 1988; Rani Thanacoody et al., 2009). Many people report somatic and

psychological symptoms as well, such as fatigue, insomnia, change in appetite, stomachaches, and headaches (Acker, 2010; Salvagioni et al., 2017). Burnout also negatively impacts physical health and has been associated with hypertension, diabetes, respiratory issues, musculoskeletal pain, gastrointestinal distress, and younger age of mortality (Kitaoka-Higashiguchi et al., 2009; Melamed et al., 2006; Salvagioni et al., 2017). All of these factors lead to increased utilization of medical care and medication, which can present as a significant financial burden (Zhang et al., 2018).

At a systemic level, higher rates of burnout have been associated with high turnover in the workforce (Garman et al., 2002), loss of revenue (Han et al., 2019), poorer patient care (Garman et al., 2002; Reader et al., 2008) and, in extreme cases, malpractice (Balch, 2009). Higher utilization of medical care by employees also means a higher rate of absenteeism and health insurance cost for employers (Dewa et al., 2014). These factors, in addition to promoting employee well-being, should serve as motivating reasons for employers to put more resources towards addressing burnout (Balch, 2009; Dewa et al., 2014; Garman et al., 2002; Reader et al., 2008).

Risk and Protective Factors for Burnout

Recent research has started addressing the factors that contribute to the experience of burnout. Several individual factors seem to account for increased rates of burnout that a person experiences, including being younger in age, not having children having fewer years of job-related experience, being single, having perfectionistic tendencies, and having more years of education (Cañadas-De la Fuente et al., 2015, 2018; Shanafelt et al., 2015; Simionato & Simpson, 2018). Individual coping styles play a role, with emotion-focused or avoidant coping

having a higher association with burnout than problem-focused or proactive coping (Demerouti, 2015; García-Arroyo & Amparo, 2017). The focus on individual factors is why burnout has been characterized as a disorder of the individual. However, research increasingly suggests that burnout is better conceptualized as a systemic issue (Card, 2018; Rider et al., 2020), as one of the most significant precursors to burnout is poor person-job environment fit (Brandstätter et al., 2016).

Many of the risk factors associated with burnout have to do with the work environment and culture, such as high work load and emotional demands (Seidler et al., 2014), role conflict and ambiguity (R. Lee & Ashforth, 1991), limited resources, and lower adaptive organizational attitudes (Alarcon, 2011). Research has demonstrated that across fields, supervisory and leadership styles significantly influence employee satisfaction and job motivation (Mosadeghrad & Ferdosi, 2013). Feeling undervalued, overmanaged, and lacking control over one's work duties all contribute to the experience of burnout (Maslach & Leiter, 2016b). Burnout has also been thought of as socially "contagious," in that it seems to spread quickly between people within a system (Bakker et al., 2005).

Just as there are individual and environmental risk factors for burnout, there are individual and environmental elements that can serve as protective barriers against burnout. Factors such as being older in age, having more years of job-related experience, being male, married, having children, and having fewer years of education all correlate with lower rates of burnout (Shanafelt et al., 2015). Additionally, having a work environment with a manageable work load and emotional demands, defined roles and responsibilities, adequate resources, and adaptable organization attitudes that are responsive to the needs of employees serve to reduce the

risk of burnout (Alarcon, 2011; R. T. Lee & Ashforth, 1990; K. O'Connor et al., 2018; Seidler et al., 2014). There is some debate as to whether some of these factors, such as being older in age or having more years of job-related experience, actually serve as protective factors or are simply artifacts of those who are more resilient to burnout (Seidler et al., 2014). Regardless, maintaining boundaries between work and home, engaging in self-care activities, and developing adequate coping resources all serve to make people more resilient to burnout (Skovholt et al., 2014).

Cognitive Rehabilitation

Cognitive rehabilitation therapy (CRT) is an interdisciplinary approach to treating patients with acquired brain injury, defined as any nervous system damage not related to a genetic or developmental disorder (Wilson, 2002b). Since its implementation, cognitive rehabilitation has occurred in an interdisciplinary setting (Cicerone et al., 2011a; Conder et al., 1988). There are several disciplines involved in patient care, including but not limited to speech therapists, occupational therapists, physical therapists, social workers, case managers, psychiatrists, nurses, and psychologists or neuropsychologists (*The Society for Cognitive Rehabilitation - What Is Cognitive Rehab Therapy?*, n.d.).

The goal of cognitive rehabilitation is to maximize function and quality of life for those with physical or cognitive impairment related to nervous system damage (*About Physical Medicine & Rehabilitation*, n.d.). While CRT can be utilized with any patient who has nervous system damage, treatment is primarily focused on individuals with stroke and traumatic brain injury (TBI) (Cicerone et al., 2005). The ultimate goal of CRT is to improve patient cognitive, adaptive, and social functioning while maintaining health and safety (Cicerone et al., 2011a). This is accomplished by maximizing neuroplasticity, bolstering cognitive skills that remain

intact, adapting or developing compensatory strategies when necessary, and using creativity to solve problems (Cicerone et al., 2011a; Wilson, 2002a).

Cognitive rehabilitation is divided into two care settings depending on the acuity of the injury. Acute care is typically provided by an interdisciplinary team in a hospital setting immediately following injury. The primary focus of treatment during this time is medical safety and stability, with rehabilitation efforts focused on activities of daily living (ADLs) such as transferring from the bed to a wheelchair, putting on clothes independently, and eating or speaking independently (Cicerone et al., 2011a; Kempen et al., 1995). Post-acute care is defined as any cognitive rehabilitation received after discharge from the hospital (Malec & Basford, 1996). Post-acute care continues to focus on ADLs, but is expanded to help patients carry out ADLs in multiple settings such as at home, work, and in the community. Post-acute rehabilitation also focuses on rebuilding instrumental activities of daily living (IADLs) such as managing finances or medication (Cicerone et al., 2011a; Kempen et al., 1995). There is no specific timeline for when patients transition from acute to post-acute care, and post-acute rehabilitation can be carried out in both inpatient (e.g. residences, skilled nursing facilities) and outpatient (clinic, home health therapy services) settings (Cicerone et al., 2011a).

The delivery of cognitive rehabilitation has also changed in response to the COVID-19 pandemic (Mantovani et al., 2020). Successful cognitive rehabilitation requires time intensive therapy (Cicerone et al., 2011b), but precautions related to the pandemic have significantly limited patients' access to treatment (Mantovani et al., 2020). Some therapies have transitioned to telehealth (Bernini et al., 2021; Mantovani et al., 2020), while others have remained in-person (Lew et al., 2020).

Burnout in Cognitive Rehabilitation

Previous research has demonstrated the prevalence of burnout amongst physicians, especially psychiatrists (Linzer et al., 2014; Shanafelt et al., 2015; Silver & Bhatnagar, 2017), nurses (Bakker et al., 2005; İlhan et al., 2008), psychologists (Dorociak et al., 2017; Simionato & Simpson, 2018), and case managers (Kraus & Stein, 2013). Limited research has been conducted to explore the prevalence of burnout in occupational, physical, and speech therapists (Adriaenssens et al., 2015; Donohoe et al., 1993; Gupta et al., 2012; Shanafelt et al., 2015), but one study found that the prevalence of emotional exhaustion in a sample of physical and occupational therapists in a cognitive rehabilitation setting was 42.5 % (Schlenz et al., 1995). The prevalence of burnout in the field of cognitive rehabilitation as a whole has also been largely neglected (Mantovani et al., 2020). Despite the lack of specific research on burnout in the field of cognitive rehabilitation, several risk factors for burnout are present. These factors include limited support and funds, isolation, and investing copious amounts of time and resources in one patient over several months (Ashley et al., 2018; McNally et al., 2017). Therapists are often expected to provide individually tailored therapies in a group setting while also managing the basic health needs and safety of all patients with limited support (*Coding and Payment of Cognitive Evaluation and Treatment Services*, n.d.; United Health care, 2020). Across disciplines, increased time using electronic medical records for documentation has been associated with higher levels of burnout (Adler-Milstein et al., 2020). Many providers are also affected by patients who choose not to participate in treatment or who show displeasure with their therapists and their treatment plan (Martin et al., 2005). Although it has not been examined in the literature, it is reasonable to assume that the changes made in treatment delivery because

of the COVID-19 pandemic have also impacted the rate of burnout experienced by providers (E. Azoulay et al., 2020; Barello et al., 2020; Mantovani et al., 2020).

Research has looked at several individual and organizational factors that contribute to burnout (Cañadas-De la Fuente et al., 2015; Seidler et al., 2014), but one factor that has yet to be explored is the role of interdisciplinary team functioning in burnout (Hellyar et al., 2019). Since interdisciplinary care is at the core of cognitive rehabilitation, (Cicerone et al., 2005; Conder et al., 1988), its influence shouldn't be overlooked. One might assume that being on a team would serve as a protective factor against burnout given increased resources and support, but this practice might also lead to increased risk factors for developing burnout such as team conflict, increased workloads, and varying attitudes regarding the role of each discipline on the team (Begley, 2020; Leipzig et al., 2002; Oliver & Peck, 2006).

CHAPTER THREE

Research Aim and Hypothesis

Overall Aim

Research into the risk and protective factors of burnout has primarily focused on individual and organizational factors (Cañadas-De la Fuente et al., 2015; Seidler et al., 2014). Limited research has been conducted to examine the role of interdisciplinary team functioning in burnout (Gorbenko et al., 2020; Hellyar et al., 2019).

Research Aim

The aim of this study was to determine the impact interpersonal functioning of the interdisciplinary team, or team cohesion, has on the experience of burnout in individual providers.

Hypothesis

Increased interpersonal functioning of the team, as measured by the Teamness subtest of the Team Functioning Survey, will be associated with lower levels of burnout as measured by the burnout index, while decreased interpersonal functioning of the team will be associated with higher levels of burnout.

Rationale

Interdisciplinary team dynamics and workflow significantly overlap with known risk and protective factors of burnout, such as increased resources and support, team conflict, increased workloads, and varying attitudes regarding the role of each discipline on the team (Begley, 2020; Leipzig et al., 2002; Oliver & Peck, 2006). Given that many of the factors

influencing burnout are inherent to interdisciplinary work, it is expected that the overall function of the team will impact the experience of burnout in individual providers.

CHAPTER FOUR

Methods

Location and Setting

Participants for this study were recruited from Pate Rehabilitation, a multi-site facility that provides post-acute cognitive rehabilitation to adults with acquired brain injuries. As of 2019, 63% of patients were receiving services following a stroke, 25% had sustained a traumatic brain injury, and 12% were treated for other diagnoses including aneurysm, anoxia, brain tumors, and other central nervous system disorders. Pate Rehabilitation was chosen because it is a post-acute cognitive rehabilitation center with six treatment teams to survey. Pate is comprised of three treatment facilities, the Villa Creek location in Dallas, Texas, the Brinlee Creek Ranch Location in Anna, Texas, and the Savanna Oaks Ranch location in Fort Worth, Texas. The Villa Creek location is within the city, while the other two locations are in rural locations outside of the cities. Services are provided to both outpatient and inpatient populations, and all three locations provide in-patient residences for those who require more medical attention or supervision. Staff at Pate spend the majority of their time on a specific team at one of the three treatment locations, but staff will occasionally temporarily switch to another team or location as needed to ensure adequate support is provided at all locations. Staff who provide direct care to patients at Pate Rehabilitation's three treatment locations include physical therapists, occupational therapists, speech therapists, registered nurses, licensed vocational nurses, case management, and rehab technicians.

Before the COVID-19 pandemic, patients were divided into two treatment groups based on their functional level. The two groups were the "Transition to Independent Living

Skills Team/ Independent Living Skills Team” (TRILS/ILS) for those who were more functionally independent, and the “Functional Independence Treatment Team” (FITT) for those who required more structure or support. Patients on both teams received 4-6 hours of therapy five days per week. Each group had a team of providers consisting of speech therapists, physical therapists, occupational therapists, a case manager, and a neuropsychologist or psychologist. Nurses were based in a specific location, but saw patients from both groups. Throughout the day, patients rotated through occupational, physical, and speech therapy. Appointments with nursing, case management, and neuropsychologists were scheduled on an as-needed basis. As patients progressed, they had the opportunity to transition from FITT to TRILS/ILS. Since the COVID-19 pandemic, the teams have been restructured to maximize safety and decrease the risk of exposure. Teams are now comprised of the “Day Neuro” program for those not living in the residences and the “Inpatient” program for those who are currently living in the residences. Each group continues to have the same team of staff members. Patients in the Day Neuro program currently receive 3 hours of therapy per day, either in the morning or the afternoon, five days per week. Patients in the Inpatient program continue to receive 4-6 hours of therapy five days a week. Patients continue to receive physical, occupational, and speech therapy throughout the day with appointments as needed for nursing, case management, and neuropsychological services.

Participants

Staff who provide direct care to patients at Pate Rehabilitation’s three treatment locations (PT/PTAs, OT/COTAs, SLP/SLPAs, registered nurse, licensed vocational nurse, psychologists, case managers, and rehab technicians) were eligible to participate as part of a

convenience sample. A power analysis for multiple regression showed that a sample of 42 would be adequate to achieve 80% power with a moderate effect size ($d=0.15$) but based on data provided by Pate Rehabilitation 205 individuals were eligible to participate in this project.

Participants were asked to provide information regarding several individual and professional factors that have been associated with burnout such as age, marital status, parental status, years of education, years of experience in chosen field, and hours worked per week (Cañadas-De la Fuente et al., 2015, 2018; Shanafelt et al., 2015; Simionato & Simpson, 2018) as well as Pate specific factors that might increase the observed variance of burnout such as primary location or primary treatment team (outlined in Table 1, full questionnaire in Appendix D)

Table 1

<i>Demographic Variables</i>	
Individual Variables	Professional Variables
Age (years)	Field
Gender	Pate Location (VC, BCR, Anna)
Race/ Ethnicity	Treatment Team (Day Neuro or Inpatient)
Marital Status	How many years have you worked in this field in total?
Parental Status	How many years have you worked at Pate?
Years of Education	Do you have an additional part-time job?
Highest Degree Obtained	On average, how many hours do you work per week?
	On average, how many hours do you work per week at Pate?
	How many days of vacation do you take per year?

This table provides a list of the demographic variables that were collected from survey participants.

Exclusion criteria included staff who did not provide direct care to patients (administrators, administrative assistants, managers, supervisors, medical records clerk, patient transporters), students, and those who did not wish to participate in the current study.

Characterization of the Sample

Of the 61 participants who started the survey, 50 completed the survey online and three completed the survey on paper. The remaining eight surveys were incomplete and were excluded from the analysis. The majority of the sample was female ($n = 44$), not Hispanic/Latino ($n = 40$), White ($n = 41$), and held a master's degree ($n = 20$). Demographic information for the sample is provided in tables 2 and 3. Data on the total number of direct care staff across Pate Rehabilitation's three treatment locations as well as their discipline of practice were made available to the representativeness of this convenience sample. Pate rehabilitation employs a total of 205 direct care staff that were eligible to participate in this study. It is important to note that speech therapists and case managers were mildly overrepresented, psychologist/ neuropsychologists were significantly overrepresented, nurses were moderately underrepresented, and rehab technicians were significantly underrepresented (see Table 2, Field of Practice).

Table 2

<i>Demographic Data-Categorical</i>			
Variable	<i>n</i>	%	% Total
Gender			
Male	9	17	
Female	44	83	
Ethnicity			
Hispanic/Latino	10	18.9	
Not Hispanic/Latino	40	75.5	
Race			
White	41	77.4	
Black/African American	7	13.2	
American Indian or Alaska	0	0	
Native			
Asian/Pacific Islander	0	0	
Other	4	7.5	
Two or More	0	0	
Prefer Not to Say	1	1.9	
Marital Status			
Never Married	7	13.2	
Married	31	58.5	
Domestic Partnership	6	11.3	
Divorced	8	15.1	
Separated	1	1.9	
Widowed	0	0	
Parental Status			
Yes	32	60.4	
No	21	39.6	
Highest Degree Received			
High School Graduate	1	1.9	
GED or Equivalent	1	1.9	
Some College, No Degree	6	11.3	
Associate Degree	5	9.4	
Bachelor's Degree	7	13.2	
Master's Degree	20	37.7	
Professional School Degree	3	5.7	
Doctoral Degree	9	17	
Other	1	1.9	

Table 2 (continued)

Field of Practice			
Speech Therapy	9	17	10.2
Occupational Therapy	8	15.1	11.2
Physical Therapy	6	11.3	13.2
Nursing	7	13.2	6.8
Case Manager	7	13.2	2.4
Psychologist/ Neuropsychologist	6	11.3	4.9
Rehab Technician	9	17	51.2
Treatment Team			
Day Neuro	18	34	
Inpatient	14	26.4	
Both	20	37.7	
Residential	1	1.9	
Primary Pate Location			
Villa Creek	18	34	
Brinlee Creek Ranch	20	37.7	
Savannah Oaks	15	28.3	
Second Job			
Yes	13	24.5	
No	40	75.5	

Note. This table lists the descriptive statistics for all categorical variables collected from participants. % Total indicates the total number of direct care staff in each field of practice across all three treatment locations based on data provided by Pate Rehabilitation.

Table 3*Demographic Data-Continuous*

Variable	M	SD
Age	40.3	11.3
Years of Education	14.6	5.4
Years in Field	11.3	9.3
Years at Pate	6.5	5.2
Hours per Week Total	45.1	12.1
Hours per Week at Pate	42.8	4.7
Vacation Days Taken per Year	10.2	5.8

Note. This table lists the descriptive statistics for all continuous variables collected from participants. Hours per week total includes all hours at a second job in addition to hours worked at Pate.

Design

Recruitment

A cross-sectional survey design was used for this study. Information about the study as well as inclusion and exclusion criteria were provided to all direct care staff at Pate Rehabilitation's three treatment locations by an email distribution list through Pate as well as paper flyers posted at all three locations (Appendix A and B). Not all staff had access to laptops or tablets at Pate where the survey was being advertised, so participants had the option to take the survey online or on paper. Providing the survey using two modes has been shown to increase response rate as participants vary in terms of accessibility and comfort level with online versus paper surveys (Beebe et al., 2007; Dillman & Christian, 2005; Nulty, 2008). The online and paper surveys were identical in format except for modality in order to mitigate the effects of a response bias to different survey delivery systems (Dillman & Christian, 2005). Two campaigns were issued to maximize participation. In the first wave, all eligible participants had the option to complete the survey on a laptop or tablet provided at their place of work, provide their email in order to receive a link to the survey, or to follow a QR code from the flyers that were provided. In the second wave, participants had the option to complete a paper and pencil version of the survey.

Procedure

Data were collected and managed through REDCap (Harris et al., 2009, 2019) hosted at UT Southwestern Medical Center. The survey was available to participants for two weeks, but they were required to complete the survey in one sitting. Participants were notified that

the survey was expected to take 30 minutes to complete. Participants received an information sheet about the study via REDCap prior to completing the survey (see Appendix C). In addition to demographic data, four surveys were also included to measure burnout, team functioning, depression, anxiety, and stress. The Maslach Burnout Inventory (MBI) (Appendix E) and Teamness subscale of the Team Functioning Survey (TFS) (Appendix H) were used to test the hypothesis that teamness would be inversely related to burnout (Maslach et al., 1986; Strasser et al., 2010). The Depression, Anxiety, Stress Scale 21 items (DASS-21) was used to better characterize the psychological make up of participants, determine rates of comorbidity between psychological variables and burnout in this sample (Koutsimani et al., 2019), and to establish discriminant validity for the Maslach Burnout Inventory in this sample (Antony et al., 1998; Cresswell & Eklund, 2006) (Appendix F). The Coronavirus Anxiety Scale (CAS) was used to assess anxiety specifically related to the COVID-19 pandemic, which has been shown to manifest differently than other anxiety disorders (S. Lee, 2020; S. A. Lee et al., 2020) (Appendix F). Participants were asked to provide their name and email address, but only the people conducting this study had access to this information. They were also asked how they heard about the survey (e.g. flyer, email, coworker, or other) and researchers tracked which surveys were completed online versus on paper. Participants were compensated with a \$5 gift card to their choice of Starbucks or Panera for their time and participation in order to maximize response rate (Keating et al., 2008; Nulty, 2008). These gift cards were sent via email after completion of the survey.

Protection of Participants

Participant privacy was protected by limiting access of individual responses to study personnel. Participants were notified that supervisors, managers, and administrators at Pate would not have access to their individual data but that they would be provided with the overall results of this study including average level of burnout. All data was kept in a secure location outside of Pate Rehabilitation.

Measures

Measure of Burnout

Maslach Burnout Inventory (MBI)

The *Maslach Burnout Inventory Human Services Survey for Medical Personnel* (MBI-HSS (MP)) (Maslach et al., 1986) (Appendix E) was used to assess the level of burnout providers were experiencing. This is a 22-item measure designed to assess the three components of burnout; emotional exhaustion (9 items), depersonalization (5 items), and reduced professional accomplishment (8 items, reverse scored). Items were rated on a 7-point scale ($0 = \text{Never}$, $6 = \text{Every day}$) indicating how often they experienced symptoms consistent with one of the three components of burnout. Responses were added together to produce a sum score for each scale. Participants were classified as burned out if they had scores of 27 or higher on the emotional exhaustion scale, 10 or higher on the depersonalization scale, or a score of 33 or lower on the diminished professional accomplishment scale (Maslach et al., 1986). Although the authors of the MBI do not recommend combining the three scales into one combined score of burnout, researchers frequently use the average scores from each

dimension in a weighted equation derived from discriminant function analysis to create an index score for burnout ($0.4 \times \text{exhaustion} + 0.3 \times \text{depersonalization} + 0.3 \times \text{diminished professional accomplishment}$) that can be used as a continuous variable (Ahola et al., 2008; Kalimo et al., 2003). Exploratory and confirmatory factor analysis have repeatedly demonstrated support for the 3-factor model (Worley et al., 2008). The Cronbach alpha coefficient of estimated internal consistency was 0.83 for the overall scale, .89 for emotional exhaustion, .77 for depersonalization, and .74 for diminished professional accomplishment (Maslach & Jackson, 1981). Convergent validity was established by demonstrating positive correlations with behavioral ratings from an independent person, presence of job characteristics thought to contribute to burnout, outcome hypothesized to be related to burnout (Maslach & Jackson, 1981), and other measures of burnout (Demerouti et al., 2003). Discriminant validity was established by demonstrating negative correlations with measures of general job dissatisfaction, social desirability (Maslach & Jackson, 1981), depression, anxiety, and stress (Cresswell & Eklund, 2006).

Measures of Anxiety and Depression

Depression Anxiety and Stress scale, 21 Items (DASS-21)

The *Depression Anxiety and Stress Scale -21 Items* (DASS-21) (Antony et al., 1998) (Appendix F) is a 21-item measure used to assess current levels of depression, anxiety, and stress. This measure is frequently used to establish discriminant validity between burnout and depression, stress, and anxiety (Cresswell & Eklund, 2006) in research samples. Participants were asked to rate statements using a scale from 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*) based on how they had felt over the past week. Each scale

(depression, anxiety, and stress) is composed of 7 items. Scores were multiplied by two before applying cut off scores. Scores were considered to be mild to extremely severe if they were greater than or equal to 10 for depression, greater than or equal to 8 for anxiety, and greater than or equal to 15 for stress. Cronbach's alpha reliability was .94 for depression, .87 for anxiety, and .91 for stress. Convergent validity was demonstrated by showing positive correlations between the three scales and other measures of depression and anxiety (Antony et al., 1998)

Coronavirus Anxiety Scale (CAS)

The *Coronavirus Anxiety Scale* (CAS) (S. Lee, 2020) (Appendix G) is a 5-item scale which can be used as a screener for anxiety related to the COVID-19 pandemic. This scale was used to account for any variance in burnout or anxiety that might be accounted for by the COVID-19 pandemic. Each item addresses a different manifestation of anxiety. Participants were asked to rate how much these symptoms have affected them over the past two weeks from 0 (*not at all*) to 4 (*nearly every day*). Scores greater than or equal to 9 indicated dysfunctional levels of anxiety related to the coronavirus. Cronbach's alpha reliability was 0.93 for the scale. Convergent validity was established by demonstrating positive correlations between this scale and functional impairment, alcohol or drug coping, negative religious coping, extreme hopelessness, passive suicidal ideation, and diagnosis of COVID-19 (S. Lee, 2020; S. A. Lee et al., 2020).

Measure of Team Cohesion

Team Functioning Survey (TFS)

The Teamness scale of the *Team Functions Survey* (Strasser et al., 2010) (Appendix H) was used to measure different aspects of team functioning. The TFS is a 42-item measure of team functioning in a medical setting. This survey was developed in VA hospitals specifically with interdisciplinary cognitive rehabilitation teams working with stroke patients. The survey consists of 5 scales. The Physician Support scale (9 items) measures the perceived extent to which physicians actively participate and facilitate work on the team. The Shared Leadership scale (7 items) evaluates the effectiveness of the team leader while recognizing that leadership can shift depending on situational demands. The Supervisor Team Support scale (7 items) assesses supervisor's expectations for participation in team activities such as meetings or treatment planning. The Teamness scale (11 items) measures how team members perceive the effectiveness of their team in working together, and the Team Effectiveness scale (8 items) measures how well teams coordinate and perform work. The Physician Support scale is a dichotomous scale with True/False answer choices. Responses of "true" were scored as one point, while responses of "false" were scored as 0 points. Three of the items in this scale were reverse scored. The remaining scales were rated on a 7-point Likert scale from 1 (*not very important*) to 7 (*very important*). Items from each scale were summed in order to produce individual scores. Higher scores on all scales indicate greater team functioning, but the authors did not provide cut off scores for each scale. The authors also evaluated each scale independently rather than developing a composite score of team functioning. Cronbach's alpha reliability was .86 for Physician Support, .94 for Shared Leadership, .87 for Supervisor Team Support, .95 for Teamness, and .94 for Team Effectiveness. Intercorrelation between scales ranged from .44 to .76. Convergent validity

was established by demonstrating positive correlations between team functioning and patient outcomes, including improved motor functioning and discharge destination (home vs. inpatient) (Strasser et al., 2010). Exploratory and confirmatory factor analysis supported the 5-factor model (Strasser et al., 2010, 2014).

While all subscales of the TFS assess different aspects of team functioning, the teamness scale was specifically chosen to measure interpersonal team functioning in this sample. The teamness scale assesses the interpersonal and relational aspects of working together as a team, such as how the team handles disagreements, incorporates divergent staff perspectives in treatment planning, and overcomes misunderstandings among team members. The physician support, shared leadership, and supervisor team support scales address different leadership positions on the team, emphasizing one member of the team rather than looking at all team members. While the team effectiveness scale does address the functioning of the team as a whole, the focus is primarily on treatment outcomes and does not include questions assessing the relational aspects of working together as a team. The purpose of this study was to determine how interpersonal functioning of the interdisciplinary team relates to the experience of burnout in individual providers. Since the teamness scale most closely assesses the interpersonal or relational aspect of the team experience, it was chosen as the measure of team cohesion for this study.

Psychosocial Characterization of the Sample

Results of the DASS-21 and CAS

The subscales from the DASS-21 were used to describe the prevalence of depression, anxiety, and stress in this sample defined as scores greater than or equal to 10 on the

depression subscale, greater than or equal to 8 on the anxiety subscale, and greater than or equal to 15 on the stress subscale. The CAS was used to describe the prevalence of anxiety specifically related to the COVID-19 pandemic, defined as scores greater than or equal to 9. Overall, participants did not report experiencing significant levels of depression, anxiety, or stress (see table 4).

Table 4

Psychological Characterization of the Sample

Measure/ Scale	M	SD	Cut-Off	N Above Cut-Off
DASS-21 Depression	6.3	7.7	≥ 10	15
DASS-21 Anxiety	4.5	6.2	≥ 8	11
DASS-21 Stress	8.8	7.7	≥ 15	9
CAS	6.5	3.7	≥ 9	6

Note. This table lists the mean and standard deviation for the mean level of depression, anxiety, stress, and anxiety about the COVID-19 pandemic reported by the sample. Cut-off scores indicating clinically significant distress are included for comparison. The number of participants endorsing clinically significant symptoms are also provided.

Results of the MBI and TFS

The MBI was used to classify participants as burned out if they had scores of 27 or higher on the emotional exhaustion scale, 10 or higher on the depersonalization scale, or a score of 33 or lower on the professional accomplishment scale (Maslach et al., 1986). The weighted equation $0.4 \times \text{exhaustion} + 0.3 \times \text{depersonalization} + 0.3 \times \text{professional accomplishment}$ was used to calculate an index score of burnout (Ahola et al., 2008; Kalimo et al., 2003). Average rates of emotional exhaustion, depersonalization, and reduced professional accomplishment were calculated in addition to the mean of the burnout index (see table 5). While 26 participants met the criteria for burnout on the emotional exhaustion

scale, no participants reported levels of depersonalization or professional accomplishment beyond the provided cut-off scores (see Table 5).

Table 5

Results of the MBI

Scale	M	SD	Cut-Off	Burned Out
Emotional Exhaustion	29.38	12.77	≥ 27	26
Depersonalization	9.15	4.64	≥ 10	0
Professional Accomplishment	46.38	5.62	≤ 33	0
Burnout Index	28.41	5.56	-	26

Note. This table includes the mean, standard deviation, and cut-off scores for the three scales of the MBI, as well as the frequency of participants classified as burned out using the cut-off criteria provided by Maslach et al. (1997).

The sum of the Teamness scale from the TFS was used to measure team functioning. Teamness (11 items) measures how team members perceive the effectiveness of their team in working together. The scale is rated on a 7-point Likert scale from 1 (*not very important*) to 7 (*very important*). Although no cut-off scores were provided by the authors (CITE TFS), higher scores indicate a greater level of team functioning (see Table 6).

Table 6

Results of the TFS

Scale	M	SD	Maximum Score
Physician Support	7.0	2.2	9
Shared Leadership	36.5	11.6	49
Supervisor Team Support	39.3	7.9	49
Teamness	64.1	12.0	77
Team Effectiveness	47.1	8	56

Note. This table includes the results of the 5 scales of the TFS. Although cut-off scores are not provided for these scales, higher scores indicate a greater level of team functioning. The maximum score possible for all scales are provided for comparison.

CHAPTER FIVE Results

Statistical Analysis

Preliminary Analysis

Establishing the Relationship Between Teamness and Burnout

Prior to testing the hypothesis with multiple regression, a 2-tailed Spearman's rank order correlation analysis with $\alpha = 0.05$ was conducted to determine if there was a significant relationship between teamness (TFS) and burnout as measured by the MBI index. Spearman's rank order correlation was used because the analysis was performed on a convenience sample (Higgins, 2004). Since regression analyses are related to correlation analyses, this was done to determine the viability of conducting a multiple regression with teamness as a predictor and burnout as an outcome variable (Cohen et al., 2003). Since emotional exhaustion was the only component of burnout that participants endorsed, a 2-tailed Spearman's rank order correlation with $\alpha = 0.05$ was also performed with teamness and emotional exhaustion. While the correlation between teamness and the MBI index score approached significance ($r_s(51) = -.25, p = .072$), the only measure of burnout that correlated significantly with teamness (TFS) was the emotional exhaustion scale of the MBI ($r_s(51) = -.34, p = .014$). Because emotional exhaustion was the only measure of burnout that correlated with teamness, as well as the fact that no participants endorsed depersonalization or decreased professional accomplishment beyond the cut-off points, additional analyses utilized emotional exhaustion as the measure of burnout. Since experiencing

only one of the three components of burnout is sufficient to be classified as burned out (Maslach et al., 1986), this was thought to be a valid representation of burnout.

Examining Possible Predictors of Emotional Exhaustion

Several demographic and psychological variables were collected from this convenience sample based on previous research demonstrating a relationship between these factors and burnout (Cañadas-De la Fuente et al., 2015; Koutsimani et al., 2019). Demographic variables that were collected have been shown to serve as risk or protective factors of burnout (Cañadas-De la Fuente et al., 2015, 2018; Shanafelt et al., 2015; Simionato & Simpson, 2018). Depression, anxiety, and stress were also measured as they have been shown to be comorbid with burnout (Koutsimani et al., 2019). Given the relatively small sample size (Cohen, 1992), additional analyses were conducted after data were collected to limit the number of predictors in the multiple regression to variables that were significantly related to burnout in order to maintain adequate power to observe any relationship between teamness and emotional exhaustion. Because data were collected from a convenience sample, non-parametric statistics were used for these analyses (Higgins, 2004). A series of Kruskal-Wallis H tests, Mann-Whitney U tests, and a 2-tailed Spearman's rank order correlation analyses with $\alpha = 0.05$ (see tables I.1 and I.2) were used to identify possible predictors to be included in the multivariate regression equation.

Gender. A Mann-Whitney U test did not reveal any significant differences in emotional exhaustion based on gender ($U (n_{\text{female}} = 44, n_{\text{male}} = 9) = 148.50, p = .241$).

Ethnicity. A Mann-Whitney U test did not reveal any significant differences in emotional exhaustion based on ethnicity ($U (n_{\text{not Hispanic}} = 40, n_{\text{Hispanic}} = 10) = 183.00, p = .680$).

Race. A Kruskal-Wallis H test did not reveal any significant differences in emotional exhaustion based on race ($\chi^2(3) = 0.29, p = .962$).

Marital Status. A Kruskal-Wallis H test did not reveal any differences in emotional exhaustion between those who were never married, married, in a domestic partnership, divorced, or separated ($\chi^2(4) = 4.285, p = .369$).

Parental Status. A Mann-Whitney U test demonstrated that participants without children (*mean rank* = 32.29) endorsed greater symptoms of emotional exhaustion than those with children (*mean rank* = 23.53) ($U(n_{\text{no children}} = 21, n_{\text{children}} = 32) = 225.00, p = .043$).

Highest Degree Received. A Kruskal-Wallis H test did not reveal any differences in emotional exhaustion based on highest degree received ($\chi^2(8) = 11.5, p = .178$).

Field of Practice. A Kruskal-Wallis H test did not reveal any significant differences in emotional exhaustion between speech therapists, occupational therapist, physical therapists, nurses, case managers, psychologists/ neuropsychologists, or rehab technicians ($\chi^2(6) = 5.54, p = .477$).

Treatment Team. A Mann-Whitney U test did not show any significant differences in emotional exhaustion between providers on the day neuro team, inpatient team, or providers who served on both teams ($\chi^2(3) = 6.40, p = .094$).

Primary Pate Location. A Kruskal-Wallis H test did not reveal any differences in emotional exhaustion based on placement at the Villa Creek, Brinlee Creek Ranch, or Savannah Oaks Ranch locations ($\chi^2(2) = 1.19, p = .551$).

Second Job. A Mann-Whitney U test did not reveal any significant differences in emotional exhaustion based on having a second job or not ($U (n_{\text{no second job}} = 40, n_{\text{second job}} = 13) = 234.00, p = .591$).

Continuous Demographic Factors. A 2-tailed Spearman's rank order correlation analyses with $\alpha = 0.05$ was conducted to determine if any continuous demographic factors were potential predictors of emotional exhaustion (see Table I.1). Emotional exhaustion did not significantly correlate with age, years of education, years in the field, years worked at Pate, total hours per week worked including time spent at Pate and a second job, total hours per week worked at Pate, and days of vacation taken per year.

Depression, Stress, and Anxiety. A 2-tailed Spearman's rank order correlation analyses with $\alpha = 0.05$ was conducted to determine if depression, stress, or anxiety were significantly related to emotional exhaustion (see Table I.2). As expected based on previous research (Koutsimani et al., 2019), significant correlations were found with the depression ($r_s (52) = 0.72, p < .001$), anxiety ($r_s (49) = 0.41, p = .003$), and stress ($r (49) = 0.71, p < .001$) subscales of the DASS-21. No significant relationship was found between emotional exhaustion and the CAS ($r_s (52) = 0.09, p = .542$).

Primary Analysis

The aim of this study was to determine the impact of interpersonal team cohesion on the experience of burnout in individual providers. The hypothesis was that interpersonal team cohesion as measured by the teamness scale of the TFS would be inversely related to the experience of burnout in individual providers. Given that teamness correlated with emotional exhaustion instead of the MBI index, emotional exhaustion was used as the outcome variable for

burnout. Although all of the demographic variables collected as part of this survey have been shown to relate to burnout (Cañadas-De la Fuente et al., 2015), the number of predictors for this analysis was limited in order to maintain adequate power (Cohen et al., 2003). Even though this analysis is based on a convenience sample, multiple regression was used as there is no non-parametric alternative (Kelley & Bolin, 2013). Based on the results of the Kruskal-Wallis H tests, Mann-Whitney U tests, and a 2-tailed Spearman's rank order correlation analyses with $\alpha = 0.05$, the depression, anxiety, and stress scales of the DASS-21 and parental status were included in the regression analysis as they were the only demographic and psychological variables that were significantly related to burnout in this sample (Cañadas-De la Fuente et al., 2015; Koutsimani et al., 2019). Multiple regression was used to determine whether teamness predicted emotional exhaustion while controlling for depression, anxiety, stress, and parental status (Cohen et al., 2003). The model accounted for 79% of the variance in emotional exhaustion ($F(5, 43) = 14.31$, $p < .001$, $R^2 = .79$), but teamness was not a significant predictor ($\beta = -0.04$, $p = .688$). The only factors that significantly contributed to the model were depression ($\beta = .35$, $p = .044$) and stress ($\beta = 0.64$, $p = .001$) as measured by the DASS-21 (see Table 7). Based on this analysis, the hypothesis that interdisciplinary team cohesion would be inversely related to burnout was not supported.

Table 7

Multiple Regression Analysis of Teamness Predicting Emotional Exhaustion

Variable	B	95% CI	β	t	p
(constant)	20.19	[2.22, 38.15]		2.27	.029*
Depression (DASS 21)	0.57	[0.02, 1.13]	0.35	2.08	.044*
Anxiety (DASS 21)	-0.41	[-1.05, 0.23]	-0.19	-1.23	.208
Stress (DASS 21)	1.08	[0.49, 1.67]	0.64	3.72	.001**

Parental Status	1.55	[-4.37, 7.46]	0.06	0.53	.601
Teamness	-0.05	[-0.27, 0.18]	-0.04	-0.40	.688

* $p < .05$, ** $p < .01$, 2-tailed

Supplementary Analysis

Although teamness was included as a predictor in the multiple regression equation, the question of whether level of teamness varied based on team arose. It is also important to note that some participants did not belong to a specific treatment team, such as nurses and rehab techs. Kruskal-Wallis H test was used to determine if teamness differed based on discipline, treatment team, or primary Pate location. Teamness did not significantly differ on any of these factors.

Secondary Analysis

The hypothesis that interdisciplinary team cohesion would be inversely related to burnout was not supported by the primary analysis. However, several interesting but nuanced patterns emerged from the multiple regression analysis. Using a 2-tailed Pearson's correlation coefficient analysis with $\alpha = 0.05$, the correlation between teamness and emotional exhaustion was significant ($r(48) = -.30, p = .029$). Simple linear regression was used to confirm that teamness predicted emotional exhaustion when no other predictors were included in the analysis. The model showed that teamness accounted for 9.2% of the variance in emotional exhaustion ($F(1, 50) = 5.08, p = .029, R^2 = .09$). There was an inverse relationship between teamness and emotional exhaustion (see table 8). However, when other predictors were added to the regression equation, the significance of the relationship between teamness and emotional exhaustion disappeared (see Table 7). Of note, the p -value in the simple linear regression with only teamness included as a predictor ($p = .029$) grew considerably when included in the multiple

regression equation with the DASS-21, CAS, and parental status also included as predictors ($p = .990$).

Table 8

Simple Linear Regression of Teamness Predicting Emotional Exhaustion

Variable	B	95% CI	β	t	p
(constant)	50.28	[31.38, 69.19]		5.34	< .001**
Teamness	-0.33	[-0.62, -0.04]	-0.30	-2.25	.029*

* $p < .05$, ** $p < .01$, 2-tailed

Because depression and stress had presented as the only significant predictors in the multiple regression analysis, an additional multiple regression was conducted to determine if teamness would remain a predictor of emotional exhaustion when adding just depression or stress to the multivariate regression equation (see Table 9). The model examining teamness, stress, and depression as predictors of emotional exhaustion was significant ($F(3,45) = 23.17, p < .001, R^2 = .78$), but stress was the only significant predictor in the model ($\beta = 0.55, p = .001$). It was observed again that the p -value from the simple linear regression ($p = .029$) increased ($p = .169$) when stress and depression were added as predictors. This increase in the observed p -value when additional predictors were added to the model is suggestive of collinearity (Morrissey & Ruxton, 2018), in which two or more of the predictors included in a regression are significantly related to each other (Mason & Perreault, 1991). In this sample, stress was correlated with both teamness ($r(48) = -.35, p = .015$) and depression ($r(49) = .78, p < .001$). Depending on the direction of the correlation, collinearity can result in either obfuscating or magnifying the direct effect of other predictors on the outcome variable (Morrissey & Ruxton, 2018). Given this relationship between multiple predictors in the regression analysis and how this impacted the observed direct effects, additional analyses were conducted to further examine the relationship

between these variables in order to look for indirect effects (Baron & Kenny, 1986; Cohen et al., 2003; Morrissey & Ruxton, 2018)

Table 9

Simple Linear Regression of Teamness, Depression, and Stress Predicting Emotional Exhaustion

Variable	B	95% CI	β	<i>t</i>	<i>p</i>
(constant)	21.93	[6.57, 37.29]		2.88	.006
Teamness	-0.05	[-0.27, 0.17]	-0.05	-0.45	.169
Depression (DASS 21)	0.42	[-0.09, 0.92]	0.25	1.67	.102
Stress (DASS 21)	0.93	[0.39, 1.46]	0.55	3.50	.001

* $p < .05$, ** $p < .01$, 2-tailed

A review of the literature showed that both depression and stress have been shown to serve as mediators between other predictors and burnout. For example, depression has been shown to serve as a mediator between social support and burnout (Jun et al., 2021), spirituality and burnout (Jun et al., 2021), and mindfulness and burnout (Y. Sun et al., 2021). Additionally, stress has been observed to act as a mediator between work place variables and burnout (Acker, 2010), perceived communication competence and burnout (Wright et al., 2010), and emotional intelligence and burnout (Swami et al., 2013). Given the statistical implication that a more complex relationship exists between teamness, stress, depression, and burnout, as well as previous literature showing that both depression and stress have served as mediators between several other variables and burnout, further analyses explored whether depression and stress could also serve as mediators between teamness and burnout (Acker, 2010; Baron & Kenny, 1986; Swami et al., 2013).

Depression as a Mediating Variable

As outlined by Baron and Kenney (1986), the first step in determining a mediation relationship is establishing that the causal variable significantly predicts the outcome variable.

As previously established, teamness did significantly predict emotional exhaustion (see table 8).

The second step is to determine if the causal variable significantly predicts the mediating variable. Using simple linear regression, teamness did not significantly predict depression ($F(1, 50) = 3.40, p = .071$). Because this relationship was not significant, it was determined that depression was not a mediating variable between teamness and emotional exhaustion in this sample.

Stress as a Mediating Variable

As previously stated, the first step of the mediation analysis (Baron & Kenny, 1986) is to determine if the causal variable significantly predicts the outcome variable. The relationship between teamness and emotional exhaustion has already been established as significant (see Table 8). For the second step, a simple linear regression showed that teamness was a significant predictor of stress ($F(1, 47) = 6.38, p = 0.015, R^2 = .12$), meaning that the causal variable did predict the mediating variable. The third step of the mediation analysis is to determine if the mediating factor significantly predicts the outcome variable. Simple linear regression showed that stress did significantly predict emotional exhaustion ($F(1, 48) = 66.20, p < .001, R^2 = .58$). The final step of the mediation analysis is to determine if the relationship between the causal and outcome variable disappears when the mediating variable is controlled for. To do this a variable was created that combined teamness and stress, which was then entered into a hierarchical regression. This variable was created by multiplying the teamness and stress variables. The first step of the hierarchical regression only included teamness, while the second step of the hierarchical regression included teamness and the combined variable. The combined term accounted for more of the variance ($F(2, 46) = 29.53, p < .001; \beta = .69, p < .001; R^2 = .56$) than

teamness by itself ($F(1, 47) = 4.50, p = .039; \beta = -.295, p = .039; R^2 = .07$), but in the second step of the hierarchical regression teamness remained a significant factor ($\beta = -.25, p = .014$), indicating that stress does serve as a partial mediator between teamness and emotional exhaustion (see Table 10). The standardized indirect effect was $(-0.35) (0.76) = -.27$. The significance of this indirect effect was tested using bootstrapping procedures per Hayes method (Hayes, 2017). Unstandardized indirect effects were computed for each of 5,000 bootstrapped samples and the 95% confidence interval was computed by determining the indirect effects at the 2.5th and 97.5th percentiles. The bootstrapped unstandardized effect was -0.29 . The 95% confidence interval ranged from $-0.54, -0.07$, indicating that the indirect effect was statistically significant (Hayes, 2017). The results of the mediation are illustrated in Figure 1.

Table 10

Hierarchical Analysis Demonstrating Stress as a Partial Mediator between Teamness and Emotional Exhaustion

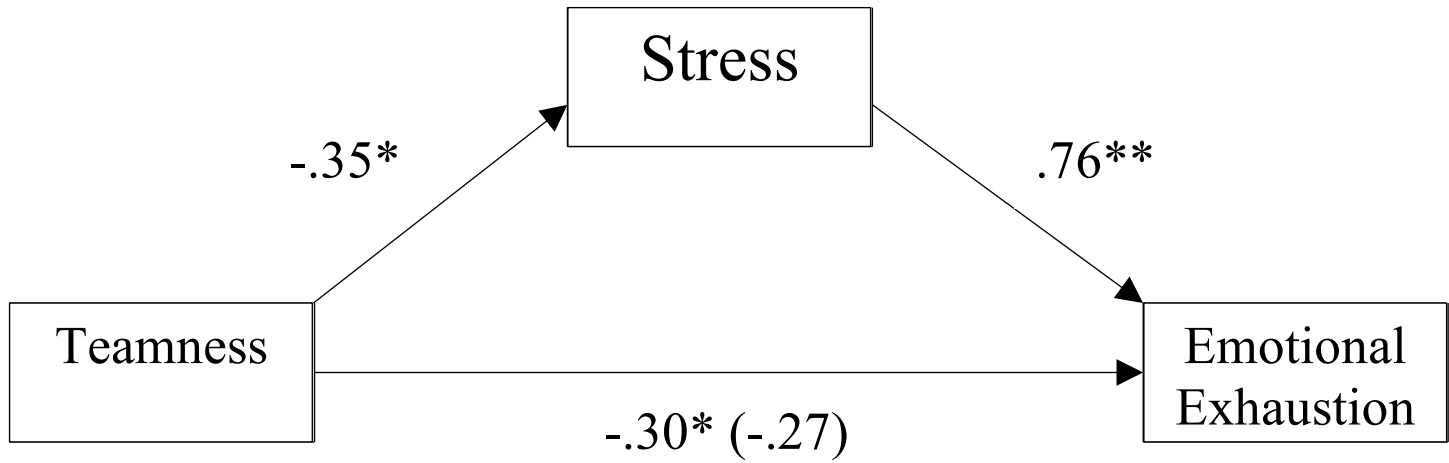
Variable	B	95% CI	β	t	p
Step 1					
(constant)	50.08	[30.40, 69.76]		5.12	< .001**
Teamness	-0.32	[-0.63, -0.02]	-0.295	-2.12	.039*
Step 2					
(constant)	36.60	[22.29, 50.91]		5.15	< .001**
Teamness	-0.27	[-0.49, -0.06]	-0.251	-2.57	.014*
Teamness*stress	0.02	[0.01, 0.03]	0.691	7.06	< .001**

Note. The Teamness*Stress variable indicates the combined variable of teamness and stress.

* $p < .05$, ** $p < .01$, 2-tailed

Figure 1

Stress as a Partial Mediator between Teamness and Emotional Exhaustion



* $p < .05$, ** $p < .01$, 2-tailed

CHAPTER SIX

Discussion

Within the healthcare system, burnout has been identified as a significant problem across disciplines (Adriaenssens et al., 2015; Balogun et al., 2002; Gómez-Urquiza et al., 2017; Kumar, 2016; McHugh et al., 2011; K. O'Connor et al., 2018; Shanafelt et al., 2015). Burnout has been associated with poor psychological (Ahola et al., 2014; Ding et al., 2014; Koutsimani et al., 2019; Kumar, 2016) and physical (Ekstedt et al., 2006; Kitaoka-Higashiguchi et al., 2009; Melamed et al., 2006; Salvagioni et al., 2017) health, as well as difficulties with professional and personal relationships (Garman et al., 2002; Rani Thanacoody et al., 2009). Burnout also presents as a financial burden, with higher healthcare utilization to address the physiological and psychological sequelae (Zhang et al., 2018). In terms of organizational effects, burnout results in higher turnover in the workforce (Garman et al., 2002), higher rates of absenteeism (Dewa et al., 2014), loss of revenue (Han et al., 2019), and poorer patient care (Garman et al., 2002; Reader et al., 2008). The effects of burnout have been further magnified by the COVID-19 pandemic (É. Azoulay et al., 2004; Barello et al., 2020; Boudreau et al., 2007). There is a significant drive to reduce and prevent burnout in healthcare (Reith, 2018). To do this, researchers have been working to identify modifiable risk and protective factors that could be used as targets for intervention (Alarcon, 2011; Cañadas-De la Fuente et al., 2015; Demerouti, 2015; García-Arroyo & Amparo, 2017; Seidler et al., 2014; Shanafelt et al., 2015)

Based on the previously identified risk and protective factors associated with burnout (Alarcon, 2011; Cañadas-De la Fuente et al., 2015), many of the treatments and interventions for burnout focus on individual (Awa et al., 2010; Demerouti, 2015; Korczak et al., 2012; Moss,

2020) or job factors (Cañadas-De la Fuente et al., 2015; Gregory et al., 2018; Seidler et al., 2014). One point of intervention with limited research is the role of interpersonal relationships at work (Fernet et al., 2010; Leiter & Maslach, 1988). One important aspect of interpersonal functioning in the workplace that has yet to be explored in the context of burnout is the interdisciplinary team (Hellyar et al., 2019). This study was developed to determine if interpersonal team cohesion was related to burnout, in which case future interventions for burnout could be tailored to address the interpersonal functioning of the interdisciplinary team in addition to individual and job specific interventions (Awa et al., 2010; Gregory et al., 2018).

Findings

Sample Characteristics

Demographics of the Sample

Participants in this study were majority White, not Hispanic, and held a Master's Degree. Approximately one-third of the eligible participants responded to this survey. When compared to all direct care staff across Pate Rehabilitation's three treatment locations, this convenience sample over represented speech therapists, case managers, and psychologists/ neuropsychologists as well as underrepresented nurses and rehab technicians.

Depression, Stress, and Anxiety

On average, participants did not endorse clinically significant symptoms of depression, anxiety, or stress. Of the 53 participants, 28.3% endorsed significant levels of depressive symptoms, 20.7% endorsed significant levels of anxiety, 17% endorsed significant levels of stress, and 11.3% endorsed significant levels of anxiety related to the COVID-19 pandemic (Antony et al., 1998; S. Lee, 2020). This is consistent with meta-analyses reporting that among

healthcare workers, 23.2% endorse significant symptoms of depression, 22.8% endorse significant symptoms of anxiety, and 15% endorse significant symptoms of stress (Pappa et al., 2020; Ruitenburg et al., 2012). Even though the overall sample average was not clinically significant, depression, stress, and anxiety were all related to emotional exhaustion. This relationship is consistent with previous research (Koutsimani et al., 2019), and these findings indicate that subclinical levels of mental health symptoms, even if they are not causing clinically significant distress, are still associated with increased symptoms of burnout (Ahola et al., 2014; Ding et al., 2014; Kakiashvili et al., 2013; Kaschka et al., 2011; Nuallaong, 2013; Restauri & Sheridan, 2020; W. Sun et al., 2012).

One study attempted to demonstrate that there were three subgroups of burnout, labeled depressed burnout, anxiety burnout, and fatigue burnout (van Dam, 2016). Instead, they found that burnout could be divided into subgroups based on mild or severe symptoms for depression, anxiety, and fatigue combined. That is, there was a group of participants that were classified as burned out that experienced mild levels of depression, anxiety, and fatigue, and there was a second group of participants classified as burned out with severe levels of depression, anxiety, and fatigue (van Dam, 2016). This reinforces the idea that even subclinical mental health symptoms were still related to provider burnout. This variability in presentation has significant implications for both identifying and treating burnout. For screening, it is important to recognize the variability in presentation and that significantly different rates of endorsed symptoms can still be indicative of burnout (van Dam, 2016). Although individuals with burnout are at a greater risk for developing depression, anxiety, or stress (Koutsimani et al., 2019), it is important to recognize some individuals do not experience significant levels of these psychological sequelae

(Ehret et al., 2015; Hegde & Mitra, 2020; Morote et al., 2017). Differing levels of severity also have implications for intervention and treatment. Those experiencing clinically significant levels of depression, anxiety, or stress will require additional support as well as treatments that address all comorbidities (Bianchi et al., 2016; Roy et al., 2020; Squiers et al., 2017). Burnout, stress, depression, and anxiety have all been associated with higher rates of job turnover (Garman et al., 2002; Husain et al., 2016; Yang et al., 2016), resulting in higher costs for organizations (Han et al., 2019)

Burnout

Using the MBI, burnout was defined as experiencing symptoms of emotional exhaustion, depersonalization, or decreased professional accomplishment at, above, or below the specified cut-off scores (Maslach et al., 1986). Of the MBI subscales, 26 participants reported experiencing emotional exhaustion at or above the cut-off score provided by Maslach et al. (1986), but no one in the sample endorsed experiencing depersonalization or decreased professional accomplishment. This is reflected in the average level of burnout endorsed, where the mean level of emotional exhaustion was beyond the cut-off score but the mean scores for depersonalization and professional accomplishment were not.

Nuallaong (2013) provided a model demonstrating that the first stage of burnout experienced by most people is emotional exhaustion, followed by depersonalization, followed by decreased professional accomplishment. Participants in this sample who reported experiencing burnout were likely in the early stages of this cycle (Maslach & Leiter, 2016b; Nuallaong, 2013). Those experiencing burnout were primarily facing depleted emotional and physical resources (Maslach & Leiter, 2016b). Factors that have been associated with emotional exhaustion include

lack of organizational resources or uneven distribution of resources (López-Cabarcos et al., 2019). It is possible that participants were experiencing the sequelae of inadequate resources, both at the organizational level such as sufficient staffing and leadership style (Albrecht et al., 2018; Leiter & Maslach, 2003) and personal level including self-efficacy, optimism, and self-esteem (Huang et al., 2016; Wang et al., 2016). This was likely either caused or exacerbated by the COVID-19 pandemic, which has both increased the demands placed on healthcare workers by increasing the workload and increasing isolation from others and reduced available resources such as necessary personal protective equipment or emotional support for increased anxiety (Dinibutun, 2020; Jalili et al., 2021; Mantovani et al., 2020; Sung et al., 2020). While this means that the impact on their patients and interpersonal relationships is likely lower than if they were experiencing depersonalization or diminished professional accomplishment (Bakker et al., 2005; Maslach & Leiter, 2016b), the toll of burnout is still present and is probably impacting their sleep and concentration (Ekstedt et al., 2006), increasing physiological and psychological strain (R. T. Lee & Ashforth, 1990), and resulting in negative attitudes towards work (Kahill, 1988). It is important to note that other stressors in the company or in cognitive rehabilitation at large maybe affecting the distribution of resources in a way that has yet to be identified.

Of note, burnout in this sample was not significantly associated with demographic factors that typically serve as risk or protective factors for burnout such as age, gender, marital status, years of education, hours worked per week, or days of vacation taken per year. This is likely because only 26 participants endorsed experiencing emotional exhaustion and no one endorsed experiencing depersonalization and decreased professional accomplishment, which limited the power to detect significant relationships between burnout and these demographic factors. It is

also possible that the relationship between burnout and these demographic factors is driven more by the depersonalization or diminished professional accomplishment components of burnout that were not represented in this sample (Cañadas-De la Fuente et al., 2015; Maslach & Leiter, 2016a; Shanafelt et al., 2015). The only demographic factor that burnout was associated with in this sample was parental status. Having children was associated with lower rates of burnout compared to participants without children. One might assume that the added stress of raising children would increase burnout (Vigouroux & Scola, 2018), especially with the increased demands placed on parents to continue working while raising and schooling their children during the COVID-19 pandemic (Calvano et al., 2021). Research has even showed increased rates of parental burnout specifically related to the pandemic (Griffith, 2020). Interestingly, recent studies have confirmed that having children is associated with lower levels of burnout (Cañadas-De la Fuente et al., 2018). While investing in a family requires time, money, and emotional resources (Eby et al., 2005), having a family can also provide a source of fulfilment, energy, and social capital (Heskiau & McCarthy, 2020). The hypothesis is that the rewards of raising children are associated with an increased sense of personal accomplishment (ten Brummelhuis et al., 2008), and that the resources gained from having a family can be reinvested in work (Heskiau & McCarthy, 2020) which reduces the risk of burnout (Maslach & Leiter, 2016b).

Interpersonal Team Cohesion

Because participants in the study had different roles on different treatment teams, additional analyses were conducted to determine if any team factors lead to different experiences of interpersonal team cohesion. The level of team cohesion endorsed did not differ based on discipline, being on a specific treatment team versus not being on a specific treatment team, or

being on the inpatient versus outpatient team. The only difference in team cohesion was found between treatment locations, with the Villa Creek location experiencing significantly lower levels of team cohesion than the Savanna Oaks Ranch location. While the difference was significant, it is important to note that the level of teamness reported at the Villa Creek location was still relatively high with an average rating of 58.44 out of 77. While the exact cause for this difference is unclear in the current study, several possible explanations exist. It could be that several factors not accounted for in this study are also impacting interpersonal team cohesion, such as administrative policies (Morley & Cashell, 2017), leadership style (Graça & Passos, 2015), patient demands (Chiocchio et al., 2015), geographical location (Farughi et al., 2020), or some other unidentified factor influencing team cohesion at these locations.

Hypothesis Testing

The aim of this study was to determine the impact of interpersonal team cohesion on the experience of burnout in individual providers. The hypothesis was that increased interpersonal functioning of the team, as measured by the teamness scale of the Team Functioning Survey, would be associated with lower levels of burnout as measured by the MBI index, while decreased interpersonal functioning of the team would be associated with higher levels of burnout.

Based on the results of the preliminary analysis, interpersonal team cohesion did not significantly correlate with the MBI index. The hypothesis as stated was not supported. The lack of endorsement for depersonalization or decreased professional accomplishment likely impacted the strength of the relationship between the MBI index and teamness. Even though the full range of experiences in burnout were not captured in this sample (Maslach & Leiter, 2016b), the higher

levels of emotional exhaustion sufficiently resulted in a classification of burnout for 26 participants (Maslach et al., 1986). In this sample, higher levels of team cohesions were associated with lower levels of emotional exhaustion. Given that participants in this sample only endorsed emotional exhaustion, and since only experiencing emotional exhaustion is sufficient to be classified as burned out (Maslach et al., 1986), emotional exhaustion was used in additional analyses to represent burnout.

After examining all demographic and psychological variables, it was determined that stress, anxiety, depression, and parental status were all significantly related to emotional exhaustion, and as such should be included in the analyses examining the relationship between teamness and emotional exhaustion. With these factors included, teamness did not significantly predict emotional exhaustion. Even with the substitution of emotional exhaustion for the MBI index, the hypothesis that interpersonal team cohesion would be inversely related to burnout in individual providers was not supported.

Mediation Analysis

In further exploration of how team cohesion is associated with burnout, two unexpected variables of interest appeared in the analysis. Both stress and depression presented as significant predictors of emotional exhaustion. Given that teamness was a significant predictor of emotional exhaustion until stress or depression were added to the model, and that stress significantly correlated with both teamness and depression, it was determined that the direct effect of teamness on emotional exhaustion was being distorted by collinearity (Morrissey & Ruxton, 2018). This implied that there could be a more complex relationship between all of these variables. Further review of the literature revealed that both depression and stress have been

previously identified as mechanisms of change between other predictors and burnout using mediation analysis (Acker, 2010; Jun et al., 2021).

Mediation analysis was conducted to determine if either depression or stress served as an underlying mechanism between interpersonal team cohesion and burnout (Baron & Kenny, 1986). The analysis revealed that depression did not serve as a mediator, but that stress did serve as a partial mediator between interpersonal team cohesion and emotional exhaustion. This means that part of the relationship between interpersonal team cohesion and burnout was direct, but that some of the relationship was indirectly mediated by stress. As team cohesion decreased, stress increased, resulting in higher levels of burnout. The opposite was also true, in that higher levels of team cohesion would lead to lower levels of stress, resulting in lower levels of burnout. The initial hypothesis that teamness was inversely related to burnout did not account for the complexity of the relationship (Bria et al., 2012; Lastovkova et al., 2018; Pandey & Singh, 2016), specifically the role of stress as an underlying mechanism or stepping stone between team cohesion and burnout (Agler & De Boeck, 2017; Baron & Kenny, 1986; Jun et al., 2021). This introduces another area of potential intervention, suggesting that burnout could be addressed by targeting both team cohesion and individual stress (Bradley et al., 2003; Gilmartin et al., 2017).

Limitations

There are several limitations in the present study. It is important to note that this study was conducted with a self-selected convenience sample. Data on all direct care providers at Pate Rehabilitation were made available, indicating that only 53 of 205 eligible participants partook in this study. Some fields were overrepresented in this sample, while others were underrepresented. This was very apparent in regards to the rehab technicians. Even though rehab technicians make

up approximately half of the staff in cognitive rehabilitation, participation was significantly limited compared to other disciplines. These misrepresentations could lead to over or under representation of other sample characteristics that are related to field of practice, such as age or level of education (Fife, 2013). This limits the generalizability of these findings, for example individuals who did not respond could be experiencing different rates of interpersonal team cohesion or greater rates of burnout (Maslach et al., 1986; Phillips et al., 2016; Strasser et al., 2014). This also resulted in a smaller sample size, which limited the statistical power to identify a significant relationship between variables (Breur, 2016). This study was also conducted during the COVID-19 pandemic. No data exists in this sample from before the pandemic, so the magnitude of the impact the COVID-19 pandemic has had on these providers and their experience of burnout cannot be fully accounted for. In terms of burnout, participants in this sample only endorsed emotional exhaustion, meaning the effects of depersonalization and decreased professional accomplishment could not be meaningfully assessed. This in turn limited the represented experience of burnout, which likely limited generalizability. Additionally, all of the data were collected at a single time point by self-report. This self-reporting could lead to a bias in responses that is not otherwise accounted for (Lance & Vandenberg, 2009). There were also limitations inherent to the measures that were used. The Team Functioning Survey is relatively new (Strasser et al., 2014), so the research supporting its clinical utility is present but limited (Strasser et al., 2005, 2010; Strasser & Falconer, 1997). Authors of the Maslach Burnout Inventory initially provided cut off scores for each scale, but these cutoffs do not correlate with clinically significant distress (Eckleberry-Hunt et al., 2018). This is further complicated by the lack of consensus for diagnostic criteria for burnout (Korczak et al., 2010). Lastly, this study was

conducted through one cognitive rehabilitation setting which limits the generalizability of these findings.

Future Directions

There are several steps that can be taken to address the limitations of the current study. Since this study was conducted during the COVID-19 pandemic, future research should compare the current reported rates of burnout to rates of burnout after the pandemic has resolved in order to estimate the effect of the pandemic on the experience of burnout (E. Azoulay et al., 2020). Because participants only endorsed emotional exhaustion, future research could expand upon these findings by utilizing samples with a broader presentation of burnout that includes emotional exhaustion, depersonalization, and diminished professional accomplishment (Maslach et al., 1986). Future studies can compare self-reported levels of burnout and team cohesion to other related measures such as secondary reports from managers or family members, turnover data for the company or institution, or patient factors such as level of care or discharge location (Wittink et al., 2003). Adding a longitudinal component would also help elucidate the causative roles between team cohesion and burnout. As for the measures themselves, future research should continue to utilize the Team Functioning Survey to further establish validity and reliability across settings (Strasser et al., 2014). Future research should also continue to work towards creating a standardized definition of burnout and should clarify when these measures correspond with clinically significant distress in order to increase the power and generalizability of research on burnout (Eckleberry-Hunt et al., 2018). This will likely lead to more clinically relevant ways of interpreting the MBI (Eckleberry-Hunt et al., 2018). Research should also be expanded into other settings with interdisciplinary teams such as oncology (Chung et al., 2011),

emergency medicine (Fernandez et al., 2008), pain management (Gatchel et al., 2014), palliative care (M. O'Connor et al., 2006), and other specialty clinics (Newhouse & Spring, 2010) to see if team discipline impacts either team cohesion or burnout.

Given the preliminary nature of these findings, there are several paths for future directions and growth. The proposed hypothesis was shown to be too simplistic to account for the complexity of the relationship between team cohesion and burnout. The fact that stress served as a partial mediator indicates that the relationship between team cohesion and burnout could be better explained by a multiple mediation or mediation-moderation model (Preacher & Hayes, 2008). Future research should continue to examine multi-level influences of individual, interpersonal, and organizational factors on the experience of burnout (Lastovkova et al., 2018). Additional studies could also be conducted to examine factors impacting team cohesion (Bradley et al., 2003; Leipzig et al., 2002), thus leading to a chain of interacting factors that ultimately lead to burnout. If the role of team cohesion and stress in predicting burnout is further bolstered by additional research, interventions targeting these two factors in order to reduce or prevent burnout can be developed, implemented, and studied (Awa et al., 2010; Demerouti, 2015; Greenberg, 2012).

Implications

Research has consistently demonstrated that both provider burnout and interdisciplinary team functioning significantly impact patient outcomes (Reader et al., 2008; Strasser et al., 2005). Burnout has also been associated with poorer psychological and physical health (Kitaoka-Higashiguchi et al., 2009; Kumar, 2016) poorer outcomes at work (Dewa et al., 2014; Garman et al., 2002), and poorer patient outcomes (Balch, 2009; Garman et al., 2002). Once someone

begins to experience burnout, it can be difficult to reduce or remit their symptoms (Ahola et al., 2017). In order to develop appropriate interventions, it is important to identify modifiable factors that influence burnout. Even though the positive and negative experiences of being on an interdisciplinary team overlap with both protective and risk factors for burnout (Adler-Milstein et al., 2020; Ashley et al., 2018; McNally et al., 2017; United Health care, 2020), the relationship between interdisciplinary team functioning and burnout have yet to be specifically examined in the literature (Hellyar et al., 2019).

The results of this study found two modifiable factors that interact to predict the levels of emotional exhaustion that cognitive rehabilitation providers experience. Lower perceived team cohesion mediated by high levels of stress predicted higher rates of emotional exhaustion, one of the three main components of burnout (Maslach & Leiter, 2016b). As such, both team cohesion and stress could serve as points for intervention (Awa et al., 2010). The next step is to determine which of these interventions ultimately reduce or prevent burnout. Several interventions exist to improve team cohesion (Bradley et al., 2003; Callow et al., 2009) and manage stress (Gilmartin et al., 2017; Greenberg, 2012; Richardson & Rothstein, 2008).

Because interdisciplinary team cohesion has a direct and indirect on burnout, this should be the first point of intervention. For teams who are working together on the same project over time, it is recommended that interpersonal interventions are used rather than task interventions (Bradley et al., 2003). Interventions can include but are not limited to workshops teaching principles of teamwork (Miller et al., 2018), developing better communication and interpersonal skills (Fleetwood et al., 2018), and developing a system of accountability (Hamman, 2004). Even though interventions for interpersonal team cohesion should also lead to decreased stress,

additional interventions addressing stress can be used to supplement the interventions on interdisciplinary team cohesion. Several resources are already readily available to help individuals manage stress (Greenberg, 2012; Richardson & Rothstein, 2008), techniques that have been proven to be effective specifically for healthcare providers include mindfulness (Gilmartin et al., 2017), diaphragmatic breathing (Hopper et al., 2019; Varvogli & Darviri, 2011), and cognitive behavioral therapy (CBT) (Bamber, 2011; Varvogli & Darviri, 2011). Improving low levels of interpersonal team cohesion and high rates of stress with existing empirically based interventions (Bradley et al., 2003; Greenberg, 2012) should lead to a decrease in burnout symptoms without having to develop and assess new interventions for burnout that are still under empirical investigation (West et al., 2016).

The healthcare system at large is experiencing a “Burnout Epidemic” (Reith, 2018). The development and experience of burnout is complex (Lastovkova et al., 2018), but it is important to continue exploring all of the factors associated with burnout in order to develop a more complete clinical picture (Eckleberry-Hunt et al., 2018; Maslach, 1993). One of the many areas that has yet to be explored is the role of the interdisciplinary team (Hellyar et al., 2019). Interdisciplinary teams are becoming the foundation of healthcare (Philip & Soper, 2016), as such it is imperative that we expand our understanding of burnout to include the role of interdisciplinary team functioning. This study has opened a new avenue in exploring the causes and effects of burnout. Understanding the relationship between interdisciplinary care and burnout sets the stage for developing new interventions to address team functioning, provider burnout, and quality of care for patients.

Appendix A Recruitment Emails

Initial Recruitment Email

Hello,

My name is Carolyn Cassill, I'm a 4th year doctoral candidate in the Clinical Psychology program at UT Southwestern Medical Center. I'm looking for volunteers to complete a survey for my dissertation research under the supervision of Mary Anise, PsyD and Mona Robbins, PhD. I'm interested in exploring the relationship between the level of burnout in individual providers and interdisciplinary team cohesion in a cognitive rehabilitation setting.

- **Eligibility:** All direct care staff at Pate Rehabilitation's treatment and residential locations are eligible to participate. This includes all physical therapists, occupational therapists, speech therapists, nurses, psychologists/neuropsychologists, case managers, and rehab techs. Students and those who do not provide direct care to patients (administrators, administrative assistance, etc.) are not eligible for this study.
- **Protection of Privacy:** Your information will be kept private and confidential. All information will be collected and stored by UT Southwestern. Administrators and supervisors will not have access to individual responses, but they will receive a general summary of the results.
- **Compensation:** After completing this survey, a \$5 gift card to your choice of Panera or Starbucks will be emailed to you within 7 business days.
- **How to Participate:** The survey will take approximately 30-40 minutes to complete. There are two ways for you to complete this survey.
 - The survey will be available online until June 23rd, 2021. Follow the QR code on the attached flyer or follow this link to access the survey online:
<https://ais.swmed.edu/redcap/surveys/?s=JNX4HT9339>
 - Complete the survey on site using one of the computers provided or by filling out a paper version of the survey
 - XX/XX/XX at Brinlee Creek Ranch
 - XX/XX/XX at Savannah Oaks Ranch
 - XX/XX/XX at Villa Creek

If you have any questions about the survey or how to participate, please email me at carolyn.cassill@utsouthwestern.edu.

Thanks!

Carolyn Cassill, B.S.
Doctoral Candidate of Clinical Psychology
UT Southwestern Medical Center

Follow-up Recruitment Email

Hello,

If you haven't already, there is still time to complete this survey examining the relationship between provider burnout and interdisciplinary team cohesion in a cognitive rehabilitation setting. Those who complete the survey will be emailed a \$5 gift card to their choice of Starbucks or Panera within 7 business days. The survey will be available online until June 18th, 2021. It can be accessed online at <https://ais.swmed.edu/redcap/surveys/?s=D99NTDMH8C>, or you can take the survey in person on one of the following dates.

- 6/10/2021 at Savannah Oaks Ranch
- 6/11/2021 at Villa Creek

For more information about the study or how to participate, refer to the attached flyer or send an email to the study coordinator, Carolyn Cassill, at carolyn.cassill@utsouthwestern.edu.

Thanks!

Carolyn Cassill, B.S.
Doctoral Candidate of Clinical Psychology
UT Southwestern Medical Center

Appendix B

Study Flyer

How does your job impact you?

Please take this 30-40 minute online survey to help us understand burnout in the rehab field!

Direct care staff (PT, OT, SLP, Nurses, case managers, psychologists, rehab techs) are eligible to participate.

Participants who complete this survey will be emailed a \$5 gift card to your choice of Starbucks or Panera!

For More Information

Please contact Carolyn Cassill at carolyn.cassill@utsouthwestern.edu or follow this QR code to take the survey now!



This survey is part of a Research Project being conducted by UT Southwestern Medical Center.

Appendix C

Study Information Sheet

To be conducted at
The University of Texas Southwestern Medical Center

Who is conducting the study? Mona Robbins, PhD, an Assistant Professor from the Department of Psychiatry at UT Southwestern Medical Center is conducting this study.

This research is being conducted as part of a Dissertation. The student completing this dissertation is Carolyn Cassill, a 4th year doctoral candidate in the Clinical Psychology Program in the Department of Psychiatry at UT Southwestern Medical Center

What is the purpose of the research? Many healthcare providers across settings and across disciplines experience burnout at some time during their career. Burnout is the feeling of exhaustion that occurs with work-related stress. However, limited research has been done looking at burnout in the field of cognitive rehabilitation. While several individual and organizational factors have been linked to burnout, the role of the interdisciplinary team in how individuals experience burnout has yet to be explored.

You are asked to participate in this research study of burnout and interdisciplinary team cohesion. The purpose of this study is to assess the level of burnout providers in a cognitive rehabilitation setting are experiencing, and to examine the role interdisciplinary team cohesion affects levels of burnout.

The researchers hope to learn how interdisciplinary team cohesion impacts the level of burnout providers experience in a cognitive rehabilitation setting.

Who is asked to participate? You are being asked to be a participant in this study because you are a member of the direct care staff at one of Pate Rehabilitations treatment or residential locations. This study will enroll approximately 150 study participants.

Do you have to be in this study? You do not have to participate if you don't want to. You may also leave the study at any time. If you decide to stop taking part in this research study, it will not affect your relationship with the UT Southwestern, or any staff or doctors. Whether you participate or not will have no effect on your legal rights or the quality of your health care. If you are a medical student, fellow, faculty, or staff at the Medical Center, your status will not be affected in any way.

What are the Research Procedures? While you are taking part in this study, you will be asked to complete one survey either online or on paper. This survey is expected to take 30-40 minutes to complete. You can complete the study on your own device whenever you like, or you can complete the study on site where electronic devices or paper surveys will be provided. You will be asked to complete one 30-40 minutes survey. You can start the survey whenever you like, but you will be required to finish the survey in one sitting. You will not be able to leave and return to

the study at a later time. Once you have completed the survey, a \$5 gift card to your choice of Panera or Starbucks.

What are the Risks and Benefits? There is a slight risk of the loss of confidentiality as a result of completing this survey.

You may not receive any personal benefits from being in this study. We hope the information learned from this study will benefit other healthcare providers with burnout in the future.

Costs and Compensation There are no costs associated with participating in this research survey. Once you have completed the survey, a \$5 gift card of your choice to Panera or Starbucks will be emailed within 7 business days.

Confidentiality Information we learn about you in this study will be handled in a confidential manner. If we publish the results of the study in a scientific journal or book, we will not identify you.

Any data collected as part of this study may be used for future research studies without your consent. Any information that identifies you will be removed before it is used for future research studies.

All information you provide will be collected by and stored at UT Southwestern Medical Center. Supervisors and administrators at Pate Rehabilitation will not have access to individual responses, but they will have access to de-identified overall results, e.g. average levels of burnout or team cohesion at specific treatment or residential locations.

Contact Information for questions or comments:

The University of Texas Southwestern Medical Center Human Research Protection Program (HRPP) oversees research on human subjects. HRPP and Institutional Review Board (IRB) representatives will answer any questions about your rights as a research subject, and take any concerns, comments or complaints you may wish to offer. You can contact the HRPP by calling the office at 214-648-3060.

Before you agree to participate, make sure you have read (or been read) the information provided above; your questions have been answered to your satisfaction; and you have freely decided to participate in this research.

Primary contact:

Carolyn Cassill, B.S. can be reached at (210) 807-0712.

APPENDIX D**Demographic Information**

Name:

Email:

How did you hear about this study?: (email, flyer, coworker, other)

Gender: (Male, Female, Other)

Race:

Ethnicity: (Hispanic/ Not Hispanic in Origin)

Marital Status: (Single, Married, Separated, Divorced)

Parental Status: (Kids / No Kids)

Total Years of Education:

Highest Degree Obtained: (less than High School, High School or GED, Associates or Certificate, Bachelor's Degree, Master's Degree, Doctoral Degree)

Field: (Speech Therapy, Occupational Therapy, Physical Therapy, nursing, social work/ case management, psychologist/ neuropsychologist, rehab tech)

Pate Location: (Villa Creek, Brinlee Creek Ranch, Anna)

Treatment Team: (Day Neuro/ Inpatient)

How many years have you worked in this field?:

How many years have you worked at Pate?:

How many hours a week do you work on Average?

How many days of vacation do you take in 1 year?

APPENDIX E
Maslach Burnout Inventory Human Services Survey for Medical Personnel
(MBI-HSS (MP))

The Maslach Burnout Inventory (MBI) is subject to copy right. As such, only three sample items may be disclosed for dissertation. The sample items are as follows:

MBI – Human Services Survey for Medical Personnel – MBI-HSS (MP):

I feel emotionally drained from my work.

I have accomplished many worthwhile things in this job.

I don't really care what happens to some patients.

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APPENDIX F
Depression, Anxiety, and Stress Scale-21 items (DASS-21)

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
 - 1 Applied to me to some degree, or some of the time
 - 2 Applied to me to a considerable degree or a good part of time
 - 3 Applied to me very much or most of the time
- 1. I found it hard to wind down
 - 2. I was aware of dryness of my mouth
 - 3. I couldn't seem to experience any positive feeling at all
 - 4. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)
 - 5. I found it difficult to work up the initiative to do things
 - 6. I tended to over-react to situations
 - 7. I experienced trembling (e.g., in the hands)
 - 8. I felt that I was using a lot of nervous energy
 - 9. I was worried about situations in which I might panic and make a fool of myself
 - 10. I felt that I had nothing to look forward to
 - 11. I found myself getting agitated
 - 12. I found it difficult to relax
 - 13. I felt down-hearted and blue
 - 14. I was intolerant of anything that kept me from getting on with what I was doing
 - 15. I felt I was close to panic
 - 16. I was unable to become enthusiastic about anything
 - 17. I felt I wasn't worth much as a person
 - 18. I felt that I was rather touchy
 - 19. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)
 - 20. I felt scared without any good reason
 - 21. I felt that life was meaningless

APPENDIX G
Coronavirus Anxiety Scale (CAS)

How often have you experienced the following activities over the last 2 weeks?

The rating scale is as follows:

- 0 Not at all
- 1 Rare, less than a day or two
- 2 Several days
- 3 More than 7 days
- 4 Nearly every day over the last 2 weeks

- 1. I felt dizzy, lightheaded, or faint when I read or listened to news about the coronavirus
- 2. I had trouble falling or staying asleep because I was thinking about the coronavirus
- 3. I felt paralyzed or frozen when I thought about or was exposed to information about the coronavirus
- 4. I lost interest in eating when I thought about or was exposed to information about the coronavirus
- 5. I felt nauseous or had stomach problems when I thought about or was exposed to information about the coronavirus

APPENDIX H

Team Functioning Scale

Physician Support: *These statements are about social characteristics of teams. If you think the statement is True or mostly True of your team, check True. If you think the statement is False or mostly False, check False. Be sure to answer every item.*

1. The attending physician spends very little time encouraging members. (Rev)
2. The attending physician goes out of his/her way to help members.
3. The attending physician doesn't know the members very well. (Rev)
4. The attending physician explains things to the team.
5. The attending physician helps new members get acquainted with the team.
6. The attending physician takes a personal interest in the members.
7. The attending physician doesn't expect much of the team. (Rev)
8. The attending physician tells members when they're doing well.
9. Members can count on the attending physician to help them out of trouble.

(Rev) indicates items need to be reversed when scored.

Shared Leadership: *Leadership comes in various shapes and sizes. While the attending physician is commonly the designated leader of the team, he or she rarely performs all leadership functions that are inherent in team work. Depending upon the situation and the expertise of the individuals, leadership may shift among the members of the team. In responding to these items, please consider a broad view of leadership. How effective is your team leader? Rank on a scale of 1 (not very important) to 7 (very important).*

1. Promoting an atmosphere of acceptance and trust
2. Helping individuals understand their role on the team
3. Promoting open discussion of conflicts and disagreements
4. Motivating creative solutions to difficult problems
5. Encouraging team problem-solving and decision making
6. Advocating for the needs of the rehab team
7. Keeping patient progress at the center of the discussion

Supervisor Team Support: *Your supervisor is the individual responsible for your performance. Typically, this is the individual who performs your annual performance evaluation. To what extent are the following items an important expectation of your supervisor? Rank on a scale of 1 (not very important) to 7 (very important).*

1. Meeting accreditation (JCAHO/CARF) requirements
2. Improving patient satisfaction
3. Your active involvement at team meetings

4. Attendance at team meetings by staff treating the patients
5. Active involvement of family members and caregivers
6. Developing co-treatment plans with other rehab professionals
7. Reducing length of stay

Teamness: *To what extent are the following statements characteristic of your team? Rank on a scale of 1 (not very important) to 7 (very important).*

1. Work together as team
2. Be ethical in their work
3. Deal constructively with disagreements
4. Remain focused on the goals of rehab
5. Incorporate divergent staff perspectives into treatment planning
6. Involve families and caregivers

On a scale of 1 (not very effective) to 7 (very effective), How effective do you feel your team is in the following?

1. Integrating patient information from different disciplines
2. Overcoming misunderstandings among team members
3. Problem solving on challenging patients
4. Coordinating team activities
5. Using team meeting time productively

Team Effectiveness: *How satisfied are you with your team's effort devoted to the following? Rank on a scale of 1 (not very important) to 7 (very important).*

1. Establishing treatment goals
2. Achieving treatment goals
3. Carrying over therapy skills to the nursing floor
4. Providing family and caregiver education
5. Trying out innovative rehab strategies
6. Adapting to changes in the patient's status
7. Working together as a team
8. Assisting families and caregivers with difficult problem

APPENDIX I Correlation Analysis

Table I.1

Spearman's Rank Order Correlation Analysis for MBI, Teamness (TFS), and Continuous Demographic Data

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
Maslach Burnout Inventory														
1. Emotional Exhaustion	29.38	12.77	-											
2. Depersonalization	9.15	4.64	.46**	-										
3. Professional Accomplishment	46.38	5.62	-.37**	-.15	-									
4. MBI Index	28.41	5.56	.92**	.61**	-.07	-								
Team Functioning Survey														
5. Teamness	64.12	12.03	-.34*	-.25	.24	-.25	-							
Demographics														
6. Age	40.28	11.31	-.19	-.13	.29*	-.13	.13	-						
7. Years of Education	14.60	5.39	-.07	.08	.26	.04	.02	.53**	-					
8. Years in Field	11.31	9.29	-.02	-.09	.26	.03	.08	.73**	.42**	-				
9. Years at Pate	6.53	5.23	.26	.14	.17	.24	.02	.45**	.28*	.49**	-			
10. Hours per Week Total	45.14	12.07	.08	-.07	.10	.06	-.13	-.09	-.00	-.09	-.03	-		
11. Hours per Week at Pate	42.84	4.73	.19	.28*	.18	.26	-.23	-.07	-.04	-.04	.14	.45**	-	
12. Vacation Days Taken per Year	10.23	5.78	-.04	.11	.26	.07	.03	.36*	.48**	.34	.44**	.01	-	.04

* p < .05, ** p < .01, 2-tailed

Table I.2*Spearman's Rank Order Correlation Analysis for MBI, TFS, DASS-21, and CAS*

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Maslach Burnout Inventory															
1. Emotional Exhaustion	29.38	12.77	-												
2. Depersonalization	9.15	4.64	.46**	-											
3. Professional Accomplishment	46.38	5.62	-.37**	-.15	-										
4. MBI Index	28.41	5.56	.92**	.61**	-.07	-									
Team Functioning Survey															
5. Physician Support	7.04	2.23	-.29*	-.21	.40**	-.17	-								
6. Shared Leadership	36.46	11.56	-.36**	-.26	.29*	-.27	.60**	-							
7. Supervisor Team Support	39.289	7.87	-.24	-.24	.10	-.20	.46	.72**	-						
8. Teamness	64.12	12.03	-.34*	-.25	.24	-.25	.51**	.70**	.62**	-					
9. Team Effectiveness	47.06	8	-.27*	-.22	.25	-.27	.43**	.46**	.46**	.78**	-				
Depression, Anxiety, Stress Scale 21															
10. Depression	6.30	7.69	.72**	.45**	-.41**	.64**	-.30	-.35*	-.23	-.28*	-.25	-			
11. Anxiety	4.48	6.21	.41**	.38**	-.39**	.35**	-.28	-.27	-.02	-.31*	-.20	.62**	-		
12. Stress	8.80	7.69	.71**	.42**	-.36**	.65**	-.19	-.37**	-.24	-.33*	-.28	.82**	.62**	-	
Coronavirus Anxiety Scale															
13. CAS	6.49	3.67	.09	.14	-.02	.09	-.26	-.13	.03	-.19	-.16	.23	.33*	.23	

* $p < .05$, ** $p < .01$, 2-tailed

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