

REVISING THE SCRIPT: MIXED-METHOD STUDY OF TRAUMA DRAMA
FOR COMPLEX-TRAUMA-EXPOSED YOUTH IN RESIDENTIAL TREATMENT

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Dedication

This dissertation is dedicated to the people who made me: my darling dad and mom, Burk and Miriam Sullivan; my grandmother, Miriam Elizabeth Loughran Fenerty; the acting/music teachers of my youth, Dolly Beechman Schnall, Jack and Sue Shaw, Eileen and Larry Zerone, and Mike Lemon; my partners in motherhood, Stephanie Brielle Gullo, Maria Carolla Gullo, Dolores Landgraf, and Yildiz Dogukan; the two loves of my life, my husband Andy Hyde and our daughter Isabella Stephanie Hyde; and the generations of theatre artists, healers, teachers, and scientists upon whose shoulders I stand.

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Abstract

Creative-arts interventions have historically been used to treat people exposed to complex trauma. In the United States, however, such interventions have failed to achieve widespread use, perhaps because of obstacles to systematic study, which have prevented development of a sufficient evidence base. This may be attributable in part to the challenges of measuring drama's differential impact on the unique psychophysiological system of the individual, as well as the complications related to having no legitimized complex trauma diagnosis around which to organize a research agenda until publication of the complex post-traumatic stress (CPTSD) diagnostic classification of 2018 (ICD 11; World Health Organization). In order to simplify future field research and data aggregation across settings, the current study of Trauma Drama (TD; Spinazzola, 2019) made a first attempt to identify a core matrix of variables that might imply an increased flexibility in the underlying constituents that bind heterogeneous symptoms (Insel, 2014). The TD study, as described in this dissertation, is an embedded, combined, concurrent, and sequential mixed-method investigation in a complex-trauma-exposed population of 47 youth in residential treatment in the northeastern United States (treatment condition [$n = 27$] and a semi-matched comparison condition [$n = 20$]).

Longitudinal pattern analysis of the subtracted distance between resting and maximum capacity heart rate variability (HRV) was used to calculate the novel high frequency HRV (HF HRV) variable, an index of parasympathetic nervous system balance at pre- vs. posttest. My analysis suggested the presence of three physiological subgroups across the treatment and comparison groups. The treatment condition of one of the subgroups appeared to account for improved depression symptoms in the overall treatment group as contrasted with the comparison group. Therefore, it appears that in this study, response to the TD intervention may be, at least

partially, moderated by electrophysiological subtype. I used Interpretive Phenomenological Analysis (IPA; Smith & Osborn, 2008) to analyze interviews of treatment group participants ($n = 29$) and intervention-facilitators ($n = 12$). The superordinate theme of the qualitative arm of the study was the shift that occurs from a state of *Absence* (a survival state of fight, flight, and/or freeze that dissociates people from being in the now) to a state of greater *Presence* (being rooted in the now) via the *Modification of Associations Process* (MAP). The MAP reorganizes and expands associations undergirding subjective experience of self, others, and the world.

Taken together, triangulated data imply that the treatment group experienced a decrease in dissociation (a central symptom in the network of the Post-Traumatic Stress Disorder [PTSD] cluster of the CPTSD diagnosis [Knefel & Lueger-Schuster, 2013]), as well as a decrease in depression (a central symptom in the network of the Disturbances of Self Organization [DSO] cluster of the diagnosis [Haselgruber et al., 2020]). These findings suggest that TD may work to diminish complex trauma pathology in this population, and as a result, further study of TD is indicated. The data also suggest that the stabilization phase of TD is essential to engagement in the intervention and for the consequent reduction of DSO symptoms in particular; therefore further study of TD may offer an opportunity to use the intervention as an exemplar through which the general characteristics, effect, and value of the stabilization phase of component-based treatments for CPTSD may be examined.

Keywords: Complex Posttraumatic Stress Disorder (CPTSD); Drama Therapy; Heart-Rate Variability (HRV); Interpretive Phenomenological Analysis (IPA); Stress Sequelae Assessment

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Chapter I: Introduction

For thousands of years, drama has been used to integrate traumatized people naturally into society and to heal stressful experiences (Boyd, 2018; Shay, 1995). In the 21st century, however, the treatment of trauma has become professionalized and often focuses on cognitive behavioral protocols for posttraumatic stress that directly target specific or time-limited incidents (e.g., an automobile accident or combat exposure in adulthood), with the goal of rapidly restoring affected people to a prior state of well-functioning (Friedman et al., 2007; Rauch & Foa, 2006). Yet, for people who have experienced more pervasively stressful events in early childhood—such as chronic abuse and neglect—stressful experience most commonly does not have a beginning and an ending (Ford & Courtois, 2020; van der Kolk, 2015). It is often not characterized by discrete events that can later be used as treatment targets. In addition, chronically stressed people cannot be returned to a baseline of well-functioning if it was never established in the first place.

Early life stress that is pervasive, continual, and cumulative is referred to as complex stress (Ford & Courtois, 2020), and when it contaminates a person's experience of life it is referred to as complex trauma (Cloitre & Beck, 2017; Herman, 1992b; Shonkoff et al., 2009; Spinazzola et al., 2005; Spinazzola et al., 2013). Complex trauma most often occurs within the context of impaired caregiving systems. It triggers persistent employment of survival adaptations that deplete physiological resources; it alters the developmental course; and it interferes with flexible and well-calibrated responses to challenges in the environment (Karatsoreos & McEwen, 2013; Teicher & Samson, 2016; van der Kolk, 2005). The survival-adapted body habitually deploys crisis-calibrated fight/flight/freeze defenses (Karatsoreos & McEwen, 2013). Confused evaluations of relative threat versus safety make it impossible for people to trust fully in their

own judgment (Matsakis, 1998). Trauma-infused perceptual impairments are viewed as akin to “driving while drunk” (Rosenberg, 2021, personal communication, May 12, 2021). Affected individuals learn to mistrust self, others, and the world. They develop a negative sense of self and become isolated and marginalized from engagement in society (Cloitre, 2021; D’Andrea et al., 2012; Ford & Courtois, 2020; Herman, 1992b; Janet, 1925/1976; Matsakis, 1998; Spinazzola & Briere, 2020; van der Kolk, 2010).

Early-life stress has a dose-related association with over forty types of physiological, behavioral, and psychological sequelae (e.g., cardiovascular disease, cancer, addiction, and depression), which develop across the lifespan (Anda et al., 2006; Bellis et al., 2019; Briere et al., 2008; Cloitre & Beck, 2017; Finkelhor et al., 2007; Follette et al., 1996; Fox et al., 2015; Spinazzola & Briere, 2020). The highest doses of early adverse experiences are associated with life being cut short by two decades (Brown et al., 2009). The Adverse Childhood Experiences (ACE) studies (Anda et al., 2006; Bellis et al., 2019; Felitti et al., 1998; Giano et al., 2020) have demonstrated that early-life stress has impacted over 60% of the U.S. population (Centers for Disease Control and Prevention [CDC], 2019). ACEs exact a tremendous toll that is paid for in human suffering, in lives cut short, and in dollars. The cost of ACEs, calculated thorough the lens of childhood abuse and neglect in the U.S., is estimated to be \$2 trillion dollars per year (Peterson et al., 2018).

Over the past century and a half, expert clinicians who have treated people with complex trauma have recommended phased treatment (sometimes called component-based treatment), the first phase of which concentrates on stabilization (Cloitre et al., 2012; Ford & Courtois, 2020; Herman, 1992b; Hopper et al., 2019; Janet, 1925/1976). The stabilization phase includes establishing a trusting and safe alliance with the therapist and instilling emotional-regulation

skills and other emotional protections. For people who have developed within the context of inadequate caregiving systems and who have never had a stable foundation, the stabilization phase revisits and fills gaps in the developmental architecture needed to support the trauma processing done in the second treatment phase (Perry, 2009).

Despite longstanding clinical recommendations in its favor, the need for phased intervention in the treatment of complex trauma is the focus of heated debate within the trauma field (see Brewin, 2020). Proponents of phased treatment argue that an initial stabilization phase is critical (Cloitre et al., 2012; Cloitre et al., 2010; Courtois, 2021; Herman, 1992b; ISTSS, 2019); however, proponents of focal-trauma treatments—designed for post-traumatic stress disorder (PTSD)—argue that there is little systematically collected clinical trial data to support the superiority of phased complex trauma treatment. They maintain that trauma-focused cognitive behavioral treatments—which bypass stabilization and directly and rapidly expose people to trauma memories—have a strong evidence base for treatment of the time-limited traumatic incidents characteristic of PTSD (de Jongh et al., 2016; Ehring et al., 2014; Resick et al., 2012) and should therefore be used for complex trauma until there is further evidence to support phased treatment. Focal treatment proponents argue that to withhold evidence-based PTSD treatments from chronically traumatized people is potentially to prolong their suffering through the weeks of a stabilization phase that may be ineffective and unnecessary. In contrast, proponents of phase-based complex trauma treatments argue that complex trauma is not merely a more severe form of PTSD—it is different in character. Phase-based treatment proponents maintain that focal treatments will at best remain inert and will at worst be destabilizing and re-traumatizing, since focal treatment omits the stabilizing installation of the relational and

emotional-regulation scaffolding required to initiate, contain, and metabolize complex trauma processing (Brewin, 2020; Cloitre et al., 2017).

It is indeed the case that there is scant systematic clinical trial research examining phased treatment for complex trauma (Karatzias et al., 2019) because the complex post-traumatic stress disorder (CPTSD) classification was not legitimized as an official diagnosis until the 2018 edition of the *International Classification of Diseases for Mortality and Morbidity Statistics: 11th Revision* (ICD 11; World Health Organization). Therefore, until three years ago, there was no official complex trauma diagnosis around which to organize a shared and unified research agenda. In contrast, the PTSD diagnosis (American Psychiatric Association [APA], 1980) was formulated and legitimized four decades ago, in the wake of the Vietnam War. Forty years of PTSD research have allowed for a body of evidence to accumulate in support of direct and focal approaches to PTSD (Foa et al., 2009; Friedman et al., 2007). In short, although there is little systematically acquired evidence that phased treatments are better than focal treatments for treating complex trauma, there is a similar lack of evidence that they are not. There is a pressing need for systematic studies on phased treatments for CPTSD (Karatzias et al., 2019).

Complicating the study of CPTSD treatment is the fact that people who are affected are often differentially impacted depending upon a variety of factors, including individual physiology and the timing and dose of exposure (including length of time exposed and number of different types of exposures; Finkelhor et al., 2007; Spinazzola et al., 2014; Teicher & Samson, 2016). There is some evidence to indicate that once symptoms develop, they compound, intensify, and combine to produce additional symptoms (Haselgruber et al., 2021). Complex trauma produces a host of heterogeneous diagnoses and biopsychosocial sequelae, depending upon developmental trajectories and physical maturation from infancy through the phases of

adulthood (Briggs et al., 2013; Cross et al., 2017) and other factors (e.g. genetics; Adams et al., 2016; Franklin et al., 2010; Hodgdon et al., 2019; Koenen et al., 2009; Rutter et al., 2006; Shonkoff et al., 2009; van der Kolk, 2010).

The CPTSD classification emerged subsequent to the introduction of a new research framework by the National Institute of Mental Health (NIMH; Insel et al., 2010; Insel, 2014), namely, the Research Domain Criteria (RDoC). The RDoC expanded the prevailing research paradigm by promoting analysis of complex relationships and of convergences and divergences among dimensional biopsychosocial variables. The RDoC assumes that symptomatology occurs along a continuum of wellness to pathology, that *phenotypes* (observable characteristics that emerge as a result of gene/environment interactions may moderate symptom profiles and treatment responses, and that common substrates underpin heterogeneous sequelae (for a fuller description see Cuthbert, 2020). The goal behind the RDoC paradigm has been to support identification and delivery of precision treatment to individuals (Gordon, 2020a, 2020b).

The current study of Trauma Drama (TD) was conducted in light of the RDoC framework and during the time of debate over the necessity of phased interventions for complex-trauma. TD is a phased and manualized group intervention (Spinazzola, 2019) that synthesizes a naturalistic, improvisational theatre form with the expert-consensus treatment guidelines for CPTSD (first published in 2012 by Cloitre et al.). TD is an evidence-informed and promising practice model adapted from the Urban Improv theatre-based secondary youth violence prevention model (Kisiel et al., 2006; Zucker et al., 2010) recognized by the Office of Juvenile Justice and Delinquency Prevention in its Model Program Guide (U.S. Department of Justice [DOJ], 2006). The potential strength of an improvisational drama intervention is (arguably) its ability to interact differentially with the unique characteristics of the individual in a complex and dynamic

manner. In theory, TD has the potential to seek, find, and address traumatic memory differentially and can address pre-verbal attachment wounds and non-verbal traumatic-memories through safe projection of unconscious and conscious experience onto the metaphor of the improvisation (Blair, 2009; Boyd, 2018; Cook, 2009; Johnson, 1982; Spolin, 1963; Stanislavski, 1934). The potential strength of drama therapy in conferring personalized effects is also its weakness, and until now treatments that employ drama have defied the type of systematic study necessary to encourage wider dissemination and implementation. In line with the RDoC framework, the current study suggests that if TD is effective, there will be variables on different dimensions that will show convergent trends—and therefore will reveal general effects for the entire treatment group—and/or there will be other variables that show divergent trends as moderated by phenotypes or subtypes that are present within the treatment group (in this dissertation I use the words subtypes and phenotypes interchangeably).

It would be hubris to proceed on the assumption that the differential impact of a naturalistic art form like drama could be comprehensively reduced, but through triangulated examination of TD, a matrix of variables that is capable of confirming effectiveness may emerge. Consequently, the goal of this mixed-method study is to triangulate psychological questionnaire data, electrophysiological data, and phenomenological interview data in order to begin the work of identifying a parsimonious matrix of variables capable of capturing evidence of dynamic-system perturbations and shifts to a higher order (Garland et al., 2010; Pascual-Leone, 2009). It is also the goal of this study to identify variables that may simplify future field research and support the data aggregation across settings that may enable statistical modeling. Such modeling may help to show whether, how, and for whom TD is effective.

The TD study is an embedded, combined, concurrent, and sequential mixed-method investigation of a complex-trauma-exposed population of 47 youth in residential treatment in the northeastern U.S. (treatment condition [$n = 27$] and of a semi-matched comparison condition [$n = 20$]). Participant demographics were as follows: aged 14 to 22 years; 61.7% female, 38.3% male; average of 5 trauma types; 79.4% experienced their first trauma before age 1; average of 2.51 diagnoses; average of 2.54 medications; and average of 3 years behind in school (see Appendix C, Table C1). Participants were divided into two groups, the first group being a TD treatment group of those who attended Trauma Drama adjunctive treatment groups over the course of a school year, and the second group being a comparison group of semi-matched participants who experienced treatment as usual and adjunctive treatments that were not TD.

Organization of the Mixed-Methods Dissertation

This dissertation has three data strands: (a) secondary analysis of quantitative data from questionnaires; (b) primary analysis of electrophysiological heart rate variability data; and (c) primary analysis of qualitative interview data. In the past, creative-arts interventions have resisted methodical study. This triangulation of methods is intended to serve as a beginning step in the identification of a simplified matrix of variables for future study of this complex arts intervention in complex populations (Creswell & Zhang, 2009). Triangulation of methods and informants is also meant to compensate for a small quantitative sample size and the roughness of the secondary analysis of the parent-organization-provided clinical questionnaire-data (originally used as continuous quality control data).

Triangulated exploration considers the following research questions:

- What are the phenomena of TD as experienced by participants?

- What are electrophysiological and/or survey instrument variables (if any) that appear to indicate treatment effect across the treatment group?
- Is there evidence of increased biopsychosocial flexibility?
 - If so, what are the indicator variables?
- Is there any evidence to indicate that phenotypical subtypes are embedded within the participant groups?
 - If so, are there any differences in treatment response by phenotypical subtypes (as indicated by quantitative variables)?
- Based on the results of this exploratory study, what are recommendations for future study and for further honing of a matrix of variables for a cross-setting aggregation of data and for data analysis?

Chapter I introduces the dissertation. Chapter II includes a general literature review to contextualize the overall dissertation within relevant theory and research. Chapter III presents quantitative methods, results, and discussion as well as limitations, implications, and recommendations that are specific to the quantitative data analysis. Sample characteristics and human-subject considerations (for the entire dissertation) are contained in the quantitative methodology section. Chapter IV presents qualitative interview methods, results, and discussion as well as limitations, implications, and recommendations that are specific to the qualitative data analysis. As is typical of qualitative writing, additional contextualizing literature is interwoven with the qualitative discussion (Smith, 2008). Because of the complexity of the methods and discussions, instead of repeating material I have provided hyperlinks¹ within this document to

¹ To follow a hyperlink, click on the blue text. To return to the previous location, use Alt+LeftArrow (hold down the Alt key and press the Left Arrow key).

provide ease of access to revisited concepts. (For further clarity, Appendix A contains a list of terms.) Chapter V provides limitations, implications, recommendations, and conclusions synthesized from the three data strands.

Chapter II: A Review of the Literature

Resilience is the ability of an organism to withstand threats to stability in the environment. In a sense, resilience represents the ability to bend without breaking in the face of environmental or psychological perturbations.

—Karatsoreos & McEwen, 2013

Since 1980, when the diagnosis of post-traumatic stress disorder (PTSD) was first introduced in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (APA, 1980), a vast, diverse, and multi-dimensional body of biological, psychological, and social research has been generated. An exhaustive review of the trauma literature would consume volumes. In the following review of the literature, I strive to include a selection of the literature that is limited but sufficient to situate the Trauma Drama (TD) study in the current context of what has become known as *complex trauma* (Cloitre et al., 2019; Herman, 1992b). Additional relevant literature on complex trauma is further woven into the discussion chapter of the qualitative portion of the study, which is consistent with the norms of qualitative research (Smith, 2008).

Epidemiology of Complex Stress Exposure in Childhood

A dose-related association exists between stress exposure during childhood and the breadth and severity of sequelae that develop across the lifespan (Anda et al., 2006; Briere et al., 2008; Cloitre & Beck, 2017; Finkelhor et al., 2007; Follette et al., 1996; Spinazzola & Briere, 2020). Injurious stress that usually begins in childhood has become known as *complex trauma* (Cloitre et al., 2019; Cook et al., 2003; Cook et al., 2007; Herman, 1992b; ISTSS, 2018, 2019; Spinazzola et al., 2021). Complex trauma may be described as interpersonal injury that compounds over time, is potentially irreparable, and may result in deformations of identity,

including the capacity to integrate identity and experience (Ford, 2017; Ford & Courtois, 2020). Complex trauma has an omnipresent quality that erodes sense of safety with intimates and interferes with the ability to form the trusting relationships that are requisite for thriving in society (Ford, 2017; Ford & Courtois, 2020). Complex-trauma exposure provokes psychophysiological adaptations that enhance chances of survival during periods of inescapable threat (McEwen & Lasley, 2004), but those survival-calibrated adaptations become a liability when using crisis-fixated fight, flight, or freeze defenses to navigate safer environments (Wamser-Nanney & Vandenberg, 2013). Sustained activation of stress-response physiology alters the functioning of maturing organ systems (including the brain) and the nervous system (Shonkoff et al., 2009) and negatively affects long-term psychophysiological wellbeing, morbidity, and mortality (Felitti et al., 1998; Ford & Courtois, 2020; Institute of Medicine & National Research Council, 2000; Porges, 1995; Sapolsky, 2004a; Shonkoff et al., 2009; Teicher & Samson, 2016).

Since 1995, the Adverse Childhood Experiences (ACE) studies have systematically assessed large, general-population adult cohorts for level of exposure to common childhood stressors in order to understand cumulative long-term impacts of early life stress (Felitti et al., 1998). Although other collectives of researchers have utilized somewhat different frames, the ACE studies provide a broad-based (although not entirely complete) and contextualizing snapshot of the effects of early life stress. The first ACE study enrolled 17,337 health maintenance organization members who had completed a standard medical evaluation (Brown et al., 2009; Felitti et al., 1998). ACEs may be described as stressful and potentially traumatic events occurring between birth and the age of 17 that may interfere with bonding to others, sense of safety, and sense of stability (Felitti et al., 1998). ACEs encompass events such as

maltreatment and neglect, witnessing of violence at home, parental mental illness, parental divorce, and/or substance abuse, etc. (CDC, 2019). ACEs are common across all demographics. Emotional abuse is the most commonly reported ACE (Merrick et al., 2018, 2019). The feature of disorganized attachment to caregivers, which frequently accompanies emotional abuse and/or neglect in early childhood, has been robustly related to indicators of psychopathology and to dissociative symptoms in adolescence and adulthood (Spinazzola et al., 2021; Sroufe et al., 2010).

Over half of prior ACE-study participants have reported experiencing at least one ACE. One quarter of participants have reported exposure to more than three categories of ACEs, and nearly one in six participants has reported exposure to four or more ACEs (Felitti et al., 1998; Giano et al., 2020; Merrick et al., 2018, 2019). An exposure-gradient was found to exist between the number of categories of ACEs and the severity of psychopathology, physical illness, and early death. Other studies that also examine chronic stress in early life (but do not employ an ACE frame) have similarly shown that the types of trauma, number of traumas, combinations of traumas, and developmental timing of traumas compound, which means that that higher levels of trauma exposure are associated with more complex symptom profiles and more severe outcomes over the lifespan (Adams et al., 2016; Andersen et al., 2008; Briere et al., 2008; Finkelhor et al., 2007; Teicher, 2018; Teicher & Samson, 2016). A recent network-analysis study by Haselgruber et al. (2021) posits that it is the existence of chronic trauma symptoms themselves (rather than total trauma load) that causes trauma symptoms to worsen and branch into additional mental health syndromes over time.

A systematic review and meta-analysis of quantitative ACE studies (inspired by the original ACE studies) from North America and Europe between 1990 and 2019 concluded that

30% of cases of anxiety and 45% of cases of depression in North America and 25% of anxiety and depression cases in Europe were attributable to ACEs (Bellis et al., 2019; Merrick et al., 2019). As compared with people who had experienced no ACEs, people who had experienced four or more ACEs had “4- to 12-fold increased health risks for alcoholism, drug abuse, and suicide attempts” (Felitti et al., 1998, p. 45), and people who had experienced six or more categories of ACEs died an average of 20 years before people who had experienced no ACEs (Brown et al., 2009). More than 40 outcomes have been associated with ACEs, including ischemic heart disease, cancer, chronic lung disease, immune system problems (e.g., asthma and arthritis), inflammation, metabolic abnormalities, and liver disease (CDC, 2019; Danese et al., 2009; Felitti et al., 1998; Waehrer et al., 2020). ACEs are also associated with increased criminal and violent behavior (Duke et al., 2010; Fox et al., 2015), as well as higher rates of alcohol and drug abuse and risky sexual behavior (Dube, Anda, et al., 2002; Dube, Felitti et al., 2003; Hillis et al., 2001; Pilowsky et al., 2009).

Certain groups are at higher risk for childhood stress than others, including people in marginalized groups (e.g., people of color and LGBTQIA+) and those who lack a high-school diploma or are under- or unemployed (Giano et al., 2020; Merrick et al., 2018). Lower socio-economic status confers a high stress burden (Marmot et al., 1984; Sapolsky, 2004b, Syme & Berkman, 1976; Wilkinson, 2000). Ancestral stress (also known as intergenerationally transmitted trauma) is associated with mental health and physiological sequelae (Jovanovic et al., 2011; Sotero, 2006; Yehuda & Lehrner, 2018). Certain combinations of stressors have been associated with particular impacts upon children; for instance, exposure to violence in the family and/or community, combined with impaired caregiving, confers a risk for compromised self and relational functioning and for developmental issues (Spinazzola et al., 2018). Males and females

display distinctly different profiles of childhood adversity, and female gender is associated with a more complex and varied history of exposure to adverse experiences (Haahr-Pedersen et al., 2020). The type, timing, and compounding of stress during childhood development differentially impacts the physical development of the brain and consequent sequelae. (For a review, see Teicher & Samson, 2016.)

The estimated total economic burden of complex stress in the United States, as calculated through the frame of childhood abuse and neglect, is \$2 trillion dollars per year (Peterson et al., 2018). An estimated \$105 billion could be saved annually from a 10% reduction in ACE prevalence (Bellis et al., 2019; Merrick et al., 2019). In summary, in the United States and throughout the global community, complex stress in childhood appears to be dose-related, is common, and leads to a wide array of negative psychological and physical outcomes that exact severe tolls on individuals, society, and the economy.

Although I have used the term “ACE” to capture recent essential research on negative stress during development and its sequelae, there is no one common term used in the extensive literature of recent decades. Other terms (with associated variations in meaning) include (but are not limited to) Early Life Stress (Lanius, Vermetten, et al., 2010), Developmental Trauma Disorder (van der Kolk et al., 2009), and Complex Trauma (Herman, 1992a). As mentioned previously, Complex PTSD (CPTSD) was legitimized as an official diagnostic classification in 2018 in the ICD 11. Prior to 2018, there was no official complex trauma diagnosis around which to organize a shared research agenda (Karatzias & Cloitre, 2019). As of this writing, the CPTSD formulation is emerging as the centerpiece of a coordinated research agenda. Previously, there have been numerous separate streams of research occurring across multiple domains. The streams of particular relevance to this paper began to emerge in the second half of the nineteenth

century, at which time scientist-researchers and clinical theorists began to wrestle with empirically derived definitions of the constituents of aversive stress and with identification of which people were affected, why they were affected, and when and how they were affected.

Relevance to Social Work

The current study of TD synthesizes concepts that derive from different but convergent streams of the multi-disciplinary literature on stress that provide the theoretical dimensionality necessary for a dynamic-system model. The circular-causality/dynamic-system model that is employed is in line with the literature and with the complexity recognized by the Social Work profession (Garland et al., 2010; Panksepp & Biven, 2012; Stiglbauer et al., 2013). Social Work is a dimensional discipline dedicated to drawing together elements that intersect and interact to enhance the complex biopsychosocial system. The practice of social work recognizes complex systems and processes (International Federation of Social Workers [IFSW], 2014) and the need for complex analysis. Social Work employs a strengths-based approach to intervention (IFSW, 2014). The Trauma Drama (TD) intervention itself is a holistic, nonpathologizing, strengths-based approach to working with people in dynamic interaction with their environments.

The incidence and frequency of adverse childhood experiences have remained unchanged since at least the early 1900s (Dube, Felitti, et al., 2003, p. 267). The mental health field has a century-and-a-half-long history (at least) of episodic attuning to and then abandoning of the issue of adverse childhood stress (van der Kolk, 2007). As an explicitly tenacious change-agent profession, Social Work is a good fit for holding fast and long to a complex and difficult research agenda that is aimed toward liberating the vulnerable and neglected with the intended result of leveling the path to enhanced wellbeing and social inclusion (IFSW, 2014). As a practical

discipline, Social Work is concerned with facilitating changes that matter. This study looks for intervention-facilitated changes that matter for the human condition.

Theoretical Background: A Selective History

Attribution and Framing of the Condition

Depending upon the ascendant theorists of a particular historical epoch, traumatized people might be either blamed or held blameless for their symptoms (or both, in differing proportions). They might be viewed as constitutionally weak, e.g., as cowardly (Moran, 1945, cited in van der Kolk, 2007), as innocently injured by events that would have adversely affected almost anyone (Tedeschi & Calhoun, 2004), and/or as having a predisposition or an inherited genetic defect that rendered them particularly vulnerable to stress. In addition, attribution of traumatization has cycled from the perception of having been caused by a single event or a cluster of events during a discrete period in adulthood (like war, automobile accident exposure, or rape) to having been caused by the cumulative effect of chronic stress, potentially of multiple types, usually beginning in childhood (such as ongoing child abuse and neglect). In short, the lens of particular historical epochs has framed perception of the injured person as responsible or not responsible for injury and impacts, and symptoms as attributable to a simple cause requiring a simple treatment or to a complex cause requiring a complex treatment. (For a thorough summary, see Herman, 1992b and van der Kolk, 2007.)

Early Complex Trauma Practitioner-Theorists

French psychiatrist Jean-Martin Charcot (1825–1893) proposed that exposure to adversity produced the psycho/physiological symptoms of hysteria (Charcot, 1887, cited in van der Kolk, 2007). As influenced by fellow countryman Charcot, Pierre Janet (1859–1947), also a psychiatrist who treated hysterics, theorized that stressful events generated vehement emotions

that fractured normal memory in such a way that original traumas were blocked from consciousness. Janet observed that forgotten memories haunted sufferers and were manifested through their repeated re-experiencing of intrusive and unresolvable fragments of the traumatic past. Without the ability to integrate traumatic memory, traumatized people remained fixated in an ever-present past that effectively halted emotional development and conferred an inability to assimilate new experiences (described in van der Hart et al., 1989).

In contrast to Janet, who believed that hysteria developed through adverse events as combined with an inherited pre-disposition, Sigmund Freud (1856–1939) suggested that intrusive emotions and dissociation (i.e., aspects of hysteria) were instead solely the consequence of traumatic experience (Sanfelippo & Dagfal, 2020). Yet, like Janet, Freud believed that physical and emotional manifestations of forgotten trauma continued in repetition because the traumatic experience itself had never been resolved (Sanfelippo & Dagfal, 2020; van der Kolk, 2007). As influenced by Charles Darwin's (1808–1882) work on the universality of emotional expression across species (Darwin, 1872; Ekman, 2009), Freud proposed that traumatic emotional re-enactments provided traceable clues (via the universal language of the physical expressions conveyed) that could lead to the actual origins of the unresolved trauma (Breuer & Freud, 1895/1957). Freud imagined that the processing of trauma was much like the mourning process, because the trauma sufferer, like the mourner, needed to work methodically through fragmented memory and reconcile it with the present in order to conclude the traumatic experience (Freud, 1917; Sanfelippo & Dagfal, 2020).

Now, in the 21st century, the field has circled back to Freud's and Janet's early formulations. Janet, in concert with his clinical formulation of traumatization, recommended that treatment proceed in three stages. His stages closely correspond to the three-phase treatment

model that is currently recommended for complex trauma (Cloitre et al., 2012; Herman, 1992b).

Van der Hart et al. (1989, p. 3) describe Janet's (1925/1976) three-stage treatment model as follows:

1. Stabilization, symptom-oriented treatment, and preparation for liquidation of traumatic memories
2. Identification, exploration, and modification of traumatic memories
3. Relapse prevention, relief of residual symptomatology, personality reintegration, and rehabilitation

In a well-known example of the way in which the trauma field has oscillated between validating and then invalidating interpersonal injury as the cause of intractable traumatization, Freud eventually abandoned the contention that his patients' symptoms were caused by external traumas and instead proposed that symptoms were generated by drives that originated within the person themselves. Van der Kolk (2007, p. 34) quotes Freud's rejection of interpersonal trauma as cause and his eventual decision to disbelieve his patients' stories:

I believed these stories (of childhood sexual trauma) and consequently supposed that I had discovered the roots of the subsequent neurosis in these experiences of sexual seduction in childhood. If the reader feels inclined to shake his head at my credulity, I cannot altogether blame him. . . . I was at last obliged to recognize that these scenes of seduction had never taken place, and that they were only fantasies which my patients had made up.

Over the early and mid-twentieth century, Freud's drive theory ascended in dominance, and Charcot's and Janet's theories of interpersonal injuries-as-cause receded (van der Kolk, 2007).

War

In decades surrounding the turn of the 20th century, another relatively independent stream of theory and clinical practice was developing in relation to the trauma of war. As with trauma treatment in the private sector, trends of particular historical epochs influenced clinicians and theorists examining the outcomes of battle experience. Alternately, post-combat stress sequelae were attributed either to the overwhelming experience of war or to an inherent physical

and or mental weakness within the person (or sometimes a mixture of both). In the United States after the Civil War, traumatic combat sequelae were attributed to irritable heart and nostalgia (Hyams, 1996). During World War I, symptoms were attributed to shell shock and trench neurosis. In World War II, symptoms were believed to arise from effort syndrome and battle fatigue. In 1941, Abram Kardiner (1891–1981), who had previously treated World War I soldiers, published *The Traumatic Neurosis of War*, in which he described a war-related stress syndrome that included avoidance of memories (dissociation), intrusions and flashbacks, and somatization. As such, Kardiner's theory had much in common with Janet's earlier theories and with the framing of the post-traumatic stress disorder diagnosis (PTSD) as it exists today (van der Kolk, 2007). After the Vietnam War, trauma symptoms were attributed to the new diagnosis of PTSD (APA, 1980; Hyams, 1996), which, for the first time, legitimized PTSD as an officially recognized categorical diagnosis. The PTSD diagnosis acknowledged that individuals had been injured by events that would have overwhelmed most people's capacity to cope, thereby no longer "othering" those affected and thus rendering them deserving of treatment and support (van der Kolk, 2007; Yehuda et al., 2015).

Social Systems

The discipline of Social Work arose in the United States at the end of the nineteenth century. In contrast to approaches that emphasized single types of interpersonal traumas or intrapersonal predispositions as etiological causes of symptomology, the progressive settlement house movement attributed psychological disturbance to social forces, such as multiple points of oppression and the socio-economic gradient (Addams, 1910; Gross, 2009; Hamington, 2019). This included the impact of the society in synthesis with the biological, psychological, and social systems of people. The first settlement house in the United States, Hull House, was opened in

1889 in Chicago by Jane Addams (1860–1935) and associates. Addams and the Hull House workers embodied a humanistic approach centered on empathy, egalitarianism, and connection. They collaborated with community members to enrich the experience of life by resolving individual, community, and educational inequities, and to advance society through joint activism and social justice. Hull House, while embedded in the community, provided practical supports, including housing, education, child care, and participation in recreational and artistic enrichments (Addams, 1910). The work at Hull House launched the Social Work profession in the United States (Gross, 2009).

Attachment Theory

John Bowlby (1907–1990), an English psychiatrist educated in Freud’s psychoanalytic drive theory, was not able to reconcile the mismatch he found between that theory and the needs and experiences of the children whom he observed and treated. Bowlby believed that “[psycho]analysts, in their preoccupation with a child’s fantasy life, were paying too little attention to actual events in the child’s real life” (Ainsworth & Bowlby, 1991, p. 333). In the aftermath of World War II, Bowlby published a World Health Organization (WHO) report on children who had lost their families as a result of the war, entitled *Maternal Care and Mental Health* (1951). Bowlby concluded that children, when physically and/or emotionally separated from their caregivers, manifested mourning and grief. He attributed the grief reaction to caregiver unavailability and inadequate caregiving systems, which he believed to be at the root of children’s symptoms (rather than symptoms being attributable to internal drives). He proposed that, in the service of building a person’s capacity for secure attachment, the therapist should construct a trustworthy relationship with the “patient” and guide that person toward the exploration of childhood relationships with caregivers, in order that the internalized model of

attachment could be revised to lessen attachment anxiety and to gradually enable improved interpersonal relationships in the present. In the early 1950s, Bowlby and Canadian psychologist and researcher Mary Ainsworth (1913–1999) joined forces to develop contemporary attachment theory.

Physiology: The Nervous System

Another stream of traumatic stress theory developed around the physiology of stress. Claude Bernard (1813–1878) and Walter Bradford Cannon (1871–1945) pioneered research on the balance of the internal physiology, including the nervous system. Bernard considered a well-regulated, flexible, and balanced internal milieu (glycemic function, blood flow and temperature regulation, influence of the vagus nerve on heart rate, etc.) essential for living a free and independent life (Bernard, 1879; Wehrwein et al., 2016). He theorized that the higher the order of the living being, the more complicated the coordinated adjustment of various vital systems to keep the body functioning within a stable zone during periods of external stress (e.g., adverse traumatic experiences). Cannon coined the term “homeostasis” to describe the complex coordination of the body’s internal material supplies (e.g., sodium, insulin, etc.) and physiological processes (e.g., the action of the autonomic nervous system) in order to maintain a stable balance and steady state in the face of the ever-changing external environment (Cannon, 1929). Cannon suggested that homeostasis could be maintained as a result of organized government of the “open system such as our bodies represent, compounded of unstable material and subjected continually to disturbing conditions” and that “constancy is in itself evidence that agencies are acting, or ready to act, to maintain this constancy” (p. 424).

Hans Selye (1956) elaborated on the body’s necessary shift away from homeostasis when under the stress of acute challenge. He observed the resetting of the body from the

regenerating (anabolic) functions that preserved the steady state to the systemically expensive crisis-accommodating catabolic functions (a breakdown of metabolic compounds in the service of producing rapid energy) that allowed the organism to respond rapidly to changing/emergent situations. In addition to analyzing the acute-crisis response, Selye examined the systemic cost of more prolonged stress that was of lesser magnitude but that was chronically present. He theorized that chronic stress would require a *sustained* use of the same survival-calibrated physiological-balance resources as had been episodically employed to manage acute challenges.

Like Selye, Sterling and Eyer (1988) sought to understand the sustained uses of survival resources to manage chronic stress. In the clinic they had observed a vast difference in cardiac aging of patients whose systems had been taxed over time by stress. They expanded the concept of homeostasis by introducing the term *allostasis* to describe the body's fluctuating employment of alternative set-points to balance and serve the level-of-demand and speed-of-response required in more emergent circumstances. Sterling and Eyer noted that, in addition to contributing to cardiac problems, chronic employment of allostasis caused people to misread even safe situations through the lens of crisis, which exacted a toll on relationships and mental health. The language and understanding of homeostasis and allostasis were further elaborated by McEwen & Lasley (2004) with the term *allostatic overload*, which describes the perpetuation of the expensive, resource-expending, crisis-oriented state over the long term. When experiencing allostatic overload, the body is habitually engaged in crisis defenses. ACEs and other taxing social constructs such as oppression are believed to be at the root of the depleting nature of chronic stress that triggers allostatic overload. In more recent years, Sapolsky (2004a, 2004b) has demonstrated in animal studies the ways in which lower social rank (e.g., social-order oppression) acts as a form of chronic stress that negatively affects morbidity and mortality of

subordinate animals. The Whitehall Study, a long-term prospective study of British social servants, also found that lower rank had a negative impact on morbidity and mortality (Marmot et al., 1984; Marmot & Shipley, 1996; North et al., 1996).

Theoretical Framing of TD Study

Allostatic Overload as Connected to HRV. Allostatic overload is theorized to alter the organism along epigenetic, chromosomal, cellular, structural, and psychological dimensions (Herman et al., 2016; Karl et al., 2006; Koenen et al., 2009; Karatsoreos & McEwen, 2013; Kaufman et al., 2004; Liston et al., 2009; Sapolsky, 1996; Shonkoff et al., 2009, Lasley, 2002). The organism may become chronically depleted and consequently lose the flexibility necessary to reset to restorative homeostasis. Progressive degeneration initiates a cascade of pathological processes (Shonkoff et al., 2009). Allostatic overload has been connected to accelerated reduction of telomere length, the DNA protein caps of chromosomes that are considered a proxy for cellular aging (Price et al., 2013), and is theorized to cause changes in gene methylation (epigenetic changes) that can reduce stress-response and immune-system resiliency across generations, among other potential epigenetic alterations (Morrison et al., 2019). In theory, gene methylation may affect not only the traumatized person but also pass the crisis-state settings forward to offspring via altered genetic coding that is contributed by either parent. Recent research suggests that effective treatment may be able to switch off epigenetic coding that was switched on by chronic trauma (Vinkers et al., 2019)

On a functional level, allostatic overload may be reflected in pervasive use of fight, flight, and/or freeze defense postures. Chronic employment of crisis defenses is believed to deplete adrenaline and cortisol, two hormones that are required to support systemic flexibility through regulation of the sympathetic (accelerator) and parasympathetic (braking) branches of

the autonomic nervous system and hypothalamic pituitary axis (Cannon, 1929; McEwen & Lasley, 2004). The ongoing stress response interferes with the calming action of the parasympathetic branch of the nervous system by disengaging the calming “brake” on the sympathetic “accelerator” branch of the nervous system. The sympathetic nervous system becomes mobilized at the expense of suppression of generative secretions such as insulin, digestive hormones, and reproductive hormones (Sapolsky, 2004b). While sympathetic activation during acute stress may sharpen quick cognitive assessment of a danger, “chronic stress disrupts [cognition] and impairs synaptic plasticity as well as the birth of new neurons, atrophies dendritic processes in neurons, and increases the incidence of neuron death” (Sapolsky, 2004, p. 395). According to Sterling & Eyer (1988), allostatic arousal affects metabolism and the function of almost all regulatory systems and chemicals in the body and brain, and “rather than simply local feedbacks, is a far more complex form of regulation than homeostasis” (p. 637).

The rapid speed with which the parasympathetic nervous system operates appears to indicate that any rapid changes in heartbeat are more generally facilitated by the parasympathetic nervous system rather than the sympathetic nervous system. A release of acetylcholine at the neuro-muscular junction mediates parasympathetic activity. Acetylcholinesterase quickly degrades the acetylcholine in the extracellular compartment (Talman & Kelkar, 1993), so the parasympathetic system is relatively rapid in its action. Alternatively, the sympathetic nervous system releases adrenalin and slowly engages in its reuptake. *Parasympathetic activity has seven times more control over the timing of the heartbeat than does sympathetic activity* (Berntson et al., 1997). The parasympathetic versus sympathetic balance of the hypothalamic pituitary axis can be reflected in cardiac vagal tone (Cannon, 1929; Porges, 2007; Selye, 1956). Vagal tone is described as the inhibitory influence of the parasympathetic nervous system on the sympathetic

nervous system and the heart (Pickens & Field, 1995). Schore (2018, p. 349) states, “In other words, the energy-expending sympathetic and energy-conserving parasympathetic components of the autonomic nervous system (ANS) regulate the autonomic, somatic aspects of not only stress responses but also emotional states.” Vagal tone may be assessed by measuring the power of the high-frequency range of electrophysiological measures of heart rate variability (HF HRV), which is the electrophysiological power-spectrum measure of amplitude/voltage that is used in this study to index systemic flexibility vs. inflexibility over the course of the intervention.

High Frequency Heart Rate Variability (HF HRV)

In this study, the use of the physiological measure of HF HRV is viewed as an operationalized index of pivotal aspects of the fear-emotion circuitry (Porges, 1995, 2007), including flexible “regulation of physiological, affective, and cognitive processes” (Thayer & Lane, 2009, p. 81). HF HRV is a continuous variable and is an indicator of systemic balance. The HF HRV (.5 to .4 hertz) primarily reflects parasympathetic/vagal activity (Thurber et al., 2008). The parasympathetic branch of the autonomic nervous system (PNS) modulates the arousal of the sympathetic branch of the nervous system (SNS). Even though HF HRV was specified as the electrophysiological variable of interest for this study, the HeartMath HRV equipment used for the TD study (*EmWave Pro Desktop*, n.d.) captured all HRV frequency bands at once, so all frequencies were examined for potential information of relevance (Thurber et al., 2008). Prior studies (Aupperle et al., 2012; Beauchaine et al., 2007; Beauchaine & Thayer, 2015; Blase et al., 2021; Blood, 2015; Choi & Jeon, 2020; Colzato et al., 2018; Forte et al., 2019; Hartmann et al., 2019; Jandackova et al., 2016; Kemp et al., 2012; Koenig et al., 2016; Kogan et al., 2014; Kolacz et al., 2020; Ottaviani et al., 2018; Porges, 2007; Pyne et al., 2016; Rasmusson & Abdallah, 2015; Shaffer & Ginsberg, 2017; Thayer et al., 2012) have linked HF HRV to constructs that

were evaluated via psychometric instrumentation in the TD study, including body awareness, alexithymia, affect regulation, behavioral regulation, cognition, mood, socialization, and executive function. Although perhaps sounding counter-intuitive, increased/higher levels of heart rate variability (HRV) have been conceptualized as indicative of a healthier, more balanced, more flexible, and more resilient system, and decreased/lower levels of HF HRV as indicative of a less healthy, less balanced, less flexible, and less resilient system (McEwen & Lasley, 2004; Porges, 2007).

Lower HF HRV has consistently been associated with depression (Choi & Jeon, 2020; Hartmann et al., 2019; Kuang et al., 2017; Licht et al., 2008; Shinba, 2014), including in adolescents (Blood, 2015; Koenig et al., 2016). Increases in HF HRV have been associated with improvement in depression symptoms (Chambers & Allen, 2002; Koenig et al., 2018). HF HRV has been used to describe the physiology associated with chronic stress exposure and sequelae (Campbell et al., 2019; Herzog et al., 2018; Rabellino et al., 2017; Schneider & Schwerdtfeger, 2020), yet with the exception of small and pilot studies (e.g., D'Andrea & Pole, 2012), it has not been used as an outcome measure for trauma-related disorders. At the conclusion of a recent meta-analysis of potential physiological variables (Yang et al., 2021), the authors suggest that electrophysiological measures be used to assess traumatization and recovery because such measures are less limited than psychological questionnaires may be by cultural biases related to preconceptions of emotional health versus pathology. However, Yang et al. (2021) also observe that there is not a standard testing paradigm for electrophysiological measures (which is needed), and that although increases in HF HRV have been associated with abatement of traumatic sequelae in small or pilot studies, findings have not been so robust as to encourage HF HRV to be broadly adopted as a measure of therapeutic outcome (see also Campbell et al., 2019; Cohen

et al., 1998; Forte et al., 2019; Grupe et al., 2020.; Karstoft et al., 2016; Liddell et al., 2016; Schneider & Schwerdtfeger, 2020; Thayer et al., 2012).

The work of Lanius, Frewen, et al. (2010) and Lanius, Vermetten, et al. (2010) suggests that the neurobiological system affected by complex stress may not only chronically under-modulate but may alternate between under-modulation and over-modulation. A fixation to either over-controlled modulation (e.g., shutting down or freezing) or under-controlled modulation (e.g., aroused aggression)—or toggling back and forth between them—is not considered useful in navigating safe environments. Karatzias et al. (2018) have found both hypo- and hyper-activation to be characteristic of CPTSD. The findings of Lanius, Frewen, et al. (2010), Lanius, Vermetten, et al. (2010), and Karatzias et al. (2018) would suggest that the theory related to HF HRV requires elaboration, since present HRV theory considers increases in the power of HF HRV to be indicative of treatment success. Yet, it would seem that for those people who are over-modulated (frozen or disconnected from emotion and feeling), a decrease in parasympathetic HF HRV dominance would be indicative of healing, because such a decrease would be expected to allow them to awaken from the frozen state. Complex stress adaptation appears to narrow the flexibility level of the fear-emotion circuitry, which affects the stress response and influences the development of complex-stress symptoms/sequelae (Lanius, Vermetten, et al., 2010; McEwen & Lasley, 2004; Rodrigues et al., 2009; Sherrington, 1906). It would seem that a flexible balance between sympathetic and parasympathetic systems is optimal for any HRV typological subgroups embedded in the TD study's participant population. This study proposes that successful treatment with TD will diminish reliance on over- and under-modulating crisis settings and will begin restoring/instilling balance and flexibility to the fear-emotion circuitry. In turn, increased flexibility would foster a broader range of behaviors that

would be optimally calibrated for and adapted to the particular circumstances at hand. This study concerns itself with locating indicators of increased systemic flexibility and looks at HF HRV as one of those potential indicators of balance.

This study acknowledges the possibility of heterogeneous physiological phenotypical subtypes (as indexed by HF HRV) embedded within the population. It was anticipated that participants could display different longitudinal physiological and symptomatic recovery paths as moderated by physiological subtype and indexed by HF HRV (Alvares et al., 2016; Freed & D'Andrea, 2015; Ge et al., 2020; Kemp et al., 2017; Kogan et al., 2014; Mann et al., 2015; Shaffer & Ginsberg, 2017; Shinba, 2014; Sloan et al., 2017; Williams et al., 2019; Young-Southward et al., 2020). The mixed methods of the TD study represent an attempt to triangulate physiological, psychological-instrument, and subjective-participant perspectives in order to begin the process of homing in on a refined matrix of variables for data aggregation in future study of TD treatment effectiveness across treatment settings. HF HRV was proposed as a transdiagnostic marker of pathology versus health and as an index of the flexible function of the organism's neurovisceral integration system (Thayer et al., 2021; Thayer & Lane, 2009).

The Ventromedial Prefrontal Cortex (vmPFC). In a meta-analysis of “studies relating cerebral blood flow to HRV,” Thayer et al. (2012) deduced that there was support “for the idea that HRV [might] index the degree to which a [medial prefrontal cortex] mPFC-guided core integration system [would be] integrated with the brainstem nuclei that directly regulate the heart” (p. 754). Thayer et al. concluded that HRV was important “as a potential marker of stress and health and provide[d] evidence for the neural correlates that serve[d] to underpin the relationship” (p. 754). Damasio (2007, p. 66) maintained that the vmPFC “provide[d] a cortical platform for inputs and outputs that link the lower brain with the higher cortical regions and vice

versa.” According to Damasio (2007, p. 66), since the vmPFC acts as “a trigger to emotions or as a producer of signals capable of influencing the activity of other brain regions, the vmPFC can exert a wide influence. . . . Given its anatomofunctional position, the vmPFC sector is well suited for monitoring the connection between decision options and action taken, in addition to the outcome of the option/action, in factual as well as emotional terms.” In order to make reasoned, optimal decisions that are oriented to the environment, Damasio (2000) contends that individuals must feel the implications of decisions and also be able to reason cognitively about the advantages or disadvantages of a particular course. Traumatized individuals have a great deal of difficulty understanding emotions and undergo what Krystal (1978) conceptualized as a dedifferentiation of affects. Studies of people with PTSD have shown functional and structural abnormalities in the vmPFC (Grupe et al., 2020). In this study, movements toward increased systemic flexibility, as indicated by balanced HF HRV, are also theoretically indicative of movement toward improved functional interconnectivity of the vmPFC (Bluhm et al., 2012; Kaplan et al., 2016; Lanius, Frewen et al., 2010; Shaffer & Ginsberg, 2017; Zelazo & Cunningham, 2007) .

Research Domain Criteria (RDoC)

The National Institute of Mental Health initiated the Research Domain Criteria (RDoC) in 2009 to “integrate many levels of information (from genomics to self-report) to better understand the basic dimensions of functioning underlying the full range of human behavior, from normal to abnormal” within a research framework (National Institute of Mental Health, 2016, p. 2). The RDoC guidelines recommend uncovering the transdiagnostic markers that underlie common substrates of heterogeneous diagnoses through a triangulation of biology, behavior, and context. The current mixed-method TD study was mindfully formulated with RDoC agenda in mind.

Creswell & Zhang (2009) observed that quantitative studies have dominated the trauma field, and they have recommended that study design be diversified to include qualitative data within a mixed-method model. They state that mixed-method studies are well suited to the field of trauma, and should therefore be systematized, standardized, and pursued.

CPTSD Classification

At the time that this study was proposed and the data gathered (2013 to 2015), the CPTSD diagnosis had not yet been legitimized. Since its appearance in the 2018 ICD 11, the CPTSD construct has been tested in more than forty studies (including studies of adolescents and children) conducted in over fifteen different countries (Cloitre, 2020, 2021), and CPTSD has been shown to be distinct from PTSD. The CPTSD classification has provided the platform for a coordinated research agenda across disciplines and allowed for the development of standardized CPTSD assessments (International Trauma Questionnaire—Child and Adolescent (ITQ-CA, n.d.) and treatment recommendations (Cloitre et al., 2012; Cloitre, 2021; Hopper et al., 2019).

The CPTSD classification has two factors: PTSD and Disturbances of Self Organization (DSO). Each factor organizes three symptom clusters. The PTSD factor encompasses the clusters of Re-experiencing, Avoidance, and Sense of Threat. The DSO item encompasses the three symptom clusters of Emotion Regulation, Negative Self-Concept, and Interpersonal Problems (Cloitre, 2020). Negative Self-Concept has been shown to be a central feature of CPTSD (Cloitre, 2020). The results of this study were examined in the context of CPTSD, and synthesized recommendations for future research are provided with the RDoC guidelines of identifying transdiagnostic and common substrates of heterogeneous diagnoses through a triangulation of biology, behavior, and the CPTSD classification.

Dynamic-System Theory

TD's impact on the condition of fear-emotion circuitry may be best understood if viewed through the lens of a dynamic system model (Baines, 2008). In theory, if the dynamic systems of study participants were effectively stimulated by TD, their neurovisceral fear-emotion circuitry would self-organize to a more optimal level of flexibility. "Broadly defined, self-organization refers to the emergence of novel patterns or structures, the appearance of new levels of integration and organization in existing structures, and the spontaneous transition from states of lower-order to states of higher-order" (Lewis, 2005, p. 173). Chaos/complexity theory asserts that gentle, very small perturbations of a dynamic system may generate very large changes in systemic organization: the butterfly effect (Bishop, 2008). A dynamic-system model was a good theoretical fit for this study of TD (Lewis, 2011; Smith & Thelen, 1993), since there could be countless interacting and compounding elements emerging from the intervention itself and from the group dynamic. It was anticipated that elements might selectively and idiosyncratically perturb the body/mind/psychology of the individual study participants, which would thereby make it impossible to determine which element was the potent agent in instigating healing. Different elements might have varying levels of potency for different people.

After a review of the literature on the neuroscience of emotional circuitry (affective neuroscience), Garland et al. (2010) found scientific support for a dynamic-system "upward spiral" of instilling/restoring/building positive emotional states and enduring positive traits. In theory, positive emotions cause an upward spiral of ever-broadening attention that expands the person's "thought-action repertoire" (2010, p. 860) to a degree of flexibility and a flourishing that utilizes all levels of the body and mind (the learning brain). Positive factors may "exert actions on the brain by feeding back upon it to modify the expression of genes and thus the

function of nerve cells” (Kandel, 1998, p. 460). Because of Trauma Drama’s structure and repetition of themes and activities, it was anticipated that the intervention might incorporate reiteration in the service of producing upward spirals that could recontextualize life in a more positive and empowering frame (Lakoff & Johnson, 1980). Complex circular systems might not be reducible to component parts. They might not have a solution (Sreenath, 2008). That is one reason the TD study sought to identify a matrix of variables with the potential for successful indexing of pivotal aspects at the substrate level that initiate an upward spiral of flexibility in the dynamic fear-emotion circuitry. For instance, heart rate variability might impact the fear-emotion circuitry, which might impact the activity of the medial prefrontal cortex, which might impact emotional regulation, which might impact executive function, which might impact depression symptoms, which might impact negative sense of self, which might impact interpersonal relationships.

Subtypes/Phenotype Studies. It would seem necessary to assume some heterogeneity within samples of chronically trauma-exposed youth and to identify ways to filter for treatment effects by phenotype or subgroup. Ford (2020) has been able to identify six trauma-profile subtypes through latent class analysis (LCA) of a nationally representative group of adolescents. Each trauma-profile subtype has distinct characteristics. (Two subgroups had primarily been exposed to single-event trauma or had witnessed violence, and four subgroups had experienced polyvictimization, that is, multiple personally victimizing events.) Adams et al. (2016) also used LCA to identify trauma-exposure classes within a diverse clinical sample of 3,487 adolescents within the National Child Traumatic Stress Network (NCTSN) and found five classes, four of which were characterized by polyvictimized youth. In latent profile analysis (LPA) of Danish treatment-seeking, combat-exposed veterans, Karstoft et al. (2016) identified four profiles related

to different levels of symptomatology, the least symptomatic of which exhibited unexpectedly low vagal tone when compared to veterans who were more symptomatic. Although this TD sample is small, it seemed prudent to look for evidence of phenotype that might moderate longitudinal patterns related to treatment effect. Although this study was unable to draw conclusions about phenotype, it begins the process of identifying candidate variables for potential classification of phenotypes to be pursued when larger samples and/or aggregated data sets become available.

TD Treatment

Drama

Since the evolution of modern humans, drama has been used to develop resiliency and to heal the wounds of stressful experience (Boyd, 2001; McConachie, 2008, 2011; Shay, 1995). Consequently, it is a natural vehicle with which to synthesize a trauma-informed intervention. In Africa and Europe, research has been conducted on the use of school-based drama interventions for early- and middle-school students. Drama interventions have been focused on increasing children's resiliency and on preventing and ameliorating the impacts of early life stress. Studies of drama interventions have been found to decrease relational, verbal, and physical aggression, to increase a sense of wellbeing (Ager et al., 2011), and to increase social and emotional skills that include a better understanding of bullying and diversity (Joronen et al., 2011).

TD: Description of Intervention

Although it has been previously studied for effectiveness in violence-prevention, TD was (and is) formulated as a "trauma-informed" intervention. The traumatic-stress field recognizes trauma-informed treatment as explicit in its recognition of clients' histories of trauma, their related symptoms, and the ways in which traumatic experiences and symptoms have affected

their lives (Bartlett et al., 2016; Hodgdon et al., 2013; Peterson et al., 2018). TD is built on a naturalistic theatre model. It incorporates elements of the vast multi-disciplinary stress literature into its drama format (Spinazzola, 2019). The eighteen- to twenty-four-session intervention employs a phased trauma-treatment structure to (a) instill/create safety and build appropriate trust, (b) learn and practice stress-coping skills and social skills, (c) work through stressors/traumas previously experienced, (d) make personal meaning of experiences and connect to the social environment, (e) obtain transcendent post-traumatic growth, (f) achieve self-actualization and a hopeful outlook, and (g) instill resiliency to future stress. TD seeks to build mind/body infrastructure and function by bolstering attachment, interoception, and executive function. By focusing on core competencies that are often derailed by adverse childhood experiences (Anda et al., 2010) that have resulted in stress sequelae, TD instills and/or reinforces abilities in the areas of attunement, assessment of trust, safe attachment, interoception (somatic awareness), self-regulation, identification of emotions, affect/emotion regulation, decision-making, engagement of executive function under stress, conflict management and pro-social behaviors, assertiveness, effective-interaction and bonding skills, self-awareness, self-acceptance, and self-esteem (Kisiel et al., 2006; Spinazzola, 2019; Tishelman et al., 2010; van der Kolk et al., 2009).

Detailed fictional-scenario outlines have been designed and written, which cover topics that allow participants to rehearse alternative behaviors and feelings elicited by common stresses and challenges faced by adolescents (for instance, peer pressure, prejudice, racism, homophobia, and harassment). Troupe members then improvise dialogue and behaviors. The practice of new coping mechanisms and alternative behaviors during improvisational scenarios that portray domestic violence, dating violence, peer violence (e.g., gang violence, community violence),

and/or familial trauma (e.g., neglect and maltreatment) may help participants metabolize and learn from difficult experience. It can also aid participants who experience depression, grief, and loss by increasing interpersonal connection and by encouraging future orientation toward individual goals and plans (Spinazzola, 2019). TD's eighteen to twenty-four sessions are divided into three major phases: (1) Safety and Skills Building, (2a) Skills Application: Youth Conflict, (2b) Skills Application: Youth Trauma, and (3) Skills Generalization (Spinazzola, 2019). The sessions themselves have common elements: an opening circle, therapeutic exercises, scenario-driven theatre improvisations, post-scene discussion, and a closing circle. The "opening circle" poses an introductory "question of the day" that assists participants in warming up to and anticipating the day's theme. Therapeutic exercises develop core competencies like emotional/physiological regulation, self-expression, and social risk-taking. Cooperation is emphasized over competition. One of the repeated exercises, "Simon Says" (not all exercises are repeated), is meant to develop cortical reasoning under pressure (executive functioning), impulse control, and attunement. Facilitators increase the difficulty and complexity of Simon Says as the weeks progress and as the participants develop greater mastery (Spinazzola, 2019).

Scenario-scripted improvisational scenes become more trauma-focused toward the middle phase of TD. For instance, during improvisations of the middle phase, troupe members may act out a scenario in which a character is depressed or has experienced a familial trauma. At pivotal points in the scene, the troupe members freeze the action and the participants brainstorm potential actions that the main character and those around him/her might take. Troupe members and participants alternate in taking over the roles of key characters and play out options that are proposed by the group. At the close of the scenario, there is a post-scene discussion designed to process the substance of the scene-work, to problem-solve, to consolidate learning, and to wrap

up the emotional work of the session. TD troupe members are trained to be mindful of identifying any participants who require additional emotional support during or after the session (Spinazzola, 2019). The scenes are not taken from the real lives of participants but are fictional depictions of typical interactions experienced by youth who have experienced complex stress. Scenarios are carefully designed to seem real but are written in a mindful and modulated manner that helps participants to tolerate, manage, and metabolize the material.

Beginning sessions of the TD intervention are weighted toward tasks that relate to development of the lower and mid-sections of the brain (involved in sensation, emotion, self-regulation, attachment, etc.), and such tasks are integrated and reiterated throughout the weeks of the intervention (even though in later weeks participants also work on the development of higher-order cortical functions; Spinazzola, 2019). The process of acting within the safe holding space of the fictional scene aims to lead participants to a conscious toleration of feeling and knowing in the present. Participants are taught to turn toward, rather than away from, emotionally evocative material contained in the safe field of play, and they are taught to recognize and regulate differentiated emotions and affects (Spinazzola, 2019). Common rituals and exercises of skill that are repeated in the session structure are designed to build upon one another. Skills and themes are reiterated over the course of the school year. The physical/emotional space provided by TD strives to be safe and predictable. The same eight facilitators (four clinicians and four milieu staff) return to engage participants in the ritual of the drama. TD joins self-agency and safety with the experience of social relationships.

Trauma-Drama Relevant Outcomes. In line with violence-prevention goals of the CDC (David-Ferdon et. al., 2016) and DOJ (U.S. Department of Justice, 2006), two previous studies of Urban Improv (UI; the predecessor of TD) examined behavioral outcomes related to youth

violence in urban school populations exposed to community violence. The prior UI studies found a halting of aggression in the UI group versus controls and an increase in pro-social behaviors that are identified as mitigators of youth aggression (Kisiel et al., 2006; Zucker et al., 2010). The current study of TD in a complex-trauma exposed clinical population, while not unconcerned with aggression abatement, is more concerned with substrates that indicate perturbation of the dynamic system of the person, rebalancing toward greater flexibility, and resumption of developmental and maturational processes (a transdiagnostic approach that, at least in the short term, is diagnostically agnostic). Troupe members and participants involved in past TD intervention groups reported that the intervention had a positive effect on the development of an expanded pro-social-behavior repertoire and a sense of self, including self-esteem, increased confidence, sense of self-efficacy, and personal discovery of talents, abilities, and strengths (D. Beckstead, personal communication, March 11, 2011). As one teacher whose students participated in TD put it, “Kids who would normally be aggressive or swear in confrontations tried out new behaviors” (K. Demasi, personal communication, August 14, 2009).

What the TD Study Seeks to Contribute

Focal-incident interventions (interventions meant to address a single type and/or time-limited trauma) have been relatively well researched and disseminated, but interventions meant to address the progressive cascade of sequelae that flow from early life stress (a far more widespread problem) are not well researched because of barriers to the quantification of results (D’Andrea et al., 2012; Ford & Courtois, 2009; Ford, 2011, van der Kolk et al., 2009). Recent advances in neuropsychophysiological studies suggest that the cascade of heterogeneous sequelae that emerge from chronic stress can be catalyzed by processes connected into the dynamic fear-emotion circuitry (Shonkoff et al., 2009). In theory, an intervention that is capable

of selectively interacting with the dynamic fear-emotion circuitry of people as they idiosyncratically develop over time cannot be reduced to component parts (because of its circularity), so analysis is a challenge. It is likely that other effective interventions for treating early life/developmental stress currently exist, but it is necessary to find a way to build an evidence base sufficient to encourage their dissemination. This study seeks to uncover, to frame, and to understand evidence of the helpfulness of a trauma-informed creative-arts intervention in establishing a more flexible fear-emotion circuitry. Mixed methods (phenomenological, electrophysiological, and psychological questionnaire data) are triangulated to begin the work of identifying a manageable matrix of testable variables that may be used for future aggregation of participant data across settings and subsequent assessment of intervention effectiveness in particular populations and subpopulations.

Chapter III: Quantitative Methods, Results, and Discussion

Quantitative Problem Statement

Does TD intervention increase systemic flexibility in chronic-trauma exposed youth in residential care? Are there clues to the identification of a core set of variables that may be used in future research to investigate TD's impact on systemic flexibility?

Hypotheses

Based on a review of the literature, the following hypotheses were tested:

1. Hypothesis I predicted that participation in Trauma Drama would be associated with an increase in the flexibility of the fear-emotion circuitry.
2. Hypothesis II predicted that participation in Trauma Drama would be associated with a halting of aggression as indexed by a decrease in aggression and social-problem symptoms.

Methods

Participants

Demographics. Participants were 47 complex-trauma exposed youth living in seven residential treatment facilities operated by a large nonprofit organization dedicated to social justice and delivery of services in the New England area of the United States. (I will refer to this organization as the parent organization.) Demographic data related to the participants were collected by the parent organization upon participants' admission into their respective residences and were entered into the parent organization's Client Assessment Tracking System (CATS) database, which housed continuous quality control and assessment data. Descriptive statistics on demographics are presented in Table C1. Thirty-four participants (72.3%) resided in four residential schools run by the parent organization. Thirteen participants (27.7%) resided in three

group homes run by the parent organization. Of the 47 participants, 27 participants (57.4%) were members of the treatment group and 20 were members the comparison group (42.6%).

Participants ranged in age from 14 years to 22 years, with the average age being 17.8 years.

Twenty-nine (61.7%) participants were female, and 18 (38.3%) were male.

Trauma History. I was granted access to the de-identified and coded demographics, medication records, and trauma histories for 38 of the 47 participants (although there were some missing data in the available records). Descriptive statistics on trauma history are presented in Table C1. The following trauma history characteristics apply to the available records of the total participant sample. On average, each participant had experienced 4.9 types of trauma ($f = 34$) over an average of 6.1 total years of life ($f = 34$). Most participants experienced more than one type of trauma at a time.

There is no standardized way to quantify cumulative trauma load, and so I devised my own rough calculation to describe cumulative trauma load. I subtotaled the years of occurrence assigned to each type of trauma experienced by each participant and then added the subtotals to get a total that represented cumulative trauma load. For instance, if a participant experienced school violence from the age of 8 through the age of 12 (a subtotal of 4 years), and also experienced sexual abuse from the age of 8 through the age of 12 (another subtotal of 4 years), their cumulative trauma load would equal 8 years. This calculation yielded an average cumulative trauma load of 14.6 years ($f = 34$) per participant. Twenty-six participants (79.4% of the sample with accessible data) had experienced their first trauma before the age of 1; the mean age for first exposure was 1.8 years of age ($f = 34$). I felt it was important to devise a rough indicator of trauma load, since a vast literature has demonstrated the dose-dependent association between severity of sequelae and [the number of and chronicity of childhood adverse stress types:](#)

higher numbers of stress type and higher levels of chronicity are associated in a dose-dependent fashion with worse morbidity and mortality outcomes. In addition, higher levels of post-traumatic stress and co-occurring depression lead to the poorest mental-health treatment outcomes (Anda et al., 2006; Barawi, et al., 2020; Briere et al., 2008; Cloitre & Beck, 2017; Finkelhor et al., 2007; Follette et al., 1996; Spinazzola & Briere, 2020). The cumulative trauma load calculation may have particular merit if different levels of cumulative trauma load are associated with any phenotypical subtypes identified by this study. In some cases, cumulative trauma load is greater than a participant’s chronological age; however, the cumulative trauma load is meant to provide a rough calculation for distinguishing trauma exposure among participants in this study.

Of those participants with available data, 48.6% were suspected² to have experienced sexual trauma ($f = 18$). Physical abuse and/or physical maltreatment was suspected for 51.4% of participants ($f = 19$). Emotional abuse was suspected to have been experienced by at least 69.4% ($f = 25$), and neglect was suspected to have been experienced by at least 75.7% of participants ($f = 28$). Fifty percent had been exposed to an impaired caregiver ($f = 17$). Of the 31 participants who had been assigned a global assessment of functioning score (APA, 2000), the average score was 46.2, implying “serious symptoms” (APA, 2000, p. 34).

Background Information. Study participants had academic difficulty. (Descriptive statistics on background information are presented in Table C1.) The 23 participants with available school data were, on average, 3 years behind the grade level corresponding to their

² “Suspected” was used to describe an event that the clinician-evaluator judged as a likely occurrence, yet sources of information might have disagreed. For instance, a caregiver might have reported sexual abuse of a child, but the child might have denied the abuse had occurred (Hodgdon et al., 2019). Despite lack of corroboration between reporters, the event was still presumed likely and, therefore, was “suspected.”

chronological age. Of those 23 participants, 63.9% had documented learning disabilities. Of the participants with data, (a) at least eight (21.1%) were adopted, (b) 10 (26.3%) were in custody of child protective services, (c) 18 (48.6%) had experienced between one and 15 different foster settings, (d) 14 (36.8%) had a history of substance abuse, (e) 21 (63.6%) had a history of suicidal ideation, (f) nine (25.7%) had made between one and 10 suicide attempts, and (g) 17 (44.7%) had a history of self-injury. Of the 29 participants for whom racial demographics were available, one was African American (3.4%), one was Asian (3.4%), 20 were white (69%), and five were bi- or multiracial (17.2%). Of the 29 participants for whom ethnicity was identified, six of the participants (20.7%) identified as Latino/Hispanic and 23 (79.3%) as not Latino/Hispanic.

Of the 29 participants for whom medication records were available, 100% were prescribed up to six psychotropic medications. The mean number of medications taken by each participant was 2.54. Of the 29 participants with medication records, nine (32.2%) were on antidepressants, 14 (50%) were on mood stabilizers, 14 (50%) were on antipsychotics, one (3.6%) was on a benzodiazepine, 11 (39.3%) were on blood pressure medications, four (14.3%) were on an antihistamine, three (10.7%) were on sleep medications, and 10 (35.7%) were on a stimulant for ADHD.

Of the thirty-five participants for whom mental-health diagnosis was available (74.5%) had a history of prior mental-health residential placement, with an average of 2.51 diagnoses. Twenty-one participants (60%) had been diagnosed with mood disorder/depressive disorder, 13 (37.1%) with PTSD, 11 (31.4%) with reactive attachment disorder (RAD), two (5.7%) with dissociative disorder, one (2.9%) with an eating disorder, five (14.3%) with bipolar disorder, two (5.7%) with a psychotic disorder, two (5.7%) with being on the autism spectrum, eight (29.9%) with generalized anxiety, and nine (25.7%) with attention deficit hyperactivity disorder (ADHD).

Data related to critical incidents (e.g., any reported violence) and other relevant data (e.g., changes to medication and/or diagnoses) were regularly updated while participants lived in the parent organization's residences. The treatment group and comparison groups were roughly equivalent in terms of demographic information, trauma history background, and medication records (see Table C1).

Recruitment and Inclusion/Exclusion Criteria. The research participants were not randomized into this study; rather, participants comprised a convenience sample. Following review by both the Widener University Institutional Review Board (IRB) and the parent organization IRB, the on-site clinical supervisors at the seven residential facilities participating in TD were provided with the inclusion/exclusion criteria for the study. Potential treatment-group participants were drawn from among the resident youth who were already planning to attend the TD intervention. Potential participants' clinicians determined whether they met the study criteria and asked them whether, in addition to attending the TD treatment, they would like to join the TD study. (HRV-protocol-related preparation material provided to participants may be found in Appendix B.) Clinicians explained the study to participants as it was described on the consent form.

The non-randomized comparison-group was composed of youth who: (a) were the same age and general description as treatment-group participants, (b) resided in the same schools and/or group homes as the treatment-group participants, (c) were identified through the parent organization's CATS database, and (d) were willing to contribute de-identified existing questionnaire data for secondary analysis by me (the CATS database held demographic and treatment information and tracked client progress on an array of domains related to stress sequelae). After identification through the CATS system, potential comparison-group youth were provided with an invitation to be part of the study if their respective clinicians considered

them competent to provide consent/assent and if they expressed willingness to participate. Participants 18 years-of-age and older provided consent; those younger than 18 gave assent with their legal guardians providing consent on their behalf. Comparison group members were receiving standard trauma-informed care at their residences and were also receiving adjunctive treatments that were not TD. In utilizing a non-randomized, comparison group, I wanted to gain a rough understanding of what TD might have contributed that was different from or additional to outcomes of standard care in combination with adjunctive treatments that were not TD (as experienced by the comparison-group participants). Was there something contributed by TD that was recognizably unique from or additive to standard trauma-informed treatment (as combined with other adjunctive treatments in the comparison group)? If so, did any related variables emerge as promising candidates for use in future streamlined study of TD? (I did not measure or keep record of the adjunctive treatments in which the comparison group participated.) In this exploratory study, electrophysiological, quantitative questionnaire, and qualitative interview data were triangulated in order to provide a starting point for identification of a matrix of streamlined variables suitable for future data aggregation and analysis across treatment settings. In addition to possibly identifying a useful matrix of variables, triangulation of primary analysis electrophysiological and phenomenological data with secondary analysis of psychological-instrument data may partially compensate for the small quantitative sample size and the roughness of the secondary-analysis questionnaire data.

Criteria for non-randomized treatment-group participant inclusion, in addition to consent/assent, were that the participant must be proficient in English, enrolled as a resident at one of the seven included parent-organization facilities, and enrolled in the TD intervention. Comparison group participants were required to meet these same criteria, except for participation

in the TD intervention. Criteria for study exclusion were (a) a lack of consent/assent, (b) a participant's decision to opt out of the study, (c) a legal guardian's decision to remove their underage child from the study, (d) a decision by the parent organization or the researcher that participation in the study might cause harm to a participant, (e) lack of English proficiency, or (f) discharge from the residential setting. Because the TD study was a naturalistic study of a complex-trauma-exposed clinical population in residential treatment, most participants qualified for a psychiatric diagnosis and were taking multiple medications; as such, there were no exclusion criteria related to medication or for psychiatric diagnosis. Regular trauma-informed treatment was similar for both the comparison and treatment groups. TD was an adjunctive treatment for the treatment groups; the comparison group received other adjunctive treatments that the treatment group did not. I did not separately measure or keep track of comparison-group members' adjunctive treatments for the following reasons: the information was not readily available to me; the adjunctive treatments in which the comparison participants engaged were varied; the *n* involved in each adjunctive treatment would have been very small (e.g., one or two people); this exploratory study is an attempt to obtain a rough idea of a matrix of relevant variables that might help to differentially assess the phenomenon of TD in the future. The study did not attempt to precisely measure TD's outcomes head-to-head against other particular adjunctive treatments. All treatment group participants attended TD sessions regularly and therefore received an equivalent dose of the treatment (with the exception of one young woman who attended only three sessions because she said that she was not interested in drama and did not identify sufficiently with other participants).

Protection of Human Subjects. In addition to study approvals by the IRBs of Widener University and the parent organization, the parent organization provided me with necessary

letters of support from supervisors of each residence granting permission to recruit and to conduct the proposed study at their residences. Each potential participant's clinician supervised the participant's completion of the consent/assent form in order to ensure that participants fully understood the nature of their potential participation and that consent was provided freely and without coercion.

Potential study participants were supplied with pseudonyms by the parent organization in order to protect their privacy. In addition to electrophysiological HRV data and phenomenological interview qualitative data that I collected myself, this study utilizes secondary analysis of the parent organization's continuous quality control CATS data (psychological questionnaires, background information, and demographic data), which had been de-identified and matched to each participant's pseudonym. As a condition of the Widener University IRB, and as a further caution against my learning the real names of individual participants, all consent forms across the seven residential sites were collected by a parent-organization employee and shuffled before being sent to me in one combined package. I hired a research assistant who was also an employee of the parent organization to (a) maintain a list of participant names attached to pseudonyms (at no time did I have access to the linked identities); (b) acquire, track, receive, and shuffle consent forms before forwarding them to me; (c) coordinate receipt of CATS data; and (d) coordinate transfer of de-identified and pseudonym-tagged archival data to me.

As an incentive to complete the study, a \$30 gift certificate to a retail store was offered to participants in the comparison group upon study completion. Participants in the treatment group were provided with a slightly higher gift certificate of \$40 upon study completion, since their participation required a brief interview that was not required of the comparison group. All participants were offered a snack of their choosing (e.g., candy or pretzels) when completing

each HRV assessment and/or phenomenological interview that I conducted. I self-funded the incentives.

Data Collection

Procedure. There were two cohorts in the TD group. The data collection with the first cohort occurred from October of 2013 to May of 2014. Data collection for the second cohort (different individuals from those in the first cohort) occurred from November of 2014 to June of 2015. CATS archival data were collected by the parent organization between August of 2013 and December of 2015.

Questionnaires. The CATS comprehensive assessment battery was administered by the parent organization to clients of the three residential treatment centers and three group homes as part of their routine continuous quality control mechanism. Clients were evaluated via the web-based, trauma-informed psychological CATS questionnaire battery at entry into the program, every three months thereafter, and upon discharge. Questionnaires were presented (with express permissions from the publishers, except in the case of free open-source measures) on scrolling screens that showed identical items as the paper versions of those questionnaires and in the same order, and they were scored by computer using the same raw score, t score, and percentile algorithms as the paper versions.

Questionnaire data were maintained in the CATS database, which tracked client progress on an array of domains related to stress sequelae. The battery of eight assessment instruments evaluated for constructs and domains related to (a) posttraumatic stress symptoms, (b) self-regulation, (c) behavior and social competencies, (d) depressive symptoms, (e) alexithymia, (f) somatization, (g) executive function, and (h) types of trauma exposure. Taken together, the assessments were meant to index the impact of complex developmental stress and recovery from

its sequelae (Briere & Spinazzola, 2005). Client demographic, diagnostic, and ongoing medication information was also maintained in the database.

CATS data were transferred to me by the parent organization in an SPSS database containing all participants' CATS assessments, demographics, diagnostic, and medication information (de-identified, as described above). Quarterly assessments occurred every three months as counted from that person's residential-program entry date; as such, none of these fell at the same time (except by coincidence). I therefore selected the three assessment points for each participant that were closest to the beginning, middle, and ending of the TD treatment. A description of the eight psychological questionnaires utilized by the CATS database follows.

Assessments Completed by the Participant.

- University of California Posttraumatic Stress Disorder Reaction Index. The Posttraumatic Stress Disorder Reaction Index (PTSD RI; Elhai et al., 2013; Pynoos et al., 1998; Steinberg et al., 2004) DSM-IV version is a widely used measurement that assesses a young person's reaction (fear, helplessness, horror) to exposure to 26 possible types of trauma during childhood and also assesses for DSM-IV PTSD diagnostic criteria. Numerous studies assessing instrument validity have found a clear dose-response relationship with regard to PTSD RI scores (Steinberg et al., 2013).

The PTSD RI is a 48-item, self-report measure in three parts: Part I assesses for previous trauma exposures and forms, Part II asks for "yes" or "no" endorsement of symptoms that have been experienced since the event, and Part III inquiries about the frequency of symptoms as experienced in the prior month, as scored on a 5-point Likert scale from 0 (*none of the time*) to 4 (*most of the time*). The instrument is tabulated for a total score on a continuous scale. The PTSD RI has shown an internal

consistency estimate (Cronbach's α) of .90 and a test-retest reliability estimate of .84 (Roussos et al., 2005). The test has been used across a variety of trauma types, age ranges, settings, and cultures. Although most of the assessments in the parent organization's CATS-database battery are administered at entry into the residential program, then every three months, and then at discharge, the PTSD RI Part I (which takes trauma history) is administered once, while Part II and Part III (symptoms and symptom severity—from Question #14 onward) are administered quarterly and at discharge.

- The Abbreviated Dysregulation Inventory. The Abbreviated Dysregulation Inventory (ADI; Mezzich et al., 2001) is a self-report measure used to assess emotional, behavioral, and self-regulatory dysregulation in adolescents. The ADI is meant to predict “delinquent behavior, aggression, and problems managing frustration,” including prediction of substance use disorders (Mezzich et al., 2001). The 30-item ADI is scored on a 4-point Likert scale from 0 (*never true*) to 3 (*always true*). There have been no norms established for the ADI. One study found four factor-loadings on the instrument: Behavior, Emotion/Affect, and two Cognitive Dysregulation factors (Cruz-Katz et al., 2010).

Marsee and Frick (2007) suggested that the estimated reliability and validity that they established in their study were an encouraging indication that the ADI would be a promising measure of adolescent dysregulation. The ADI emotional/affective scale has been shown to display an internal consistency estimate (Cronbach's α) of .75 and to be “associated with reactive aggression” (Marsee, 2008, p. 524) in adolescent girls. Cronbach's α for the behavioral

dysregulation subscale has been shown to be .80, and higher scores on that subscale have been associated with impulse control and conduct problems (Pardini et al., 2003).

- The Children's Depression Inventory 2. The Children's Depression Inventory 2 (CDI 2; Kovacs, n.d.) is a broadly used, normed instrument used to measure the extent and severity of depressive symptoms over the previous two weeks (state rather than trait attributes). The instrument is a 28-item, self-report measure scored on a 3-point Likert scale from 0 (*none*) to 2 (*definite*). There are two higher-order factors on the instrument: Emotional Problems (with two subscales: Negative Mood/Physical Symptoms and Negative Self-Esteem) and Functional Problems (with two subscales: Ineffectiveness and Personal Problems). In internal consistency reliability testing, the CDI 2 has shown coefficient alphas from .67 to .91 on all scales and subscales for various ages and sex groups (Bae, 2012).
- The Body Awareness Measure. The Body Awareness Measure (BAM; Stone, 2011) is a 20-item self-report questionnaire that utilizes a 5-point Likert scale from 0 (*never*) to 4 (*always*) to index bottom-up somatic nervous system function. The instrument consists of three factors: somatic sensory sensitivity, somatic problems, and body awareness, with respective internal consistency coefficients of .61, .87, and .86 (Stone, 2011). In the current study, the Cronbach's α values were, over a three-month interval at Time 1, Time 2, and Time 3, respectively, .61, .70, and .63 for somatic sensory sensitivity, .67, .58, and .73 for somatic problems, and .80, .81, and .73 for body awareness. The test-retest reliability estimates from Time 1 to Time 2 and from Time 2 to Time 3 were, respectively,

.70 and .61 for somatic sensory sensitivity, .65 and .61 for somatic problems, and .83 and .83 for body awareness.

Assessments Completed by Clinician.

- Trauma History Profile. Unlike other instruments in the assessment battery (with the exception of Section I of the PTSD RI), the Trauma History Profile (THP; Briggs et al., 2012) interview is administered by the clinician upon admission to the residential facility and is not readministered. The THP includes 20 common types of traumatic experience, recording age-of-onset and duration of exposure. The categories of trauma inventoried by the THP were drawn from the National Traumatic Stress Network core data set of over 14,000 children and adolescents who attended NCTSN treatment centers across the U.S. (Briggs et al., 2013). Examples of two categories of traumatization are “impaired caregiver; history of exposure to caretaker depression/mental health problems, other medical illness, or alcohol/drug abuse” and “serious injury/accident: unintentional accident or injury” (Briggs et al., 2013, p. 104). A previous study that utilized the data created by the THP assessment instrument summarized interview results by converting the number of trauma types from a possible score of 20 to variable categories: 1–2, 3–4, or 5+ total types of trauma. The variable conceptualization was intended to facilitate analysis of contrasts related to general dose response effects for multiple trauma exposures (Briggs et al., 2013). The THP is described and was administered as detailed in Hodgdon et al. (2019).
- Child Behavior Checklist. The Child Behavior Checklist (CBCL; Achenbach, 2001; Achenbach & Rescorla, 2001, 2004) for ages 6 to 18 is a widely used

comprehensive assessment tool designed to assess child behavior problems and social competencies. It seeks to “identify syndromes of co-occurring problems” that contribute to psychopathology. The instrument has 118 questions related to behavior issues and 20 questions related to social competencies. The instrument is normed according to age, gender, cultural group, and informant. The questionnaire is scored on a 3-point Likert scale from 0 (*not true*) to 2 (*often true*). A total score of more than 65 indicates problems in the clinical range.

The parent-report form of the CBCL was filled out by each student participant’s parent-organization assigned clinician. The CBCL includes eight factors/syndromes: Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Social Problems, Thought Problems, Attention Problems, Rule-Breaking Behavior, and Aggressive Behavior (Achenbach et al., 2008). Second-order factors are “Internalizing” the Anxious/Depressed, Withdrawn/Depressed, and Somatic Complaints syndromes and “Externalizing” the Rule-Breaking Behavior and Aggressive Behavior syndromes (Achenbach et al., 2008, p. 257). The CBCL also has “DSM-IV oriented scales” of Affective Problems, Anxiety Problems, Somatic Problems, Attention Deficit/Hyperactivity Problems, Oppositional Defiant Problems, and Conduct Problems (Achenbach et al., 2008, p. 257). Achenbach et al. (2008) reported test-retest reliability estimates ($r \geq .80$) and interrater reliability estimates ($r \geq .57$) across diverse samples of youth. In the current study, the CBCL subscales showed test-retest reliability estimates within a three-month interval ranging from .43 (Oppositional Defiant subscale) to .86 (Somatic Complaints subscale).

- The Children’s Alexithymia Measure. The Children’s Alexithymia Measure (CAM; Way et al., 2010) assesses limits in children’s ability to recognize and name their own emotions (alexithymia). It is a 14-item self-report with a single-factor structure utilizing a 4-point Likert scale from 0 (*almost never*) to 3 (*almost always*). Way et al. (2010) reported an internal consistency estimate (Cronbach’s α) of .92 and a criterion-related validity of .73. When compared to the CBCL, greater alexithymia was associated with “greater externalizing behavior problems and greater withdrawn/depressed problems, which suggests preliminary contrasted-groups validity” (Way et al., 2010, p. 313). In the current study, the test-retest reliability estimates within a three-month interval were .84 (Time 1 to Time 2) and .45 (Time 2 to Time 3).

Assessments Completed by a Teacher or Primary Caregiver.

- Behavior Rating Inventory of Executive Function. The Behavior Rating Inventory of Executive Function (BRIEF)—teacher (BRIEF T) and parent (BRIEF P) versions—measures children’s “everyday behavior manifestations” of executive function (Gioia et al., 2002). The assessment contains 86 items and yields a three-factor structure: Behavior Regulation (including Inhibit and Self-Monitor scales), Emotional Regulation (including Emotional Control and Shift scales), and Metacognition (including Working Memory, Initiate, Plan/Organize, Organization of Materials, and Task Monitor scales.)

Each item is rated using a Likert scale from 1 (*never*) to 3 (*often*) and is computed by summing the weighted individual items on the scale. The parent version has been normed, and the instrument has been standardized for parents

and teachers. The BRIEF's normative data were based on child ratings by 1,419 parents and 720 teachers from rural, suburban, and urban areas, reflecting 1999 U.S. Census estimates for socioeconomic status, ethnicity, and gender distribution.

In the current study of TD, milieu staff workers of the parent organization rated TD participants on the BRIEF P scale. Classroom teachers rated TD participants on the BRIEF T scale. Executive Function is defined as “abilities that direct and control goal-oriented Cognitive, Behavioral, and Emotional Functioning” (Gioia et al., 2002, p. 250). In this study, BRIEF P and the BRIEF T showed internal consistency estimates (Cronbach's α) ranging from .80 to .98 and test-retest reliability estimates of .82 for BRIEF P and .88 for BRIEF T. There are moderate correlations between teacher and parent ratings ($r_s = .32-.34$) for both parent and teacher forms. In the current study, from Time 1 to Time 2 (an interval of three months), the BRIEF P showed test-retest reliability estimates ranging from .38 to .47, and the BRIEF T showed test-retest reliability estimates within a three-month interval ranging from .40 to .74. From Time 2 to Time 3 (an interval of three months), the BRIEF P showed test-retest reliability estimates ranging from .58 to .80, and the BRIEF T showed test-retest reliability estimates ranging from .71 to .94.

Data Cleaning for Questionnaires. The de-identified CATS data were maintained in an SPSS file (SPSS 25.0, 2017). All questionnaire data for the pre-, mid-, and posttest points for each participant for each questionnaire and its subscales were moved from an SPSS file containing every CATS quarterly assessment to a separate SPSS file containing only study data.

There were missing data (missed quarterly-administrations of questionnaires), which is not unusual for data collected in naturalistic settings (Graham, 2009), but which did impact the final sample sizes for ANOVA analysis and pattern mapping of each of the respective eight survey questionnaires (sample size for each questionnaire is attached to its respective Table [see Appendix C] and Figure [see Appendix D]).

Scale and subscale calculations were spot-checked for accuracy at the item level, when item-level data were available. Parent-organization tabulation of scale and subscale items was found to be correct on items that could be checked. Data were examined for *inattentive participant responses*. Inattentive responses are those for which there is a suspicious lack of variability in response to questions, or a suspicious lack of variability from one assessment to the next assessment three months later (Meade & Craig, 2012). There were not many inattentive responses; yet, if for instance a participant rated all items on an assessment with the same score, or if a teacher gave a participant almost exactly the same item scores on every three-month iteration of the BRIEF T, those assessments would be considered suspiciously lacking in variability. There were a few responses judged to be inattentive; these were removed.

Electrophysiological Data. The raw electrophysiological HRV data, which had been individually recorded for each participant (see Appendix B for HRV recording protocol), were extracted from the HeartMath emWAVE Desktop HRV professional recording program and equipment (*emWave Pro Desktop*, n.d.) via individual ASCII files of each recording for each participant. All ASCII file data were manually inspected for artifacts. Artifacts were then manually extracted, and the cleaned data were entered into an Excel spreadsheet.³ The

³ Artifacts are short periods of static or of obvious anomaly in the visual representation of the electrophysiological signal. Artifacts interfere with accurate calculation of the amplitude of the various frequencies. Any static and/or

spreadsheet data were then entered into the Kubios HRV analysis program Version 2.1 (Niskanen et al., 2004; Tarvainen et al., 2014).⁴ For this study, the Kubios program imported beat-to-beat interval (RR) data from the Excel spreadsheet and calculated frequency and time domain variables for each individual HRV recording. Natural logarithm variables were also created for frequency-domain data. The natural logarithm transformed frequency data corrected for skewness, which rendered those data better suited for statistical testing. Natural logarithms were calculated for power-spectrum variables of total power, very-low frequency (VLF), low frequency (LF), high frequency (HF), and low frequency versus high frequency ratio (LF/HF). Natural logarithms were also calculated for the time domain measure of root mean square of the successive differences (RMSSD).

Individual PDF-document Kubios HRV Analysis reports were generated for each participant, for each recording. Each participant's Kubios RR time-series graph was visually examined for RR time-series artifacts. Observed artifacts were manually removed, as recommended by the 1996 report by the Task Force of the European Society of Cardiology and the North American Society of Pacing and Electrophysiology (TFESC & NASPE). All artifact-corrected reports were reprinted.

In addition to the five-minute electrophysiological measure of high-frequency heart rate variability (HF5) and one-minute electrophysiological measure of high-frequency heart rate variability (HF1) variables that were the focus for this study, Kubios analyzed all other variables that are in standard use. Each time-domain variable, frequency-domain variable, and each natural

anomalies in the visual wave-tracing of the signal were manually removed so that HRV variables could be accurately calculated.

⁴ Kubios is a freeware program that was developed as part of the academic research of its authors at the Department of Applied Physics, University of Eastern Finland, Kuopio, Finland.

logarithm of the frequency-domain variable for each participant (for the first five-minute resting and first one-minute paced breathing evaluation at pretest and for the first five-minute resting and first one-minute paced breathing evaluation at posttest) were transferred from the Kubios HRV Analysis PDF reports into the SPSS analysis system (see Tables C11 through C16 for a listing of other HRV variables).

Box plots were created for each variable and outliers were identified. Outlying values were removed in order to perform between-groups analysis of covariance (ANCOVA) and within-subjects *t* tests, which were conducted for treatment and comparison groups and included 27 treatment group participants and 18 comparison group participants. Two treatment group participants had no HRV data, and thus were not included. One treatment group participant (Kate) did not have any HRV data because she entered the intervention immediately after the HRV pretest evaluation of the first cohort. The HRV data of a second treatment group participant (Ariel) were lost in data transfer to the ASCII file.

No single outlying values were excluded from HF-HRV pattern mapping analysis, but five participants (three treatment group participants and two comparison group participants) were not included in that analysis. Treatment group members Kate and Ariel were not included for reasons stated directly above. A third treatment group participant (Pablo) and two comparison group participants (Isabella and Margaret) produced a high number of artifacts in their HF-HRV recordings, and thus their cases were entirely eliminated from HF pattern-mapping analysis. As a result, 24 treatment group participants and 18 comparison group participants were included in HF-HRV pattern mapping analysis.

Results

Questionnaire Data

Because repeated-measures analysis of variance (ANOVA; comparing the differences in mean scores pre-, mid-, and posttest for each dependent variable) between the treatment and comparison groups showed inconclusive patterns, I decided to run repeated measures ANOVA trend analyses for only the treatment group on all scale, factor, and subscale scores of the eight questionnaire instruments. For the analysis, the Type I error level was relaxed from .05 to a level of .10 across all tests because of the small sample and the resulting low power of the analysis and because of the exploratory nature of the study. The aim of the study was to identify variables of interest for future streamlined assessment of the intervention's effectiveness. Whenever the sphericity assumption was violated, multivariate analysis results were reported. If both linear and quadratic effects were significant for a particular variable, only the higher-order quadratic effects have been reported.

Hypothesis I-A

Hypothesis I-A predicted that participation in TD would be associated with an increase in the flexibility of the fear-emotion circuitry as indexed by a decrease in symptoms. A decrease in symptoms would be indicated by a decrease in the total scores and any factor-scale or subscale scores on each of eight psychological questionnaires. The results of the analysis are summarized below.

Posttraumatic stress symptoms were measured by the Total Score of the PTSD RI Part II and Part III. According to the hypothesis, there would be a decrease in the PTSD RI total score. A repeated measures ANOVA trend analysis on the PTSD RI total score showed a decreasing linear trend ($p = .06$). At the subscale level, Intrusion ($p = .04$), Cognition/Mood ($p = .09$), and

Arousal/Reactivity ($p = .07$) showed a decreasing linear trend (see Table C3, Figure D2, and Figure D3).

Self-regulation symptoms were measured by the Abbreviated Dysregulation Inventory (ADI) total score. According to the hypothesis, there would be a decrease in self-regulation symptoms as assessed by the total score of the ADI. A repeated measures ANOVA trend analysis on the ADI total score and on its subscales did not show any statistically significant trend (see Table C4 and Figure D4).

Behavior and social competency symptoms were measured by the CBCL total score. According to the hypothesis, there would be a decrease in behavioral and social competency symptoms as assessed by the Total Syndrome Score of the Child Behavior Checklist for Ages 6–18 (CBCL, 2001). A repeated-measures ANOVA trend analysis on the CBCL Total Syndrome Score did not show any statistically significant trend (see Table C2 and Figure D1).

At the subscale level there were, however, significant curvilinear convex quadratic trends (meaning that symptoms went down and came up again) for the Rule-Breaking Behavior subscale ($p = .07$) and the Attention Problems subscale ($p = .06$; see Table C2 and Figure D5).

Depression was measured by the CDI 2. According to the hypothesis, there would be a decrease in the total score of the CDI 2. A repeated-measures ANOVA trend analysis on the CDI 2 total score showed a decreasing linear trend ($p = .08$; see Table C5 and Figure D6). At the factor level, Functional Problems showed a decreasing linear trend ($p = .08$; see Table C5 and Figure D6). At the subscale level, Negative Mood ($p = .07$) and Interpersonal Problems ($p = .02$) showed a decreasing linear trend (see Table C5 and Figure D7).

Alexithymia symptoms were measured by the total score of the CAM. According to the hypothesis, there would be a decrease in alexithymia as assessed by the CAM. A repeated

measures ANOVA trend analysis on the CAM total showed an increasing linear trend ($p = .09$), implying an increase in alexithymia, contradicting the hypothesis (see Table C6 and Figure D8).

Somatization symptoms were measured by the total score of the BAM. According to the hypothesis, there would be a decrease in somatization as assessed by the BAM. A repeated-measures ANOVA trend analysis on the BAM total score did not show any statistically significant trend (see Table C7 and Figure D9). At the subscale level, Somatic Sensory Sensitivity ($p = .08$) showed a curvilinear convex trend (see Table C7 and Figure D10).

Executive function symptoms were measured by the parent version of the BRIEF, the BRIEF P. According to the hypothesis, there would be a decrease in executive function symptoms as assessed by the Global Executive Composite (GEC; total score) of the BRIEF P. Repeated-measures ANOVA trend analysis on the BRIEF P total score showed an increasing linear trend in the GEC/total score ($p = .04$), implying an increase in symptoms, contradicting the hypothesis (see Table C8 and Figure D11). At the factor level, there was a significant increasing linear trend in the Metacognition factor ($p = .01$), implying an increase in symptoms, contradicting the hypothesis (see Table C8, Figure D11, and Figure D12). At the subscale level, there was an increasing linear trend on the subscales of Initiate ($p = .01$), Plan Organize ($p = .02$), and Organization of Materials ($p = .02$), implying an increase in symptoms on those subscales, contradicting the hypothesis. There was also a curvilinear concave quadratic trend on the subscale of Inhibit ($p = .06$; see Table C8 and Figure D13).

Executive function problems were also measured by GEC (total score) of the teacher version of the BRIEF, the BRIEF T. According to the hypothesis, there would be a decrease in executive function symptoms as assessed by the GEC/total score of the BRIEF T. A repeated measures ANOVA trend analysis on the BRIEF T showed an increasing linear trend in the

GEC/total score ($p = .01$), implying an increase in symptoms, contradicting the hypothesis (see Table C9 and Figure D14). At the factor level there was a significant increasing linear trend (see Table C9, Figure D15, and Figure D16) in both the Behavioral Regulation factor ($p = .02$) and the Metacognition factor ($p = .02$), implying an increase in symptoms, contradicting the hypothesis. There was also a curvilinear convex quadratic trend on the factor of Metacognition ($p = .07$). At the subscale level (see Table C9 and Figure D17), there was an increasing linear trend on the subscales of Shift ($p = .01$), Emotional Control ($p = .06$), Initiate ($p = .003$), Working Memory ($p = .01$), and Plan Organize ($p = .02$), implying an increase in symptoms on those scales, contradicting the hypothesis. There was also a curvilinear convex quadratic trend on the subscale of Initiate ($p = .06$) and Plan Organize ($p = .91$; see Table C9 and Figure D17). Illustration A on the next page summarizes the treatment-group trends described above.

Illustration A

Decreasing-Symptom Versus Increasing-Symptom Trends in the Treatment Group

Decreasing Symptoms	Increasing Symptoms
<p><u>PTSD RI (measure of posttraumatic stress)</u></p> <ul style="list-style-type: none"> • Total PTSD score • Intrusion subscale • Cognition/Mood subscale • Arousal Reactivity subscale <p><u>CDI 2 (measure of depression)</u></p> <ul style="list-style-type: none"> • Total Depression score • Functional Problems factor • Negative Mood subscale • Interpersonal Problem subscale <p><u>BAM (measures somatization and body awareness)</u></p> <ul style="list-style-type: none"> • Body Awareness^a subscale 	<p><u>CAM (measure of alexithymia)</u></p> <ul style="list-style-type: none"> • Total alexithymia score <p><u>Brief P (measure of executive function)</u></p> <ul style="list-style-type: none"> • Total executive function • Metacognition factor • Initiate subscale • Organization of Materials subscale • Plan/Organize subscale <p><u>Brief T (measure of executive function)</u></p> <ul style="list-style-type: none"> • Total executive function • Metacognition factor • Behavior Regulation factor • Shift subscale • Emotional Control subscale • Working Memory subscale • Plan/Organize subscale

Note. PTSD RI = Posttraumatic Stress Disorder Reaction Index. CAM = Children’s Alexithymia Measure. CDI 2 = Children’s Depression Inventory-2. BRIEF P = Behavior Rating Inventory of Executive Function – Parent Version. BAM = Body Awareness Measure. BRIEF T = Behavior Rating Inventory of Executive Function – Teacher Version.

^a For the Body Awareness subscale of the BAM, the comparison group (n = 13, (1, 12) = 9.25, p = .01; $\eta^2 = .44$) experienced an opposite linear trend to the treatment group.

Pattern Analysis in Hypothesis I-A. The goal of this dissertation was to identify promising variables that might indicate treatment-related effect. In pursuit of that goal, I attempted to separate “signal from noise”; therefore, below, I more concisely present variables of interest as culled from the section above. The culled variables may be grouped into four statistically significant treatment-group trends or patterns. In this dissertation, treatment group results are comprehensively presented.⁵

Pattern I. Decreasing Trend in Treatment-Group Symptoms From Pre- to Posttest.

Symptoms scales that showed a statistically significant treatment-group pattern consistent with the hypothesis—namely, a decreasing linear trend in symptoms—were:

- PTSD RI: For the self-rated PTSD RI posttraumatic stress questionnaire, there was a significant decrease in the treatment group symptoms from pretest to posttest on the following scales: total score ($p = .06$; see Table C3 and Figure D2) and subscales of Intrusion ($p = .04$), Cognition/Mood ($p = .09$; see Table C3 and Figure D3), and Arousal Reactivity ($p = .07$; see Table C3 and Figure D3).⁶
- CDI 2: For the self-rated CDI 2 depression questionnaire, there was a significant decrease in the treatment group symptoms from pretest to posttest on the following scales: Depression total score ($p = .08$; see Table C5 and Figure D6), factor of Functional Problems ($p = .08$; see Table C5 and Figure D6), and the subscales of Negative Mood

⁵ The presentation of comprehensive comparison-group results is beyond the scope of this dissertation; yet, while probing the data, I did perform repeated measures ANOVA trend analyses for the comparison group. It may be of interest to view comparison-group results and trends that contrasted with treatment-group results and trends, so I have included those comparison-group results that contrast in footnotes to the corresponding treatment-group results.

⁶ Comparison group: There was a significant curvilinear-concave quadratic trend in the comparison group for the PTSD RI total score, $F(1, 11) = 4.72, p = .05, \eta^2 = .30$; for the Intrusion subscale, $F(1, 11) = 5.11, p = .05, \eta^2 = .32$; and for the Cognition Mood subscale, $F(1, 11) = 4.12, p = .07, \eta^2 = .27$, in which symptoms decreased from Time 1 to Time 2 but increased to Time 1 baseline scores from Time 2 to Time 3.

($p = .07$; see Table C5 and Figure D7) and Interpersonal Problems ($p = .02$; see Table C5 and Figure D7).⁷

Pattern II. Increasing Trend in Treatment-Group Symptoms From Pre- to Posttest.

Symptoms scales that showed a statistically significant treatment-group pattern contradicting the hypothesis—namely, an increasing linear trend in symptoms—were:

- CAM: For the CAM clinician-rated alexithymia questionnaire total score, there was an increasing linear trend in symptoms ($p = .09$; see Table C6 and Figure D8).⁸
- BRIEF P: For the BRIEF P milieu staff-rated questionnaire of executive function, there was a significant increase in the treatment group symptoms from pretest to posttest on the following scales: Executive Function total score ($p = .04$; see Table C7 and Figure D11), factor of Metacognition ($p = .01$; see Table C7 and Figure D11), subscales of Initiate ($p = .01$), Plan/Organize ($p = .02$), and Organization of Materials ($p = .02$; see Table C7 and Figure D12).⁹
- BRIEF T: For the BRIEF T questionnaire, there was a significant increase in total score of Executive Function ($p = .01$; see Table C8 and Figure D14), the factor of Behavior Regulation ($p = .02$; see Table C8 and Figure D14), and in the subscales of Shift ($p = .01$), Emotional Control ($p = .06$), and Working Memory ($p = .01$; see Table C8 and Figure D17).¹⁰

⁷ Comparison group: There were no significant trends.

⁸ Comparison group: There were no significant trends.

⁹ Comparison group: There were no significant trends.

¹⁰ Comparison group: There was a significant curvilinear-convex quadratic trend for the Working Memory subscale, $F(1, 8) = 4.60, p = .06, \eta^2 = .37$, in which symptoms increased from Time 1 to Time 2 but returned to Time 1 baseline scores from Time 2 to Time 3.

Pattern III. Curvilinear Convex Treatment-Group Trend. Two symptom scales showed statistically significant curvilinear convex patterns. They were:

- BAM: For the BAM (self-rated somatic symptom inventory) symptoms measured by the somatization/body awareness subscale increased from Time 1 to Time 2 and decreased from Time 2 to Time 3 ($p = .09$; see Table C7 and Figure D10).¹¹
- BRIEF T: For the BRIEF T (teacher-rated executive function) factor of Metacognition ($p = .07$), symptoms increased from Time 1 to Time 2 and plateaued between Time 2 and Time 3 (see Table C8 and Figure D14). Similarly, for the BRIEF T subscales (see Table C8 and Figure D16) of Initiate ($p = .03$) and of Plan Organize ($p = .91$), symptoms increased from Time 1 to Time 2 and plateaued between Time 2 and Time 3.¹²

Pattern IV. Curvilinear Concave Treatment-Group Trend. The symptom scales that showed a statistically significant curvilinear concave pattern (symptoms decreased from Time 1 to Time 2, and increased from Time 2 to Time 3, ending slightly above Time 1's score) were:

- BRIEF P: For the BRIEF P (milieu staff-rated executive function), the subscale of Inhibit ($p = .06$; see Table C7 and Figure D13) showed symptom decrease from Time 1 to Time 2 and increase from Time 2 to Time 3, ending slightly above the Time 1 score.
- CBCL: For the CBCL (clinician-rated social and behavioral competency; see Table C2 and Figure D5), symptoms of Rule-Breaking Behavior ($p = .07$) and Attention Problems

¹¹ For the comparison group: There was a positive linear trend in the comparison group, $F(1, 12) = 9.25$, $p = .01$, $\eta^2 = .44$.

¹² Comparison group: There was also a significant Plan Organize subscale curvilinear-convex quadratic trend in the comparison group, $F(1, 8) = 5.64$, $p = .05$, $\eta^2 = .41$, in which symptoms increased from Time 1 to Time 2 but returned to Time 1 baseline scores from Time 2 to Time 3.

($p = .06$) decreased from Time 1 to Time 2 and increased from Time 2 to Time 3, ending above Time 1's score.¹³

Summary of Findings for Hypothesis I-A. Hypothesis I-A predicted that TD would be associated with an increase in the flexibility of the fear-emotion circuitry as indexed by a decrease in symptoms (a decrease in symptoms would be indicated by a decrease in the total scores and any factor scale or subscale scores of each of the eight psychological questionnaires). Hypothesis I-A was partially supported for the treatment group because some but not all symptoms decreased over time. While depression, PTSD, and body awareness problems decreased over the course of the intervention, executive function symptoms and alexithymia symptoms increased. Rule Breaking Behavior and Attention Problems both showed a curvilinear concave quadratic pattern but rebounded to approximate pretest levels by the end of treatment.

Hypothesis I-B

Hypothesis I-B predicted that participation in TD would be associated with an increase in the flexibility of the fear-emotion circuitry as indexed by an increase in the HF power spectrum measurement of HRV. In addition to HF HRV, all HRV time variables and HRV frequency variables were probed for pre- to posttest changes for both the five-minute resting condition (HF5) and the one-minute paced-breathing condition (HF1). Between-groups analysis of covariance (ANCOVA) and within-subjects t tests were conducted for treatment and comparison groups. For the between-groups ANCOVA, there were no significant differences between treatment and comparison groups on any of the tested variables for either the five-minute condition or the one-minute condition (see Table C11 and Table C12).

¹³ Comparison group: there were no significant trends.

For within-subjects *t* tests in the five-minute resting-condition analysis (HF5; see Table C13 and Table C14), there was one statistically significant change: VLF power was significantly higher in the posttest measurement of the comparison group. The finding lacks utility, however, given that, in short-term recordings, VLF is an unstable variable/frequency that can fluctuate with circadian rhythm and a variety of other factors and cannot be reliably interpreted (TFESC & NASPE, 1996).

For the within-subjects *t* tests in the one-minute paced-breathing analysis (see Table C15 and Table C16), there was one significant change: posttest RR interval was significantly higher in the comparison group (indicating lower heart rate). Lower heart rate is generally considered more favorable but is not a strong indicator of increased systemic flexibility (TFESC & NASPE, 1996).

Summary of Findings for Hypothesis I-B. TD did not increase flexibility of the fear emotion circuitry as indexed by an increase in HF. Overall, there were no meaningful differences between treatment and comparison groups on any HRV variables. Therefore, Hypothesis I-B was not supported.

Hypothesis II

Hypothesis II predicted that participation in TD would be associated with a decrease in youth violence as indexed by a decrease in aggression and social-problem symptoms. Aggression symptoms were measured by the CBCL Externalizing factor score; social-problem symptoms were measured by the CBCL Social Problems subscale and the CBCL Internalizing (indexing hyperactivity and withdrawal) second-order factor score. According to the hypothesis, there would be a decrease in all of these measures. Repeated measures ANOVA trend analysis on these scores did not show any statistically significant trend (see Appendix C, Table C2 and

Appendix D, Figure D1). Therefore, while TD appeared to halt the progression of aggression, it did not reduce aggression as indexed by the CBCL Externalizing factor score.

Exploratory Analysis of HRV Data

Because chronic developmental trauma influences the physiological system differentially depending upon a variety of factors, I expected to find physiological phenotypical subtypes within my sample. It seemed to me that longitudinal intrapersonal comparisons on HRV variables could be meaningful for this complex population. Thus, I probed the data to explore whether electrophysiological subtypes moderated patterns of response to the TD intervention. The HF variables of the HRV power spectrum are believed to best reflect systemic flexibility; for that reason, I explored the HF1 and HF5 variables for evidence of subtypes. My exploratory analysis began with intrapersonal comparisons of the HF1 and HF5 variables from pre- to posttest.

Spielberger's framing of the difference between *trait* versus *state* conditions (Spielberger, 1966, 2012) provided a useful tool with which to conceptualize and label the difference between the HF1 and HF5 variables. In this study, the HF1 paced-breathing task measured maximum induced parasympathetic nervous system (PNS) capacity achieved at will (via a one-minute EKG recording of a paced-breathing exercise). Thus, HF1 reflected the maximum parasympathetic state (meaning the transient voltage/amplitude/power of HF) that the participant could induce and achieve at will. In contrast, HF5 measured the strength of the PNS at rest via a five-minute resting EKG recording. In general, resting HF would remain relatively stable over time—meaning that voltage/amplitude/power would stay relatively consistent—unless a person experienced a major physiological change (e.g., a significant increase in athleticism). Thus, for this study, the HF5 resting measure reflected participant trait (stable) PNS function.

I analyzed the way in which HF1 (state HF) and HF5 (trait HF) changed in relation to each other from pretest to posttest. If an individual's HF1 state/maximum-induced parasympathetic tone and their HF5 resting/trait parasympathetic tone moved closer together from pretest to posttest, I reasoned that the nervous system would be more balanced, consequently indicating greater nervous-system flexibility. Greater flexibility of the nervous system would manifest in increased flexibility of the fear/emotion circuitry, enabling the individual to more effectively respond to the changing environment. Such flexibility might be important, because it would counteract the inflexible and habitual defenses that would have been a disruptive consequence of complex traumatization.

In order to quantify the longitudinal changes in the ratio of state versus trait dominance from pretest to posttest, I developed the following formulas: $HF1_{pretest} - HF5_{pretest} = \text{State-Trait } HF_{pretest}$ (S-T $HF_{pretest}$) And $HF1_{posttest} - HF5_{posttest} = \text{State-Trait } HF_{posttest}$ (S-T $HF_{posttest}$). The new S-T $HF_{pretest}$ and S-T $HF_{posttest}$ variables were single variable snapshots of systemic balance at pretest and at posttest (D'Andrea, personal conversation, June 24, 2016).¹⁴ With the new variables, participants could be compared to themselves from pretest to posttest. For the treatment group, I plotted each participant separately, mapping the participant's directional movement/pattern on S-T HF from pretest to posttest. Participants' directional movement over time on S-T HF appeared to separate them into three phenotypical subtypes (see Figure D18). Following the same procedure, the comparison group could then be separated into the same three phenotypical-subtype groups (see Figure D19).

¹⁴ Associate Professor Wendy D'Andrea, PhD., of the New School helped to conceptualize and operationalize the novel formula of S-T HF as a way to capture longitudinal shifts in state/trait PNS balance (personal communication, June 24, 2016).

For the three subtypes (i.e. Calming Down, Sowing Seeds, and Waking Up subtypes) from pretest to posttest, if the S-T HF variable produced was a negative number by posttest, that meant that HF5 and trait PNS had become more dominant for the participant; if the S-T HF number was positive, that meant that state PNS had become more dominant for the participant. If the S-T HF variable was near zero, it meant that HF1 and HF5 had gained balance (neither state nor trait was dominant over the other). See the next page for plottings of the three subtypes for the treatment group in Illustration B and for the comparison group in Illustration C.

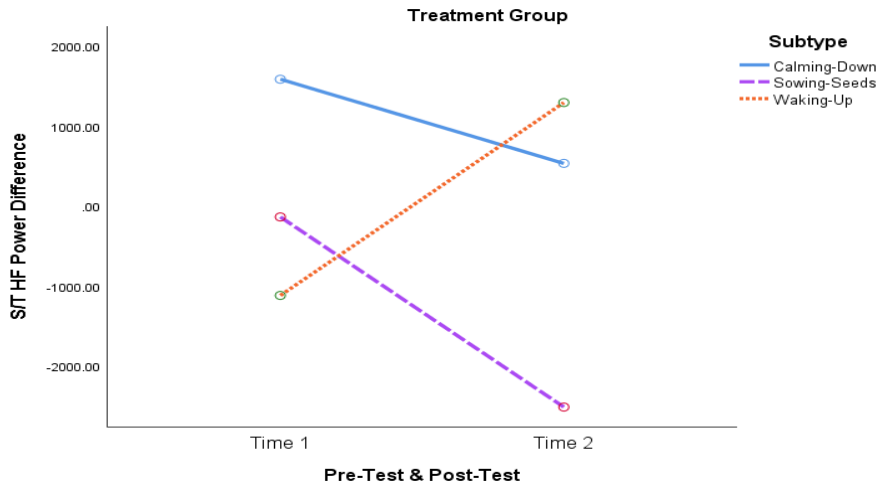
All other HRV variables were mapped by phenotypical subtypes for treatment and comparison conditions (see Figures D24 through D63). For the Sowing Seeds and Waking Up subtypes, other HRV variables supported and elaborated the systemic balance information that could be gleaned from each subtype via the longitudinal movement of the S/T HF variables from pre- to posttest (see Footnotes 16 and 17 for a description of those variables).

Regardless of treatment status (treatment or comparison group), the longitudinal pattern of state versus trait balance (S-T HF) from pre- to posttest exhibited the following trends in the three phenotypes (see Figures D18 and D19).¹⁵ Group 1 (Calming Down subtype) exhibited positive S-T HF_{pretest} that moved from above zero to near zero by S-T HF_{posttest}, achieving trait versus state balance. This meant that at pretest the Calming Down 1 subtype's ability to achieve state PNS activity at will was stronger than the ability to experience trait PNS activity at rest. At posttest, trait PNS activity appeared to strengthen and balance with state PNS activity, imparting maximal systemic flexibility of response to varying in-the-moment challenges.

¹⁵ See Figures D20 and D21 for the typological subtypes from the combined data as compared to norms.

Illustration B

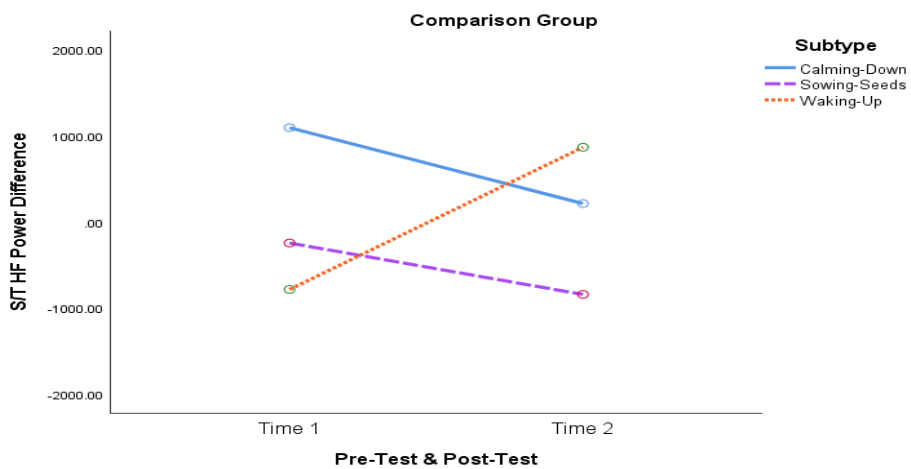
State/Trait High Frequency (S/T HF) Balance in the Treatment Condition by Three Phenotypical Subtypes Pre- Versus Posttest for the Treatment Group



Note. $n = 24$ (Subtype 1 = 10, Subtype 2 = 5, Subtype 3 = 9). This illustration is also included as Figure D18 in Appendix D.

Illustration C

State/Trait High Frequency (S/T HF) Balance in the Comparison Condition by Three Phenotypical Subtypes Pre- Versus Posttest for the Comparison Group



Note. $n = 18$ (Subtype 1 = 4, Subtype 2 = 4, Subtype 3 = 10). This illustration is also included as Figure D19 in Appendix D.

Group 2 (Sowing Seeds subtype) exhibited balanced S-T HF_{pretest} but S-T HF_{posttest} had fallen far below zero, which indicated that trait PNS activity had strengthened, grown dominant, and had perhaps become excessive relative to maximum achievable state parasympathetic activity. Excessive trait PNS activity might have caused participants to end the study “checked-out” and/or defaulting to dissociation in the face of varying in-the-moment challenges. It is possible that the Sowing Seeds subtype of the treatment group experienced a differential treatment effect for TD, in that they became more markedly trait PNS dominant than did the comparison group. The treatment condition of Sowing Seeds had a much sharper downward slope from pre- to posttest on the S-H HF variable (see Figure D18) than did Sowing Seeds in the comparison condition (see Figure D19).¹⁶

Group 3 (Waking Up subtype) had negative S-T HF_{pretest} that moved from below zero to above zero by S-T HF_{posttest}. At pretest the Waking Up subtype appeared to experience excessive trait PNS activity (perhaps being checked-out or dissociated at rest), which was stronger than the ability to evoke state PNS activity under in-the-moment challenge. By posttest, it seemed that state PNS activity became dominant, and trait PNS activity receded. The Waking Up subtype may have ended the posttest feeling less calm at rest but more able to induce calm under challenge.¹⁷

¹⁶ Other variables provided additional support for both state and trait posttest increases in PNS strength for the Sowing Seeds subtype. On the longitudinal mapping of HF5 alone (higher levels of which indicate greater trait parasympathetic strength), the treatment condition of the Sowing Seeds subtype showed a sharper and higher upward slope (indicating greater trait parasympathetic activity, see Figure D50) than did the comparison group (see Figure D51). Longitudinal movement of the Sowing Seeds group on the SDNN1 variable follows an upward slope (see Figure D28), indicating an increase in state PNS strength (while there was a slight decrease in state PNS in the comparison group [see Figure D29]).

¹⁷ The treatment condition of Waking Up #3 subtype appeared to become slightly more sympathetically aroused and awake in the face of varying in-the-moment challenges. While sympathetic arousal cannot be explained by the S/T HF graphs alone, it can be deduced when longitudinally mapping Log LF5 with the covariate Log HF 5 (see Figures

In summary, treatment and comparison phenotypical subtypes followed similar subtype trends from pretest to posttest. The TD treatment condition itself did not appear to differentially impact S-T HF by phenotypical subtype, except for sharper slopes that indicated greater trait parasympathetic activity in the treatment condition of the Sowing Seeds subtype and slightly greater sympathetic activation in the resting measure of the treatment condition of the Waking Up subtype. Thus, in the total sample of complex-trauma-exposed residential youth, who all received both trauma treatment as usual and adjunctive therapies over the course of the study (with the treatment group alone receiving TD), the same three electrophysiological subtype groupings (i.e., Calming Down, Sowing Seeds, and Waking Up) were longitudinally observed regardless of treatment versus comparison condition. In other words, everyone's physiology longitudinally shifted in one of three subtype patterns, regardless of whether or not they had received the TD treatment.

Demographic Differences in Subtypes. The possible differences in demographic characteristics of the phenotypical subtypes were examined (see Table C17). The Calming Down subtype (across treatment and comparison conditions) experienced a heavier cumulative trauma load (17.5 years) as compared to both the Sowing Seeds subtype (10.14 cumulative years) and the Waking Up subtype (11.62 years). It may also be worth noting that the sexual trauma burden was higher for the Calming Down subtype. Sexual trauma was experienced by 72.7% of the Calming Down subtype, in comparison to 44.4% of Sowing Seeds subtype and 30.8% of the Waking Up subtype. The Sowing Seeds subtype had a much lower number of participants

D62 and D63). Greater sympathetic activation may be observed at rest during posttest (compared to pretest) for the treatment condition of the Waking Up subtype. In the comparison group, longitudinal mapping at-rest sympathetic activation, as indicated by Log LF5 with the covariate Log HF5 (see Figures D62 and D63), showed an opposite decreasing trend.

reporting physical trauma (11.1%), as opposed to the Calming Down subtype (63.3%) and Waking Up subtypes (53.8%).

Exploratory Analysis of Questionnaire Data

I also examined the data from the questionnaires in terms of the HRV subtypes.

CDI 2. I had hypothesized that a complex intervention such as TD might interact with phenotypical subtypes by keying into the next sequentially needed emotional/developmental building block required by a particular phenotypical subtype. Because longitudinal-path patterns of S-T HF appeared to separate all participants into three subtypes (regardless of treatment vs. comparison condition), I wondered whether one subtype might display more treatment-related symptom changes than other subtypes and whether there would be longitudinal symptom differences between treatment- and comparison-groups by subtype. I therefore decided to explore how S-T HF HRV subtypes (Calming Down, Sowing Seeds, or Waking Up) might relate to response to the CDI 2 (the questionnaire that had showed the greatest reduction of symptoms in the overall treatment group vs. the comparison group [see Table C15, Figure D16, and Figure D17]). For the three subtypes, I ran the trend analysis in repeated measures ANOVA for the CDI 2's total, factor, and subscale scores, and I longitudinally mapped each scale by subtype (see Figure D6 through Figure D77).

When divided by treatment- versus comparison-group conditions, the three subtypes had small sample sizes, yet longitudinal movement on scales by subtype provided interesting hints of potential targets for further exploration. When contrasting treatment to comparison conditions (see Figure D6 through Figure D77), two subtypes (the Calming Down S-T HF subtype and Sowing Seeds S-T HF subtype) showed opposite patterns (treatment vs. comparison) on most scales and subscales of the CDI 2: the Calming Down subtype of the treatment group

consistently showed a decreasing trend in depression symptoms over time, while the Calming Down subtype of the comparison group showed either a flat trend or an increasing trend in depression symptoms over time. It seemed that most of the overall effect in treatment-group depression symptom reduction could be accounted for by the scores of those whose heart rate variability placed them in the Calming Down subtype.

The scope of this dissertation is limited, so for the remainder of the psychological instruments, I explored total scores only for phenotypical subtype movement as divided by treatment versus comparison conditions (see Figures D78 through D93 for longitudinal mapping of Total Scores). For succinct presentation, only S-T HF subtype movement on the total scores of remaining instruments is described in the next section.

BRIEF T and ADI. The differential patterns observed on the CDI 2 in the Calming Down subtype can again be observed in the ADI total score (see Figures D78 and D79) and the BRIEF T Executive Function total score (see Figures D82 and D83). For those in the Calming Down subtype, as assessed by the CDI 2 and the ADI, treatment group symptoms decreased over time, while comparison group symptoms stayed relatively the same. However, for those in the Calming Down subtype, as assessed by the BRIEF T, symptoms increased for the treatment group but decreased for the comparison group. Given the above, it seems that the Calming Down subtype may account for most of the differential symptom changes captured by psychological instruments in the overall treatment group. The total scores on the remainder of the questionnaires did not show markedly consistent or notable patterns in either the treatment or comparison group (see Figure D84 through D93).

It appears that the Calming Down subtype, which had the greatest cumulative trauma load and a greater incidence of sexual trauma, had, paradoxically, the most marked differential

treatment versus comparison response on the CDI 2. The Calming Down phenotype in the treatment condition (differentiated from the comparison condition of the Calming Down subtype) exhibited a decreasing trend for depression, total PTSD, affect dysregulation, and total body awareness symptoms, and an increase in teacher-rated executive function symptoms. In contrast, the Sowing Seeds subtype and the Waking Up subtype showed no notable patterns in the treatment condition relative to the comparison condition. See Illustration D.

Illustration D

Decreasing Versus Increasing Symptom Trends in the Calming Down Phenotypical Subtype Treatment Condition

Decreasing Trend in Symptoms	Increasing Trend in Symptoms
<p><u>CDI 2 (measure of depression)</u></p> <ul style="list-style-type: none"> • Total Depression score • Negative Mood • Ineffectiveness • Interpersonal Problems • Emotional Problems • Functional Problems <p><u>ADI (measures affect dysregulation)</u></p> <ul style="list-style-type: none"> • Total Score 	<p><u>BRIEF T (measure of executive function)</u></p> <ul style="list-style-type: none"> • Total executive function

Note. CDI 2 = Children’s Depression Inventory-2. BRIEF T = Behavior Rating Inventory of Executive Function – Teacher Version. ADI = Abbreviated Dysregulation Inventory. Because of the small *n* of the subgroupings, participants were pattern mapped by subgroupings in treatment versus comparison subgroupings (rather than probed for statistical significance). The comparison condition of the Calming Down subtype showed opposite trends to those summarized in the table above for the Calming Down subtype. All scales and subscales of the CDI were pattern mapped and examined. All scales and subscales showed opposite patterns for the Calming Down comparison group. Only the total-score was pattern mapped and examined for the ADI and the BRIEF T.

Discussion

Results

My initial plan was to test TD's effectiveness by comparing complex-trauma-exposed residential youth who had experienced the TD intervention (the treatment-condition) to a comparison group of youth from the same population who had not experienced the TD intervention. Initial analysis of group differences in trends was inconclusive. I therefore focused primarily on trend analysis of the treatment group.

Hypothesis I-A. Hypothesis IA was partially supported. The supported findings indicated that systemic flexibility did increase in the treatment group. Analysis of standardized-questionnaire data revealed statistically significant decreases in depression and PTSD symptoms among the TD treatment group. The treatment group also showed statistically significant increases of alexithymia and executive function symptoms. Thus, the Hypothesis IA questionnaire findings may possibly indicate systemic flexibility shifts in the treatment group. It could be that patterns of improvement in certain symptoms, as well as an exacerbation (or transient exacerbation) in other symptoms, may be indicative of a growth/recovery trajectory.

Findings related to Hypothesis IA appear to indicate that participants' fear-emotion circuitry became more flexible by the end of the intervention. Yet, the equating of only significant symptom decreases with increased systemic flexibility may not be the best conceptualization of flexibility. I considered the possibility that decreases in some symptoms and increases in others may have combined to present a more natural and accurate reflection of emotional flexibility and emotional maturation as opposed to a simple decrease in all symptoms. For instance, in this study, it is possible to speculate that increased flexibility of the fear-emotion circuitry was captured by the significant decrease in PTSD and depression, as well as by the

significant increase in alexithymia and exacerbation in symptoms of executive function. *Again, patterns of lesser as well as greater symptoms (detected by the psychological questionnaires) may have signaled the natural fluctuation of dynamic recovery from complex traumatization.* And thus, those patterns may have indicated increased flexibility of the fear-emotion circuitry.

When the flatness of depression and the negative memory intrusions of PTSD decrease, those changes may be accompanied by the emergence of new/unfamiliar feelings and cognitions. People who have not experienced themselves fully in the past and who are confronted with an assortment of unfamiliar feelings and thoughts may not know how to synthesize that new information, perhaps causing an increase in alexithymia (not knowing what to make of body sensations) and a worsening of executive function symptoms. Considering these possibilities, *if we have mistakenly been using decreases in symptom scales across the board to indicate success of an intervention—without taking into account that in some cases increasing symptoms may indicate treatment progress—we may have previously discounted effective interventions.*

Other possibilities arising from these findings are as follow.

1. Treatment may be effective in reducing some but not all symptoms.
2. Treatment may be effective in immediately reducing some symptoms, while other symptom decreases may lag.
3. There could be an actor-observer bias: the questionnaires that reflected a significant increase in symptoms for executive function and alexithymia measures were rated by teachers and clinicians, respectively, while the questionnaires that reflected a significant decrease in symptoms for depression and PTSD were self-rated. It may be that subjects themselves internally experienced and assessed improvement, while external observers (who may have been more concerned with

behavioral control and/or may not have been aware of internal shifts and changes) perceived an increase in symptoms. Observation of complex-trauma-related recovery phenomena may lead to opposite interpretations depending upon the interpreter (self-reporter vs. other reporter). When the system becomes more flexible, subjects may feel relieved; they may feel better and feel their symptoms have decreased. However, others who are observing the same individuals may interpret the expanding repertoire of emotional/behavioral/cognitive activity and increased self-expression that comes with increased flexibility as a worsening of symptoms (Berger et al., 2005; Kim et al., 2018; Verhulst & Ende, 1992).

4. Alternatively, different patterns and combinations of waxing and waning symptoms over time may signal the presence of multiple specific phenotypes (specific subtypes of behavioral and physical traits [Taylor & Lewotin, 2017]).

The first three possibilities should be explored through follow-up investigations. In the current study, I explored the last possibility using the HRV data as presented in exploratory data analysis.

Hypothesis I-B. In contrast to findings for Hypothesis I-A, no statistically significant differences in trends were detected in the Hypothesis I-B HRV data. There were no meaningful differences between treatment and comparison groups on any HRV variables. Therefore, Hypothesis I-B was not supported.

Hypothesis II. Hypothesis II was not supported. Two previous studies of Urban Improv (UI), a predecessor of TD (Kisiel et al., 2006; Zucker et al., 2010) demonstrated a halting of aggressive behaviors in youth participating in this secondary violence prevention program versus controls, and an improvement in pro-social behaviors identified as important potential mitigators

of youth aggression. In the current study, TD appeared to halt the progression of aggression, but it did not reduce aggression as indexed by the CBCL, because neither aggression nor social-problem symptoms significantly changed on the levels of total scores, factor scores, or subscale scores. Therefore, the TD model when implemented with youth with histories of complex trauma exposure and adaptation may not function primarily as a violence prevention model per se. This observation is not necessarily contradictory to the designed intent of TD, which was developed not as a secondary violence prevention program but a tertiary prevention and clinical intervention model for violence and trauma-exposed youth exhibiting significant trauma-related symptoms and difficulties. In addition, the UI studies and the current study did not use the same outcome measures to index aggression. The UI studies used the Social Skills Rating System (SSRS; Gresham & Elliott., 1990) to measure outcomes related to aggression, while the current study used the second-order factor Externalizing scale of the CBCL (Achenbach et al., 2008) in order to approximate the measure of aggression, because questionnaire data in the TD study were confined to secondary analysis of already collected data available through the parent organization's quality-control database. (While Hypothesis II was not supported by secondary analysis of the CBCL questionnaire results, reductions in aggression and increases in pro-sociality were [clearly supported by the qualitative](#) portion of this dissertation, [which indicates that attitudes toward aggression and aggressive behaviors were reduced and pro-social attitudes and behaviors increased.](#))

Exploratory Analysis. The possible moderation of the treatment effect by HRV phenotypical subtypes was further explored. Three phenotypical subgroups were identified (see Figure D18 and Figure D19) based on the participants' directional movement over time on the S-

T HF variable (a snapshot of state/trait PNS balance). I have called those groups Calming Down, Sowing Seeds, and Waking Up.

The Calming Down subtype had been state-PNS dominant at pretest, but by posttest had developed an equal balance between state and trait PNS. At pretest, resting-state calm would not have been as accessible as at posttest. At posttest, with both state and trait PNS accessible and flexibly balanced, the Calming Down group may have been able to toggle fluidly between trait-calm when safely at rest and at-will state calm as demanded by the circumstances at hand.

The Sowing Seeds subtype, which had exhibited balanced state and trait PNS at pretest, became markedly trait-PNS dominant at posttest (although both state and trait PNS strengthened), perhaps imparting a type of dissociative or checked-out/numb condition at posttest. Although the treatment and comparison groups of the Sowing Seeds subtype followed the same pattern, the slope of the treatment group was much sharper, indicating even greater trait PNS dominance than demonstrated by the comparison group. This may have been a treatment effect.

The Waking Up subtype had been excessively trait PNS dominant at pretest (perhaps dissociative or checked-out at pretest). By posttest, the Waking Up subtype of both the treatment and comparison group had developed state PNS dominance, suggesting that trait PNS had receded (indicating that dissociation or separation from one's own experience had diminished), and state PNS (the ability to calm at will) had become dominant. For the Waking Up subtype, state/trait longitudinal courses were similar for the treatment and comparison groups, but the treatment group experienced slightly more sympathetic activation (as indicated by LF with covariate HF variable pre- to posttest), which may have reflected a differential treatment effect.

In general, it seemed that the three distinctive phenotypical subtypes were present in both the treatment and comparison groups. It appeared that the entire sample followed one of the three subtype electrophysiological state/trait PNS patterns over time, regardless of treatment vs. comparison assignment. The literature supports the notion that the characteristic represented by the HF5 variable (i.e., trait resting high-frequency activity in a short-term recording) is stable across time, except in the case of a major physiological shift in a person (e.g., losing or gaining substantial physical fitness, or gain or loss of substantial body mass, etc.; Ge et al., 2020; Goedhart et al., 2007; Spangler et al., 2018). It is perhaps of interest then that HF5 itself (see Figures D50, D51, D54, and D55) longitudinally shifted by phenotypical subtypes *across* the treatment and comparison conditions. This change in HF5 and trait PNS balance might possibly indicate that all participants experienced electrophysiological effects as a result of the parent organization's treatment environment as usual.

Next, I explored whether questionnaires used in this study had captured significant symptom changes. Because the CDI 2 had shown the most consistent treatment effect across scales and subscales, I pattern mapped the treatment and comparison groups by subtypes and compared the subtypes on all scales of the CDI 2. The Calming Down subtype of the treatment condition appeared to account for most of the symptom decreases on the CDI 2, while the Sowing-Seeds and Waking Up subtypes did not consistently show decreases in symptoms (see Figures D64 through D77). Thus, it is possible that the electrophysiological subtypes had confounded the treatment effect and masked the extent of the hypothesized effect on the depressive symptoms.

I decided to briefly probe the other questionnaires for notable differential patterns by longitudinally mapping questionnaire total scores by subtype for both treatment and comparison

groups (see Figures D78 through D93). The treatment condition of the Calming Down subtype displayed decreasing trends in affect dysregulation symptoms on the ADI and an increasing trend in teacher-rated executive function symptoms on the BRIEF T, while the comparison condition showed the opposite patterns on these questionnaires. In contrast, the Sowing Seeds and Waking-Up subtypes did not show consistent contrasting patterns of interest. Therefore, as in CDI 2, the Calming Down subtype seems to be responsible for changes in affect dysregulation and executive function symptoms.

In addition, as described before, there were some clear demographic differences among the subtypes. Notably, individuals included in the Calming Down subtype had the highest mean cumulative-trauma load and sexual-trauma burden (see Table C17), which might underlie the greater pre- to posttest symptom changes and perhaps the greatest benefit from intervention. A second possibility is that the questionnaires used in this study were not sensitive to any changes experienced by the other two phenotypical groups or by the overall treatment group. A third possibility is that missing data, or a low number of responders, might have masked subtype pattern-mapping results. A fourth possibility is that there is a lag in symptom abatement for the Sowing Seeds and Waking Up subtypes that might be revealed at a later time.

Although HRV norms are not particularly well-defined for adolescents and are not necessarily relevant to this population (who vary widely because of physical development, medication status, etc.), I did compare the three phenotypical subtypes on HF5 (vagal tone), both pre- and posttest, to existing norms (Corrales et al., 2012) for this age group (see Figures D22 & D23). At pretest the Calming Down subtype exhibited HF5 trait PNS vagal tone far below the norm; at posttest, trait HF5 increased to come much closer to the norm. The Calming Down subtype presented the phenotypical profile and responses that would be expected by existing

HRV-literature (as it relates to depression and trauma impacts), except that for executive function the literature would have predicted a decrease in executive-function symptoms (Beauchaine & Thayer, 2015) rather than the increase in executive-function symptoms displayed by the Calming Down subtype on the teacher-rated BRIEF T. The unexpected increase in executive-function symptoms may have been caused by observer bias on the part of the teacher-observers.

It is also possible that improvement in executive-function symptoms lagged behind improvement in depression and affect regulation symptoms, and that initial executive-function disorganization was in fact a positive indicator of progression on a healing trajectory. As people shake free from engrained neural patterns set to evoke instantaneous defense under survival threat, a dynamic fluctuation in executive-function symptoms could precede a new ordering of executive-function neural connections. For the Calming Down subtype, a new executive-function order set to flexibly evaluate and navigate a safer environment might have been evident at a later posttest assessment. In such a case, it would be beneficial to continue to follow participants for a longer time to see whether executive function symptoms do, in fact, lag, before ultimately showing the expected improvement. The cumulative effects of traumatization produce oscillation between emotional under- and over-modulation (Lanius, Frewen, et al., 2010). As the cumulative-trauma load and its impact increase, dysregulation of the biological system progressively increases (Lanius, Frewen et al., 2010; Shonkoff et al., 2009; Yehuda et al., 2015). It would seem logical that as the cumulative-trauma impact on a person's system unwinds and decreases via interventions, *healing might be tracked by variables that index progressive reorganization* of better regulation and of greater stability of modulated affect.

The Calming-Down group, with its higher cumulative trauma load, accounted for most of the significant symptom reductions in the CDI 2 depression scale and subscales. Prior studies have associated high trauma load with a combination of depression and low HF HRV. Higher trauma load and depression have been associated with poor treatment response (Barawi et al., 2020), but in the current study of TD, the Calming Down phenotype, which displayed the highest level of depression and highest cumulative trauma load, was the phenotypical subgroup that was most responsive to the TD treatment as measured by the CDI 2 depression questionnaire. In a study of 62 depressed individuals as compared to 65 healthy controls, Hartman et al. found that major depression was associated with low HF HRV (2019) and that there was a progressive improvement in both HF HRV/vagal tone and depression symptoms over the course of treatment. Hartman's treatment was pharmacological, and he postulated that improved HRV parameters directionally caused an improvement in arousal modulation (improved autonomic nervous system function), which led to symptom improvement. However, it is possible that symptom improvement directionally led vagal tone improvement. A Danish network analysis of the symptoms of 2,782 adults seeking treatment (Fried et al., 2017) found that detachment and loss of interest in activities were strongly connected to other PTSD symptoms. Therefore, the depression-related symptoms of detachment (i.e., anhedonia) and loss of interest, as affected by the TD intervention, might secondarily affect HF HRV. It is also possible that improvement in depression and HF HRV were bi-directionally related (e.g., HF changes perturbed symptom abatement, which in turn perturbed more HF changes, and so on).

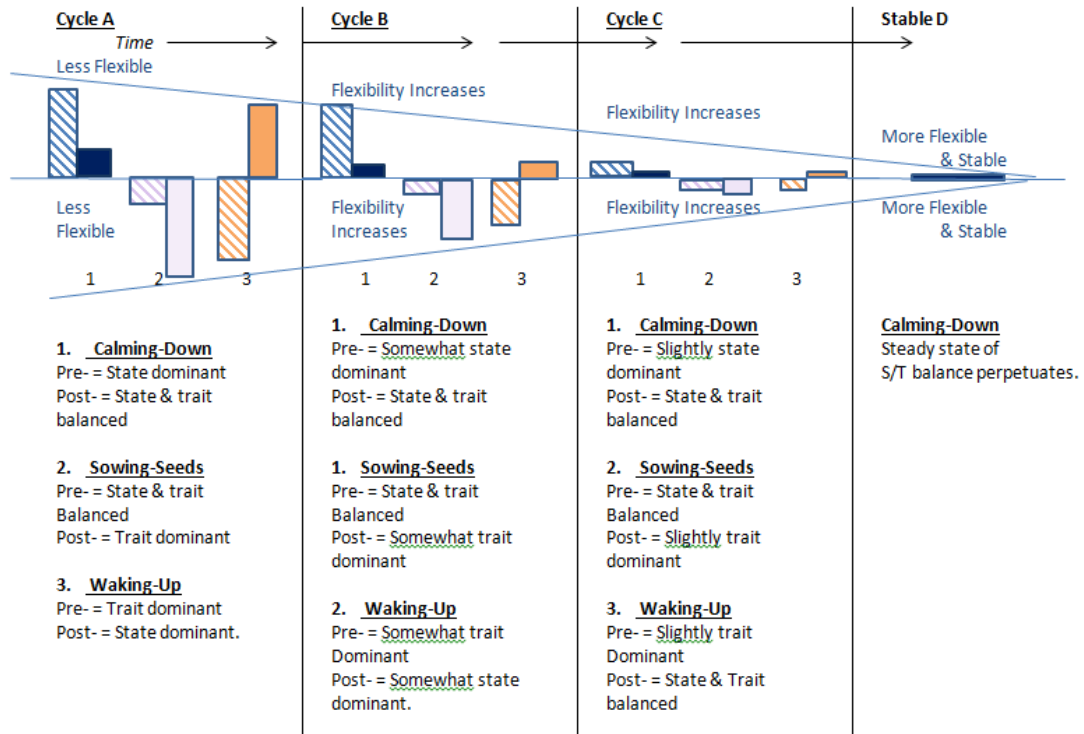
The Calming Down subtype's decrease in depression symptoms might also be conceptualized as an increase in positivity (Garland et al., 2010; Kogan et al., 2014; Licht et al., 2008; Rottenberg et al., 2007). Prior studies have supported the proposal that increases in HF

HRV functioning/vagal tone be used as a physiological indicator of positive affectivity, and therefore a reflection of the positive-valence system of the NIMH Research Domain Criteria (RDoC; National Advisory Mental Health Council Workgroup, 2018) and an indicator of a strengthening medial-prefrontal-cortex core integration (Gruber et al., 2015; Thayer & Lane, 2009). In the current study, over the course of treatment, the Calming Down subtype experienced an increase in trait HF HRV functioning, which would predict a decrease in depression symptoms by posttest, unlike the other subtypes.

My findings led me to an idea that requires exploration at a later time: rather than being discrete phenotypes, Calming Down, Sowing Seeds, and Waking Up might represent a cycling trajectory of stepwise nervous-system adjustments, slowly and dynamically nudging the system to a new norm of flexibility (as the impact of trauma unwinds). Illustration E on the next page shows a theoretical model of cyclical progression. With each cyclic iteration, the system is perturbed to operate in a more balanced, flexible, and stable fashion as it cycles through Calming Down to Sowing Seeds to Waking Up, and then begins the next iteration of the cycle more balanced than it was during the previous cycle.

Illustration E

Cycling Trajectory of Stepwise Nervous-System Adjustments



Note. Cycle A reflects data from the TD study. Cycles B, C, & Stable D are theoretical projections.

Limitations and Implications

Limitations

An important limitation of the current study is the small sample size available for quantitative analyses of the questionnaire data ($N = 47$). Sample-size issues were further aggravated when exploratory analyses were conducted using subtypes. The current study proceeded with the small sample size because of the rare opportunity to access complex-trauma exposed teenagers in residential care (for whom research is remarkably absent, yet critically needed). Regardless, because of the small sample sizes, sampling errors are a threat to the conclusions.

The detailed demographic information that the parent organization collected and provided is a strength of this study, but a great deal of demographic data was missing or incomplete, particularly data related to race and ethnicity. Because this data had not been collected for many of the participants, it is possible that the participant group was more diverse than reflected and, if so, minority participants may have experienced societal oppression that could have resulted in a greater cumulative-trauma load that was not captured in the quantitative portion of the study.

Although I argue that, because of decreases in depression and affect dysregulation, the Calming Down subtype benefited most from the TD treatment, it is also possible that treatment effects for all subtypes were not sufficiently captured by the instruments. Examination of the psychometric properties of the BAM uncovered some issues. The scoring instructions in the manual were not correct for reverse-coded items. Based on item content and inter-item correlations, items 5, 6, 7, and 8 must be reverse-coded and item 4 must not be reverse-coded, contrary to manual directions. In this study, reports based on the BAM are produced from the rescoring (after fixing the five scoring discrepancies) and may not be comparable to previous

reports. Regardless, the manual's scoring inaccuracies lessened my confidence in the validity of the measure. Follow-up studies are needed to reexamine the basic psychometric properties of the BAM. Also, psychometric evaluations of the study measures should be regularly conducted in future investigations.

There could be some concerns about questionnaire administration in this particular sample because the questionnaires were repeatedly administered every three months throughout participants' entire stay in their respective residences; therefore, respondents could have developed fatigue or disinterest, causing careless responding (Meade & Craig, 2012). At the time of the TD study, with the exception of the CBCL and the BAM, the parent organization did not maintain the questionnaire data at the item level, which made it impossible to investigate potential measurement issues on the remaining questionnaires. Lastly, the timing of questionnaire administration was not consistent across individuals. Because the questionnaire data were already existing and part of routine quality control assessments conducted by the parent organization (not data I collected myself), any given participant's quarterly assessment (which occurred every three months as counted from that person's original residential-program entry date), did not fall at the same time as any another participant's (except by coincidence). I therefore selected the three assessment points for each participant (for each questionnaire) that were closest to the beginning, middle, and ending of the TD treatment, respectively. So, for instance, a participants' first TD questionnaire might have fallen six weeks prior to or even six weeks after the pre-, mid-, or posttest dates of the intervention. (But if I had to pick between equidistant questionnaire assessment points six weeks prior to or six weeks after the pre-, mid-, or posttest points of the TD intervention, I always favored the earlier of the equidistant questionnaires.) Therefore, the measurement intervals may not line up sufficiently across youth

to show the impact of the program. Future studies should attempt to assess all participants within a week of pre-, mid-, and posttest dates respectively.

Although HRV testing was consistent across individuals, HRV subtypes were identified using two time measurements (as opposed to the pre-, mid-, and posttest time points for the questionnaire data). Because of the limited time measures, fully descriptive HF5 trends (e.g. quadratic trends) may not have been captured for each subtype. More frequent measurements of HF5 might have revealed both the validity of the subtypes and the unique trends for each subtype. I would recommend multi-time-point HRV measures for future studies. New technology utilizing smart-devices, for example, may streamline this process.

Implications

It may be worth conducting further HRV studies of adolescent residential populations receiving other evidence-based trauma-focused treatments to see whether participants sort into the same phenotypical subtypes as identified by the current study. If so, it would be interesting to explore the possible reasons for the shifts in state/trait pattern balance over time. For example, are the shifts an effect of standard trauma-focused treatment? Or are the shifts in trait PNS related to the resumption of normal emotional development in the relatively safer environment of the residence, because participants are away from the inciting, chronically stressful circumstances?

Residential treatment offers a favorable milieu in which to study the effects of TD treatment over an extended period of time. It would be optimal to test future TD study participants at more frequent intervals to see how the subtype patterns longitudinally map over extended pre-and posttest time periods. Multiple, regular, and extended longitudinal test points might help to compensate for small sample sizes that are a typical limitation of creative-arts

group interventions. Another way to compensate for small sample sizes might be to aggregate data from multiple TD groups across treatment settings, in which case it might be possible to use statistical modeling (e.g., latent profile analysis) to classify subtypes more clearly. To date, most studies that explore subtypes of trauma populations have been cross-sectional (e.g., Karstoft et al., 2015, 2016). Yet the literature recommends that future studies be longitudinal because trauma sequelae are believed to unfold in a stage-wise manner (McFarlane et al., 2017; McGorry et al., 2014; McGorry et al., 2006), and it is likely that such sequelae would also resolve in a step-wise (but not necessarily linear symptom-reduction) manner. Longitudinal studies probing subtypes are also in line with the recommendations of the RDoC (National Advisory Mental Health Council Workgroup, 2018), which, instead of being interested in categorical diagnostic cut-offs, is interested in addressing the transdiagnostic substrates that drive a continuum of psycho/biological dimensions of functioning (Insel et al., 2010; Insel, 2014). The RDoC's approach may be particularly appropriate with adolescents, in whom relevant categorical diagnosis is challenging because of differences in symptoms and co-morbidity patterns that are attributable to their dynamic development process.

This TD study offers a first step in identifying a core set of constituent factors that explain neuro/physio/behavioral outcomes of the TD intervention. If a sufficiently succinct set of core measures can be identified and can be regularly measured in the field, data may be aggregated across treatment settings for more comprehensive evaluations. Future study should seek to further refine and elucidate the key mechanisms shifted by TD according to phenotype.

Chapter IV: Qualitative Methodology, Findings, and Discussion

I privately interviewed and audio-recorded study participants and informants (including TD troupe co-directors, TD troupe members, and parent-organization staff members) at their respective residential programs. My goal was to gather participants' lived experiences of Trauma Drama and to understand the specific ways in which they framed and made sense of what had happened over the course of the intervention. Qualitative interview data were gathered in order to identify a parsimonious matrix of variables for use in future studies of TD. In reporting the experience of TD, interviewees clearly and spontaneously described the overall structure of the intervention, its components, the nature of their participation in TD, and the perceived impacts of the intervention upon themselves and upon others.

Interpretative Phenomenological Analysis (Smith et al., 2009) was the methodological tool used to explore the interview data. IPA methodology analyzes both specific (idiographic) responses to an intervention and also general thematic essences that are common across study participants. IPA revealed that it was through the constantly expanding, contracting, and layering of multiple perspectives in the safe space and solidarity of the TD sessions that participants experienced the internal shifts that allowed them to engage expanded cognitive networks of association. The adoption of new perspectives appeared to cause a break in long-standing isolation and facilitated flexible reorganization of previously rigid schemas related to self, others, and the world. Expanded associations appeared to allow trauma-interrupted emotional and social development to resume.

Methodology: Interpretative Phenomenological Analysis

Interpretative phenomenological analysis (IPA) rests on three foundational pillars: phenomenology, hermeneutics, and idiography (Pietkiewicz & Smith, 2014; Smith et al., 2009).

Phenomenology

As translated from the Latin, *phenomenology* means *a discourse on appearance*. IPA springs from philosophical phenomenology as pioneered by Husserl (Husserl & Heidegger, 1927). Husserl maintained that the experience of *things* could be reduced to common *essences* (Husserl & Heidegger, 1927, p. 166). The essence/s could be extracted through *eidetic reduction* of experience (Husserl & Heidegger, 1927, p. 165). For instance, if a person were to describe the experience of a specific house, in a particular location, with unique architectural features, that particular house could be reduced to its most essential quality of “houseness,” which might yield a phenomenological essence like “home.” The essence “home” would resonate commonly in human experience (Pietkiewicz & Smith, 2014, p. 14). While interviewing participants, I listened for *how* the subjective experience of TD appeared within the participants’ narratives, and I reduced what I heard to the most common essences that I could discern.

Hermeneutics

Hermeneutics is the theory of interpretation. IPA takes inspiration from Heidegger (Smith et al., 2009) in constructing a hermeneutical approach. Heidegger believed that a person’s experience of things was created by contrasting and contextualizing the things under consideration to other things in the person’s culturally and temporally bound environment (Husserl & Heidegger, 1927; Merleau-Ponty, 1942/1983). Because the person describing the phenomenon was mentally *Dasein*, i.e., “being there” (Husserl & Heidegger, 1927, p. 282) in his or her own environment of contrasting things, the phenomenon could be made to appear through that person’s effective sharing of their contextualized experience with a receiving person. The receiving person would *bracket* (Husserl & Heidegger, 1927) their own preconceptions to clear a relatively unpolluted space in which to receive the describing person’s phenomenological

experience. The phenomenon is made visible when *Mitdasein*, e.g., a “mutual being there” occurs; that is, the receiver is there with the describer in “mutual confirmation of the concrete subjectivity” (Husserl & Heidegger, 1927, p. 115; see also Binswanger, 1968). Thus, the phenomenological meaning and interpretation of things is created in the *intersubjective* (shared) space of the phenomenon and finds a relational home in the understanding between two attuned people (Husserl & Heidegger, 1927, p. 115).

IPA’s hermeneutics are based upon Heidegger’s work, but IPA utilizes a *double hermeneutic*, a double interpretation of experience (Smith & Osborn, 2008, p. 50). The doubling occurs when the receiver of the description (in this case, me) re-describes the phenomenon to another/others (in this case, the readers of this dissertation). To the best of my ability I have bracketed my own prejudices in order to convey the participants’ descriptions as purely and accurately as possible, although aspects of my personal filter have undoubtedly influenced my interpretation of participants’ own interpretations of their experience (the double hermeneutic).

During my interviews with participants, I paraphrased and repeated back key points so that participants might correct or clarify my understanding. I considered the interactions in-the-moment *member checking* of meaning (Creswell, 2007, p. 208). Participants did clarify and correct, but our interactive dialogue likely shaped the ways in which they explained their experiences. I attempt to provide a description of my thoughts and processes so that the reader of this dissertation may develop an approximate gauge of my personal filter.

My paraphrasing and repeating key points had a second purpose beyond clarifying meaning. Often participants provided eloquent affective communication [through physical cues](#) (e.g. hand gestures) that could not be picked up by the audio recording, and which I would have forgotten without some sort of a memory prompt. In order to capture notable nonverbal

communication, I verbally repeated back a summary of key affective communication in conjunction with a recap of verbal communication over the course of the interview. In this way I was able to check my interpretation of critical aspects of nonverbal and affective communication with the participant, and at the same time I was able to capture a record of that behavior on the interview recording that was then transcribed verbatim.

Idiography

The third pillar of IPA is *idiographic analysis* (Smith et al., 2009, p. 29). In the case of IPA, idiographic means *particular*, which “cannot be conflated exactly with a focus on the individual” (Smith et al., 2009, p. 29). IPA is always concerned with a particular population of people, within a particular culture, who are experiencing a particular phenomenon. In pursuit of the particular, IPA researchers start the analytic process with systematic and in-depth individual-case analysis. Particulars communicated by individuals in their interviews are compared across the corpus of cases in order to identify convergences and divergences of themes, constituent elements, and/or pattern structures (Pietkiewicz & Smith, 2014). I followed that process, as elaborated later in this section.

Heidegger called the iterative identification of particulars on different levels of the interpretative process the *hermeneutic circle* (Smith et al., 2009, p. 27). In the hermeneutic circle, the parts are reflected in the whole, and the whole is reflected in the parts. For instance, a theme or pattern structure that is present in a phrase might be reflective of an entire interview, and in turn the same theme or pattern might be reflective of the entire sample. Likewise, a theme or structure reflective of the whole of the corpus might also appear in a segment of an interview.

The IPA methodology calls for liberal use of participant quotes in the service of a rich and thick description of themes. Quotes are linked to the researcher’s interpretation of

constituents, themes, and structures. Liberal use of illustrative quotes allows for idiographic retention of the particular voices of participants and enables the reader to “assess the pertinence of the interpretation[s]” (Pietkiewicz & Smith, 2014, p. 13). The voices of the TD participants were eloquent, and it was my sense that many strongly desired to be heard and understood by readers of this research. I did my best to faithfully represent the TD participants.

Differentiation of the IPA Phenomenological Method

IPA’s interpretative method is further differentiated from other qualitative methods in that it encourages the researcher to connect findings to the literature of psychology and of mainstream science (Pietkiewicz & Smith, 2014, p. 11). Smith et al. (2009), the developer of IPA, has suggested that the methodology is suitable for mixed method studies (like this study of Trauma Drama). He cautions that the methodology “should not be treated as a recipe” (Pietkiewicz & Smith, 2014, p. 11) but instead should be applied with thoughtful and purposeful flexibility and creativity.

Replicability, Flexibility, and Creativity as Related to this Study

Replicability. IPA is used most commonly with small samples (fewer than eight people), in which case it focuses on the particulars of the individuals. Smith (2009) suggests that researchers who are working with a larger study should focus on second-order analysis (analysis of constituents, themes, and pattern structures across cases). This direction fit the TD study in that the sample was very large for an IPA study (I conducted 41 interviews across 39 informants) and because second-order analysis was more likely to yield essences that could be tested through study replication (a goal of this pilot study). In recent years IPA has gained methodological traction; Smith (2011) counted 293 empirical papers presenting IPA studies between 1996 and 2008. However, Giorgi has criticized IPA as being less than scientific, chiefly (but not solely)

because he has felt that a flexible methodology may interfere with replicability (1997, 2008, 2011). Giorgi maintains that for phenomenological study to be scientific, it must follow a recognizable series of repeatable steps, so that other researchers may replicate the experiment by duplicating those same steps. Giorgi's argument does have merit, especially since at the onset of the study there were no existing survey instruments to capture some of the potentially generalizable impacts of TD (which seemed important to provide for future qualitative replication). As such, I heeded the essence of Giorgi's critique (since he advocates for drilling down to the most invariant essences that underlie phenomenological experience). With an eye to replicability, I provide a clear rationale for and mapping of the specific steps taken in my use of IPA, and I focus thematic, constituent, and structural findings on essences obtained through eidetic reduction. Giorgi (2009) maintains that the essence of certain constituents and structures (processes or patterned linkages of constituents/themes) is basically invariant and would always be found when examining and reducing the same phenomenon, even with a different data set. (Recall the eidetic reduction example above in which different family-occupied, specific houses, with different specific architectural features might be reduced across samples to an invariant essence like "home.") I am interested to see whether the superordinate themes and reduced essences of this TD study are a local product of data contextualized by this particular residential sample, or whether the themes and essences prove to be invariant across other studies that may duplicate the procedures outlined here.

Although Smith (2009) accepts prudent incorporation of methodological elements derived from other qualitative methods, Giorgi is a purist with regard to methodology, and he would likely not approve of my mixing aspects of his descriptive phenomenological method in an IPA study. Nevertheless, I chose to incorporate Giorgi's recommendations in the service of

strengthening this phenomenological study and in the service of setting a template for replication of qualitative studies in other practice settings employing TD. In the service of those recommendations, this TD study seeks to obtain a clear “gist” of potential intervention effects—in other words, when participants believe TD is working, *what* is it that they feel is working? Elements revealed to be potentially effective can then be targeted for future measurement. Although wanting to get at “gist,” I still maintained alertness for a fully descriptive and dimensional picture.

Flexibility. While I have not essentially changed the IPA method, I have taken advantage of its flexibility in the following ways. IPA employs a semi-structured interview that allows for adjustment and modification of open-ended questions and prompts by the researcher, because attunement is anticipated to result in “the extent to which [the researcher] get[s] access to the subject’s personal world” (Pietkiewicz & Smith, 2014, p. 8). IPA calls for participants to be interviewed in a comfortable and familiar setting. Each TD participant was interviewed in his or her particular residence (one of four residential schools or three group homes). Each parent-organization-employee informant was interviewed separately in person at their work setting (residential school or group home), with the following exceptions: one troupe member was interviewed at the 2016 Trauma Center Conference after participating in a presentation on TD, and one troupe member was interviewed at her group-home office desk via Apple’s iPhone FaceTime video call function. I separately interviewed troupe co-directors once by phone and once in person at the residences in which they worked.

Creativity. Smith (2009) asserts that IPA is well suited for study of populations that are vulnerable. As such, he encourages researchers to creatively apply clinical and interviewing skills to building and maintaining a safe and trusting space, especially because with IPA methodology, participants often cross into sensitive territory in which they discuss themes of

culture, existence, and sense of identity (Pietkiewicz & Smith, 2014). Because I was an outside researcher (and therefore an unfamiliar person), I felt that the participants might be skeptical of my trustworthiness. Therefore, I made the creative choice to adopt the egalitarian stance used by troupe members during the TD sessions themselves. That approach dictated I be transparent, knowable, and consistent. The egalitarian stance allowed me to converse naturally with participants (Smith & Osborn, 2008) within a familiar and safe-feeling relational space. Yardley (2008) and Smith et al. (2009) use the term “sensitivity to context” (a “pillar” of qualitative validity) to refer to the researcher’s creative use of experiential expertise to generate equal relationship and to put the participant at ease (Smith et al., 2009, p. 180). Smith (2009, p. 204) contends that the “phenomenological core” emerges from “the concerns of the participant themselves, so the quality of our relationship must be such that it supports this.” I greatly concerned myself with the quality of my relationship with participants. I did my best to create relationships that seamlessly preserved the gestational environment of the TD intervention and the residential milieu. It was my thinking that attuned and authentic participant/researcher connections would hold participants safe and would produce rich, valid data that honored each participant’s role as the expert in their own experiences. To demonstrate that I viewed participants as individuals whose choices and opinions were of value, I inquired about each person’s favorite snack and made sure to bring that particular item to every meeting. (Snack incentives were rewards specified in the protocol.) I acknowledged and talked about ways in which I uniquely remembered each participant from the prior times we had met. By the time of their qualitative interview (which occurred at posttest), participants were familiar with me. (I had met treatment-group participants two to six times to collect physiological data, prior to interviewing them at our final meeting after my collection of their last posttest HRV recording.)

I clearly stated that my interview goal was to gain a thorough understanding of each participant's true experience of TD (whether positive, negative, neutral, or a mix). In this way, I encouraged participants to partner in producing the data necessary to support rigorous analysis and generation of potentially "useful" theoretical generalizations (utility and rigor have been identified as pillars of validity [J. Johnson, 1997; Yardley, 2008, 2017]).

In IPA studies it is suggested that the researcher follow the participant in an immersive manner, while balancing between "closeness and separateness" (Smith et al., 2009, p. 180). The researcher is to provide the participant requisite space to reveal phenomenological experience in an uncontaminated field but maintain enough vigilance to notice minute shifts, cues, and hints. Hints are followed up by moving forward for close-in probes. Once an area has been unlocked by a close-in probe, the researcher steps back to the widened field, so that the participant has the uncontaminated space to describe emerging phenomena. I reflected back to participants the ways in which I had metabolized what they described and did my best to provide them with the sense that I would honestly transfer their contribution to the outside world.

Giorgi cautions researchers against biasing the research by leading the participant to say specific things, but he suggests that researchers may direct participants to *zones of interest* related to the phenomenon (2009, p. 123). The arising of unexpected facets of participant experience in the first few TD interviews illuminated new zones of interest within the phenomenon that caused me to update related prompts that were used in subsequent interviews. I mindfully allowed participants to freely describe their experience of the TD intervention, then followed up on individuals' own shifts and cues, and finally directed participants to zones of interest that had been identified by other participants while taking care to not lead them in their expression (Levitt et al., 2018; Smith et al., 2009).

While my stance and creative reward system might possibly have prejudiced a different population, I felt that it removed prejudice from this residential population, in that chronically traumatized people often perceive neutral stimuli—and neutrally presenting people—as negative and to be defended against (Cook et al., 2005). I sought to unobtrusively reduce default defensiveness, which, if present, might have led to incomplete and inaccurate experiential reporting by participants.

Triangulation of Informants within Qualitative Data

As another way of increasing validity, I triangulated analysis by interviewing three types of informants about participation in Trauma Drama (Yardley, 2008; Smith et al., 2009). The three types of informants were youth participants (the treatment group), TD troupe members, and staff members who had transported the treatment-group participants from their respective residences (at which the staff members were employed) to the TD intervention site (a flexible theatre space in the outside community). All three types of informants collectively participated in the intervention, but the troupe and staff members participated in delivering the TD treatment, while the youth participants received the TD treatment. The triangulation of data from two or more informant types is not typical of IPA, but for the TD study, the analysis of each available perspective is key to gaining the comprehensive picture and reduced essences required to fulfill the primary goal of this dissertation, which is to begin to identify a strategic and parsimonious research model and to generate refined hypotheses for future research efforts (Creswell, 2007).

Research Problem

As per IPA guidelines (Pietkiewicz & Smith, 2014), the phenomenological formulation of the research problem was as follows, “What was the experience of the Trauma Drama intervention?”

Researcher Description

I will describe relevant background that may have influenced aspects of my approach to and engagement with the study material and with the study participants (Levitt et al., 2018). I am a professionally trained actor with a Bachelor of Fine Arts degree in acting. I have twenty-five years of acting experience. I received a master's degree in social work (MSW) in 2002. From 2002 to 2004, I was a primary therapist in a co-occurring disorders intensive-outpatient program, in which most patients had experienced complex trauma. In 2002 I created a syllabus for an MSW trauma treatment course that I taught through 2012. I have been a licensed clinical social worker (LCSW) since 2004, specializing in the treatment of psychological trauma. I clinically supervised a county domestic-violence-survivors' program for adult survivors and for their children who had experienced complex trauma related to domestic abuse from 2004 to 2007 and have maintained a private practice since 2007. In 2010 I co-authored a chapter on trauma treatment for a social work textbook (Gilin & Sullivan, 2010). Since completing my MSW, my work as a therapist, teacher, and doctoral student has focused on the treatment of complex trauma. Taken together, my experiences have prepared me to tune into and engage participants, to interpret communication, to recognize the patterns of traumatic experience and its impacts, and to understand the experience of engaging in an acting group.

Although I come to this dissertation with particular experiences and perspectives, I did my best to consciously listen to participants while maintaining awareness of my own filters/countertransferences, which I attempted to set aside in order to hear more purely what the participant was communicating. Luborsky (1975) warns against researcher-allegiance (RA), which often occurs in intervention-comparison studies (Gaffan et al., 1995). RA is a type of *interpersonal expectancy* (Harris & Rosenthal, 1985) that is hypothesized to influence support of

the researcher's presupposed theory of change and to influence study outcome in favor of the preferred intervention (Leykin & DeRubeis, 2009; Munder et al., 2013). Although the current dissertation study is not a head-to-head comparison of other interventions against TD, I guarded against undue bias by adhering strictly to protocol (Munder et al., 2013) and by mindfully bracketing presuppositions during data collection and analysis. Even so, it is possible that my expectations in some way influenced results. Yet, the aim of this study is to develop a beginning understanding of what (if anything) changes, to understand how and why it might change, and to begin to identify a simplified matrix of variables for measurement of treatment progress in future studies. If TD proves to be an effective treatment in initial studies, subsequent head-to-head studies must include collaborators who represent a mix of research allegiances in order to account for possible RA (Munder et al., 2013). It is suggested that doctoral students design a dissertation study that allows them to make a unique contribution. I have attempted to do just that. I support my analysis with quotes and attempt to be transparent in my description of my own process.

Participants

All 27 participants in the qualitative portion of this study received the active TD treatment. The comparison group did not receive or experience the TD treatment. They would not have been able to answer the primary phenomenological question, which was to describe the experience of TD, so they were not interviewed and are not represented in the qualitative data.

Protection of Human Subjects

(See Quantitative Methodology section subheading: [Protection of Human Subjects](#).)

Sample Characteristics

Twenty-seven youth participants who received the TD treatment were interviewed for the qualitative portion of this study. (See Table C1 and also [the quantitative section on participant characteristics](#)).

Parent-Organization-Employee Informants

It had not been my original intention to interview TD troupe co-directors, troupe members, or transporting staff members, but as I casually conversed with them during the HRV data-collection process, they offered spontaneous and rich reports of their involvement in TD. Their professionally informed perspectives provided an enhanced dimensionality that clarified participant narratives and lent support to the phenomenon that was appearing; therefore, it seemed important to interview them formally. The thematic agreement among troupe-member and staff-member quotes, in conjunction with participant quotes as they are presented in the qualitative results section, is meant to provide clarifying evidence of the trustworthiness of my thematic analyses.

In Year 1, I interviewed the TD co-directors and one troupe member. In Year 2, I again interviewed the two co-directors and also interviewed eight troupe members and two staff members. In total I conducted 14 interviews with 12 employees. The 12 employees interviewed were in the first decade of their professional working lives and were in their 20s and early 30s. Nine possessed master's degrees and three possessed bachelor's degrees. Occupations of troupe members included those of clinical director, clinical supervisor, clinician, milieu staff member (meaning a staff member who was on the "floor" of a residential program), youth mentor, and teacher. Troupe members were a mix of races and ethnicities, although the majority of troupe members were white. Co-directors were constrained in expanding troupe ethnic and racial

diversity because troupe members with requisite skills were being selected from the existing pool of employees (which was a diverse pool, but at the time of the auditions, applying employees with the needed skill set skewed white). Informants expressed that increased diversity was a continuing goal of the troupe.

Procedure

I privately conducted interviews of the 27 treatment-group participants immediately following each participant's final posttest HRV recording, while participants remained seated in the Adirondack chair in which their HRV recording had occurred. (Participants had been disconnected from the HRV equipment before the interview began.) Interviews averaged 20 minutes in length and lasted from 7 to 47 minutes (depending upon how much the interviewee had to say and depending upon the constraints of scheduling within the residential setting). I collected a total of 569 total recorded minutes across participants.

Interviews of 12 informants (14 interviews total, because the two directors were interviewed once in Year One and once in Year Two) lasted from 16 to 75 minutes in length, and they averaged 39 minutes (545 minutes total). All participant and informant interviews were audio recorded with the exception of one (in which the participant-interviewee requested that I not record him, so he is not listed in the above count of interviewees). Interviews were simultaneously recorded on two devices (the second device was a back-up in case of equipment failure of the first device). Treatment group participants' real identities were never attached to recordings. Instead, recordings were immediately coded with a pseudonym and were downloaded into a password protected NVivo file (*NVivo Version 11*, 2015). Interviews were then transcribed verbatim and synchronized with the recordings within the NVivo qualitative analysis computer program. As a method of member-checking, printouts of transcripts were

privately mailed to participants and informants, who were invited to contact me with any edits that they would like to have made or with any additional comments. No participants or informants contacted me to make changes in or additions to their transcripts. ([Details of recruitment](#) may be found in the quantitative recruitment and consent sections.

Interview Questions

Interviews of youth participants and informants were semi-structured. Questions and probes were meant to be open-ended in order to elicit the experience of participants and the idiographic/particular meaning(s) they ascribed to participation. The first interview question asked of each participant or informant was a paraphrasing of the following: “If a kid here at your residence were considering participating in Trauma Drama and wanted you to describe what it was like, what would you tell that person? What is Trauma Drama?” (Participants in TD referred to one another as “kids.”)

I maintained a list of probes, which I augmented as I gained an increasingly clear sense of the phenomenon and the themes being presented by most participants. I tried to keep my questions and probes as “free from hidden presumption” as possible (Pietkiewicz & Smith, 2014, p. 10), while at the same time directing participants to discuss *zones of interest* related to the phenomenon (Giorgi, 2009). I sometimes chose to abandon my pre-determined probes to pursue topics that naturally emerged from participants’ narratives. I followed the participants’ leads in asking follow-up questions. The more my probes resonated with participants’ experiences, the more engaged participants became in providing fruitful and in-depth commentary.

Analysis and Criteria for Selecting Observations

In the service of gaining a clear global perspective, I conducted a total of 41 interviews. I idiographically analyzed each separate interview transcript, and I focused on the second-order analysis of common constituents, themes, and structures across interviews. I supported those elements with idiographic quotes that are exemplars of those elements. In this study, unless otherwise specified as unique, all included themes are represented in at least three cases.

IPA recommends that researchers utilize secondary raters or auditors to check over the thematic coding of data. The large volume of qualitative data acquired for this exploratory work (41 interviews) far exceeds data collected for the usual IPA study (Pietkiewicz & Smith, 2014; Smith et al., 2009). Because of the volume of the data and the potential cost involved (given that this is a self-funded dissertation study), utilization of a secondary reviewer proved to be impractical; instead, a cross-check of themes (conducted by me, the sole rater) through triangulation of informant-type is substituted. (In IPA there is no set prescription for the number of subjects, but because of the level of detail required for idiographic analysis of each transcript, IPA studies generally employ a small sample size [from three to five in-depth interviews of up to 90 minutes in length]. Smith [2009] recommends up to eight approximately one-hour interviews for doctoral dissertations.) Although IPA recommends secondary raters, Giorgi holds that, by nature, phenomenological research is “painstaking and lengthy and it cannot be done partially;” therefore, he proposes that the way to test phenomenological research is through replication with a new sample and new raters, and that thorough qualitative research that successfully reduces to essences cannot be accomplished by “judging” one study—even if that study is judged with multiple raters (Giorgi, 2006, p. 310).

Each recorded interview was listened to within one day and was listened to a second time within two weeks. Recorded interviews were reviewed from two to five times each. Recordings were downloaded into QSR International's NVivo Version 11 qualitative-data-analysis Software (2015) and were subsequently transcribed. Each verbatim transcription was then synced with its corresponding recording in NVivo.

Transcripts were read in NVivo twice, during which sections of interest were marked and then printed out for review. The print-outs of the sections of interest were studied. Transcripts were individually read in NVivo a third time and were marked with emerging themes. Themes, as attached to all associated participant comments, were printed out and studied. In NVivo, the extracted themes were compared across cases, and common themes were noted. For the fourth reading, transcripts were again marked in NVivo, this time according to commonly occurring themes. Common themes were then reviewed to determine a thematic hierarchy (superordinate themes, themes, and constituents) and to look for any underlying processes or structures/patterns of connection. Themes, processes, and patterns of connection were identified and reorganized under a hierarchy. Upon the fifth transcript reading, cases were reviewed and labeled according to the hierarchy.

Continual journal notes were maintained in the Evernote electronic application (*Evernote*, 2017 [Version 6.5]) over the entirety of the analysis process. All notes and NVivo coding have been retained. Themes and pattern structures have been linked to mainstream scientific discourse in the discussion section below. Qualitative findings are linked to the quantitative HRV and executive-function strands of this study in the synthesized-implications section of the dissertation, in which recommendations are made for future study.

Although IPA analysis generally concerns itself with spoken data converted into text, its originator, Smith, encourages researchers to adapt the model creatively (2011). Since TD is an embodied intervention that teaches action through action, there are instances in which I will use my behavioral observations of participants as data (e.g., in the case of two participants who had difficulty with verbal expression, but who eloquently expressed their learning via behavior). To neglect inclusion of chosen behavioral observations would be to provide an incomplete explanation of the Absence to Presence phenomenon of TD.

Results

It was dark inside the wolf.

—Beginning of Little Red Riding Hood,
as imagined by Margaret Atwood

Like the act of breathing, the phenomenon of TD is at once simple and complex. To maintain simplicity in the face of complex levels of interaction, and to achieve clarity for the reader, each theme and process is first described and then is supported by the particular voices of participants. Because the qualitative arm of the TD study has an unusually large number of participants, I have taken Smith's suggestion to focus my analysis and description on second-order themes and processes described across participants. Although each theme and process outlined below was represented across at least three cases, most themes and processes were represented across at least 50% of cases.¹⁸

¹⁸ The purpose of this exploratory study is to identify a matrix of variables and research questions for future study, so I have not taken the step of tagging themes and processes with numbers of participant endorsements. In addition, it was not practical for me to include thematic case counts because of the volume of data involved in this mixed-method study.

Superordinate Theme: Absence to Presence

Absence vs. Presence is the most reduced phenomenological essence of all Trauma Drama themes. It is also superordinate over other themes that manifested as TD participants progressed from a state of Absence to a state of greater Presence over the course of the intervention. Absence refers to the inability to see or experience the self except as a defective entity that is identified with the most negative aspects of past trauma. In Absence, participants reported feeling disconnected and empty. Participants shifted from a state of relative Absence from self, others, and the world to a state of greater Presence within an expanded, temporally anchored, and connected world. I derive the thematic-variable label of Presence from the theatrical concept of *stage presence*. When stage performers are said to have presence, it is implied that they exude composure and a command of self. Stage presence may be described as the projection of “a concentrated force [that is not a] fixed, definable quality but rather a process of continuous growth and change that takes place before the eyes of the audience” (Barker & Beckerman, 2009, para. 4). Similarly, in achieving aspects of Presence, TD participants became visible and known to themselves, to others, and to the world with a concentrated force of integrated consciousness (as opposed to the fragmentation, inertia, and lack of focused energy that was characteristic of Absence). As they moved toward greater Presence, participants gradually ascended a hierarchy of developmental levels leading to increased emotional maturation.

Structure of the Intervention

Trauma Drama is a synthesis of two pillars: the CPTSD therapeutic-best-practice guidelines and the intergenerationally transmitted form and practice of the professional improvisational theatre. Both pillars utilize a similar three-stage structure:

- Stage I (beginning), a safe entry into and acclimation to the working space
- Stage II (middle), exposure to and working through of emotionally charged material that involves conflict
- Stage III (end), safe decompression, integration of session's learning, self-regulation in preparation for exit back to everyday life

The three stages of CPTSD treatment and of improvisational theatre allow work to occur in episodes with a distinctive beginning, middle, and ending. TD's three-stage structure, as described by the TD manual (Spinazzola, 2019), is parallel to that of its parent pillars. The TD manual describes a three-part episode structure with distinct beginning (entry), middle (working through), and ending (exit) stages:

- Stage I (beginning), safe entry into and practice of skill building in acclimating to and preparing for work
- Stage II (middle), titrated exposure to and processing of archetypal conflicts and traumas (increasing in challenge as the weeks of the intervention progress)
- Stage III (end), safe down-regulation, exit from the working phase, and consolidation of learning

I asked participants to tell me about TD as if describing the intervention to a friend. Descriptions of the above-mentioned three-part structure organically emerged. It appeared the three-part structure was learned through repeated experience of it over the course of the intervention. The three parts/stages were present across micro and macro layers of the intervention and gave episodic form to the overall flow of TD's twenty-two sessions (see Illustration F), to each discrete session (see Figure Illustration G), and also to participants' individual and internal processing of challenging material. Troupe members and staff members

provided additional confirmation of the three stages as experientially generated phenomena. I have labeled the three phenomenologically described stages with the names of common locations within the theatre in order to simplify explanation and understanding of the three-stage phenomena across the intervention's layered and interconnecting structural elements and the intra- and interpersonal processes that were experienced. The labels may be applied to the three stages no matter where they appear across layers of the intervention:

- Green Room, Stage I (beginning) – The culture, patterns of ritual, and regulation skills of TD prepared a safe transition into more intensive work. (In theatre, the Green Room is where actors prepare to transition onto the stage.)
- On Stage, Stage II (middle) – The more intensive work occurred, during which fixated trauma-related associations were confronted (often via improvisational scene work).
- Dressing Room, Stage III (end) – The residual of the more intense On Stage working phase was metabolized and divested. Regulatory skills were engaged to recalibrate emotionally and physically for the next task or environment.

The three stages explicitly frame the overall intervention and each session and, after they had been experienced sufficiently (via attending the TD group), were imprinted within the person. Imprinted stages could be tapped at will, so that spontaneously encountered evocative material might be managed in internal episodes that had beginnings, middles, and (importantly) endings. Therefore the three-stage frame, as an acquired internal resource within the participant, could be considered an outcome of the intervention. TD's three-stage structure was explicitly built into the intervention (see Figure D and 2.2).

Three-Stage Pattern in the Flow of the Overall Twenty-two Sessions. This section describes the three stages as they structured the overall flow of the intervention as shown in Illustration F.

Illustration F

Overall Twenty-Two Session Structural Flow (Three-Part)

Weeks of TD	Stage	Task
Weeks 1-5	I. Green Room (beginning)	<ul style="list-style-type: none"> • Learned foundational skills and practices <ul style="list-style-type: none"> ▪ Built trust, safety, & group cohesion via intra-personal, interpersonal, and self-regulation skills and practices
Weeks 6–18	II. On Stage (middle)	<ul style="list-style-type: none"> • Applied foundational skills and practices to improvisational scenes that reflected common youth conflicts and traumas (in fictitious circumstances)
Weeks 18–22	III. Dressing Room (ending)	<ul style="list-style-type: none"> • Consolidated learning • Adjusted to growth • Integrated updates to ideas, skills, practices, and sense of identity • Prepared for graduating from the intervention • Graduated from and left the group

Stage I. Green Room activities took up the entirety of each session during the first five to seven weeks of TD, during which basic intra-personal, interpersonal, and self-regulation skills and processes were routinely practiced via games and improvisational activities of increasing challenge. Green Room weeks set a foundation for the more intensive On Stage weeks.

Stage II. The ten to twelve weeks during the middle of the intervention (from approximately week six to week eighteen) were On Stage. These weeks focused on the embodied application of skills learned in the Green Room to problems presented through improvisational scenes. (Improvisations were based on pre-written fictional scenarios.) Scene work contained archetypal trauma reminders, conflicts, and characters frequently encountered by young people

exposed to complex trauma. As the weeks advanced, scene work itself progressively increased from mildly evocative to more powerfully evocative.

Hayden, a participant, described the gradual increase in exposure to challenging material over the course of the intervention. When talking about the less intense games and exercises that were the focus of the initial Green Room weeks, he held his hand low and flat, and then slowly traced his hand up an imaginary ascending diagonal line to describe the elevating intensity of the intervention over time. With his hand at the apex of the diagonal, Hayden described archetypal scenes of the On Stage weeks that contained more evocative reminders of participants' traumas (family problems and child abuse):

Because what they [troupe members] do is the graphic is it goes from down here to up here. At first it was games and stuff [at the beginning of the program]. Then they did the plays. They showed less intense plays like getting in a fight with someone [after the first third of the program]. At the end [toward the end of the second third of the program], they showed family problems and a child getting abused.

Stage III. Scene work ceased in Dressing Room, during the final three to five weeks of the intervention. Instead, activities and exercises were geared toward consolidation of prior learning, including internalization of intra-personal, interpersonal, and self-regulation skills and processes; adjustment to changes in associations that had occurred over the course of the intervention; adjustment to accompanying increases of Presence and the emergence of sense of identity; and reorientation to life after graduation from TD.

Three-Stage Pattern in the Flow of the Discrete Session. This section describes the three stages as they structured the flow of each discrete session as shown in Illustration G.

Illustration G

Individual-Session Structural Flow (Three-Part)

Individual Session	Stage	Task
Entered the theatre at session's start	I. Green Room (beginning)	<ul style="list-style-type: none">Jumped into warm-up exercises and games that transitioned participants into to the work space and that taught and re-enforced intra-personal, interpersonal, and self-regulation skills and practices
Engaged in intensive working phase in session's middle	II. On Stage (middle)	<ul style="list-style-type: none">Applied acquired skills and practices to a more challenging game or to an improvisational scene that reflected common youth conflict or trauma (in fictitious circumstances)
Wrapped up the session and exited the theatre at session's end	III. Dressing Room (end)	<ul style="list-style-type: none">Adjusted (initially) to discoveries achieved within the sessionRe-oriented and re-regulated for return to residential environment

Green Room occupied the beginning of each discrete session and transitioned participants into the physical space of the intervention via routine warm-up exercises and games that introduced, practiced/reinforced, and cemented intra-personal, interpersonal, and self-regulation skills. Exercises and games built a sense of community among group members and energetically prepared participants for On Stage by modulating arousal to an optimal level.

On Stage occurred during the middle of each discrete session and was the most intensive working stage. In the beginning weeks of TD, the On Stage portion of the session was occupied by more challenging games and by activities that reinforced new skills. After skills were sufficiently practiced, the On Stage work transitioned to incorporate improvisational scene work of increasing challenge. Scenes first depicted archetypal youth conflict (for four weeks) and subsequently depicted archetypal youth trauma (for eight weeks).

Dressing Room occupied the last third of each discrete session. Participants adjusted to the discoveries that sprang from On Stage work, using skills learned in Green Room to diminish the residual disturbance of the scene work and to reorient and re-regulate for return to the residential environment.

I will next provide participant-description exemplars of the routine procedures and activities that fell within the three-stages of the discrete session. I will also provide examples of the ways in which participants thought about the purpose and utility of those activities. In order to illustrate the importance of the three stages sufficiently, it is necessary to for me to further clarify procedures and activities of the session for the reader. I have chosen to describe the intervention through the voices of the group, because the lived experience of the entire group (participants, staff members, and troupe members) closely matches the nuts-and-bolts description provided by the TD manual (Spinazzola, 2019).

Green-Room Activities: Procedure and Purpose. After arriving from their respective programs, participants entered the session's physical space (a community theatre) and immediately engaged in Green Room activities. Warm-ups were followed by check-in questions, which were followed by more games. The Green Room sequence was repeated at each session (with some variation).

Selena, Participant: Well, first we all come in from different programs. The troupe has these dots, and we stand on them, and then we play a game.

Colored dots were placed by the troupe in a large circle. Each dot indicated a place for a participant to stand or sit around the perimeter of the circle. As participants entered the theatre, they chose a dot and joined the circle.

Kate, Participant: The warm-ups are a lot of fun. It's awesome.

Check-in questions established a playful tone within the group, and opening activities brought participants' awareness to the physical experience of noticing shifts in arousal.

Lelani, Participant: We had different [check-in] questions, like, 'If you had a superpower, what would it be?' or something like that.

Selena, Participant: Then we'll do an opening question, like, 'What's your energy level?' or 'How did that [warm-up exercise] make you feel?'

Pablo, Participant: Usually, [at the beginning of the group] you say how you're feeling [by assigning your arousal level a number] from one to ten, and then you say from one to ten how you're feeling at the end of the group too.

Just as Selena and Pablo had learned to notice arousal and to rate arousal on a scale, other participants reported practicing and learning arousal regulation skills through warm-ups and games. Through embodied experience, they appeared to have extracted and metabolized essential lessons.

Brianna, Participant: All the warm-ups and grounding techniques they teach you—like the breathing, and the shaking—last session we did this thing where we stand, and we count to ten, and we shake out our limbs, and it's like it really helps, not with just regulating yourself, but with regulating the group.

A [troupe member](#) observed that TD's games and activities were a fun way to provide participants with the skills they needed to help themselves.

Troupe Member #3: [We're trying to help them be] able to take back that regulation piece and to use different tools to make themselves feel better so that they're not always stuck. I liked learning about the very different ways that we can incorporate regulation into so many different games, rather than just always talking about skills. They're having fun and they're laughing.

Once warm-up and check-in had concluded, the group advanced to playing improvisational games. Kate believed that participants might be able to apply game-acquired mindfulness skills to address anxiety encountered in life.

Kate, Participant: The games [could be] considered mindfulness games. [For instance,] what to do in your room if you're anxious or something. Like, 'Oh boy, I'm so anxious

about my mother coming,' for example. You can do mindfulness skills and stuff. I think some of [the games] are like to teach lessons and stuff.

The Green Room routine, which included the playful practice of new intra-personal, interpersonal, and self-regulation skills and practices, seemed to construct a multi-dimensional safety net capable of holding the psyche relatively steady before, during, and after exposure to trauma reminders contained within the On Stage portion of the TD session. Pablo summarized the generation of comfort that served as the foundation for the more challenging On Stage work.

Pablo, Participant: The games were to get your mind at ease, I believe, before you go to the stage and sit down and watch the acting.

On Stage Activities: Procedure and Purpose. On Stage was designed to be the most challenging portion of TD. Jennifer described the mechanics of the transition from Green Room to the scenarios of On Stage.

Jennifer, Participant: After the [Green Room] games, we'd go sit near the stage, and the troupe members or staff members [would] act out a scene, and then we'd have the chance to go up and replace someone and play that character.

Troupe members acted out each scene completely. They replayed each scene (or portions of each scene) and froze the action at critical decision-making points. During each freeze, the community of participants brainstormed, reflected upon, and experimented with potential solutions and alternative directions and observed the natural consequences of proposed solutions as the scene played out.

Hayden, Participant: I like when they freeze. They say, 'Freeze!' in the middle of the play, and they'll usually ask, 'What is going on here?' Kids or staff or troupe members go up and [act out different ideas and solutions].

Co-director #1: We'd freeze a scene and then we'd ask, 'What do you notice? What is going on in this person's body? What do you think this person would do? What would happen if this person does this? Let's see what happens. What is your suggestion? Okay. Let's see where your suggestion takes us.' . . . With Trauma Drama we don't shoot down ideas so [participants] have the ability to come in, see how the stage had been set for them, and then choose how they want to navigate these situations within that world.

Co-Director #2: And coming from a place of trauma where there are a lot of things out of their control, within Trauma Drama they have the ability to reclaim control and have fun doing it and play all these different types of roles and characters and there's no right or wrong answer. It's a sense of empowerment.

Scene work resonated with participants, but it was not directly drawn from their own lives. Participants appreciated the safe distance and privacy offered by the fictional circumstances.

Jennifer, Participant: I think it's a way of approaching things that are difficult, like traumatic experiences that people have gone through in their lives, and to do it in an artistic way, rather than just talking about it. Nobody's putting themselves out there and being like, 'Oh, well, this was done to me. This happened to me.' Or that kind of thing. It's just you can relate to it, because it's similar to experiences you've had. You're explaining what you went through, but you're doing it through drama, and it makes it a lot easier—in my opinion—than just talking about the trauma.

Participants worked out aspects of their own traumas through the scene work, but they did not need to expose their own personal stories to the possible judgment of others.

Staff Member #B: They [participants] could process using the play. It gave them a separation [from their own experiences. They could say], 'This experience really reminded me of this.' They almost get to talk about it without having to talk about it.

Sarah, Participant: I think it's better that [the troupe is] doing characters, because I think it would be harder if everyone [the participants] were doing their [own story]. Plus, it's like, people are afraid if people are going to judge—like I understand if [kids] don't tell anyone. So those scenarios help us to learn other ways to get out of things.

When participants found themselves to be triggered, troupe members and staff members initially helped to prompt strategic practice of newly acquired skills.

PacMan, Participant: The troupe leaders—they sort of just know [and] they could tell...when you're getting triggered. It was Arturo [troupe member] who helped me, and he just had me go out into the community and just walk around and calm down.

Like other participants who were prompted to practice skills when triggered, Kate and Sarah were able to execute the prompted skills, experience success in affect regulation, and imagine successful self-initiated application of the same skills in the future.

Kate, Participant: It was way too intense that day. But when I stepped out, there's this coping skill I used, it's called the iPod touch, and I listened to music and I squeezed a ball with it. It helped me to cope with myself. At least I took my coping skill immediately. So that taught me, in case something intense happens, that upsets me like that, to use my words more often. And to say, 'Hey, I need to step out.' Instead of getting upset over it.

Sarah, Participant: If someone feels triggered by a topic, then they could step out if they wanted to. So I learned I could take a break for a while and then come back and not just hold it in, but talk about it. Knowing that people won't judge me. . . . I learned some triggers for myself, and what topics go too far.

Dressing Room Activities: Procedure and Purpose. Dressing Room was designed to dissipate any remaining disturbance by the end of the session, and it focused on physiological and emotional re-calibration of participants for return to everyday life at the residence. If after the scene work the remaining group energy seemed too high or too low, a modulating game or activity would be employed before participants sat down for the closing circle. Sarah (a participant) noticed the way in which troupe members tweaked the group energy following "tough" scenes. She observed, "[When] people's energy kind of went down, after that, they [the troupe members] usually did an uplifting topic or game, and everyone's energy went up."

Troupe Member #7 talked about choosing closing exercises to steer regulation up or down to an optimal range. "We really think about which exercises or games we're going to use before and after the scenes to either raise or lower their energy to help them [participants] be as regulated as possible."

In the final minutes of the session, the group came together for the *closing circle*. Alexis described the relative stillness of the ritual. "Yeah, and you sit around in a circle. The mood is kind of different. People are a little quiet. After we just did this whole big show and stuff like that. They're quiet." Alexis reported having left the work of the session behind at the theatre:

Then we leave. Say, 'Good job' to everyone and we leave. Next thing you know it's another Monday of Trauma Drama. It's a start-over.

Bond reported that he left the theatre feeling unburdened, connected with others, and more equipped to handle difficult life situations in the future after dealing with, learning from, and acquiring perspective from the session's challenges and difficult work:

It's not like a paperwork thing. It's not something like, 'I'm going to sit in an office for an hour and just talk about myself.' No. You learn from current things, old things, things that are day-to-day, things that you might walk down the street and find. But no one gets hurt. No one's in trouble. It might feel awkward and uncomfortable, but you're learning and you're growing. And that's the therapy. You deal with it because you know you're going to learn from it, and no one's getting hurt. It's dramatizing...not traumatizing. You just go there and you have fun and you come home. You don't really think on it too much, but you know in the back of your head, okay, people are in the same shoes and we feed off each other and are able to learn together and teach each other. That's kind of what this group is.

Perhaps one of the most important lessons of TD was that in the company of trusted others, even disturbing trauma-related occurrences could be revisited through the distancing device of the improvisation and broken into episodes that could be managed and, at least incrementally, diffused. In addition, participants internalized acquisition of the three-stage (beginning, middle, and end) structure required to independently regulate and process experience.

In the next section I focus on TD's *folkways* and the mores of egalitarianism that underpin the folkways. Green Room weeks were seriously and mindfully devoted to cultivating and transmitting the folkways, without which there would not have been the requisite intra-personal and interpersonal trust and stability from which to first launch and then contain the cascade of change processes that occurred during the On Stage weeks. The importance of the egalitarian folkways cannot be minimized. Without them there would have been no change.

Folkways & Mores

Participants learned TD's three-stage pattern through observing troupe members and staff members model the stages during the early weeks of the intervention. Because participants

imitated, practiced, and ultimately internalized an imprint of the modeled stages, I have titled the knowledge-transfer process *folkways transmission*. Folkways (Sumner, 1906) are considered “correct,” “right,” or “best practices” that are handed down through active modeling by cultural mentors to their cultural progeny. In general, folkways are time-tested, wise, tactful, and/or skillful ways and formulas that may be applied to navigating life, tasks, and/or relationships. Folkways transmission is the method through which theatre professionals learn their craft. They are not explicitly taught. They are learned and acquired through observation, embodied imitation, and adoption. Folkways are circular, in that a master practitioner of folkways acculturates the apprentice. In turn, the former apprentice becomes master to the next generation of apprentice, while feeding back creative improvements to previous mentors. Circular transmission is implicitly understood, manifests automatically, and is self-sustaining (e.g., TD participants who had acquired pockets of mastery—for instance, the ability to soothe a distressed colleague—immediately wanted to pass what they had learned to uninitiated peers.

TD folkways were an operationalization of the intervention’s primary moral value of *egalitarianism* (Sumner, 1906). TD’s egalitarian mores included respect, power-sharing, authenticity and openness, belief in the capacities and equal-strength of others, trustworthiness, non-judgmental acceptance of self and others, kindness, supportiveness, and solidarity. The value of egalitarianism guided interpersonal interactions within the group. Folkways of the intervention were refined to fit the particular society/milieu and grouped into three categories: *structural-pattern folkways*, *skill-and-practice folkways*, and *cultural folkways*. During TD, the group-enacted folkways provided a supportive and safe social-emotional field that enabled participants to modulate and maintain cognitive, affective, emotional, and physiological arousal within a tolerable range that was beneficial for the task and/or circumstances at hand. Once

learned, TD folkways became part of the participants' internalized system of navigating life. As folkways accrued, they linked in an expanding network of internal resources. Although folkways were numerous and extended far beyond what is covered in this dissertation, I have included some salient examples from each category of folkways below:

- Pattern/structural folkways: structured templates capable of containing various experiences and processes
 - Green Room, On Stage, and Quiet Room as the pattern for working through trauma reminders
 - Fun/Play: the flexibly responsive structures of play that elastically accommodated and managed spontaneity (including the balancing of sudden expansions and contractions of emotion, arousal, energy, memory, and/or cognition)
- Skill-and-practice folkways: specific intra-personal, interpersonal, and self-regulation skills and practices
 - paced breathing for self-regulation and for support of focus under challenge
 - tuning into and observing of personal reactions to challenges
 - group-sourced creative problem solving
 - group-sourced meaning-making
- Cultural folkways: cultural manifestations of egalitarianism
 - behavioral self-disclosure
 - identification
 - equal participation
 - advocacy for self and/or for vulnerable others
 - values, such as self-determination

Categories of folkways were not necessarily discrete and often overlapped. For instance, paced breathing was a *skill*, but the process of paced breathing also followed a *structure* (i.e., the pattern of steps in the breathing exercise). Group-sourced problem-solving was a skillful practice, and it was a cultural norm within the group. As with all themes of TD, categories of folkways circled, spiraled, enriched, and amplified one another.

Folkways were first introduced and practiced in Green Room. They were then utilized to assist and stabilize participants as they were exposed to the simulated problems and traumas of On Stage. Folkways then threaded all the way through Dressing Room and were used to facilitate self-regulation and reorientation to the state appropriate to the next task or next environment to be encountered. I will next elaborate on folkways as described by participants.

Equal Participation (Cultural Folkway). Troupe members, staff members, and participants themselves were expected to engage equally in TD. For example, residential staff members (who were present for TD sessions because they had transported participants from their respective residences to the theatre) had been taken aside by troupe members and instructed “not to sit on the sidelines of the group” but to engage actively in routines, games, and scene work instead. Staff Member #A said that she was visibly uncomfortable the first time that she got up on stage. In retrospect, she felt that her discernible discomfort modeled participation in the face of fear.

Staff Member #A: I participated from the start. The troupe members were very encouraging, and they asked me to join in even though I haven’t had much experience in theatre. They really wanted the transporting staff to be as involved as possible, so that we could model for the kids that it would be okay to get involved. When we were switching over to more of the acting scene work and stuff, that day you could tell that the students either felt nervous or uncomfortable. . . . They just didn’t get up to participate. I was really nervous, too. I’m not used to doing stuff like that, but I did it just to show the kids that it’s okay to try something new even if you’re nervous about it.

Staff Member #A believed that her bravery in the face of fear allowed participants to risk participation.

Staff Member #A: I could definitely see a shift. It made an impact. Other staff got involved and then some of the kids started to get involved. When the staff [members] get onstage, the kids usually follow us. Some days [the participants] would be really quick to get onstage, and other days they'd be a little bit more reserved, and then we would go onstage and they would follow. . . . It seemed like a really safe space for people to jump in, especially if they don't typically.

In another manifestation of equal participation, troupe members intentionally allowed their authentic reactions to be observed while engaging in activities in the same manner as was expected of participants.

Troupe Member #5: One of the great things about TD is that the troupe members and the kids are all on the same level, and we're going through the emotions together. We are all here together. It's very intentional that the troupe and staff members are all playing every single game along with the kids. There is no sitting on the sidelines. Staff, troupe, and youth, we are all there together and on the same plane. That is very, very intentional. We wear regular clothes when we go to Trauma Drama. We try to wear what the kids do. We wear tee-shirts. We wear our Trauma Drama hoodies.

Active and equal investment by troupe members and staff members created a level playing field.

Jane, Participant: It's serious stuff, but I still felt comfortable, because everyone was doing the same thing. . . . And I feel like everyone is equal. You know what I'm saying? Like no one's hired [to work with us]. We're all there together.

The culture of camaraderie and equality induced participants to share parts of themselves that had—out of fear—been hidden.

Lucky, Participant: I just like how we're not the only ones. I believe that if the staff's just sitting down, it doesn't motivate us. Then the kids will sit down and not want to do anything. . . . Not only the kids participated, but the staff did [too]. It's like we're family. We're not afraid to say stuff. . . . I used to be afraid to tell someone how I feel, that I need help, and now I actually talk if I need help.

Troupe and staff members commented on the fact that participants physically and emotionally showed up for and were involved in treatment.

Troupe Member #3: I run a lot of clinical groups in our residence, and I get a lot of kids that don't want to participate in activities. One of my favorite parts of Trauma Drama was that, with few exceptions, everyone participated in everything, which is amazing. It made my life as a facilitator so much easier.

Self-Determined Boundaries (Cultural Folkway). Although full engagement was modeled by troupe members, participants were never forced to participate. They were encouraged to draw their own boundaries. Troupe members' acceptance of participants' self-determined boundaries contributed to a sense of emotional safety.

Hayden, Participant: It [TD] definitely was [safe]. The [troupe members] were very accepting. I liked how they were accepting whether you didn't want to play or whether you did. They kind of respected your limits and they [encouraged you] slowly—like they didn't force anything onto you.

Respect for self-determined boundaries seemed to influence quiet participants to eventually risk boundary expansion.

Staff Member #A: There was an emphasis on actively listening, and so if kids didn't want to participate, they weren't forced. I know some of my clients were very receptive to actively listening. Active listening ultimately led them to actually participating and directly engaging. . . I think that's a big deal. It shows that consistency and rapport-building and having that structure is really inviting.

The ability of participants to choose, set, and have their boundaries unquestioningly respected appeared requisite to engagement and participation. Jill was originally an engaged "listener," but over time she became one of the most interactive participants in TD. While she enthusiastically participated in activities, she set a boundary around participation in a particular game:

Jill, Participant: I can't stand that [one] game.

Mimi, Researcher: Do you know why you don't like it?

Jill, Participant: I don't like when people are like, 'Bah!' in my face, because I'm going to start yelling, 'Get out of my face! I don't like that.' . . . Some games I'll play, but Lucio [would ask me to play] and I would just look at him. . . . Nope, not having it. . . . I just looked at him like he's crazy. [Laughter]

Staff member #B commented on Jill's boundary choice.

Staff Member #B: She was able to say, 'I don't want to do these games.' And everyone respected that, and I think that was part of the magic of it, too. One can be engaged as they like, and they'll be encouraged to do so, but they won't be pressured. The choice in that is really significant.

Alexis, also a very active group member, drew boundaries around her participation in a game while simultaneously encouraging a staff member's participation (recognizing and respecting inter-individual differences yet holding her boundaries).

Alexis, Participant: I'm just like 'No, no. That's embarrassing. You're not going to catch me doing that.' And then they're still like 'Come on.' And then some of the staff from my res [residence] will be, 'Sit next to me.' I'm like 'You can go play the game if you want to, you don't have to sit out like me.' She's like 'No.' I'm like, 'Play the game. Leave me alone [laughter]. You don't have to sit next to me just because I don't want to play, because I know you want to play. I know it.' Because they're always trying to get me to play. I'm like 'Just because I don't want to play doesn't mean you [shouldn't] play.'

Alexis appeared to feel relatively equal with troupe members and staff members in determining her participation. The ability to set boundaries on an equal playing field introduced the sense of safety necessary to facilitate true playfulness.

Behavioral Self Disclosure (Cultural Folkway). I am calling the cultural folkway that describes the affectively and behaviorally open stance modeled by troupe members during TD sessions *behavioral self-disclosure* (BSD). BSD may be defined as the act of allowing aspects of the authentic self to be revealed and observed via spontaneous behaviors that are generated through action. Trauma Drama involved almost constant action, so participants had ample opportunity to observe the action-revealed character of individual troupe members (as opposed to the more bounded demeanor demonstrated in their professional residential jobs).

BSD was first modeled by the troupe members as they demonstrated TD's games during sessions. Play-exposed BSD allowed participants to gather enough data to evaluate the characteristics of troupe and staff members. An early manifestation of troupe-member BSD came

during Green Room games, when the troupe engaged in unselfconscious playfulness that at times crossed into “goofiness.”

Troupe Member #3: The kids often hesitate about trying things for fear of being wrong or for being afraid that other people are going to judge them, so the troupe members model being outrageous ourselves, and sometimes we’re kind of being silly and goofy, and we go to the extremes. Then the kids are like, ‘Wait, they can do that? Then maybe I can try.’

“Goof” seemed to be a term shared by troupe members, staff members, and participants to describe the act of being unselfconsciously silly or lighthearted. The term implied a relaxation of self-restrictions and a letting-go of concern about the potential judgment of onlookers. The latitude of behavior and guard-dropping that troupe members allowed themselves provided tacit permission for participants to do the same. Bond, a participant, believed that troupe member goofiness encouraged him to let down his guard. He recalled thinking, “Like, okay, I can act and be a goof. That’s me and who I am. I don’t have to be uptight.” Over the weeks of the intervention, observation of troupe members’ BSD engendered a level of trust and a feeling of predictability and safety. Participants thought that the intervention’s success was tied to the behavior of troupe members and staff members, which was congruent, respectful, and consistent in honoring boundaries.

Erica, Participant: Even the staff that bring us there, not just the facilitators [troupe members], but it needs to be the staff that are consistent with being respectful and respecting your boundaries, and all that. Then they should be the ones to go. But the people who are not liked very much, and who are rude sometimes, should not be the ones to go, because obviously the trust level would definitely go down if someone rude goes there.

At the same time that they were observing troupe members’ and staff members’ BSD, participants began also to take the measure of peers’ behavior.

Bond, Participant: [When you’re] playing the games, you can see what people are like—you can kind of take them apart and put them back together—I guess they just reveal who they are. It makes it more comfortable for you to be onstage and act in front of them and to just kind of be yourself.

The growing ability to evaluate others' strengths and challenges (as tested by and revealed through activities) corresponded with participants' willingness to trust and enter into the environment.

Bond, Participant: There's trust exercises that go into it—that's what really breaks the ice. Ice breakers, I think for everyone [are] important, but especially for kids and young adults, and adolescents and stuff who've been through hell and back. They're simple, they're needed, and especially when you're trying to act out tough situations, it's nice to at least have an idea of the people around you and stuff.

Bond described a critically important exercise in which two participants alternately supported each another to get themselves out of an imaginary hole. He felt that the exercise established the essential trustworthiness of his exercise partner.

Bond, Participant: [There was] an exercise where you sit down back-to-back with your knees up to your chest, and you try to stand up. In the military they do that exercise to get you out of a well. They'll lower you into a well and tell you to get out of the well. You push off of each other's back, and use each other and support each other to get up. And you're back to back, you can't see the person. . . . You really, really quickly learn to trust people, and that's an exercise that you had to learn like okay, they're cool, they're all right. I mean ice breakers aren't just ice breakers.

When participants began to engage in BSD themselves (thus rendering themselves knowable by others), feelings of isolation diminished. By the middle weeks of the intervention, most participants said that they had tested the environment and found it to be safe. Through group-member BSD and observation of one another, participants acquired enough personal data to encourage dynamic connection and comfort.

Alexis, Participant: It's just kind of scary but [after] you [get to] know [one another], everybody feels okay. I think the staff and every kid puts in a lot of effort to make sure that [we] can feel [safe].

Lucky, Participant: It was fine actually, like having everybody together felt comfortable. It's like it's boring if it's just five people from [my residence].

Diversities within the group provided contrasts that made shared commonalities stand out. Jennifer identified with the sense of vulnerability among peers, which was something that she felt united the group in unspoken mutual respect.

Jennifer, Participant: I had been concerned just because of the fact that a particular program within the [parent-organization's] schools is tailored towards more inner-city type people, and I'm a country girl, so I didn't want these girls being like, 'Hey yo! What's up dog?' and try to act all tough, so I wasn't sure about that, but... Everyone felt vulnerable, so everyone was able to not touch anyone else's vulnerability.

Over time, participants developed enough trust, connection, and comfort to let their guard down. BSD, both observed and expressed, led to new perspectives and to a non-judgmental solidarity.

Melanie, Participant: Yeah, it was kind of a non-judge zone.

Kate, Participant: Everyone made me feel safe there. When I first heard of Trauma Drama, I thought I was not going to feel safe. I thought I was going to feel unsafe about it because they said some intense stuff may happen, but they were very supportive there. I didn't know they were going to be [supportive].

Participants were held in safety, relative comfort, and understanding by the group, as members openly re-experienced old wounds together.

Alexis, Participant: It's like [TD is] connecting to some of my problems that I had. And sometimes it is triggering, and I have some problems dealing with it, but there's always staff there to help me and support me through it—to understand. So it's nice. . . . People [youth participants] come in from different programs. It's just kind of scary, but then [you get to] know them, so I think that everybody feels okay [now] you know [one another], so it's just like you can let them cry. They feel okay to cry. I feel like it's a safe place to cry. . . . For me I was just bawling and just—snot was coming out and everything [laughter]—but other than that. . . .

The cultural folkway of BSD became a foundational group norm.

Identification via Deepened BSD (Cultural Folkway). When participants realized that the previously “perfect-seeming” troupe members and staff members could deeply identify with them and the “rough” experiences portrayed in the scene work, they began to reciprocally identify with the troupe and staff members.

Taisha, Participant: I was just really shocked. When you see [the troupe members] acting, it's like, 'Oh, wow!' Not that it's any of your business, but you never know if they've ever been through something that rough [themselves]. They [had] seemed so perfect [at the residence]. It just really changed my mind. I was like, 'Wow...' I know that it's hard for them to act that way, too, because they even said it themselves. [When they played certain characters, they would say,] 'Wow, it's really hard for me to go through this type of thing [in the scene].' It's just acting, but it makes you think about whether or not it did or didn't happen to them in real life.

The degree of "knowing" and understanding revealed through troupe member BSD established authentic relatedness with participants. While being beheld with understanding, participants could conceive of a possible past in which troupe members had been kids like them, thus rendering troupe members' perspectives and mentorship more credible and fitting (although troupe members' personal histories were never divulged).

Hayden, Participant: It's basically that you don't understand what happened to you, but you felt like a sense of connection with them, not like a clinical connection, but like they understand, and they know. Maybe some of them had some of the same things happen when they were kids.

Troupe and staff members recognized that their more dimensional presence during TD provided participants with the opportunity to know them as real people.

Troupe Member #5: The kids say, 'We see you guys as people now.' The kids told us that we acted the scenes so genuinely that they grew to believe that we had to know what their traumas were actually like and what they actually meant.

Selena, Participant: It really caught me by surprise. Because the way the [troupe members] represent themselves [in the residence] is kind of different than how they are in Trauma Drama. One of the troupe members from my program, she really learned more about me. Like, she understands. [It wasn't] like she got everything from a book. [The troupe members can't] tell us what they've been through [personally], but you can tell that they understand [us, what it was like for us]. You can tell. You get this feeling from [people] in Trauma Drama, from how they act and what they say. It just gave me a total different mindset. Like, 'Wow, I never knew she'd understand.' I never knew anyone could.

Through On Stage improvisations, unspeakable sources of disconnection became the bridge to connection. Not only did participants grow to trust and identify with troupe members and staff members, but they admired their characteristics and talents.

Bobby: Some of them are cool. Some of them are nice. They're mostly nice, for one thing. You know? I'm saying, none of them are really mean people. Like the group of people are really funny and enjoyable to watch and stuff like that.

Humor was a powerful form of safe intimacy that cemented relatedness. The positive, multi-dimensional connections that had developed through humor and play during TD sessions appeared to transfer to more rewarding and comfortable relationships back at the residences.

Alexis, Participant: Yeah, and my clinician's [a troupe member] pretty good onstage, I guess [chuckles]. She's a good actor. She's funny, too, when she has to act funny scenes, like [when she acted the part of] a two-year-old or something. [The scene took place on] Christmas or something like that. [There was a] two-year-old sister and a brother. Mom had a boyfriend. That [scene], yeah. That one got to me. [At the residence] we had good times laughing [about Trauma Drama]. And then she [my clinician, who is also a troupe member] gives me good props for how well I did in [TD].

Troupe members commented on enhanced clinical connections.

Troupe Member #6: [When we're at the residence], I feel like I have a really good relationship with the kids who are also in TD. I think it's because I'm seeing them in this other really fun thing that's not on campus. It instills a sense of community and establishes solidarity. I imagine it helps kids feel less alone and less stigmatized by being 'program kids.'

Navigation (Cultural Folkway). Once participants had accumulated sufficient interpersonal data through BSD, they began to recruit trusted troupe members and staff members to guide them through triggered emotional reactions and impasses. I refer to the guide as *the navigator*, and to the act performed as *navigation*. The navigator acted as a co-regulator with the participant (supplying the "training wheels" to steady the process) or as a proxy (in place of the participant). The navigator could be one person, multiple people, or the entire group (acting as guide for one or more participants). A pre-condition for navigation was the existence of an implicit pact of trust between the navigator and the

person/people to be assisted. The navigator needed to have demonstrated the ability to sufficiently identify with the person/people to be assisted and to offer properly timed and calibrated support should the person/people begin to falter after diving into risks presented by the intervention.

After having detached from a triggering scene that had brought up difficult memories, CC recalled having used a navigator (a trusted staff member who had driven her to the TD group every week).

CC, Participant: It hurt to see the [scene] that reminded me about the problems that my brother had, because it just brought back all the memories. I talked to [the staff member/navigator] and said [to her], 'Well, I'm going to sit out here just for a little bit,' and I walked away from the [scene work] so I could calm down.

After setting the boundary of physically removing herself from the scene work, CC accepted and tolerated navigational assistance, which steadied her through the co-processing of emotions and memories.

CC, Participant: My [staff member] said, 'Sooner or later, you're going to have to hash this out with someone else.' She started explaining some of the things that we were watching in the scene. She said, 'It's okay. It's not something to dwell on. It's just something that's going to happen in life.' And I was like, 'That was really helpful.' [After] five minutes, then I went right back in [to the Trauma Drama group].

CC used the staff-member as a navigational co-processor outside of the group and then discovered that she had relaxed sufficiently to rely upon the group itself for any needed navigational assistance through the remaining challenges of the scene. She returned to the theatre and was able to remain attentive to the process of the scene. CC felt able to transfer the group's brainstormed solutions to navigation of life outside of TD. Thus, CC's navigators (the transporting staff member and the group itself) had supported CC's movement through a stuck point and had catalyzed the internalization of a navigational system that CC could begin to apply independently.

CC, Participant: Then the [group] started talking about how you could work through it, how you could handle [the situation] differently. [And how you could talk to] your family, or a clinician, or a parent, or a teacher, or a guidance counselor in an appropriate manner. I took it into consideration, and just used [the suggestions about how to ask for help] on myself, because I felt like I couldn't [previously] deal with it in an appropriate way.

Trusted navigators had supported CC's self-titrated contraction and expansion of boundaries over the course of the group so that she could regulate and tolerate learning in the face of having been triggered.

Navigation was a cultural folkway that was transmitted to participants by troupe members and staff members. As the weeks progressed, participants increasingly acted as navigator/s for other participants in need of support. For instance, during a scene that depicted the fallout of sexual abuse, Jennifer acted as a navigator (proxy) on behalf of the group. She stepped into the action of the scene precisely because she realized that the content was likely more triggering for other participants, and she believed that she could handle acting a difficult character without being adversely affected.

Jennifer, Participant: Personally, me, I have no experience with sexual abuse, so it wasn't triggering to me. That's why I was able to just go right in and play it. . . . I was playing the mother of the person who was sexually abused, and I was saying, 'Oh, my boyfriend never touched you,' kind-of-thing, so it was an interesting way of playing it. I didn't like my character, but that's part of acting. . . . you don't always like your character, but you have to play the part.

Not only did Jennifer act as a proxy for participants who needed support, but she also modeled how to tackle challenging emotional material within an episode. She took on the character and then she shed it. The act of divesting oneself of the traumatic residue of scene work was a folkways skill modeled by troupe members. Participants then imitated the skill and adopted it themselves.

Fun/Play (Structural, Skill, and Cultural Folkway). In the presence of chronic traumatization, participants' lives had been overtaken by seriousness. The instinctive part of the self that allowed spontaneity, play, pleasure, and fun had receded.

Troupe Member #7: For someone who has experienced something really frightening and life-threatening, spontaneity is not going to feel like a comfortable thing. You have to feel safe enough to allow dismantling of the fight/flight survival mode. If you're being spontaneous, you're sort of really present and grounded in the moment. You have to let go of certainty and be able to accept whatever is coming.

Troupe members and staff members believed that, having lacked the opportunity to play, participants had missed essential developmental steps.

Staff Member #B: Children's play and games are preparatory for the 'serious games' we play as adults. If people miss the developmental step of play and children's 'games,' they may not be able to effectively decode and navigate the social world, may not be able to interpret the behaviors of others, and thus may be marginalized from participation in society. In Trauma Drama youth play improvisational games and play with different scenarios in a space that is free from the high-stakes anxiety of 'real-life' choices and interactions.

Troupe Member #6: They grow up too fast. So it's definitely helpful to go back and try and hit that [learning to play] so that they can move forward. It's like tagging first.

Participants expanded their tolerance for spontaneity through the practice of playing and having fun. Through creative play, participants could explore and create new facets of self.

Troupe Member #5: [TD] was able to kind of teach them how to play again. I think a lot of the times that they had become so scared of themselves, or scared of their own bodies, or had have become so adultified that they forgot that they're kids, and they can laugh, and they can play, and they can be creative. And, 'I can play this crazy character. No one will judge me and I can explore myself and my sense of identity.'

TD participants and troupe members called TD's activities "infectiously fun." Ninety-six percent of participants found TD enjoyable and 82% used the word "fun" to describe the intervention. According to participants (in a seeming paradox), although TD examined "tough situations," it was different from other treatments because it was simply so much "fun." Fun and play provided the buoyancy and elasticity to accommodate serious topics. Levity and intensity

mixed to stretch in and out in dynamically changing proportions, according to the tolerance of participants and the needs of the moment. Selena felt that fun pried her free from self-imposed isolation.

Selena, Participant: It really helps you to get out of your shell, too, because when you're in the games and stuff, you don't have to do them, but it's like they're so fun you want to do them, and they're [troupe members and staff members] like, 'Are you sure you don't? You know, this is really fun!' And everyone's really supportive of each other like when we're on stage and then we talk at the ending, everybody's just supportive. I love it. It's wonderful. Programs, they push you, but they're not as—I don't want to say fun—but they're not as... Yeah, like not as fun. Yeah, not as fun. But, yeah, they're not as fun.

TD participants often juxtaposed the mention of “fun” with the mentioning of a negative concept. For instance, the words “anxiety” or “trauma” were mentioned along with the word “fun.” The linking of a negative concept with “fun” diffused the power of the negative. For instance, Lelani stated that TD was a “fun” group that worked on “trauma.” She used the word “fun” five times within seven sentences, and used the two more negative words, “anxiety” and “trauma,” once each within the same sentences. Fun appeared to loosen the grip of anxiety.

Lelani, Participant: It was fun. It helped me a lot with my anxiety, and how to handle it. I like to meet all the new people, and I liked doing the skits and stuff. It was fun. It's a fun group where you act out and watch staff and the clients do skits of traumas or stuff to help you out. And there's fun games and activities too. . . . It was fun though.

One of the TD games, *The Instigator*, practiced handling provocation. Despite the game's potential to evoke some discomfort (in order to help participants practice self-mastery when provoked), the tension between play and provocation was “fun.”

Erica, Participant: We played a game like *The Instigator*, which was to test our anger and our ability to act. Two people are instigating you—like provoking you. We did that and it was really fun.

Participants were entertained by thought-occupying juxtapositions and paradoxes. Lucky juxtaposed the words “instigator,” “mad,” and “fun” when she described a memory that amused her.

Lucky, Participant: And I liked how they had fun games. Like one game we did, I cannot get out of my head. It's *The Instigator*. . . .The troupe members try to get us mad [laughs]. If you don't get instigated, you get a point. And if the instigator gets [successfully instigates] us, they get a point.

Participants utilized fun to propel themselves through stuck points and into a more relaxed zone that paradoxically supported action—a concept they transferred to everyday life.

Brianna, Participant: Actually participating and doing fun things helps you really move along with your life, instead of just sitting there and doing nothing. Just hanging out in your room all day doesn't do anything good for you. . . . It'll really help you calm down, relax, and not just be stuck sitting on the side like I used to do. . . . It just helped me realize that in the end, after going through something hard, you can always just goof yourself up and have a bunch of fun afterwards [laughter].

Energy (a Subordinate Theme to Fun and Play [Structural Folkway]). The ready supply and consistent use of play and fun in TD generated an infusion of energy. I define energy as dynamic, healthy, and pleasurable excitement that was infectious among the group. The group's collective energy fueled a forward thrust that edged out fear. Hayden believed that group-generated energy altered his state for the better.

Hayden, Participant: I loved how the energy was always there. There was never low energy, the staff always had it—the energy was always there. I could be totally bummed one day, I could probably have a shitty day and then go with the Trauma Drama and everyone's like—their spirits are contagious. That's what I love most about coming to Trauma Drama every day.

Playful group energy appeared to calm down participants who experienced hyper-arousal and, conversely, to wake up participants who experienced hypo-arousal. Green Room fun energetically regulated and readied the group for On Stage challenges. Fun-optimized energy kept the group afloat through the turbulence of trauma reminders. Fun threaded through On Stage and then through to the wind-down stage of Dressing Room, during which fun activities assisted recalibration of energy. Troupe Member #5 perceived fun to be critical to TD's potency.

Troupe Member #5: If people just kind of hear about [TD's fun and games] they're like, 'What do you mean? What are you doing? What do you mean you go and play games?'

[I] need to be able to speak to really what it means to our youth who have never had any kind of autonomy and have never had any kind of choice and control in their lives, and how you build empowerment through these improv scenes and how you build the cohesiveness through the games.

Group-Sourced Problem Solving and Meaning Making (Skill and Cultural

Folkway). Troupe members modeled the cultural/skill folkway of creative reflection and problem solving that was employed when the group worked together on the central problems presented by TD scene work. Play elastically accommodated the proposing and testing of imaginative solutions. Participants were invited to practice framing and reframing the problems presented by the scenes. I refer to the brainstorming of hypothetical solutions and experimentation with acted-out alternatives as *group-sourced problem solving*. All ideas were fair game and all solutions (unless dangerous) could be tried in the pursuit of fun and/or learning. One of TD's co-directors described the fast-forward and rewind possibilities afforded to the group when interrogating a scene on pregnancy and exploiting the scene for all of its learning potential.

Co-director #1: So, we have the ability to put the youth into a world, have them choose a direction they want to go in, and then navigate down that direction and [figure out] how that impacts their body, their mind, their behavior. So, now we can ask about [a] teen pregnancy [scene], 'Your girlfriend's pregnant. You didn't use protection. [Ask yourself], what are the consequences of me not using protection? What should I do now because the girlfriend's pregnant? Oh, I need to talk to my parents. I need to talk to my girlfriend's parents. What are these reactions that you're feeling? How are you going to navigate those things? What kind of behaviors led up to this? What could have been different before? Looking into the future, what could you have done differently?' So, it gives them the liberty of almost like fast-forwarding and rewinding, and stopping and recording their TiVo, DVR, whatever it is they want from this experience.

Group-sourced problem solving allowed participants the opportunity to actively propose solutions or to observe, analyze, and reflect on their own thoughts and feelings while peers took turns proposing new solutions and rotating into the scene. In this way, participants developed insight into ways in which their own bodies and minds worked, and they used acquired data to

assemble a set of skills/tools that would work to operate the self. While engaged in group-sourced problem solving, Hayden began to notice how his body reacted to triggers and challenges. He noticed the way in which habitual reactions could inform him. He projected himself as capable of moving past habits to implement more strategic, useful, and calibrated responses.

Hayden, Participant: When you see these kinds of plays, it makes you think about what's really the problem. Does that make sense at all? I noticed I forgot to breathe when I watch these plays. Or there's sudden body reactions. Your mind and body need to get on the same level. You need to know what scares you. You need to know what part because trauma is like it's your body holding on to those emotions. Your mind may be like, 'Yeah, I'm fine,' but your body may tell you otherwise. So it taught me how to deal with situations and real-life situations if they were to happen in real life. And like what rational things to do in my daily life if any of those were to happen, as opposed to what my emotional mind would have done.

Group-sourced solutions were played out in the scenes, and participants witnessed the acting out of natural consequences related to the solutions.

Troupe Member #3: I think that TD gives them a way to explore something and to safely experience their reactions, because they realize that this is a safe environment where there is no right or wrong answer. They can play the situation however they want. And then what we'll do in return is do the natural consequences. So, if they take it to a very violent extreme, okay, we'll challenge that by playing out the natural consequence.

The group's efforts yielded practical "advice."

Selena, Participant: And then they have participants from the crowd to come on stage to see what they would like to kind of change it or add on to it, or whatever. It's absolutely wonderful. It's like, when you deal with trauma, it really helps, because you know, because you're getting advice and also having fun at the same time, so it's really awesome.

Because everyone contributed to the generative act of meaning-making, group-sourced perspectives were valued and individuals' sense of safety increased.

Erica: You could voice your input...which was really helpful, because you got everyone else's perspective and how other people felt about [things]. It was a safe place, so I really enjoyed it.

In TD, group-sourced problem solving provided new tools and skills for real-life situations that had previously stumped participants. Group-sourced meaning making let Alexis know that she and other participants did not have to feel bad about past actions (how they behaved in the past did not mean that they should “feel bad” about themselves now). New options for behaviors were generated, which meant that things could happen differently in the future.

Alexis, Participant: [It’s about] things that we’ve already done in our lives, but we could look at them acting it on the stage and see what you could have done [differently] or something like that. But not feel bad about what you did do, but know that if you didn’t want another situation like [what happened during the trauma] to occur, there is more than one option. Stuff like that. Pros and cons.

Pushing and Testing Limits (Skill and Practice Folkway). By the middle weeks of the intervention, the ability to tap navigators as necessary, familiarity with folkways, and a growing comfort with and trust in others in the group provided participants the support needed to push themselves and test their limits. In general, participants were not informed about scene topics in advance of the session. They agreed that it was better not to be informed in order to test tolerances when spontaneously exposed.

Taisha, Participant: I feel like it’s better not to know because you can just see what’s going to happen, and you can learn [from that]. If you do know [the topic ahead of time], then you’re not really learning much.

Alexis felt that being trusted to handle the material and the emotions it evoked was a privilege.

Alexis, Participant: No one tells [us] what is going to happen [in upcoming scenes]. I think kids should just go and see how they deal with it, and cope with it, and [then the troupe and staff members should] just help them out [with] as much support as they need after. I’d say it’s a privilege to go and to be able to [do your best] to deal with it.

Troupe Member #5: The whole point is that they are triggered. They’re in a safe environment to be triggered, and they’re given a sense of choice and control in a situation that triggers them that they haven’t had before.

Troupe Member #6 felt that confronting discomfort pushed participants in a way that catalyzed processing.

Troupe Member #6: And it [a particular scene] was scary. It was done really well and it was cast in a way that made it all the more intimidating, and I think it made everybody really uncomfortable. And it was great [chuckles]. It sounds funny to say that but it was so—it was perfect. I don't think that they could have done it any better, and I think it just made everybody uncomfortable. . . . So I think that that was catalytic for a lot of our kids. And that was one of the times that people did talk afterwards and you saw them processing things implicitly, and being like, 'That wasn't okay. He shouldn't have talked to her like that.' People took on more of an initiative to tell off someone [chuckles], whether it was the actor on stage or somebody in their own life.

Troupe Member #8 felt that if the scenes did not evoke emotional reactions, troupe members had not effectively done their job.

Troupe Member #8: If there are no emotional reactions, then we didn't reach them, and then it's like, why did we do that? I think the whole point is to get to these kids, so I think pushing those boundaries and getting deeper and then really pushing them is really helpful.

Participants told me about the simultaneous thrill and challenge involved in being pushed to handle memories that had been sparked by the intervention's scene work. They described exploring and building out the edges of their resourcefulness.

Alexis, Participant: There were actually a few [scenes] that were just like 'Oh, my goodness!' And the way they're acting, it's just, I don't know. It's kind of heart-pounding. Makes me sweaty and have flashbacks and I just—You signed up for Trauma Drama. This is daring! Feel the reaction. Feel the adrenaline rush... [chuckles]...Or whatever. Get your emotions running. See how you can cope and deal with it.

Troupe Member #6 also observed that participants "learn[ed] to get a 'rush' from taking safe risks in a healthy activity like Trauma Drama," which she felt was a good replacement for "seeking an adrenaline rush from taking risks that [were] not safe and that worked against kids in the long run." Excitement (positive thrill) and fear were often simultaneously present (an instance of negative- and positive-concept juxtaposition). Alexis enjoyed playing out the natural

consequences of suggested “solutions” even when triggered by content of the scene being worked on.

Alexis, Participant: My first time...it felt really good to go up on stage and give my—and put on a situation trying to fix it or trying to start the fire up. And it just felt good. I guess. I liked it. Trying to put the fire out, not put on more fire, make it—it was so fun. I liked it. It’s helpful to understand situations.

The scenes that pushed the participants most and were most personally challenging (without being overwhelming) seemed to provide the greatest learning opportunities and were often considered by participants to be enlightening “favorites,” perhaps because stuck points were released and new perspectives were achieved. The scene that most challenged Taisha was her favorite. She felt that the scene allowed her to achieve a resolving type of clarity on old wounds.

Taisha, Participant: I remember that there was a sketch of when the girl was hanging out with her friends, and her parents told her not to come home late. She was late, and her dad was drunk, and she got hurt. It kind of reminded me of myself when I was younger with my dad and stuff. It was really tough, but I kind of got it, and I kind of understand that everyone has their own issues. They don’t mean to take it out on you, but it’s just because they’re not in control of themselves. It’s tough because you kind of feel like it’s your fault but it’s not your fault. It was rough. That bit was kind of hard for me to watch, but it was one of my favorites. I don’t know why it was my favorite. I just feel it really, really got to me, and I saw what happened.

Via the archetypal¹⁹ scene, which was at once familiar and at the same time different than her own trauma, Taisha discovered that what had happened to her in the past was not her fault, therefore modifying associations to self as “the one to blame” for what had happened to her. When (within the context of the group) participants were pushed to safely confront and move

¹⁹ By archetypal, I mean that the scene was an improvisational frame or stem that contained a pattern of interpersonal interaction and set of conventional roles common to the experience of trauma-exposed youth. For instance, a scripted improvisational stem might call for the archetypal characters of an abuser, a target of abuse, and a bystander in a representative scene about typical schoolyard bullying.

through triggering reminders of their most significant traumas, their associations became malleable to modification. Modification of associations allowed pivots in perspective.

MAP (The Primary Change Process)

I have titled the primary change process of the intervention the *Modification of Associations Process* (MAP) because it appeared to modify and markedly update associations that had been previously fixated by trauma (the MAP process most noticeably occurred after folkways had been sufficiently learned). By *associations*, I mean the ideas, thoughts, values, beliefs, memories, behaviors, emotions, and/or feelings connected to (or which were, at times, paradoxically dissociated from) other ideas, thoughts, values, beliefs, memories, behaviors, emotions, and/or feelings that relate to self, others, and the world. In the same way that the three-stage structural pattern of TD extra-personally and formulaically sequenced the intervention and its components, the three *MAP stages* intrapersonally and spontaneously sequenced the change process that arose within the individual participants. The internalized MAP stages matched the previously defined Green Room (beginning), On Stage (middle), and Dressing Room (ending) pattern. The three MAP stages framed out five *MAP steps*.

Via the MAP, participants experienced epiphanies and made discoveries that modified fixated associations. Trauma-bound associations that had anchored a pervasively negative sense of self and isolation from self, others, and the world loosened and changed. For example, at the onset of the intervention, most participants had associated other people with danger and memories of betrayal (which appeared to cause reflexive mistrust and consequent disconnection or aggression). After involvement in TD, the same participants modified those associations to include beliefs that others could possibly offer safety, comfort, and fun. Through repeated occurrences of the MAP, and the consequent updating and expansion of previously fixated

associations, participants pivoted away from Absence to a greater sense of Presence to self, others, and the world.

MAP (Intrapersonal spontaneous process):

- MAP Stage I: Green Room
- Step 1, Active practicing of folkways.
- MAP Stage II: On Stage
- Step 2, Encountering of a *surprise* that challenged trauma-fixated associations.
- Step 3, Taking a *risk* as a result of the surprise. (Surprise and risk were frequently reversed in the sequence of MAP steps, with Step 3 immediately preceding Step 2).
- Step 4, Making a *discovery* as a result of risk/risks taken.
- MAP Stage III: Dressing Room
- Step 5, Integrating learning, self-regulating, and stabilizing via folkways practice in order to prepare for exit into the next task or environment.

Whether or not any one participant would experience a MAP during the TD session, when and via what stimuli the MAP would initiate, and how many times any one person might experience a MAP within a single session, depended upon that individual's system as it idiosyncratically interacted with session material. Opportunities for surprise and for iteration of the MAP pattern came often in TD. The MAP could (a) fully manifest from start to finish within one part of the session, (b) occur over the length of the session, (c) occur multiple times within a session, and/or (d) occur over combined sessions. The MAP initiated differentially and spontaneously when an aspect of the intervention challenged trauma-fixated associations that were interfering with necessary next steps in emotional development for a particular participant.

Necessary pre-conditions for the MAP were folkways practice, the internalization of the three-stage pattern, and identification with others. Identification meant that participants recognized and were resonating with shared experiences, feelings, and/or characteristics of admired others. Subsequent to that identification, participants relaxed enough to lower their habitual defenses. When energy and attention were not diverted to defenses, participants paid attention to activities, were more mindful of self, and began to engage in the safe risk-taking of the MAP.

Presence and Its Five Domains: Identification, Materialization, Action-Potential, Judgment, and Navigation (I→MAJN [Change Process])

Participants achieved greater and greater Presence through the compounding discoveries achieved via MAPs. As Presence increased, Absence decreased in proportion. As participants experienced more and more instances of the MAP, the five domains of presence enriched and compounded. The five domains of Presence are:

1. **Identification:** When participants related to experiences, feelings, and characteristics shared in common with other admired people, identification grew. As identification with others increased, identification with past trauma receded and sense of stigma and isolation decreased. Sense of connection increased. *Identification with admired others was a pre-condition for the remaining four domains of Presence*, but identification most directly impacted #2, Materialization, because through seeing and accepting the characteristics of others that resonated with self, participants began to see and accept themselves. When they saw others as not completely untrustworthy or not all-bad, they saw themselves as worthy of some trust and possessing of some goodness.

2. **Materialization:** Participants slowly became visible and known to themselves and to others with a concentrated force of integrated consciousness—a cohesiveness—as opposed to the fragmentation that was characteristic of the state of greater Absence.
3. **Action potentiation:** Participants became more flexibly responsive to the moment (rather than being inert, lacking in focused energy, or being reflexively reactive when experiencing challenges), while maintaining perspective on and awareness of multiple dimensions of experience. Action-potentiated participants were poised to risk the exercise of newly acquired skills more confidently and capably (instead of reverting to habitual trauma-fixated defenses).
4. **Judgment:** Via newly acquired skills, participants were able to gather data from/on the self, others, and the environment. They were then capable of analyzing that data in the context of the circumstances and environment at hand and drawing conclusions that allowed the exercise of good judgment.
5. **Navigation:** Participants became better able to judge circumstances in the moment and strategically select and apply skills and resources. (Troupe members and participants tapped into this domain of Presence when they became proxies or co-processing Navigators for participants who required support during the intervention.)

I abbreviate the five domains of Presence described above as I→MAJN. The abbreviation is configured to communicate that identification (I) precedes and leads to development of the other four domains. I→MAJN domains populated in different proportions and constellations following each iteration of the MAP and compounded over time to increase Presence. As I→MAJN domains were established, built, and compounded, participants' sense of comfort with

self, others, and the world increased. They became more present. Their sense of identity shifted and became less identified with their traumas and more identified with admired others.

MAP and I→MAJN During an Improvisational Exercise

Initial MAPs focused upon discoveries that enhanced identification. MAPs that enhanced identification appeared to be initiated when participants who had been triggered and struck by old feelings of alienation almost simultaneously discovered resonant commonalities (i.e., identification) with others in the milieu. Identification dissipated senses of self as defective, alien, and un-relatable and enhanced senses of self as normal, connected, and relatable. Identification induced relaxation, enhanced engagement, and created capacity to take risks and to utilize skills and resources that moved participants successfully out of the past and into the safer-feeling present (diminishing the trauma-fixated [stuck-point] sense of the self as unchangeably damaged).

I next explore Selena's description of an identification-enhancing MAP during an improvisational exercise that occurred in the early weeks of the intervention. Her narrative, as extracted from interview transcripts, is not a composite. Via the MAP stages and steps, Selena discovered that even unfamiliar others could potentially relate to and help her.

MAP Stage I: Green Room. *Step 1, Active practice of folkways:* Prior to entering the challenges of the more demanding small-group exercise described below, Selena would have participated in the more comfortable routine check-in and warm-up exercises that were designed to prepare the group for the session's work.

MAP Stage II: On Stage.

Selena, Participant: At first I was nervous. I was like, 'All these people, they're from different places, and I've been in this residence, and I don't really know anyone else.' We started working with each other in groups (we were never in the same groups) and I was like, 'Can I just have like one person I know with me?' And they [the troupe members

are] like, ‘Why don’t you just try it and if you don’t like it, we’ll put you in a group with one of the troupe members that you know?’ (Everyone knows like one of the troupe members.) ‘And you can just keep that person with you?’ And I said, ‘Wow, I don’t think I can do this. I’m not feeling it.’ But then one of the other kids from another program was just like, ‘You can do this. If you need help, I can help you. We can do this together and we’re going to stick through ‘til the end.’

Step 2, Surprise: In the midst of feeling fearful and alien, Selena was surprised by the previously unknown participant’s tuned-in offer to co-navigate.

Step 3, Risk: She recognized that the other participant was sufficiently identified with her apprehension to provide support, which allowed Selena to risk co-navigation. In turn, co-navigation enabled her to risk trying something new (i.e., the exercise).

Step 4, Discovery: Selena discovered that risking involvement with unknown (but attuned) others in a safe milieu could be rewarding. She discovered that experiences of identification with another, and the interactions that sprang from mutual understanding and connection, created an atmosphere of trust, and provided material help. She discovered that she was brave enough to risk trusting.

MAP Stage III: Dressing Room. *Step 5, Adjusting, re-calibrating, and re-stabilizing via folkways:* Following the scene work, Selena would have been engaged in games to down-regulate her affect and to calm herself physiologically. She would have engaged in the routines of the session’s ending.

Through the MAP, Selena discovered that opening up to relationships with new people could be at once frightening, freeing, rewarding, and sufficiently safe.

Selena, Participant: So it was awesome. In the beginning it was a little quiet, but then you start to get to know people and everyone is really outgoing and everybody wants to meet the other person. I knew it was safe. When I think of unsafe, I think like negative people, bad vibes, and no communication. But then when you think of the opposite, it’s like, this is a safe place for me. I feel like I can express myself more in Trauma Drama. I feel like people can relate. I don’t have to worry about someone judging me because they don’t judge.

The discoveries of the MAP seemed to pivot Selena away from reflexively associating fear, mistrust, distress, and alienation with exposure to unknown others. She appeared to turn toward judiciously associating others with potential safety, trust, pleasure, and connection.

I→MAJN domains were expanded by the modified associations.

- (I) Selena developed the belief that unknown people could potentially relate to her and she to them.
- (M) She had materialized to herself and to others as a relatable person who was capable of judiciously trusting newly introduced people, capable of utilizing the support of others, and capable of acting in the face of fear.
- (A) Selena was action-potentiated to engage more confidently in safe risk and to connect with assistance from attuned people in the future.
- (J) Selena had exercised judgment in discerning that she was sufficiently safe to risk diving into feared territory while partnered with an attuned other. She no longer associated and interpreted all feelings of fear with the presence of real danger.
- (N) Selena learned that in the future she could strategically recruit others to assist her in navigating through fear-inducing but safe circumstances.

Enrichment of the I→MAJN domains of Presence increased hope that the future could be better than the past. When Selena became more Present, she was able to project herself into an imagined future in which she was less guarded and in which she was empowered to succeed in unexpected ways.

Selena, Participant: When I was growing up, there were so many hard things, and I was just, like, scared of everything. But then when I just kind of let my guard down—just a little bit, not too much, but just a little bit—you kind of see the sun. How do I explain this? It's like when you think you can't do something, and then you do it. It's like,

‘Whoa, did I really just do that [chuckles]?’ It’s an incredible feeling. Now I feel like I can do this. So it’s awesome.

As with all qualitative research findings, the discoveries related to each MAP and the associative updates that enriched I→MAJN domains were fuller, richer than anything that could be fully described, but as illustrated above, the data were adequate to the goal of this study, namely, to uncover basic phenomena.

MAP and I→MAJN During Scene Work

Below is Brianna’s description of the MAP process as it unfolded during scene work (which occurred during the middle weeks of TD). As with Selena, Brianna’s MAP was initiated after the surprising realization that she could identify in solidarity with others in the group. That realization powered a pivot away from a trauma-fixated sense of the self as alien, unrelatable, and beyond help. Brianna’s narrative description of MAP steps is out of sequence (although Brianna reported the stages as actually occurring in sequence). For this reason, and in the interest of clarity, I will first provide the full narrative, followed by a detailed breakdown of the MAP steps.

Brianna, Participant: So with the assault [scene], I did watch because of my past assault experience. While [all the other kids were] jumping up onto the stage to figure out how to change the scene into a better situation, it made me realize that—especially after the fact—that, well, there’s all these people you can go to and there’s all these places you can reach out to. I think that it changed my anxiety level about [the assault]. Because I always felt like I just had to keep everything in. And keeping everything in makes you obviously a little bit depressed, because you’re always thinking about it. And I think being able to let some things out really changed the way my emotions were, and it made them a little less strong, because I have very strong emotions. So [watching the scene] made the [emotions] relax a little bit and kind of like dissipate. I do understand a lot more of what I’ve been through, like learning about it, and not just my point of view about what happened, but everybody else’s, helped me really change the way I felt. Rather than just jump to conclusions, like, ‘Oh my gosh, what am I going to do? I have to keep this all inside.’ ...It helped me not just forget about them [problems], but work through them and realize that it’s not all bad all the time. It felt really good to be able to be in a room with people who understand you, and realize that we’ve all been through something, and we

all need to regroup, kind of. It's like not stripping you down from who you are; it's like building you up [for] what you will need.

Below I plot Brianna's MAP Stages and Steps as they would have run in sequence.

MAP Stage I: Green Room. *Step 1, Active folkways practice:* Brianna would have engaged in the safe relationships and routines of Trauma Drama prior to the above-mentioned scene work. On the day above, she would have become physiologically excited and up-regulated by participating in warm-up exercises and by playing distracting games that exercised feeling, emotion, and cognition.

MAP Stage II: On Stage. *Step 2, Surprise:* In the scene work, Brianna was surprised and rendered off-balance by the content of the scenario and by the fact that the serious and fear-inducing scene content was being acted out within the safe field of play. Resonant reactions that were evident during group-sourced problem solving and meaning making allowed Brianna to see that the other participants identified with the character who was like her. The recognition of that identification seemed to induce physical relaxation and a letting go of the sense of stigma.

Step 3, Risk: Brianna could have closed down and isolated herself from the scene, as might have been her previous habit, but she risked staying in the room. She risked paying attention to the story of the assault, to the emotions and memories that arose, and to other participants' attempts to help the character in the scene.

Step 4, Discovery: Brianna discovered that, during the scene work, she was sufficiently calm to tolerate the triggered memory of her own assault. She discovered that she could feel compassion toward and identify with the self that had been traumatized, that she could be affectively open with trustworthy people, and that trustworthy people were capable of identifying with and helping someone like her. Group-sourced meaning making helped to restore dignity to and empathy for the child that she had been. Through the layered compression and expansion of

her own memories as they intersected with the characters and story portrayed, and through the group's processing of the scene, Brianna's associations to the trauma began to update. She became more identified with the supportive members of the group and less identified with the most negative aspects of the trauma that she had experienced.

MAP Stage III: Dressing Room. *Step 5, Adjusting, re-calibrating, and re-stabilizing via folkways:* Brianna's schemas/beliefs shifted regarding the need to keep thoughts, memories, and emotions locked inside. She reported that she had become more open to herself and to others. She reported feeling understood. She stated that baseline emotions had been reset to a more relaxed level. Following the scene work, Brianna would have been engaged in games to down-regulate her affect and to calm herself physiologically, and she would have engaged in the routines of the session's ending.

I→MAJN domains were likely enriched in some of the following ways.

- (I) Brianna identified with the fact that the participants were all trying to “build themselves up for what they would need in the future.” Identification fueled relaxation and materialization. Brianna no longer associated the presence of others with needing to be fully on-guard.
- (M) Brianna materialized to herself as a person who did not have to be isolated within the experience of past trauma but could let it dissipate through working with like others. She realized that she was able to be a person with a more positive point of view. She was no longer materialized in a world that she associated with being “bad all the time.”
- (A) Brianna was action-potentiated to connect with others in pursuit of fun and/or to reach out for assistance in the future.

- (J) Brianna had exercised judgment in considering the points of view of others who had participated in the scene, which consequently changed her feelings about and interpretation of what had happened to her in the past as well as her essential sense of defectiveness, her sense of safety in the present, and how she projected using the help of others in the future. The domain of judgment particularly influenced the development of across-time changes in associations that are covered in the next section.
- (N) Brianna associated self with the ability to identify and build safe relationships and with the capable navigation of difficult situations in conjunction with trusted others.

Population of Associations x-Time (PAxT [Change Process])

Modifications of associations appeared to populate across time, which influenced and updated perspectives and personal narratives across past, present, and future. I call this across-time population of updated associations, the *population of associations x-time* (PAxT). For instance, following Brianna's TD experience, she came to associate trusted and capable others with help as opposed to equating all others with mistrust and danger. Associative updates that compounded across time strengthened the I→MAJN domains of Presence.

Brianna, Participant: So I've been in programs a couple times before. And I felt like the people there just want[ed] to hear the bad stuff and use it against you. But now, realizing there are so many other people who can help, it makes me realize that they're actually helping and stuff. I really didn't know that I could reach out like to school guidance counselors, or clinicians, and stuff like that. I thought they were all just there to keep me in one place, but really they're there to help.

Mimi, Researcher: Okay, so if you were to return to one of those other programs with the skills that you have now, would it be different for you? Or was it the program too that was untrustwor...?

Brianna, Participant: [*Interrupting*] I think it would be completely different for me.

Subsequent to PAXT, the world had not changed, but Brianna had changed in the world. She could now see that people from her past, in her present, and to be in her future could possibly be associated with trustworthiness.

- Past: There had likely been trustworthy helpers within reach in the past.
- Present: There were trustworthy helpers in the present.
- Future: There would likely be some trustworthy helpers available in the future.

Below, a different participant, Taisha, discussed how her associations to others modified over the course of TD. Taisha contrasted the way in which a prior organization of herself, centered around isolating negative self-perceptions and shame, had been updated to include connection to and identification with helpful others. Connection had become associated with the possible affordance of comfort and protection (as opposed to connection being primarily associated with inherent danger). Modified associations populated across past, present, and future.

I would feel very isolated. . . . I was actually very embarrassed and ashamed. I thought I was the only one that would go through really difficult things, and I would get my anger out on them. . . . I tried helping myself out, and I just got stuck. . . . But then I realized they've been through many situations that were similar to mine. Like I said earlier, I'm comfortable talking about situations like that [now], because I know that I'm not alone with it. You take the thing that's still really sad . . . like I said, you still have people that help you through it You can actually help each other. . . . It's really helpful, because you might need that in life.

In this example of PAXT, Taisha compared pre-TD associations to herself as alien to updated post-TD associations to herself as resourceful and as identified with admired and helpful others.

- Past: Taisha indicated that she no longer perceived that the type of trauma that she had experienced in the past was non-relatable or uniquely bad when she said, "But then I realized they've been through many situations that were similar to mine."

- Present: Taisha expressed that she was capable of tapping into/connecting to the support of resonant others in the present with the statement, “I’m comfortable talking about situations like that, because I know that I’m not alone with it.”
- Future: Taisha expressed that she would be able to connect with helpers “in life,” which implies that she was able to project her ability to identify with potential helpers into the future.

Shift in Sense of Identity (Change Process)

After having experienced (a) initial MAP incidences, (b) I→MAJN self-potentialization and enrichments, and (c) the temporal/across-time generalizations of PAXT, participants began to experience shifts in *sense of identity*, that is, the way in which one thinks and feels about who one is. At the onset of the TD, participants’ sense of identity seemed to be usurped by identification with the worst aspects of the trauma, yet by the end of the intervention they had begun to incorporate positive personal characteristics, values, and talents into an emerging sense of identity. By the end of TD, Lelani had incorporated the positive characteristics of intelligence and sense of humor into her shifted sense of identity.

Lelani, Participant: But in all reality, it (Trauma Drama) helped me learn who I am.

Mimi, Researcher: So who did you learn you were? I’m sort of putting you on the spot, so—

Lelani, Participant: (breaking in) A funny, intelligent, and smart young woman.

Similarly, Briana’s sense of identity expanded to include an experience of herself as a normal, likable person who did not have to hide and who had friends (as opposed to feeling alien, unlikable, hidden away, and friendless at the beginning of TD).

Brianna, Participant: I like them, and so I can like me and relax with me. . . . Yeah. I’m really bad at forming friends, but I made so many friends in Trauma Drama. Like, everybody in there, because they’re just—they’re such—I don’t think people realize how

nice people are these days. There are some bad people out there, but Trauma Drama helped me realize that people can be so nice sometimes, and you can actually have real friends, and understand each other, and be close. Even when I didn't know everybody that well, I still felt close to them. Because I feel like we all understood who each other was.

A developing sense of identity was characterized by a feeling of "being myself," which was characterized variously by different participants. For Taisha (participant), it meant maintaining an unapologetic presence with self, others, and the world: "I can be myself more often than what I was before. Before I would never be myself. I'd be scared and be afraid to get bullied or hurt." It also meant that she had found her voice: "Now I can be myself and speak up for others and myself."

For Dizzy (participant), "being myself" meant feeling newly open to others: "I learned that I'm capable of opening up." Lucky (participant) also talked about being a person who had become unafraid to share her emotions: "There's one thing I've learned, not to be afraid to tell people how I feel; 'being myself' felt good." Similarly, Selena (participant) believed that the decision to share her true feelings had made her feel better: "What I decided to do is, let out how I feel, and it's really helped me."

Shifts in sense of identity that occurred through TD seemed to confer increased comfort with self, with others, and with the world.

Advocacy (A Subordinate Process to Sense of Identity Shift). Once sense of identity had become more solid, participants found themselves spontaneously advocating for self and enrolling themselves as navigators for others. They incorporated the characteristics of "advocate" into sense of identity and expressed the urge to pass on the folkway of navigation (in the form of advocacy) to the next generation of initiates (an example of the way in which folkways were self-perpetuating).

Participants recognized that peer-to-peer advocacy was a superpower (meaning that peer-to-peer advocacy was uniquely potent in its ability to assist). Early in my post-intervention interviews, participants spontaneously suggested that particular participants who had graduated from TD be incorporated as peer-mentors/peer-troupe members when the intervention was offered again. Hayden believed that TD-graduates like himself could help new participants be better able to envision participation.

Hayden, Participant: If you had graduates from Trauma Drama helping new kids in Trauma Drama that would be awesome. When it comes time to do the acting, it would help take the pressure off of [the new kids], because they're thinking, 'What do I do? Has anyone ever done this before?'

Participants could immediately name peers who would do well in the role of peer-troupe member. Jill (participant) suggested that two peers, Hayden and Brianna, "would be awesome troupe members." Not only were TD participants capable of identifying potential peer-troupe members, but their advocacy extended to the differential evaluation of their own strengths and challenges with respect to fitting the role. Jill observed, "Me, I'm too easy [laughter]." Alexis recognized that she possessed characteristics that might recommend her as a peer-troupe member.

Alexis, Participant: I think I'd be fantastic actually myself [chuckles]. I'm pretty good at Trauma Drama. I've gotten a few kids on stage that would never have dared to [go onstage before]. [A kid troupe member] would be more on the same level of life as we are. Peers can make a different kind of connection than the clinicians can. A kid can give a kind of suggestion or a word to another kid that can make that other kid actually want to do or try something.

Participants believed that their unique vantage point would strengthen the intervention. For instance, Brianna and Taisha discussed the strengths of peer-to-peer identification with being away from home and feeling "trapped" in the residence, while still enduring trauma flashbacks.

Brianna, Participant: I think having students as troupe members would not only—like, it's hard, especially for me and with my experiences, to hear adults say, 'I understand,'

when I don't necessarily think they do understand in the same way that a kid can. I think it would be a lot more helpful for students to be able to be like, 'I understand what you're going through. I've been in this program. I know what it's like to be away from home, to do all this stuff, to not be able to see your family every day.' It helps to have someone who knows say, 'I understand.'

Taisha, Participant: Yeah, you can't escape. So we feel trapped. If the troupe members ever experienced this, they might have already forgotten and left it behind. . . . We're still getting flashbacks to our traumas. . . . The kids would be explaining more and being able to have connections. . . . Because the kids are younger and it's like they've been more through it recently.

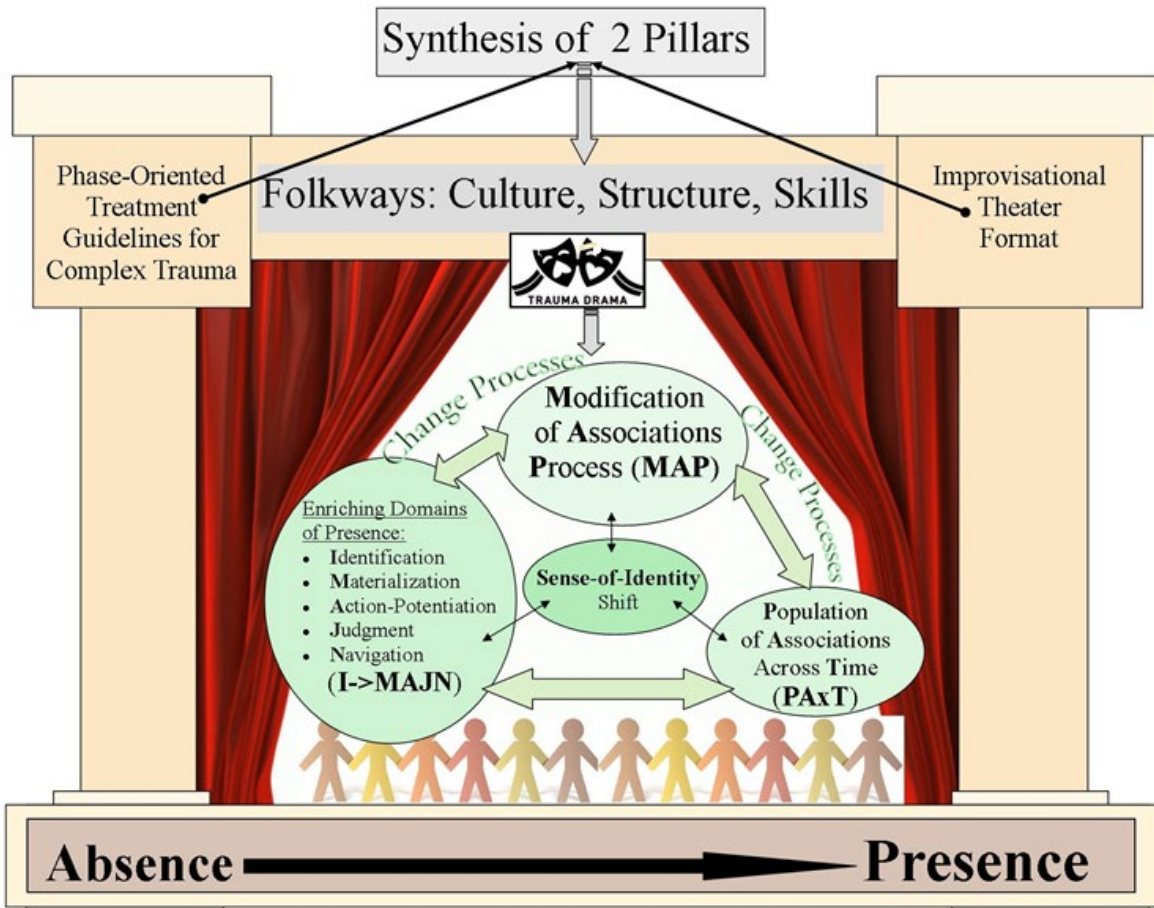
The incorporation of "advocate" into sense of identity implies that participants had shifted to experience themselves as attuned potent change agents, rather than alien and impotent. Effective navigation and advocacy on behalf of peers was experienced as immediately pleasurable and rewarding. Advocating for others seemed to help participants develop confidence that there would always be advocates and helpers available for them, too.

Example Cases with Applied Terminology

Below I use three cases to illustrate how the change systems of MAP, I→MAJN, and PAXT led to shifts in the participants' sense of identity and willingness to act as advocates. The internalized folkways and processes naturally arrange themselves into a sequence that moves away from Absence and toward greater Presence (see Illustration H, next page). The sequence engaged participants in very particular ways related to their unique trauma exposures, developmental stage, and personal characteristics. (Thus, although TD is a group intervention, it is at the same time patient-centered and individualized.) MAPs occurred multiple times throughout each case. I do not call attention to each occurrence. Instead, I sometimes highlight "surprise," "risk," and/or "discovery," which may be assumed by the reader to be part of a MAP occurrence. For each case, I provide a bulleted list of I→MAJN and PAXT manifestations. The lists should not be considered exhaustive but as selected glimpses of basic processes.

Illustration H

Qualitative Themes and Processes of the Trauma Drama Experience



Jill's Sense of Identity Shift: I Am a Change Agent and Advocate. As much as Jill seemed to enjoy TD, she was taciturn during initial sessions.

Troupe Member #5: [At the residence Jill] was always yelling, but she would not speak at all at the beginning of TD. She literally could not even go to the stairs to go up on the stage.

However, on TD's egalitarian playing field, troupe members demonstrated confidence in Jill's capacity to experiment with the same skills that they themselves modeled.

Jill, Participant: Even when I didn't do anything, the people that were doing the Trauma Drama, like the staff—the troupe, they were still like, 'Yo, you can do it next time.' They were still so supportive, and it was just—it was fun.

Staff member #B believed that Jill had wanted to participate but was afraid.

Staff Member #B: It wasn't because she didn't want to [participate in scene work]; it's just that I think there was a fear. 'What if I go up, and I do this?' There's catastrophic thinking, because [participants have] had actual catastrophes happen to them, so it makes sense what she felt.

Fortunately, Jill began to identify with the surprisingly irreverent sense of humor displayed by some of the troupe members.

Jill, Participant: My favorite part was to see [the clinical director of my program] acting. As of yesterday, I've known her for a year and eight months now. To see her doing like all these different characters, it just made me laugh. So to see her convincing [one of the characters in a scene] to smoke weed! I was pissing myself laughing, [because] she's [usually] like, 'Oh, smoking weed and drinking's bad.' So to see her do that stuff—to me—it's really funny.

The willingness of troupe members to be observed as irreverently but fully engaged in “wrong behaviors” (in the service of the drama) was a manifestation of BSD that fostered a safe intimacy, which in turn, cemented trust. Jill delighted in having special knowledge of the play-revealed behavior of troupe members and staff members (which was different from the professional demeanor displayed at the residence).

Jill, Participant: It's like she [the clinical-director troupe member] is a completely different person [at Trauma Drama]. I'll go back to [my residence], and [the staff members] will be like, 'What happened in Trauma Drama?' And I'll tell them [what our clinical director] did. It was funny.

Jill's aversion to being engaged diminished. About eight weeks into the intervention, she risked jumping onto the stage. Her sudden involvement took her by surprise. Over the remainder of the intervention weeks, Jill discovered herself performing again and again.

Jill, Participant: Then all of a sudden when I was just there, I was able to get up and just come in front of everybody. And there was one time where nobody would go on stage—

not even the staff—nobody, and then I was the first one to go. And then ever since then I wouldn't stop going up.

Through taking repeated safe risks that daunted other participants, Jill materialized as a leader. She inspired others to follow her. She grew to associate the successful navigation of safe risks with positive change.

Jill, Participant: I felt like everybody changed. I just feel like a lot of the girls and especially one of the boys named Indigo, he changed a lot. I noticed that. He wouldn't talk to nobody. He was like me. We would stay in the corner. . . . I realized that once I started going up, that's when he started going up too.

Jill's presence to and engagement in scene work deepened over time. In an early scene (an initial foray into increased presence) she took on the role of aggressor.

Jill, Participant: So when it was me [acting in the gym scene], I was the bully, and we were in gym class. And there was one guy, I was picking on him. And then I had a co-bully. . . . At the end I was like, 'F this,' and I walked up and I went to throw the ball, and it knocked everything out of their hands, and I was like, 'Oh, no.' It was fun, and then the other

In order to understand why Jill enrolled herself as the aggressor, I asked her the following question.

Mimi, Researcher: So what was it you were hoping to get out of that scenario, if you don't mind my asking?

Jill, Participant: Because I was bullied when I was younger, and I had no one to stick up for me. So that way if I see someone getting bullied real bad, I might stick up for them depending on how big the person is, because I'm not trying to get hit, you know?

Jill seemed to think that playing aggressor was a step toward empowering herself as a future advocate, and she considered it "fun" to play the cruel—but ultimately vanquished—aggressor. The negative/positive juxtaposition may have indicated that she was modulating and successfully navigating through stuck points and thorough potentially triggering territory. Remaining present and engaged during a scene that was representative of Jill's own experience may have diminished her reflexive trauma-bound defenses. The juxtaposition of negative and positive also

may have allowed Jill the freedom to feel out and explore her values. For instance, in this case, after playing the bully, Jill expressed the personal value of always standing up against a bully (when feasible).

In subsequent scene work, Jill spontaneously switched out of the aggressor role into the role of an attuned advocate. According to Staff Member #B, Jill's advocacy was unplanned. Her original plan had been to step into the new scene, while aggressively yelling at the victimized character. Jill surprised herself by pivoting into an opposite behavior. Staff Member #B described witnessing the unexpected turn.

Staff Member #B: And she said, 'I'm going to go up and I'm just going to yell at her instead,' which actually was her typical mode of interacting with friends—just to yell at them even if—and instead, when she went up there and within the play, you suddenly saw her shift into [holding her friend's] hand in concern. Just playing it up and acting in defense of the friend towards the person who was going after her, when her [Jill's original] intention [had been] to go up and turn and also attack.

Jill's assumption of the advocate's role demonstrated increasing presence. As advocate, she would have had to identify with the vulnerable character while continuing to act her part in the scene. Her spontaneous turn toward embodied advocacy suggests that she was grounded in the moment of the drama itself. She was able to tolerate her role of supportively attuning to the victim's point of view without being noticeably triggered. In order to collect the necessary data to strategically navigate her role as advocate, Jill would have required sufficient presence to track the moment-to-moment subtleties of the scene's characters and their interactions.

Staff Member #B: And then she came down and she said, 'I didn't even mean to do that. That just happened.' And it was just fascinating to see that because in that spur of the moment she felt that she wanted to go that way, despite [the fact that it had] not been her plan. And transitions are really hard for our kids. Doing anything different than what you planned is scary.

Jill had spontaneously navigated conflict by acting in accordance with her stated values rather than via her reflexive trauma-fixated habit. She discovered that values could act as a navigational device to orient actions. Jill was then primed to engage her values outside of the intervention.

Jill, Participant: And [then there was] the scene about abuse. My mom used to scream at me and my little sister...and be, well, abusive. I used to protect my sister by getting my mom to hurt me instead. Recently, when my sister was arguing with my mom, I got my sister to leave the situation so that my mom wouldn't go after her, and so that I wouldn't get hurt.

While in her mother's home, Jill discovered (via a MAP occurring in that environment) that she could sidestep her usual reflexive defense patterns. She could instead generate alternative in-the-moment solutions such as getting her sister to leave, which protected her sister and helped Jill to evade abuse. Jill actively altered a long-standing pattern of abuse in her family, which expanded her association of herself with effective advocacy for self and others (as opposed to victim or aggressor). The knowledge that Jill could protect herself in the present seemed to help her deal with having been victimized in the past.

Jill, Participant: I learned how to cope with stuff that my uncle did when I was younger. Even though that was in the past, I learned what to do if it were to happen again.

I→MAJN.

- (I) Jill identified with the role and values of navigator/advocate as modeled by the irreverently humorous troupe members.
- (M) She materialized to herself as an advocate, capable (at least sometimes) of identifying a safe way to get through conflict and avoid abuse. She had materialized to herself a change-agent and leader.
- (A) She had become action-potentiated and poised to apply clarified values when designing appropriate responses for specific situations.

- (J) Jill had applied judgment to assess the data pertinent to incidents involving her mother and uncle, and she was able to strategize a way to alter negative family patterns.
- (N) Jill applied strategic value-driven navigational decisions that kept her sister and herself safe.

PaxT.

- Present: Jill associated herself in the present with the values and skills of an advocate for self and others.
- Past: Jill more clearly associated lack of skill and knowledge with ineffectiveness in defending herself against her mother's and uncle's past abuse, rather than associating her victimization with an experience of self as defective. After participation in TD, Jill no longer perceived past victimization as a predictor of inevitable future victimization.
- Future: Jill saw herself as being a prepared advocate in the future and as capable of navigating difficult situations.

Over the course of the intervention, Jill accumulated skills, resources, and experiences of self-efficacy. One of the troupe members observed the way in which Jill's self-expression changed as she materialized as a leader.

Troupe Member #5: She joined the [parent organization's] inter-residence student government, and now in the student government organization, she's raising her hand, she's showing leadership; she's speaking at length—not just one-word answers, but providing very thorough and insightful information. I was able to witness that.

As discoveries and related changes in associations compounded, and as I→MAJN domains consequently enriched, Jill demonstrated increased resourcefulness and took even more risks outside of the intervention space. She described an activity that occurred away from her

residence, during which she was able to identify and recruit a trusted helper to navigate a feared situation.

Jill, Participant: The only one I really knew besides Iris outside [of the residence] was Beth, because she used to do the [student government]. So I've known her from before. They had [all of the residences come together for a] holiday. In October, they did the harvest festival or whatever. October, whatever the thingy was for the Halloween thing. I went there and I saw her [Beth] there. And I was nervous, and so she gave me a cat mask, and it covered my face, and I was able to walk around.

Beth had assisted Jill to navigate the Halloween party. Via that experience, Jill discovered that when she covered her face, she was able to navigate and remain present during social situations. Subsequently, she was able to imaginatively adapt and transfer the Halloween-mask anxiety-management device to another setting.

Jill, Participant: So then if I have anxiety, my friend gives me her sunglasses, and I put [them] on my face and I'm able to—and I know it like doesn't shield off my face, but I know I'm back to normal.

Jill's overall growth across the weeks of TD occurred in three phases that bridged Absence to Presence. At first, Jill avoided active scene-work participation. Avoidance signaled a preponderance of Absence. During initial forays into action, she took on the role of aggressor (identifying with the aggressor), seemingly as a way to modulate increasing presence. Finally, Jill became more fearlessly immersed in moment-to-moment Presence. Her sense of identity had shifted to incorporate the values and characteristics of effectively advocating for herself, for other TD participants, for vulnerable family members, and for fellow residents (through student government).

Pablo's Sense of Identity Shift: I Am a Non-Violent Person. In a manner similar to Jill's, Pablo progressed from Absence to greater Presence: at first he avoided participation; next, he enrolled as the aggressor in scene work; finally, he became an advocate for self in managing

conflict without violence. Like Jill, Pablo initially identified with the playfulness and sense of humor demonstrated by troupe members and staff members.

Pablo, Participant: They [troupe members] are really funny. Simon was really cool. They are really cool. They were actually a lot of fun to hang out with, and talk to, and be there with.

Pablo soon found himself identifying with peers who were nervous about acting in the scene work. Once he identified with others, Pablo relaxed enough to move away from avoidance toward becoming more engaged. He overcame his shyness to risk acting.

Pablo, Participant: At the beginning of the group, Trauma Drama, I didn't really use to do acting and towards the end, I started getting more into it. I started doing the acting and stuff like that. . . . I am pretty stage-shy in front of people. It was a big deal for me when I was able to actually get up there and do certain things, and other people were too. It felt different and uncomfortable, but I got used to it and was able to overcome my fears of acting that part and was able to do it.

Before he began to act, Pablo had observed the troupe members' performance in the scenes. In the process of shedding their characters, troupe members' own values and sense of identity could be observed in relief against the choices of the characters just played (a type of BSD). The divesting of characters and resumption of "normal self" was a folkway skill that was modeled by troupe members and passed down to participants.

Pablo, Participant: We knew they [troupe members] were acting, so we knew they weren't like that [weren't like the unsavory characters sometimes played]. That's not who they were.

Troupe Member #8 offered insight into the way in which participants reacted to the "bad guy" characters that he portrayed and then divested.

Troupe Member #8: The funny part is, afterwards [after a scene], kids will come up to me like, 'I hated you during that [scene]. You were so mean.' I'm like, 'Sorry. It's not me.' And [they are] like, 'I know it's not really you. I'm just saying it.' It's good for them to kind of play with it [juxtaposition and differentiation of character from the actual person] too, like, 'I hated you, but I like you.' The de-role—it's definitely—once you do it, it's like taking a huge breath of air, because you're playing this role and like you're trying to do your best, and then you de-role. It's just like, 'Oh, my God, I can relax and be me and

show people that it's not me, it's just a role,' and just breathing and just a releasing the bad guy out of your body almost, it's like a cool feeling.

Pablo expressed the challenge of embodying and divesting characters who were engaged in behaviors that he himself did not like. Just as Jill had, Pablo first played aggressive characters in the scene work. The contrast of the aggressive characters and their values as juxtaposed with his "normal self" seemed to "click" Pablo into a clearer experience of himself and his true values.

Pablo, Participant: It was difficult at times [to act] a character that was abusive and neglect[ful], because that's not my normal mature self. Yeah. I don't like acting like that. I guess people get angry, but they might act angry and upset. They break something, but I don't like acting like that. . . . Certain characters, they're certainly a little bit harder to embody. But I was able to do it, and then sit back down and be my normal self again.

After assuming and divesting particular characters, participants like Pablo seemed to differentiate self from character. They rejected and shed characteristics that felt wrong to them and gravitated toward (and discovered) values and characteristics that fit. In this way, participants seemed to become clearer about who they were, and, conversely, about who they were not. They began to associate certain values with the true self, increasingly materializing an enhanced sense of identity. Pablo was able to define himself as a person who strove to be unlike the abusive, neglectful, physically aggressive character(s) that he played during scene work. Pablo felt that the TD scene work had prepared him to pursue non-violent conflict resolution, and he put this clarified value of negotiation over aggression into practice when settling a conflict outside of TD (in the residence).

Pablo, Participant: It [TD] just prepared me for all the stuff that will happen in the future. Let's see. There was a time when I was playing softball and I know that a kid got upset with me, because I pushed him. I was starting to talk it out with the person. I talked it out with the person instead of getting into a fistfight or something like that, because I want to pick my battles, and I don't want to ruin my future.

I asked Pablo if talking things out in the above-described softball incident represented new behavior.

Pablo, Participant: Probably, yeah. I used to get into a lot more fistfights and restraints when I first got here and (when) I was younger. Yeah, I'm not sure. I think I just told him—well, I was friends with the person, so I'm pretty sure that I told him, 'Hold on and let's talk it out.' I knew the person, and I didn't want to [fight]. It would have taken a little bit more to get into a fistfight than it would to first talk it out.

I→MAJN.

- (I) Pablo identified with the non-violent values modeled by the troupe members.
- (M) He materialized to himself as a person who, at his core, did not feel comfortable with physical aggression as a default for handling conflict.
- (A) He had become poised and action-potentialized to apply clarified values when spontaneously designing appropriate responses for specific situations.
- (J) He had applied judgment to the data pertinent to the softball incident (e.g., regarding the level of threat posed by his softball friend) and had evaluated the pros and cons involved in trying to “talk things out,” since he did not “want to ruin” his future. (Data was bounced against values, which provided a rudder for judgment.)
- (N) Pablo applied strategic moment-to-moment navigational decisions throughout the resolution of the softball conflict (e.g. the decision to pause in order to try to talk things out, if possible). In this way, Pablo exhibited increased moment-to-moment Presence and a clarified sense of identity as a non-violent person.

PAxT.

- Present: Pablo saw himself in the present of our interview as advocating for non-violent options when settling the softball conflict.

- Past: He appeared to feel that although he had defaulted to acting aggressively in the past, it was due to lack of maturity and preparation, rather than to being an inherently violent person.
- Future: Pablo referred to self-advocacy in the future when he stated, “I want to pick my battles, and I don’t want to ruin my future.” He saw avoidance of physical aggression as a building block of a better tomorrow.

Bond’s Sense of Identity Shift: I Am a Person Who Trusts; I Am a Capable

Advocate. Prior to TD, Bond avoided close relationships with others. He believed that childhood wounds had ruptured his ability to trust.

Bond, Participant: As a little kid, maybe like four or five, I had a lot of friends. I may have gotten hurt a bunch and it pulled me [away from friends] and made me aim towards objects and stuff. And then I had like this little kid mentality that kind of takes me over quite a bit. That kind of comes from not trusting people.

Subsequent to a scene that reminded him of his own childhood, Bond experienced an update to associations that related to trustworthiness of others. The scene portrayed a passing neighbor who was shown to overhear a parent abusing a child behind a closed apartment door.

Bond, Participant: There was this one script. I can’t really remember that one so well really, because that was an experience that I had when I was little, so it really made me uncomfortable. And I think it’s like—I don’t know—it’s weird, because when that skit happened, I wasn’t just looking at the skit, I was looking around. There [were] people’s faces that I saw that were like, ‘My God, this is really uncomfortable just to sit and watch, even though it’s not real.’ So, something about it [the scene] gets to you.

Bond was disoriented by the scene’s content and was fixated in uncertainty. He was surprised to discover other audience members’ discomfort, and he identified with their reaction.

Bond, Participant: Some of my peers may not have known how to handle...I don’t think I knew how to handle it. I don’t think I went up [on stage]. And I didn’t really know how to handle that situation, so I didn’t go up, and I sat and I watched. That’s probably why I can’t remember if I went up, because I probably didn’t go up. Normally I remember if I went up. I don’t think I went up.

Bond's confused recall for his involvement in the scene might indicate that he employed a level of absence/dissociation to limit exposure to the uncomfortable dilemma represented. The scene's challenges were so tricky that staff members were also stumped by the central dilemma. Staff Member #B initially felt bereft of solutions, yet (in an example of BSD) he chose not to hide his bafflement.

Staff Member #B: I know when I first saw it [the scene], nothing immediately came to mind. And so I think [the participants] got to see...there's a shared sense of, 'Yeah, this is something that is natural to feel shocked and frozen about, and you're not alone in that.' That's a very human reaction to these [archetypal complex trauma scenarios]. . . . That shared experience [was] very equalizing and normalizing.

Rather than making him alien, Bond discovered that—considering the thorniness of the scenario—his reaction of being confounded was typical; rather than setting him apart from others, it connected him in solidarity to the group. Bond was comforted to observe that his reactions and feelings were shared.

Bond, Participant: You feel that you are out of your league. It's really like, 'What's going on?' He's agreeing, she's agreeing, he's agreeing, she's agreeing, he's agreeing, he's agreeing. And it helps. It's like you can find comfort all the time. . . . I don't think people actually realize that it's common, especially when you're little. It helped me to know that it's something common.

Because the participants seemed to be “frozen,” staff members (performing as navigational proxies) enacted group-sourced solutions.

Staff Member #B: The staff mostly acted the solutions because with the youth there was that kind of frozen, 'I don't know what to do.' We tried all of these different things for a good, long time and some of them worked, some of them didn't, and it made the situation less un-nameable and [less] frozen for a lot of them.

Even though he did not participate as an actor, Bond was attentive during problem solving and meaning making. Close attention to the process of the group, even without direct involvement, appeared to allow Bond to increase Presence gradually, which moved him through stuck points while modulating potential triggering. (For Bond, whose default defense appeared to

be dissociation, close attention to and tracking of group process seemed to function similarly to the way in which playing an aggressive character functioned for Jill and for Pablo.) Group-sourced problem-solving and meaning-making efforts confirmed that the scenario was unsolvable, which then validated and dignified the difficulty of Bond's original trauma. Bond discovered that the "learning" achieved through active observation could "dissipate" past hurts.

Bond, Participant: And then the other people are watching, and they may have other ideas. So they're watching the idea and seeing how successful it is, but then they're coming up with other ones and jumping in. Sometimes you don't say anything, and there's something that's relevant to learn from it. Most problems will come from someone getting hurt. . . . And if you're learning then the hurt is kind of dissipating and won't continue.

For Bond, trauma-fixated associations to isolation and mistrust as essential to maintenance of safety began to reverse. Newly modified associations rendered connection to others as potentially safe and healing rather than dangerous. Bond felt that involvement in scene work had moved him from feeling unable to act, to contemplation of possible actions (in the form of self- and other-advocacy). He was able to imagine future circumstances under which he could act as an advocate for a vulnerable other, and he was able to mentally rehearse approaches to that advocacy.

Bond, Participant: It kind of makes you want to—I guess it made me—at least a little bit want to be like, all right, well next time this happens, if I'm not alone and there's other people around, I could say something. . . . And I'm sure if it happened, like say, I went down the street and someone was arguing on their way out to get into a car, I could probably try to cool things down. It would kind of subconsciously maybe come back [to the learning from the scene], I mean, I'd hope, because I would figure that's how the mind would work, in a situation where you want to help.

In a TD session subsequent to the above-mentioned apartment scene, Bond actively advocated for a vulnerable participant. He tuned into the young woman's reticence to participate, and he successfully encouraged her to risk active engagement.

Bond, Participant: She didn't do anything really [she was not outwardly active during the TD sessions], and now she did. And she didn't really want to talk to people [previously]. I got her to go out of her comfort zone and participate. [After she engaged,] I pointed her out, and I gave her due credits, and everyone was happy for her.

Bond recognized that increments of connection and attuned advocacy among peers could tip the scales toward change. He discovered that he had the power to help peers take the first small steps into increased Presence.

Bond, Participant: Small things can help big time. Sometimes that's all you need, to tread the water a little bit. Maybe you'll just put your toe in, and feel it out, and see how it's going, and draw back.

Bond was the first participant who suggested to me that TD graduates become peer troupe members. He could envision himself acting as a "substitute troupe member" in support of troupe members and staff members and in modeling TD participation and folkways for apprehensive new participants of future TD groups.

Bond, Participant: I think it would be a good idea to have graduates of Trauma Drama become peer mentors for the next Trauma Drama group because [I believe that] there's going to be a lot of kids going to TD [in the future]. So let's say one of the troupe members can't make it. Okay. Well, me and my roommate, we've done the whole Trauma Drama program, and we know what's going on. We might need to learn a thing or two [to be substitute troupe members], but one of us could go. I could go and fill in for an absent troupe member. The new kids can learn from me, and they can see a product of what Trauma Drama does. Say a troupe member has to go out and talk with a kid. I could fill in. Stuff like that.

Over the course of TD, Bond's self-associations related to feelings of ineffectiveness (being stuck, inert, and isolated) modified and updated to include self-associations with effectiveness (being active, resourceful, and connected).

I→MAJN.

- (I) Bond identified with other participants having the same understandable reactions to past adversity as he. Other participants' reactions were

understandable and normal; thus, he began to interpret his own reactions as similarly understandable and normal.

- (M) Bond materialized to self, others, and the world as a normal person, with normal reactions, who was capable of judiciously trusting, connecting to, and forming relationships with others. He materialized as capable of building relationships and advocating for self and others.
- (A) Bond became poised to engage in trusting relationships and to navigate relationships and the world as a self- and other-advocate. He was poised to help others learn to connect and trust, and he was poised to receive help and wisdom from trusted others.
- (J) Bond was able to observe and collect data that allowed the exercise of judgment in navigating relationships and in advocating for self and others. Rather than seeing all relationships as dangerous, Bond judged that friendships with trustworthy others could be associated with safety and healing.
- (N) Bond created and implemented navigational strategies in order to enrich relationships, in order to learn and heal, and in order to advocate for self and others (i.e., figuring out the best interaction strategy to successfully encourage the reticent participant mentioned directly above).

After modifying associations to trust in others, Bond felt that he had reconnected with a part of himself that had been lost.

Bond, Participant: So through Trauma Drama, it's made it like—I mean I've always known there's a need for people. It keeps you sane, but the fact that you can keep those same people around you and stuff, that's something that I've been able to re-learn, and that's kind of the biggest thing, I'd say. People lose themselves. I walked out; I have a number of friends. And I normally put myself apart from the rest of the populace, and say no. I don't have friends. I have acquaintances. Because it's less hurtful when stuff

happens. And I've learned that I can at least say I've got a couple of friends, and that people can—people are always going to—you can trust people. Walk out with friends. That's basically it. And as far as it goes I guess it was really therapeutic. . . . If someone can't trust people, this is an awesome way to learn how to trust people.

Modified associations populated across time. Bond had learned to see himself as potentially effective in the past, present, and future. Bond's updated associations improved his ability to identify reciprocally and to trust judiciously. His perceptions about relationships in the past, present, and future were recolored.

PaxT.

- Present: Bond identified in the present as a connected person who was a friend, navigator, and advocate. Rather than associating friendships mainly with hurt, Bond had begun to associate them with healing. He was newly able to trust self and others in the present.
- Past: He realized that in the past he was no less effective than others would have been under the same circumstances (particularly considering that he had been a small child at the time of traumatization).
- Future: In the future he imagined himself as maintaining friendships, advocating for vulnerable others, and advocating for new participants attending upcoming TD groups. Bond projected that he would have trusting relationships/friendships in the future.

Bond's sense of identity had expanded to include the value of advocacy and associations to self as active, resourceful, potent, normal, and connected.

Indigo's Sense of Identity Shift: I Am Capable. Because the TD group included a few participants who had difficulty with verbal expression, I have chosen to use observations of troupe members and observations from my own interactions to describe the impact of TD on

Indigo. Indigo did not speak much. He exhibited perhaps the lowest level of cognitive functioning of the TD participants. In Year 1, I visited the group home in which he resided to evaluate the young men who were included in the Year 1 study. Each time I visited, Indigo would quietly locate himself directly outside the door of the room in which I was evaluating his housemates. Every time I opened the door he would be standing directly outside, expectantly making eye contact. He behaviorally expressed that he wanted not to be overlooked and to be included in TD. By Year 2, Indigo was included as a participant in the intervention.²⁰

In Year 2, as I evaluated him by taking HRV recordings three times at pretest and three times at posttest, Indigo was gruff. He always wanted to know when we would be finished. At our final meeting, I asked him if I might audio record an interview with him. He said, “No.” And then he gruffly commented, “I liked it. That’s all. I liked it.” (Indigo was the only treatment-group participant who did not consent to be recorded.) I took his gruffness during our meetings to mean that verbal communication caused feelings of self-consciousness. Despite his abruptness, troupe members observed growth throughout TD. Indigo appeared to surprise himself and others by taking risks that led to self-discovery and a new ability to navigate the wider world. He appeared to exceed others’ expectations of his capabilities.

Indigo’s Observed Behavior. Co-director #1 stated that Indigo took courageous risks, explaining that he “was all about physically engaging...all about it. He may not have always had

²⁰ Although it is not typical to use behavioral observation (versus transcribed verbal interviews with participants) in IPA qualitative analysis, I feel that it is necessary in this study because people with low verbal expressiveness are an important segment of the population that would be served by an intervention such as Trauma Drama, and (unlike TD) not all interventions are able to reach that population. In addition, the TD group-experience appeared to be enhanced by diversity within the group (including diversity of functioning and neurological typology). Indigo’s behavior was his “voice,” and so to include his voice, I must communicate his behavior. He fought to be included, and I honor and validate the essential importance of his contribution.

the words for how he felt, but he was always breaking out of his comfort zone and trying new things. He was always willing to be gently nudged in the direction of taking safe risks.”

Troupe member #7 observed Indigo’s growing engagement in TD. She witnessed somatic responses that she interpreted as evidence of tenacious and grounded presence in the face of exposure to difficult material. Troupe member #7 believed that Indigo’s investment of self in the TD process led to his divestment of old trauma.

Troupe member #7: He’s a kid that has a lot of trauma. ... With him, watching him develop from being really quiet [over the course of the TD intervention], sitting out in the corner, being on his phone—which I think is how he started—to being in the circle saying that he liked everything. Watching him was really interesting. His eyes got really big. He would be really shaky. He would be grinding his teeth. There were a lot of things that his body was doing to tell him that it was too much, that he was being pushed too hard. But emotionally, you could watch his body saying, ‘No, I’m not getting pushed too much.’ Again, you could watch his real self come out and his trauma kind of back off.

Troupe Member #7 also noticed the ways in which Indigo was action-potentiated to navigate the world, risking challenges and surprising all with his achievements. His sense of identity expanded as he became an employed person, because of his own demonstrated merit.

Troupe Member #7: So he has a job now. Originally they only hired him as a volunteer because they thought that he was so limited that he wasn’t going to be able to be an actual employee. Then he was able to outshine himself. He went beyond their expectations so they actually hired him as a part-time employee. Now he’s being really successful at work.

I was present at the graduation/last session of TD, and I participated in the group. After entering the room, I stood on the fringes of the activity, but Indigo and Tom (another participant who had described himself as very shy and who had not been particularly informative during my interview with him), gently ushered me into the opening circle (without prompting). Both young men positioned themselves to sit protectively on either side of me (which I interpreted as an invitation for me to identify with them as group members). The two young men eloquently communicated with me through inclusive behavior.

Finally, while I was interviewing Troupe Member #7 (who is a clinician at the group home where Indigo resided), Indigo returned home and broke into our interview. He proudly proclaimed to Troupe Member #7 that he had just been to the bank alone and had opened his own bank account.

I→MAJN.

- (I) Indigo identified with others through behavior, as demonstrated in ongoing group process and through having drawn me into the opening circle of the group graduation.
- (M) Indigo materialized to self, others, and the world as a self- and other-advocate.
- (A) Indigo was poised to engage in trusting relationships. He demonstrated his ability to act autonomously, despite verbal barriers. He demonstrated this through succeeding at work, opening his own bank account, and through his behavioral advocacy for me as he drew me into the group circle.
- (J) Indigo applied good judgment to letting down protections as he became involved in group process, the working world, and in communicating behaviorally with me.
- (N) Indigo navigated the group relationships, employment, and opening of a bank account.

Modified associations likely populated across time, yet because of barriers to verbal expression, Indigo was not able to report the information that would allow me to analyze how his associations to both past experience and potential future experience had changed. However, I was able to observe how he appeared in the present.

PAxT.

- Present: I observed that Indigo identified in the present as a connected person who was beginning to function in the mainstream of society.
- Past: Because of barriers to fluent verbal expression, Indigo was not able to communicate how past experience of self may have changed over the course of the intervention.
- Future: Because of barriers to fluent verbal expression, Indigo was not able to communicate how future projections regarding self may have changed over the course of the intervention, but he appeared to be experiencing a sense of optimism.

Exceptions

Although I encouraged positive, negative, and neutral feedback from participants and informants, most feedback regarding TD was positive in tone. Of the 27 treatment-group participants interviewed, 22 were enthusiastically positive about it. Many said that they wished that TD was not ending, and that they would like to “do it again.” They used positive words and expressions like “fun,” “great,” “loved it,” “liked it a lot,” “amazing,” “awesome,” “nice people,” “enjoyed it a lot,” “helpful,” and “funny” (as in amusing). Because negatives were isolated to one or two people, that feedback was not included in the above analysis. I have included that feedback below. Exceptions particularly prove the rule that identification with others within the group—and perhaps an affinity with the art form of drama—appeared to affect intervention potency.

Three of the participants did not act in the scenes because they said that they were shy and that acting on stage was not their “sort of thing.” Two of those three enjoyed the

intervention, bonded with the group, and enjoyed playing the games and brainstorming solutions to the scenes; they just did not act in the scenes. One of the three, a young man named Tom, said that he preferred sports and that he enjoyed playing some of the games, but that he was very shy and preferred to sit on the sidelines during scene work. Although Tom did not actively involve himself in the scene work, he taught the games that he liked to the groups with which he was involved at his residence. Another of the three, Ariel, said that she did not enjoy the intervention. Ariel attended TD in the first year that it was offered, at a time when the troupe lacked racial diversity. (In the first year the troupe was primarily white. By the second year the troupe was slightly more diverse in makeup.) Ariel, a young woman of color, attended only four of the 22 sessions of TD. To Ariel, TD felt “stupid” (although she recognized that other participants enjoyed and benefited from the intervention). She stated that she was interested in sports and music, not in drama. In addition, she did she did not identify with others in the intervention and felt that others could not relate to her.

Ariel, Participant: I feel like it’s better for a kid if they have somebody to relate to. You know what I’m trying to say? And with staff here, I don’t like when it’s someone who had this rich life and they come from a good family and they’ve never really been through hard times, because then they can’t give me advice on what I need to do.

Ariel felt that she had experienced a “tough life” in comparison with the life that she imagined troupe members and other kids attending TD had experienced. Although Ariel did not relate to other TD attendees, she did identify with and relate to her music therapist, Steve (who was not a TD troupe or staff member).

Ariel, Participant: I have a music therapist here [at the residence]. Um, his name is Steve (voice getting more animated). We work together. He plays the guitar and I sing. And we do recordings and stuff, so... It’s cool. ...I’ve always been the type of person where if I’m upset or if like there’s something going on, I just put on a song, and you know how you feel.

It seemed that because Ariel could not identify (and/or because others did not effectively communicate identification with her), she could not engage in the TD intervention.

One other young woman of color in Year 1 who had considered joining the TD treatment group changed her mind and elected to be a part of the comparison group that did not receive the treatment. She observed that in order to attend TD itself, she would need to walk down the street to the theatre in which TD was occurring, which was situated in an affluent white community. She said that she felt uncomfortable walking into that community. She believed that her life experience had likely been more difficult than the other attendees (whom she felt would be mostly white) and felt that problems addressed via TD were unlikely to be relevant to her. She anticipated that she and other members of the group would not be able to reciprocally identify, so she disconnected before initiating involvement in the intervention.

None of the participants in Year 2 expressed dislike for the intervention; neither did they express feelings of marginalization. In Year 2 the troupe increased in diversity and may have become more proficient at modifying engagement style and the environment to encourage inclusiveness and to foster relevance for kids who ran the risk of feeling marginalized. I specifically asked Year 2 participants whether they had any concerns about fitting in to the mix of youth from different residences. No one expressed persisting feelings of marginalization; although one young white woman, Skylar, said that she had bonded to only a few people in the group, rather than to the entire group. She felt that conversations with the clinicians in her residence were more substantive than the scene work, which she felt was insufficiently deep. Skylar also commented that she would have preferred each session of TD to be of a greater length and depth.

Discussion

Introduction and Overview of Notable Findings

The qualitative arm of the study distilled the essential phenomena experienced by TD participants over the course of the intervention. Participants described the experience of TD as a journey of Absence from self, others, and the world to greater Presence to self, others, and the world. They described TD's three-phase structure, which existed at various levels of the interpersonal and intrapersonal space, as consisting of a beginning stabilization and warm-up phase (Green Room) that focused on affect and relational management and skills, followed by a middle phase (On Stage) of working through challenges and reconsidering meanings of and solutions to those challenges, and an ending cool-down phase (Dressing Room) that began to integrate the shifts and helped participants to recalibrate the mind/body system according to the requirements of the next activity. Through identification with troupe members and staff members who were authentically present (via BSD) in the egalitarian field of play, participants materialized to self and began to allow themselves to be seen by others in the group. As participants permitted themselves greater Presence within the nonjudgmental TD culture, they risked spontaneous involvement in play, which often led to surprising discoveries about self, others, and the world. Discoveries altered trauma-fixated associations and defenses that had persisted since original traumatic injuries. Over time, associations related to self, others, and the world became increasingly flexible and diversified. As shifts occurred, participants crafted and calibrated reactions and interactions in order to better fit the unique circumstances at hand (rather than always defaulting to habitual crisis-oriented defenses). Participants described the surprises, risks, and discoveries of the MAP (through which they modified trauma-related associations), the I→MAJN process (through which they materialized and became flexibly active in navigating

both inner terrain, relationships, and the world around them), and the PAXT process (through which participants' changed associations populated across perceptions of past history, present time, and the projected future). Updated associations led to changes in sense of identity. An aspect of transformed sense of identity included the generative urge to advocate for others who had experienced complex trauma.

Stage I: Green Room Stabilization

As described by adolescent participants, the Phase I Green Room aspects of TD were essential prerequisites for the processes and outcomes of treatment. The Green Room stabilization stage established the folkways that created the environment of authenticity, trust, and safety, which thereby enabled participants' identification with troupe members and then with others in the group. Identification with admired others gave rise to a more positive self-view along the lines of "I see myself in you and you see yourself in me. I see you as okay, so I must be okay, too." Over time, folkways transmuted from external culture, skills, and processes to internal resources that could be tapped to self-regulate, think through, and persist in navigating challenges. An increased sense of self-efficacy created an excited willingness to confront fears and to test self with next-stage scene-work challenges that included fictionalized depictions of conflicts typical of participants' own experiences. First [MAPs](#) were revelatory and happened in the Stage I Green Room weeks of the intervention during warm-ups and games. Initial MAPs of identification challenged phobia of self, others, and the world. Identification with others was key to accessing both the subsequent [I→MAJN](#) process, which allowed participants to make additional interpersonal connections and to extrapolate and integrate TD learning into the navigation of other milieus (through data collection, strategic judgment, plans of action, and

follow-through) and the [PAxT](#) process, which enabled generalized re-visioning of self over past, present, and future time.

First Injuries First. TD appeared to challenge participants' inflexible defenses by intuitively seeking and locating participants' earliest and worst injuries. Then, in sequence, TD sought, found, and addressed each next injury up the developmental ladder. TD seemed to be a *smart intervention*. By that I mean that TD appeared to partner with the innate wisdom of the participant's system in order to dose challenges intuitively and in manageable chunks (Wickelgren, 1979).²¹ The literature calls the maintenance of arousal within tolerable range that allows for growth-oriented performance (Hebb, 1955; Yerkes & Dodson, 1908) the *window of tolerance* (Siegel, 1999). TD's folkways modulated arousal and structured a beginning, middle, and end to each chunked episode.

In contrast to trauma-focused cognitive behavioral therapies (TF CBTs), which explicitly name treatment targets in advance of addressing traumas (Rauch & Foa, 2006), TD appeared able to seek treatment targets organically and on an implicit level. In first addressing injuries of early attachment, it appeared capable of accessing preverbal emotional and feeling (somatic) memory. Acting teacher, director, and theorist Konstantin Stanislavsky (1863–1938) described emotional memory in the metaphor of drama as evocative of the pathway to conscious cognition:

[The purpose of the system of acting folkways and practices] is to arouse and involve the creative subconscious by indirect, conscious means. It is no accident that one of the fundamentals of our experiencing is expressed in the principle: subconscious creation through the actor's conscious psychotechnique. (The subconscious through the conscious, the involuntary through the voluntary). (Stanislavski & Benedetti, 1938, pp. 17–18)

²¹ By chunk, I refer to a representation of a subset of experience that is discrete enough to be reworked in a short period of time so that, in theory, related associations can be newly connected upward to free cortical neurons (adding new neural connections that may update fixated associations) and downward to constituent neurons that retain the old associations (Wickelgren, 1979).

TD diffused trauma memory by blending it with conscious fictional metaphor in the present.

Impaired-Caregiving System Repair: The MAP of Identification. Early failures of attunement and attachment impair self and other relationships across the life course and produce a sustained state of crisis (Ainsworth & Bowlby, 1991; Bowlby, 1988; D’Andrea et al., 2012; Ford & Courtois, 2020; Panksepp, 2005; Panksepp & Biven, 2012; Perry, 2009; Spinazzola et al., 2014; Sroufe et al., 2010; Teicher & Samson, 2016; van der Kolk et al., 2009, 2005). TD participants had experienced complex stress in the context of impaired caregiving systems. They appeared to believe that they themselves were alien, unlovable, and unknowable—a seeming internalization of their caregivers’ inability to attach. Two-thirds of TD participants had experienced caregiving-system-related trauma before the age of one year, and all participants had experienced multiple types of complex relational trauma in early childhood (see Table C1). Earliest (likely preverbal) injuries were ruptures of attachment. Because failures of attachment were the first injury, it made sense that identification (with a troupe member who could provide sufficiently secure attachment) would be the first MAP experienced by participants.

In identifying with troupe members, participants took the first steps away from identification with the trauma and toward materialization as themselves. Identification in the Green Room weeks re-engaged participants’ innate developmental potentials as they began negotiating (at least within the group) trust vs. mistrust (Erikson, 1950) and pursuit of secure attachments (Ainsworth & Bowlby, 1991; Bowlby, 1988). Green Room appeared to accomplish an initial rapprochement (Lyons-Ruth et al., 2016; Mahler, 1974), meaning that participants began to learn that there were aspects of the self and of others that were stable enough to be counted upon. That understanding provided the first building blocks toward trust and a sense of security within the group.

Therapeutic Alliance. Prior studies have indicated that therapeutic alliance is at least as important as is treatment modality to therapeutic outcome (see Norcross & Wampold, 2011, for a summary of meta-analyses). Treatments explicitly designed for complex trauma emphasize continual and active building of the therapeutic relationship (Courtois, 2021). That emphasis contrasts with evidence-based treatments for PTSD, like prolonged exposure (Rauch & Foa, 2006), in which treatment alliance—although considered important—is not as much of a focus.

Courtois notes that, when treating CPTSD, the relationship between client and therapist becomes “both the container and the catalyst for healing” (2021, p. 4). She observes that confusion can occur when clients play out past trauma-associated interpersonal dynamics in relationship with the therapist, but the preliminary data in this study indicate that TD’s improvisational theatre structure lent clarity to the sometimes confusing processing of relational injury.²² Rather than being confusing, the therapeutic alliances created in TD seemed to remain relatively clear of negative projections and negative interpersonal transferences. That may have been because, in TD, trauma-related projections were cast onto the fictional characters and scenes, while relationships with troupe members, staff members, and others in the group separated out as present-oriented and positive in tone (thus remaining unpolluted by negativism related to the past).

BSD and the Authentically Open Therapeutic Stance. The literature suggests that those treating complex trauma utilize a therapeutic stance that incorporates authentic presence

²² Therapeutic intervention with those who have suffered profound relational injury may be fraught with potential pitfalls, not the least of which are counter-transference reactions related to a therapist’s own traumatic past or vicarious traumatization accumulated from working with people who have been traumatized over the longer term (Courtois, 2021; Herman, 1992b). TD may offer some distinct protective advantages in the way it is structured, but careful attention to the study of relationship and codification of optimal relational characteristics within TD is warranted.

(Courtois, 2021; Herman, 1992b; Hopper et al., 2019). Stolorow (2013) has called therapeutic neutrality a myth and suggests that client and therapist engage in a more transparent relationship of intersubjective (bi-directional) understanding in the service of metabolizing traumatic experience. He maintains that traumatic experiences (although they can never be made good and cannot be erased) may find an intersubjective home within the resonance of mutual understanding and meaning making that bi-directionally amplifies between client and therapist (Stolorow, 2013). For people who have experienced complex trauma, neutral affect presented by others may be perceived not as neutral but as confusing and negative (Dalenberg, 2000; Matsakis, 1996, 1998). Therefore it does seem important to allow sufficient transparency for the client to clearly interpret a therapist's reactions in the present context, rather than presenting an inscrutable screen of blank affect on which the client may project and gain even more practice in transferring past traumas onto present relationships (Hopper et al., 2019; Jung, 1969; Racker, 1968).

The Role of Egalitarianism in BSD. The value of egalitarianism demanded equal personal investment, effort, authenticity, and spontaneity. It therefore produced the conditions for Behavioral Self Disclosure (BSD). Participants described being able to identify with troupe and staff members because they exhibited BSD. Through participants' comparison of troupe- and staff-members' stated values with the congruent ways in which they embodied those values in spontaneous interaction with others, participants accumulated sufficient evidence to develop trust. Troupe and staff members did not hide their spontaneous reactions and feelings during games and session activities, but neither did they disclose personal details of their lives. Their TD persona was different from the professional demeanor that they exhibited in the residences.

For participants, the BSD of troupe-members was a new model for intimacy that also demonstrated appropriate application of selective boundaries.

Participants were able to observe that the troupe members, whom they admired as accomplished and healthy people, could identify with and understand participants' struggles and feelings. They could see that troupe members were people who, at an earlier age, *could have* experienced troubles similar to their own (including having had an earlier trauma-fused identity), but *whether or not they actually did* was not important. (Thus it seemed useful that troupe members had not disclosed their personal histories, for knowledge of those details might have limited participants' ability to identify.) A deep sense of reciprocal understanding allowed participants to project an aspirational future self (aspirational avatar) onto the model of troupe members with whom they resonated (a type of positive transference). Participants could then imagine a path from present experience-of-self to development into someone like competent troupe- and staff-member models. Identification with aspirational avatars seemed to communicate that past and current circumstances could be episodes of life and that crises could end. When identified with trustworthy avatars, participants slowly began to risk materialization to self, others, and the world. Thus, the disidentification-injury sites of initial caregiver failures of attachment became the sites of identification (via initial healing MAPs of identification). Once identification occurred within the folkways and structures of Green Room stabilization, participants were ready to process other traumas.

The TD therapeutic stance—incorporating BSD—may be viewed as a radically open one, yet the logistics of TD's provision appear to have contributed features that contain that openness. For instance, participants were driven or walked from their respective residences to the TD group sessions, which were held at a community theatre in a nearby town. Participants, troupe

members, and staff members entered the group theatre space and suspended their residential roles of patient/client or clinical staff, etc., for the time period of the gathering. All were enrolled—on equal footing—as theatrical *players*. Thus, the egalitarian space for BSD existed within the temporal bounds of the TD session. In addition, TD was an adjunctive therapy for participants, all of whom were experiencing the Attachment, Regulation, and Competency (ARC) model of treatment in their residences. (ARC is theoretically congruent with TD; see Blaustein & Kinniburgh, 2019.) When participants, clinicians, and staff members returned to the residences, the congruent but more formally circumscribed ARC boundaries and residential roles were reasserted. Thus, the BSD of TD was contained within an ARC frame. TD appeared able to employ BSD safely precisely because it was an enrichment that built upon and was bookended between the ARC-structured standard care of the residences.

The openness characteristic of BSD emerged from the professional improvisational-theatre form and its cultural folkways that were fused into the CPTSD best-practice guidelines (Cloitre et al., 2012; ISTSS, 2018). Improvisational theatre in the United States has roots in the secular humanism of the community theatre of the Hull House settlement house. Hull House, in operation from 1889–2012, was one of the drivers of the social progressive movement that occurred in the decades around the turn of the twentieth century (Hamington, 2019). Hull House founder Jane Addams²³ (1860–1935) considered its theatre and all its activities (Goodson, 2015; Gross, 2009) to be “humble experiments” from which facilitators and participants learned and developed in community (Addams, 1910). In conceptualizing activities as experiments, Addams meant to convey that participation implied a type of scientific inquiry that relied on flexible

²³ Addams was the first woman to win a Nobel Prize for her life’s work (Haberman, 1972; Nobel Media AB, [n.d.]). The profession of social work in the United States had its inception at Hull House (Hamington, 2019).

creativity to produce and to test hypotheses within the community. Findings led to rapidly applied adaptations and further testing across intrapersonal, interpersonal, and social milieus (Gross, 2009). According to Addams,

The only thing to be dreaded in the Settlement is that it loses its flexibility, its power of quick adaptation, its readiness to change its methods as its environment may demand. It must be open to conviction and must have a deep and abiding sense of tolerance. It must be hospitable and ready for experiment. It should demand from its residents a scientific patience in the accumulation of facts and the steady holding of their sympathies as one of the best instruments for that accumulation. It must be grounded in a philosophy whose foundation is on the solidarity of the human race. (1910, p. 122)

Schön (1983) has referred to iterative inductive/deductive experimental processes of the type used by Hull House as *reflection-in-action*. In TD's reflection-in-action (which was constituted from the [MAP](#), [I→MAJN](#), and [PAxT](#) processes in circular iteration), members of the group interrogated challenges presented. They formulated hypotheses and gathered data as they engaged in games and improvisations. They analyzed observations, adjusted actions, and, based on the results of adjusted actions, reappraised thinking. In an iterative manner, participants continued to receive feedback, reinterrogate, and readjust. They analyzed the implications of their findings on micro and macro levels. They acquired an increased expertise in the practical art and science of each activity itself and developed an evolving expertise in the skillful use of reflection-in-action as a navigational tool.

Egalitarian reflection-in-action is intrinsic to theatre and relies on player openness as a precondition (Spolin, 1963; Stanislavski, 1934). TD, through its use of egalitarian BSD in the improvisational theatre model, created the conditions for reflection-in-action. In his social theatre model of Theatre of the Oppressed, Augusto Boal (1931–2009) also used egalitarian reflection-in-action within community. Boal's model did not privilege actor over audience-member feedback when working and reworking the experiment of the improvisation (Boal, 1979;

Rodríguez et al., 2006). Similarly, neither at the Hull House Theatre nor in TD was there a privileged class in shaping the experiments of the improvisation.²⁴ TD engaged performers and audience equally. Hull House, Theatre of the Oppressed, and the improvisational theatre of TD are exemplars of the way in which theatre has been used across millennia and across cultures to reintegrate traumatized people into society (Doerries, 2016; Feniger-Schaal & Orkibi, 2020; Goldstein & Lerner, 2018; Landy, 2010; Orkibi et al., 2017; Rodríguez et al., 2006; Sajnani & Johnson, 2014; Shay, 1995). In each case, reflection-in-action was used to enable individuals and groups to progress past traumas and ills and to create solutions and change through a combination of a roughly scientific process in conjunction with play: creative hypotheses were generated and unleashed through cooperative play.

MAP Process in Improvisational Warm-Ups and Games. Folkways of structure, culture, and self-regulation provided containment for TD's processes. The three-phase beginning, middle, and ending of every episode provided for a kind of manageable chunking of experience (and an [expectation of a solid finish line](#)), which reduced the fear of being flooded. Chunking provided the expectation that episodes would not overwhelm and would not persist indefinitely, but instead would be limited to a digestible piece of experience. The energetic, fluid, and freeing structure of play operated within the three-phase frame. Play naturally expanded and contracted to manage arousal, fun, spontaneity, risk, and discovery safely. The phase-framed field of play provided the conditions for the dynamic change space of the MAP. Van Gennepe

²⁴ Both Viola Spolin, who originated improvisational theatre work at Hull House (Spolin, 1963), and Augusto Boal (Boal, 1979), who founded Theatre of the Oppressed, were trained in New York City in the technique of Konstantin Stanislavski. Stanislavski had researched, distilled, and codified the handed-down folkways and skills from Western cultures that constituted best practices in producing authentic, in-the-moment acting (Stanislavski, 1934; Stanislavski & Benedetti, 1938). Spolin learned theatre games from her mentor at Hull House, Neva Boyd, who had run a children's program utilizing folk games collected (by Boyd) from around the world. Through the games, Boyd and Spolin helped children to develop creativity, adaptability, and flexibility and to learn the social and emotional skills needed to navigate the larger world (Spolin, 1963).

(1960) has termed this type of space *liminal*. When participants stepped beyond the threshold of what had been known to them and suspended prior definitions of self in favor of becoming available to what was dynamically present, they were in a liminal space of creativity and possibility. MAPs occurred in a liminal space. Transformational work in the liminal space has been described as constituting a ritualistic rite of passage (Turner, 1995; van Gennep, 1960).

Loss of Self-Consciousness through Irresistible Play. According to Boyd (2018), the anthropological record indicates that for tens of millions of years play has served to help modern-day humans and their ancestors capitalize on, practice, and increase flexibility and rapid response to challenges. Play is compulsively pleasurable, irresistible, and self-reinforcing (Boyd, 2018). Participants described the warm-ups and games of TD as hard to resist because they were “so much fun.” After initial identification with troupe members had occurred, participants permitted themselves the pleasure of deeper engagement in TD’s theatre games. In her book on teaching improvisational theatre technique, Spolin (1963) documented the mechanism through which the fun of improvisational games helped players to lose self-consciousness. Spolin discussed the way players shifted focus from the self and onto point-of-focus on the goals of the game.

The energy released to solve the problem, being restricted by the rules of the game and bound by group decision, creates an explosion—or spontaneity—and as is the nature of explosions, everything is torn apart, rearranged, unblocked. The ear alerts the feet, and the eye throws the ball. (Spolin, 1963, p. 6)

Spolin’s observations support TD’s findings, namely that orientation to the task at hand alleviated self-consciousness and displaced unproductive habits of defense in favor of trying novel actions that flexed to the goal of the game. Pursuit of the point-of-focus transported participants into, through, and out of the liminal change-space in which the MAPs produced surprising discoveries and generated diversified response repertoires, which became available for

subsequent use in everyday life. Pursuit of point-of-focus exposed the innate characteristics and strengths that were intrinsically available within participants but had previously been hidden. Once participants began to materialize to self, they became visible to one another. Participants rapidly grasped newly revealed strengths (e.g., the ability to inject humor, perspective-taking, leading, following, modulating group emotion, etc.), and they began to support one another spontaneously. They “[had \[one another’s\] back\[s\]](#)” when assistance was required. Addams (1910) observed the same growth in mutual support and group identity during the Hull House communal experiments, in which “neighbors [who had been] held apart by differences of race and language . . . [grew] into a sense of relationship and mutual interests [that illuminated] the needs of their neighborhood as a whole,” (p. 123).

Blends and Compressions. The discovery of potentially safe identification with others represented a new synthesis for participants, who previously viewed attachment as always unsafe. Subsequent discoveries also synthesized TD-acquired data into old concepts (such as concepts regarding the safety of engaging in spontaneity or allowing the true self to be exposed to view). In the TD study, initial syntheses occurred in the MAPs, and new discoveries constantly updated earlier MAPs. The phenomenon of restabilizing old concepts by combining them with new material has been described in the literature on linguistics as *conceptual blending* (Fauconnier & Turner, 2001). Cook (2009), from the cognitive neuroscience of acting literature, considers conceptual blending as native to theatre and describes the way in which combining revises original definitions of concepts by producing newly synthesized “emergent ideas” that result in an enriched experience. She describes the “*compressions* that occur in theatre [as] efficiently convey[ing] innumerable layers of cognitive meaning and varying depths of emotional feeling between the spaces of combined concepts” (Cook, 2009, p. 154). Blair (2009),

also from the cognitive neuroscience of acting literature, observes that blends help to compress vast and layered experiences into packets of a manageable scale that can make “experience comprehensible and, thereby, effective action possible” (p. 94). Conceptual blending theory as described in the linguistic and cognitive neuroscience of acting literature is clearly parallel to the essential processes that I have labeled [MAP](#), [I→MAJN](#), and [PAxT](#), which all deliver dense and nuanced packets of transformational information to the organism.

Relation of Emotional Regulation and Executive Function to Disturbances of Self

Organization Cluster. In the warm-ups and games of Green Room, participants utilized two distinctly different routes to expand emotional regulation (ER) capacities (one explicit and one implicit). First, they *explicitly* practiced particular emotional regulation skills (e.g., checking in with and assessing their own level of arousal during activities); second, they *implicitly* practiced emotional regulation (e.g., through utilizing coordinated executive function). The literature suggests that enhancements in emotion regulation are largely underpinned by improvements in executive function (see Zelazo & Cunningham, 2007, for a thorough discussion). Therefore, TD’s propensity to exercise coordinated executive function through its Green-Room-initiated processes may have contributed to emotion regulation at least as much as explicitly taught emotional regulation skills. The [MAP](#), [I→MAJN](#), and [PAxT](#) processes that I have outlined would have exercised computational aspects of executive function, as described by Zelazo and Cunningham (2007):

To perform [problem solving], one must first construct a representation of the problem space, which includes (1) one’s current state, (2) one’s goal state, and (3) options for reducing the discrepancy between (1) and (2) A key part of the problem consists in identifying the relevant dimensions. After representing the problem, one must choose a promising plan. After selecting a plan, one must (1) keep the plan in mind long enough for it to guide one’s thought or action, and (2) actually carry out the prescribed behavior. Keeping a plan in mind to control behavior is referred to as intending; translating a plan into action is rule use. Finally, after acting, one must evaluate the consequences of this

action to determine whether one's goal state has been attained. This phase includes both error detection and, if necessary, error correction. (p. 137)

In the service of pursuing point-of-focus in Green Room warm-ups and games, participants practiced the above-mentioned computational problem-solving (a type of reflection-in-action that utilizes blends and compressions) through beginning MAPs (that overturned trauma-bound rules and rendered new associative flexibility). Participants then extrapolated and applied discoveries to continuing activities within the group through I→MAJN programs of action and to updating old rules and associations across time through PAXT.

The accomplishing of computational problem solving while engaged in the TD processes could be considered an indication of coordinated connectivity among the brain regions necessary for the well-functioning of the executive network (at least during the computation), which in turn would indicate practice of emotional-regulation capacities during the computation (Zelazo & Cunningham, 2007). I will discuss this phenomenon more thoroughly in the On Stage section below, but I want to make the point here that there appear to be both explicit (directly taught ER skills via [specific skills](#) specified in the TD manual) and implicit ER skills (indirectly acquired through exercise of executive function by, for instance, [reflection-in-action computations](#)) that take root in the Green Room stage of the intervention. Emotion regulation established during Green Room appeared to be generated through practice of folkways *and also* through the processes of MAPs, I→MAJN, and PAXT (which iterated neural-coordinated reflection-in-action).

In a recent network analysis of a population similar to that of this study (122 Austrian adolescents from 10 to 18 years of age across six foster care settings), Haselgruber et al. (2021)²⁵ found that emotion regulation was a central symptom binding (mediating) the Disturbances of Self Organization (DSO) cluster of the CPTSD phenomenon. Based on that finding, Haselgruber theorized that improvements in emotion regulation (the most densely associated symptom in the DSO cluster) would begin to dismantle the DSO cluster and reverse severity of symptoms (including depression, which was shown to be highly associated with DSO). In the TD study, participants' experiential data very clearly indicated that TD did improve the DSO cluster (negative view of self, disrupted interpersonal relationships, and emotional regulation). Further, the quantitative portion of the TD study indicated that [symptoms of depression decreased in the treatment group](#) relative to the [comparison group](#). Consequently, the results of TD study fit the theory of Haselgruber et al. that improvements in emotional regulation (which in TD may be facilitated via direct learning of self-regulatory skills and through practicing coordinated executive function) help dismantle the DSO cluster of complex trauma pathologies and associated depression.

Experientially Described Essences as Related to Recognized Variables. This pilot study seeks a parsimonious matrix of relevant variables with which to streamline future cross-setting research into TD. In light of that goal and because of recent demands in the field for precise patient-centered assessment and treatment (Insel, 2014; Karatzias & Cloitre, 2019; Sharp et al., 2016), it makes sense to highlight the way in which essential things that mattered to TD

²⁵ The International Trauma Questionnaire [ITQ] was used to collect data in the Haselgruber et al. (2021) study. Haselgruber's findings are descriptive of the TD participants' self-descriptions. Therefore the ITQ instrument may be an appropriate measurement tool for future studies, especially those studies that aggregate data across international treatment settings.

participants matched with constructs commonly understood and measured by researchers (in order that others may use the findings of this qualitative research when deciding which standardized instruments are the best fit for future study of TD and interventions like it). The participant-perceived symptoms that improved through TD roughly matched the item and symptom-clusters of the ICD 11 diagnosis of CPTSD. As stated in the Review of the Literature in Chapter 1, CPTSD was not an official diagnosis at the time that data were collected for this study; therefore, the quantitative portion of the study did not use a CPTSD assessment instrument.²⁶ To recap: The CPTSD diagnosis has two factors, PTSD and Disturbances of Self Organization (DSO), and each factor organizes three symptom clusters, with PTSD encompassing Re-experiencing, Avoidance, and Sense of Threat, and DSO encompassing Emotion Regulation, Negative Self-Concept, and Interpersonal Problems (Cloitre, 2020). In the qualitative arm of the TD study, participants initially reported improvements in Disturbances of Self Organization (DSO-cluster constituents) during Green Room weeks. In the quantitative arm they reported [improvement in PTSD symptoms](#).

Is Phase I Really Necessary? The Surprising Importance of Green Room.

There's trust exercises that go into it—that's what really breaks the ice. Ice breakers, I think for everyone [are] important, but especially for kids and young adults, and adolescents and stuff who've been through hell and back. They're simple, they're needed, and especially when you're trying to act out tough situations, it's nice to at least have an idea of the people around you and stuff.

—Bond, Participant

Perhaps the biggest surprise of the study was the importance ascribed by participants to Green Room (Phase I stabilization). The clarity of that qualitative finding is particularly salient

²⁶ The International Trauma Questionnaire is a short self-assessment form and has been demonstrated to have international applicability in over 40 studies in 15 countries (Cloitre, 2021). The ITQ for children and adolescents is free and can be found at: https://af22a459-c039-4ba8-9a14-a6426addc3b6.filesusr.com/ugd/be25b4_c0bfe702bcf54a71a3b6c6bb625998c2.pdf.

in light of the current debate in the literature about whether Phase I stabilization is needed and whether it should continue to be part of clinical best-practice guidelines for complex trauma. The rationale behind questioning the necessity of Phase I is the contention that there is not enough systematically collected clinical-trial evidence to prove that Phase I is necessary, and therefore it is potentially more beneficial to expose complex-trauma affected people right away to direct reminders and cognitive processing of their specific traumas (in an effort to reduce symptoms immediately), rather than investing considerable time and energy in unproven initial stabilization (de Jongh & Broeke, 2014; Ehring et al., 2014; Resick et al., 2012). In fact, there is little clinical-trial literature on complex trauma treatments because until 2018 there was not an officially legitimized CPTSD diagnosis around which to organize a shared research agenda (Karatzias & Cloitre, 2019). The lack of clinical trial evidence does not prove, however, that phased treatment is not needed. Although there is not yet an accumulated body of clinical-trial research on phase-based therapies (also referred to as component-based therapies) for complex trauma (research on adolescents is particularly scant; Haselgruber et al., 2021; ISTSS, 2018), there is a long-standing clinical literature that thoroughly and consistently describes the necessity of component-based treatment for people who exhibit complex-trauma sequelae (Briere et al., 2008; Briere & Spinazzola, 2005; Cloitre et al., 2012; D'Andrea et al., 2012; Ford & Courtois, 2020; Herman, 1992b; Hopper et al., 2019; Janet, 1925/1976; van der Hart et al., 1989; van der Kolk et al., 2009, 2005, 2019).²⁷ Participants in the current study clearly indicated that Phase I had been a precondition for their willingness to enter into and for their ability to navigate the more explicit triggers of Phase II. In fact, all phases may be considered a continuation and enrichment of

²⁷ In preparation for a white paper on best practices, a 2011 survey of 50 expert clinicians conducted by the International Society of Traumatic Stress found that 84% recommended phased treatment for people who had experienced complex trauma (Cloitre et al., 2011).

implicit and explicit learning that occurred in Phase I. The TD study does not support the contention that Phase I is superfluous; rather it supports the contention that the stabilization phase is a necessity.

Green Room diversified life epistemology for TD participants. It expanded how they knew what they knew about self, others, and the world. They reported no longer relying solely on reflexive and inflexible interpretations dictated by past traumatic experience. Instead, they could collect and analyze data in the present, make a plan, and see it through. Green Room appeared to alter the inflexible schemas (cognitive frames) through which participants had organized their view of life. Repair during adolescence of early maladaptive schemas might prevent severe CPTSD symptoms and depression symptoms in later life. In a study of older adults (>65) with CPTSD who had been exposed in childhood to complex trauma, Vasilopoulou et al. (2020) showed that early maladaptive schemas (Hoffart et al., 2005), particularly schemas of disconnection and autonomy (including beliefs that others were abandoning, emotionally unresponsive, hurtful, or manipulative) mediated the relationship between childhood trauma and CPTSD symptom severity in older adulthood. TD's Green Room weeks appeared to disrupt disconnection and autonomy schemas through MAP-produced [discoveries that included identification and connection with safe, supportive, trustworthy others](#). Consequently, the findings and theory of Vasilopoulou et al. (2020), also support the importance of Phase I stabilization, since Phase I appeared to overturn previously inflexible early maladaptive schemas (which Vasilopoulou et al., 2020, suggest may be a way to prevent CPTSD symptom severity and accompanying depression across the lifespan).

TD is fundamentally different from trauma-focused cognitive behavioral therapies (TF-CBTs) in the way that it approaches trauma memory (including its approach to addressing Phase

II exposures to trauma reminders). In contrast even with phased TF-CBTs, which directly target specific disturbing experiences of the individual person in Phase II, TD uses fictional improvisational stems to process trauma through metaphor. As mentioned previously, TD appears to possess a natural ability to seek and find the next injury in the developmental sequence and implicitly to tailor and titrate processing to individual needs and readiness. The naturalistic path, while seemingly indirect, may actually be more direct than the seemingly direct path of cognitive therapies (Zang et al., 2019) that depend on explicit memory to pick representative worst experiences in advance of exposure and which may be prone to errors caused by the limitations of identifying that which is conscious and literally remembered. By processing through representational fictional metaphor, TD may avoid arousal spikes of alarm that would trigger habitual defensiveness (McEwen & Lasley, 2004; Sapolsky, 2004a). In addition, and as mentioned above, TD seemed able to seek and find first, worst, preverbal complex traumas that CBT would not be able to locate. When in the future TD is compared in head-to-head clinical trials with other interventions (e.g., STAIR [Cloitre et al., 2017], with CPT [Wachen et al., 2019], and/or with other TF-CBTs [Olf et al., 2019]), it will be interesting to see how TD differentiates itself, especially because TD appears to possess a naturalistic and fundamentally different manner of identifying and metaphorically working on treatment targets (among other fundamental differences, such as TD's therapeutic stance of BSD).

Stage II, On Stage

Participants moved into the On Stage weeks (weeks 7–12) following sufficient integration of the folkways and the processes of MAP, I→MAJN, and PAxT. As mentioned previously, On Stage improvisational topics were based on common challenges that participants had faced, such as drug abuse, depression, unplanned pregnancy, and also on such common but difficult to resolve experiences as oppression, betrayal, and neglect by institutional and caregiving systems that would normally be expected to provide safety. Compressions and blends of ideas and feelings generated by the scene work enriched as the group drew together cooperatively to use feeling in conjunction with cognition when interrogating problems presented in the scenes and deciding on solutions to play out (which may be considered group exercise of I → MAJN and reflection-in-action and a practice of coordinated executive function). Damasio (2000) has proposed that optimal decision-making involves a combination of feeling and cognition (i.e., emotional regulation and executive function are intertwined and are both dependent upon networked communication between cognition and feeling [the network being both cortical and sub-cortical, including the peripheral nervous system]). Van der Kolk suggests that cognitive therapies, which use cortical reasoning to locate and explicitly name the trauma treatment targets, may not work for complex-trauma exposed people, since key trauma memories are located below the cortex and encoded in physical feelings and emotions rather than in words and, as a result, cannot be accessed directly through the cortex and verbal language. People coping with complex trauma “need to activate their medial prefrontal cortex, insula and anterior cingulate by learning to tolerate orienting and focusing their attention on their internal experience, while interweaving and conjoining cognitive, emotional and sensorimotor elements of their traumatic experience” (van der Kolk, 2010, p. 64). Van der Kolk maintains that

expressive arts and projective treatment techniques work to integrate connectivity of thought and feeling because they exercise activation of the medial prefrontal cortex, which is “responsible for *interoception* or self-awareness” (Hopper et al., 2019, p. 211). The qualitative results of this study support these contentions, since study participants described TD’s implicit ability to reach old trauma feelings, emotions, and thought and to enable tolerable reconsideration and elaboration of those memories and related associations via the metaphor of the improvisation.

Damasio’s somatic marker hypothesis (Bechara et al., 2000; Damasio, 2000) lends further dimension to van der Kolk’s contention, and it is descriptive of what appears to be occurring when TD identifies implicit treatment targets via a feeling path (utilizing relationship, games, and metaphor to seek and find treatment targets). Damasio proposes that feelings triggered by the environment activate the ventromedial prefrontal cortex to rapidly scan somatic memory for past similar feelings (located in lower and mid-brain regions that are available for especially rapid response). After similar feeling-memory²⁸ is located, previously established cognitive associations and complete programs of action related to the somatic memory are activated in an “as-if loop” (Bechara et al., 2000), which helps to inform and to expedite rapid decision-making on complex current situations (that would normally require longer deliberation, since cognitive reasoning requires more time). In other words, emotional reminders of past experience trigger cross-referencing of feeling memory banks and activate emotionally tagged complexes of memories and associated cognitions. The “as-if” loop is a physiological short-cut that instantly reactivates past complex associations and programs-of-thought for rapid

²⁸ Bechara et al. (2000) and Damasio (2000) say that the feeling sets have a *dispositional* quality, and that the organism searches and finds past somatic experiences that have matching dispositional quality. It would seem that the improvisational stems of TD evoke dispositional feeling sets that are capable of locating and pulling up those dispositional feeling sets of participants that need therapeutic attention.

application to current circumstances. For instance, in TD, watching a scene about domestic abuse might open an as-if loop feeling bridge to memories of having been abused, which in turn would open access to associations, cognitions, and programs of action that were created at the time of the abuse. Then, through scene work and playing alternative behaviors, witnessing the processes of others, and through mentalizing²⁹ one's own and others' experiences in the network of the group, a new associative bank of information can accrue that provides a diversified set of options beyond habitual defenses and modifies the nature of the original trauma memory and associations, cognitions, and programs of action. Future as-if loop searches on feelings related to abuse would (in theory) bring up the original memory as blended and compressed with the TD exercise of that memory and its TD-elaborated associations. TD appeared to make inroads in targeting, diffusing, and rendering new flexibility to trauma-encoded as-if loops.

It may be precisely drama's ability to access feeling below the level of cognition that opens trauma memories for processing and updating. A series of recent papers and studies have described lack of activation in the default mode network of the brain (as revealed through neuroimaging) in conjunction with a lack of sense-of-self when at rest in survivors of childhood trauma (as opposed to healthy controls who exhibit the opposite patterns and who do have a sense-of-self at rest; Lanius et al., 2020; Terpou et al., 2019, 2020; Thome et al., 2019). In the recent neuroimaging studies, the default mode network (which includes connections among the periaqueductal gray [PAG; a mid-brain structure that relays and coordinates responses of the sympathetic and parasympathetic branches of the nervous system; Iverson et al., 2000], the precuneus in the midbrain, and the mPFC in the forebrain) showed connected activation via the

²⁹ To mentalize is to “read’ one’s own and others’ mental states, including thoughts and feelings” (Bateman & Fonagy, 2012, p. 1).

PAG during subliminal reminders of participants' own traumas—reminders so brief that messages were below the level of conscious discernment (Lanius et al., 2020; Terpou et al., 2020). In other words, the traumatized participants most experienced a sense-of-self in the presence of reminders of their own unresolved traumatic experience, even when those reminders were solely subliminal.

Childhood-complex-stress survivors often express a sense of absence at rest, as if at some point in the past they “had abandoned self at a cellular level” (K. Alessi, personal conversation, May 20, 2016). It may be that the archetypical scenarios and other elements built into the TD intervention come close enough to TD participants' own traumas to subliminally activate the default mode network including the mPFC, which in turn activates the sense-of-self that is available through subconscious identification with the trauma. (This would be TD's innate “seek and find” that activates the TD participant to identify with the scenario as somehow relating to self). While the feeling window is open, during which the person is experiencing a sense-of-self, TD appears to leverage the blends and cognitions that occur in TD's relational field of play to and change the nature of trauma memory through updating of associations. Dense and rich compressions and blends of information, thought processes, and past, present, and future-projected experience occur in TD's metaphorical play space. This type of performance “modulates intervals of sound and silence, the increasing and decreasing density of events temporally, spatially, emotionally, and kinesthetically. These elements are woven into a complicated yet apparently inevitable (experienced as simple) pattern” (Schechner & Turner, 1985, p. 11). Compressions and blends seem to handle efficiently the delivery of dense packets of multi-level information in an easily metabolized, brief window of time by maximizing neural connectivity. In an experiment on the complexity of information that can be synthesized in a

short period of time, van Petten found that dense metaphoric sentences were processed no more slowly than simple, literal sentences and that “processing the metaphoric sentences required more of the brain to participate, but this increase in firing did not increase the time spent to process the sentence” (cited in Cook, 2010, p. 3). These findings imply that the greater the density of compressions and blends, the greater the exercise of executive function neural connectivity (which, theoretically, underpins emotional regulation), and the greater the practice of the medial-prefrontal-cortex integration of feeling and cognition. The density and complexity of the blends and compressions of information and feeling that occur within TD may stimulate and practice holistic connectivity within each participant, allowing them to become more materialized in Presence.

That Old Familiar Feeling and Diversifying the Reactions It Elicits. Participants discussed the way in which the metaphor of the drama first elicited their own inflexible defenses (i.e., existing as-if loop programs of action under complex challenge) when they were called upon to solve the problems presented by scene work. Participants gravitated to either aggression or to dissociation. However, once they observed or played out [their habitual reactions within the group, they then automatically moved on](#) to experiment with new responses. They reported conceiving of and interacting in a present-focused manner that was congruent with newly emerging values. This implied increased flexibility in and exercise of executive function and integrated, coordinated brain function in successful solving of problems. Those who had previously gravitated toward a paralyzing reflexive dissociation found themselves able to engage in present-oriented action. Those who had previously gravitated toward reflexive aggression reported engaging in more thoughtfully attuned interactions. Once new behaviors were practiced

within the group, participants were able to transfer acquired learning of more flexible, pro-social, and adaptive behaviors to the environment [outside of the intervention](#).

TD also delivered a wealth of experiential wisdom that would generally have been passed down through a well-functioning caregiving system. Group folk wisdom loaded into experiential databanks was tagged with emotional salience related to the scene work, making it more available for future as-if loop retrievals (Bechara et al., 2000; Damasio, 2000). Expansion of available somatic markers seemed to diversify and weaken more explicit flashbacks because of the expanded dataset available for quick cross-reference with newly encountered experiences in the service of crafting and using the most effective responses.

Dissociation via Aggression and Checking-Out. As mentioned, participants reported using two primary inflexible defense strategies at TD's outset, which were [aggression](#) and [checked-out](#) dissociation (by "checked-out" I mean freezing or fleeing in the mind). This study considers both strategies as types of dissociation, since they are reflexive crisis-oriented responses that confer absence from the totality of present experience in favor of mounting a rapid survival-oriented defense. From a physiological point of view, and in theory, TD participants' original default defenses (at the beginning of the study) of aggression and/or fleeing through checking out would have occurred because their chronically stressed physiologies had shifted out of homeostatic balance (Cannon, 1929; Selye, 1956) into allostatic overload (Karatsoreos & McEwen, 2013; Sapolsky, 1996; Sterling & Eyer, 1988). A perpetuating crisis state would weaken (from disuse) connectivity between higher and lower brain functions (e.g., atrophy of synaptic connectivity that coordinated action between thinking and feeling) in favor of rapidly deployed under- or over-modulation of defenses (Cloitre et al., 2012; Damasio & Damasio, 2016; Hopper et al., 2019; Kandel, 2009; LeDoux, 1998, 2000; van der Kolk, 2015; Young et al.,

2010). In network-analysis studies by Haselgruber et al. (2021) and by Knefel (2016), dissociation mediated the PTSD symptom cluster of the CPTSD diagnosis. Therefore, in theory, decreased use of dissociation would weaken the cluster of PTSD symptoms. TD's qualitative data indicates that the intervention weakened the habitual dissociative defenses of aggression and checking out. (Kleindienst et al., 2016, have suggested that dissociation interferes with treatment success, therefore decreases in dissociation may be expected to increase treatment effectiveness.)

While TD participants usually had a dominant style with regard to dissociation, they likely alternated between aggression and checking out. Lanius, Vermetten, and Pain (2010), in considering the literature of physiology and brain-region connectivity as related to emotional regulation and posttraumatic fear, observe that traumatized people are likely to alternate between two primary defenses. The first defense (which corresponds to checked-out dissociation) favors prefrontal cortex over-modulation of the lower and mid-brain regions, effectively numbing feeling and emotion. Alternately, the second defense (which corresponds to over-arousal and aggression) favors under-modulation of feeling and emotional reactions generated by lower areas of the brain (see Lanius et al., 2010, for a through explanation).

Dissociative absence (through habitual employment of aggression and/or checking out) relative to self, others, and the world *was* modulated by Green Room (in that people became present through identification and trust building with others in the group). Then in On Stage, the dissociative defenses of aggression and checking out were further confronted through the improvisational scene work. The default mode network of the brain may have been activated by subliminal triggers in the environment that initially activated a degree of presence and a sense-of-self that became malleable in the hyper-plastic field of play. Improvisational play appeared to provide practice in connecting feeling, emotion, and intellectual circuits to bi-directionally

remain online and communicative during arousal, therefore—in theory—teaching the body to return to a more homeostatic balance (Panksepp & Biven, 2012; Porges, 2007). Play has been considered an essential component of social development. Studies of violent, anti-social men have found that play behavior was almost absent over the lifespan (Brown & Lomax, 1969). In the safe play space of TD there is room to think and feel at the same time. When participants are allowed to experiment with both old habits and new behaviors, they learn the “how-tos” of pro-social navigation in the game of life (Seervai, 2016) and gain insight into the benefits of building positive relationships. Participants then transfer new [strategies to life outside of the group space](#).

Above I have discussed the way in which TD leverages relationship, goal-oriented play, and metaphor to implicitly locate the areas of feeling that became treatment targets. Those feelings (somatic markers) access trauma memory, associations, and programs of action. The folkways of the group provide the stability for the processes of the MAP, I→MAJN, and PAXT to automatically engage in coordinating executive function and emotion regulation. Consequently, work in the play space gives rise to discoveries, new associations, and new programs of action. Green Room weakened the DSO item of CPTSD. On Stage weakened the PTSD items of CPTSD. Taken together, it would seem that TD weakened and began to undo the defensive byproducts of CPTSD.

HF HRV and Executive Function

Here I would like to mention the theoretical connections among these qualitative findings, the electrophysiological measure (high-frequency range of heart rate variability [HF HRV]), and the executive function psychological questionnaires that were used to triangulate findings in the current mixed-method study. As mentioned, executive function theory implies that integrated executive function underpins emotional regulation and systemic flexibility,

balance, and connective integration (Zelazo & Cunningham, 2007). It has been suggested that the medial prefrontal cortex is a central integration terminal that manages peripheral responses to stress, such as heart rate, blood pressure, and cortisol levels (Bechara et al., 2000; Bremner, 2010; van der Kolk, 2010). Specifically, the ventral region of the medial prefrontal cortex regulates the autonomic functions, including heart rate and blood pressure, and the dorsal region plays “a central role in the top-down monitoring of cognitive functioning, such as predicting rewards, making decisions and empathy” (Kandel, 2012, p. 374).

In a meta-analysis of “studies relating cerebral blood flow to HRV,” Thayer and Lane (2012) concluded that there was support “for the idea that HRV may index the degree to which a [medial prefrontal cortex] mPFC-guided core integration system is integrated with the brainstem nuclei that directly regulate the heart” (p. 754). Thayer and Lane suggested that HRV might provide “a potential marker of stress and health and provides evidence for the neural correlates that serve to underpin the relationship” (p. 754), and that improvements in executive function are reflected in increased HF HRV. Numerous studies (see Garland et al., 2010, for a review) have indicated that HF HRV is an indicator of resilient stress-coping capabilities and of emotion regulation and that it correlates with blood flow in the prefrontal cortex. HF HRV was therefore the physiological variable that I chose to measure in order to see whether flexibility and integration might be indicated by pre- to posttest HF HRV.

HF HRV indicates the general power of the rapidly calming vagal brake (Porges, 2007). Although Thayer and Layne suggested that increased resting power of HF HRV indicated better executive function and greater mental wellness, I was not convinced that increased power in the

propensity to lower arousal would equate in greater wellness³⁰ (or decrease in symptoms) for the subset of participants who already seemed paralyzed via checked-out dissociative defenses. It did not seem that greater ability to shut down would improve neural connectivity in that subset (although an increase in the calming of arousal might improve flexibility and connectivity for participants who had predominantly gravitated to the defense of aggression). I did, however, theorize that HF HRV could provide clues to shifts that might occur in the general give-and-take balance between arousal and calming as the participants changed over the course of treatment. In the beginning of the TD study, participants mostly reported that they were fixated in their own brand of brittle, inflexible absence (defenses of being aggressive or checked-out and buttressed against experiencing the self while at rest). In fluid and dynamic play, and in the liminal change space of TD, old defenses destabilized (Garland et al., 2010; Pascual-Leone, 2009). It would seem that if TD was effective in perturbing reset of the organism to flexibility, psychometric measures would capture evidence of that flux as it would uniquely manifest by phenotypical subtype. For instance, participants would be expected to display different corrective patterns depending upon phenotypical subtype (e.g., those who had defaulted to aggression might display patterns associated with calming down, whereas those who had defaulted to checking out might display patterns associated with waking up).

The TD study indicates that variables for future studies should include markers of flexibility (not necessarily markers of the organization that comes after the chaos of change, since that may be achieved long after the intervention has ended). Symptom remission may

³⁰ In a latent class analysis of a treatment-seeking group of Danish veterans, Karstoft et al. (2016) found that, contrary to expectations, more symptomatic veterans had higher-powered HF HRV (which in prior studies had been associated with greater wellness). The Karstoft et al. study hints at the possibility that different subpopulations may have different nervous system imbalances, depending on phenotype.

indicate treatment progress for one subtype, and symptom exacerbation might be an indication of treatment progress for a different subtype. As a result, symptom remission may not be evidence that an intervention has done its job of perturbing a move toward flexibility. For people who have experienced early complex trauma, progress toward a particular goal may be notoriously slow; therefore, it is important to have appropriate road markers that measure progress that is incremental and that may have chaotic and unexpected patterns that differ by phenotype.

Limitations, Recommendations, and Implications

IPA qualitative methodology relies upon textual analysis of spoken language (Smith, 2008), yet some of the TD participants could not communicate well through speech. I therefore adapted the methodology (Smith & Osborn, 2008) to include [exemplars of non-verbal communication](#); even so, non-verbal communication is not fully captured. The residences in which participants lived use the trauma-informed ARC model as a primary treatment modality (Blaustein & Kinniburgh, 2019).³¹ Because TD was an adjunctive treatment to ARC, it was not possible to ascertain how much the TD results rested upon the foundational underpinnings of standard ARC treatment.

I originally planned brief interviews with treatment-group participants. However, as I casually interacted with participants, troupe members, and staff members during HRV data collection, it became apparent that fuller qualitative data collection and analysis could be achieved and might serve to illuminate my basic research question. Consequently, I expanded qualitative data collection to include troupe-member and staff-member informants. It was only after I had conducted, transcribed, and listened to the richer-than-expected cache of interviews

³¹ All troupe members in this TD study had been trained in the ARC model and were professionals with other jobs (clinician, milieu staff, teacher, etc.) at participants' residences.

that I identified IPA methodology as a best fit for analysis of the qualitative data set. Even so, my [interviewing technique had been consistent with IPA data-collection guidelines](#) (Smith & Osborn, 2008).

It is recommended that IPA research continue to be conducted on TD in order to discern whether the essences distilled in this study remain the same in other samples (Giorgi, 2009) or whether they vary across populations and cultures. (Drama and performing arts interventions appear to cross cultural divides, even though they are not well researched as of this time. See Ager et al., 2011; Feniger-Schaal & Orkibi, 2020; Janzen, 2000; Joronen et al., 2008; Landy, 2006.) Methodology would benefit from expansion to formal inclusion of non-verbal communication, especially because TD appears to be helpful for people who are not verbally expressive, including people who display neurodevelopmental disorders, including disorders of intellectual development (Stein et al., 2020). In a meta-analysis and review of randomized controlled studies for complex-trauma-treatment, Choi et al. (2020) found that no studies included people who exhibited lower intellectual development, and that those individuals were often excluded by protocol. There appears to be no reason to exclude people who are less verbally expressive in qualitative protocols that are adapted to collect non-verbal expression, and there is every reason to include them. In addition, it is critical to find a way to incorporate those individuals into quantitative analyses. TD included participants with diverse levels of functioning in the same group (all of whom seemed to benefit), and that inclusion may be a strength of the intervention.

When assessing participants, it is recommended that researchers adopt the stance of the TD troupe and of the treatment milieu in which the study is being conducted (so as to be a relatively seamless extension of the intervention). Therefore, I recommend that researchers have

a clinical background if possible, so that the participants' contribution to the research—in relationship with the milieu-congruent researcher—becomes an acknowledged extension of the TD treatment (and may be measured). It is recommended that troupe members and other key informants continue to be incorporated into phenomenological research because their perspectives offer confirmatory triangulation of, and add nuance to, the distillation of phenomena. In the future, when TD is tested head-to-head with TF CBTs and other interventions for complex trauma, it is recommended that researchers adopt the respective stance of each modality being assessed (so that in the separate streams of the head-to-head study the respective researcher reflects, and is an extension of, the intervention and its milieu).

Future phenomenological study should check essences distilled from TD, namely, [the Absence to Presence phenomenon](#) as achieved through the mediating essences of the TD study. To simplify this section, I shall refer to the collected mediating essences as the *TD Constituents*. The TD Constituents consist of [egalitarian mores](#); the [folkways](#) of [structure](#), [culture](#) (including [BSD](#) and [identification](#)), and [skill](#); the processes of [MAP](#), [I→MAJN](#), and [PAXT](#); and changes in [sense of identity](#) (including the [altruistic drive to advocate and to pass on lessons learned](#)). TD Constituents were experientially reported across participants and appeared to *mediate* changes that were *moderated* by physiological subtype (as differentiated by trends from pre- to posttest in the [novel HF HRV variable](#) (W. D'Andrea, personal communication, June, 24 2016), which [indexed systemic flexibility and balance](#). The TD Constituents carry the potential to be integrated into a way of life that continues beyond the end of the intervention.

The emergence of TD Constituents in the repertoire of participants could be considered an outcome of the intervention. In addition, TD Constituents appeared to facilitate further outcomes that were captured by quantitative questionnaires (e.g., symptom and diagnostic-

criteria outcomes). Participant-internalized TD Constituents supported the Absence to Presence phenomenon. In a circular manner, increases in Presence fortified TD-Constituents. The strengthened TD Constituents then in turn mediated increased Presence, and so on.

Feniger-Schaal & Orkibi (2020) have noted that the limited drama-therapy studies available frequently describe processes experienced by participants rather than reporting on symptom or diagnostic shifts. It does seem that the TD Constituents, as experienced, learned, and adopted by participants (inclusive of TD's Processes) could be a best-marker of intervention success. It appears that TD Constituents (in conjunction with session material in the relational milieu) activate TD's ability to seek, find, and update trauma memories, which in turn renders the organic system more flexible.

After working on or observing metaphorical scene work that prompted recall of trauma memories, participants reported increased flexibility of response to challenges and an expansion of cognitive associations related to traumatic experience. According to recommendations of the RDoC (Gordon, 2020a, 2020b; Insel et al., 2010; Insel, 2014), it is critical to identify variables that activate systemic reorganization and flexibility at a substrate level (as it appears the TD Constituents may have done). In theory, interventions that influence substrates facilitate growth-oriented change across diagnoses and symptom categories, which is of particular importance in adolescent populations, for whom diagnosis is more fluid (Briggs et al., 2013; Cook et al., 2003; Cook et al., 2007; Spinazzola et al., 2005; Spinazzola et al., 2021; van der Kolk, 2010; van der Kolk et al., 2019).

Suggested Instrumentation Based on Qualitative Results

The qualitative arm of the study yielded very clear results that appear to be common across participants. Quantitative-instrumentation constructs that would be expected at least

partially to reflect the clear qualitative results (as mediated by the TD Constituents) might include a CPTSD measure, an attachment schema measure, and a measure of relationship alliance with facilitators (meaning alliance with troupe members and staff members in the group).

CPTSD Measure

Phenomenological analysis indicated that Phase I, Green Room, was critical for participants' engagement in the intervention. In addition, Phase I appeared to impact the [DSO clusters of the CPTSD diagnosis](#). Phase II, On Stage, appeared to have a particular impact on the [PTSD clusters of the CPTSD constellation of symptoms](#). Therefore, the International Trauma Questionnaire—Child and Adolescent (ITQ-CA) is recommended as a fitting instrument with which to capture general trends in CPTSD symptoms, inclusive of its DSO and PTSD clusters. Future study of TD should employ multi-time administration of the ITQ-CA to see if, when (in which phases), and to what degree TD acts on the DSO vs. PTSD clusters. As mentioned previously, the [ITQ-CA is a free-access instrument](#) that has been validated internationally across more than 40 studies (Cloitre, 2021). Longitudinal collection of multiple data points over the course of the intervention may provide evidence of whether Phase I stabilization is of value in treating complex trauma. The TD study suggests that DSO is well-addressed by Phase I. A recent meta-analysis of 42 RCTs of existing interventions as used for complex trauma indicated that “studies targeting DSO symptoms” were scarce (Choi et al., 2020, p. 173) and were therefore needed. For more than a century and a half, expert clinicians have recommended inclusion of a substantive initial phase in the treatment of complex trauma (see Herman, 1992b, p. 156 for a summary); however, current literature, citing the dearth of methodical research upon which to

judge its necessity (Ehring et al., 2014; Resick et al., 2012), debates the need for Phase I stabilization.

Attachment Schemas Measure

Phenomenological analysis indicated that by the end of TD, participant schemas related to attachment became less influenced by pervasive mistrust of and detachment from self, others, and the world. When participants identified with other members of the group, and when they engaged with the TD Constituents, they were able to trust within the group and slowly begin to materialize to self, others, and the world. An instrument such as the Trauma and Attachment Belief Scale (TABs; Pearlman, 2003), which captures perceptions of and schemas related to self- and other-attachments, would likely capture those shifts. New (or restored) attachment to self, others, and the world was the most commonly expressed change participants explicitly attributed to TD; consequently, scales measuring changes in attachment schemas have the potential to yield generalizable results.

Evidence-Based Relationship (EBR) Measure

TD offered a well-defined space in which facilitators could use BSD to reveal an authentically open self. Participants reported engagement in the intervention only after identifying with troupe members exhibiting BSD. Courtois (2021) maintains that therapeutic alliance should be described, measured, and codified as Evidence-Based Relationship (EBR) because the quality of relationship is such a critical part of treatments for complex trauma. Codification of BSD as applied in TD is indicated. A measure of therapeutic alliance is also recommended.

Chapter V: Mixed-Method Synthesis—Limitations, Recommendations, and Implications

The following section considers the TD study as a whole (i.e., the three data streams in synthesis: phenomenological, qualitative questionnaire, and electrophysiological).

Missing Data

I conducted secondary analysis of psychological questionnaires collected on a quarterly basis as part of the parent organization's continuous quality control. Demographic information was also provided by the parent organization. There were missing data (as is the nature of clinical data, which are often incomplete). Consequently, it seems necessary to devise ways to collect as complete a dataset as possible, in order that that the power of analysis can be maximized in small samples (TD groups do not exceed 28 people; Spinazzola, 2019) and so that data aggregated across settings will remain reliable. The most complete and trustworthy data might be achieved through troupe members' leveraging of their authentic relationships with participants. For that reason, I suggest that self-report questionnaire data and demographic data be collected by troupe members in the milieu of the intervention itself. If assessments are administered in the group milieu, I propose that troupe members also take some sort of assessment at the same time as participants in order to carry the Egalitarian More through to the assessment process (in which all participate equally). A potential risk of assessment administration in the group milieu is that the fun of the TD intervention could become contaminated by association with clinical-seeming assessment.

Trauma History and Demographic Data

Trauma history and demographics were important to the interpretation of the TD-study data, but history and demographic data were not infrequently missing. Future TD studies should collect thorough and comprehensive trauma-history and demographic data, especially with

regard to timing, chronicity, and types of traumatic experiences. (In this study, those with the [highest trauma burden appeared to be helped the most by the intervention.](#)) In addition, trauma-history data should reflect exposure to oppression, neighborhood and school violence, and institutionalized racism (which would be calculated into total complex-trauma load).

Administration of Assessments

Optimal quantitative instruments would be brief and non-stigmatizing and would be administered frequently in order to acquire longitudinal data points that would track change from multiple pretest points to follow-up points over as extended a time as could be managed.³² Questionnaires and HRV data collection might be expedited by Smartphone (or Chromebook), if practical and available. Multi-time-point longitudinal data might tease out the contribution of each of the three treatment phases, which would establish quantitatively whether Phase I would be necessary, as debated in the literature (Ehring et al., 2014). Longitudinal data collection would facilitate mapping of any quadratic patterns of recovery by subtype (where subtypes exert moderating influence). As mentioned in the qualitative discussion, longitudinal trends showing the interplay of some symptoms decreasing while other particular symptoms increase is more likely to reveal the true course of restored systemic flexibility. As stated previously, *if we have mistakenly been using decreases in symptom scales across the board to indicate success of an intervention (without taking into account that, in some cases increasing symptoms may indicate treatment progress), we may have previously discounted effective interventions.* If a large enough dataset is aggregated across treatment settings, identification of subtypes might be simplified by

³² The TD folkways and processes (i.e., TD Constituents) were stabilizing way-of-life elements and practices that appeared to be first instilled in Phase I of the intervention. Without Phase I, TD Constituents might not have developed, and the intervention may have been rendered inert. Multi-time-point assessment could reveal whether this hypothesis is correct. Multiple post-test assessment points could shed light on whether the TD Constituents remained active as a stabilizing way of life.

employing latent class analysis (LCA; Karstoft et al., 2015, 2016). LCA might possibly identify the most essential variables for inclusion in future study, and it also might be able to locate a variable that could identify subtypes at pretest.

Participants stated that over the course of the intervention they became more trusting of the environment and more willing to reveal true experience. I suggest that participants should re-take baseline and mid-point assessments at posttest, which would thereby provide retrospective reassessment of baseline and mid-point questionnaire constructs through more informed eyes. (Participants had reported that over the course of the intervention they became less dissociative, more present, and more able to describe experience.) In the future, participant retrospective reporting has the potential to render a more accurate comparison of true condition from baseline to mid-point to posttest.

Cross-Disciplinary Collaboration

Because of a well-defined and manualized treatment protocol (Spinazzola, 2019) that fuses phase-based CPTSD best practices (Cloitre et al., 2012; Cloitre et al., 2011; Courtois, 2021; ISTSS, 2018) with improvisational-theatre culture, structure, and skills (as first practiced in the United States at the Hull House Settlement House; Addams, 1910; Goodson, 2015; Spolin, 1963), TD appears to offer a unique opportunity for collaborative research. TD lends itself to consistent delivery and measurement across populations. (Literature reviews of therapies that utilize drama have previously concluded that a consistently administered treatment structure would enable more rigorous study; Feniger-Schaal & Orkibi, 2020; Joronen et al., 2008.) Furthermore, it makes sense to engage in cross-disciplinary collaborations when triangulating phenomenological, questionnaire, and physiological studies. For instance, there may be physiological assessment tools familiar to other disciplines that would work as well or better than

the HRV measure used by this study in order to index systemic flexibility. In choosing the electrophysiological measure of HF HRV, I considered the fact that I could employ standard low-cost HRV equipment (available to the general public and already used by many clinicians) that would allow simple, rapid, non-invasive electrophysiological assessment to be administered in the field. It may be prudent to collaborate with the discipline of drama therapy. Although TD does not identify itself as drama therapy, Landy (2006) has pointed out that the drama-therapy field and the complex-trauma field would likely enhance each other through collaborative research.

Further Recommendations for Instrumentation

Index of Nervous System Balance: HF HRV

The TD study provided beginning evidence that physiological subtypes may moderate symptom outcomes. The electrophysiological measure of HF HRV was chosen to index shifts in physiological flexibility. The novel HF calculation that was devised for this study (in essence, the ratio of quiescence at rest vs. maximum quiescence upon demand) allowed participants to be compared to themselves intrapersonally over time.³³ Three subtype trends were identified in individual pre- to posttest pattern mappings. The same three subtypes were found in both the treatment group and the comparison group. Therefore, the TD intervention itself did not appear to impact the three subtype trends appreciably. The subtype shifts in parasympathetic balance over time may have been the product of normal development and/or of the residential ARC

³³ Intrapersonal comparison is particularly important in this adolescent residential group, who would have differed *interpersonally* in HF HRV power readings because of diverging ages (affecting power), and because of various prescribed medications—among other factors that would affect HF HRV power. *Intrapersonal* comparison over time is relevant because HF is a stable measure in individuals over epochs of time. Intrapersonal changes in HF occur when the person's system shifts from its usual balance through more significant overall changes, such as years of maturation or changes in ongoing athletic conditioning (Beauchaine & Thayer, 2015; Cook, 2010; D'Andrea & Pole, 2012; Ge et al., 2020; Sharma, 2015; TFESC & NASPE, 1996; Wehrwein et al., 2016).

treatment as usual (among other possibilities). However, the TD treatment did appear to impact the Calming Down subtype differentially, in that the treatment condition of the Calming Down subtype appeared to experience a marked reduction in depression symptoms by posttest, while the comparison condition of the Calming Down subtype did not (see Figures D64 to D77 and Table C5). It may be that TD treatment improves depression symptoms differentially by subtype. The TD study suggests that physiological subtype moderates treatment effect on depression symptoms (and possibly on other symptoms). A larger sample is required to confirm differential impact of subtype on symptoms.

Executive Function, Dissociation, and Depression Measures

When considered together, questionnaire, electrophysiological, and qualitative data from the TD study suggested that the participants' systems were perturbed toward further flexibility through the experience of TD. This finding implies that the brain (including the medial prefrontal cortex; van der Kolk, 2015) and the rest of the body were moving toward increasing interconnectivity. In theory, more precise instrumentation for constructs that imply greater systemic interconnectivity might reveal differences between the treatment condition and the comparison group, as moderated by physiological subtype. As a consequence, it is recommended that other measures in the matrix of variables include:

- a measure of executive function that implies better emotional regulation (Zelazo & Cunningham, 2007) and, through better emotional regulation, improvement in the DSO clusters of CPTSD; (Haselgruber et al., 2020)
- a measure of dissociation that reflects the overall Absence to Presence outcome of the qualitative portion of the study and that, in addition, implies a reduction in the PTSD

- clusters of the CPTSD diagnostic criteria (dissociation is strongly related to the PTSD clusters of the CPTSD diagnosis; Haselgruber et al., 2020; Knefel et al., 2019)
- a measure of depression. In the TD study, the depression measure (the CDI 2) showed significant depression-symptom improvement in the TD treatment group. Haselgruber et al. (2020) have suggested that depression symptoms are strongly associated with the DSO clusters of the CPTSD construct. (Treatment condition improvements in depression appeared to be moderated by subtype.)

The above three variable constructs of executive function, dissociation, and depression might be expected to display differential quadratic patterns of waxing and waning symptoms by subtype. Differing trajectories and longitudinal patterns in which symptoms may worsen should not necessarily be dismissed as “bad,” but instead should be simply considered different. Symptoms may get worse before they get better. I theorize that at a more distant time point participants’ systems would rebalance to function more flexibly and symptoms would remit and cease to rebound. Arguably, the TD Constituents could become a way of life and mediate future challenges outside of the intervention. Future head-to-head studies with other treatments will illuminate differentiating characteristics of TD.

Although the CBCL questionnaire (completed by clinical staff at participant residences) did not indicate that aggression decreased by posttest, it makes sense to include a different behavioral questionnaire in a future assessment matrix, [since in posttest interviews participants clearly and broadly reported decreased aggression](#). At posttest, participants reported a new orientation toward pro-social values, attitudes, and behaviors and reported that they did not identify with being an aggressor. Participants described rejecting the idea of using aggression as a primary defense and stated that they engaged in more thoughtful relationship-building solutions

whenever possible. There may be several reasons for this: the CBCL was simply the wrong measure for this population; attitude and behavioral outcomes would be more accurately reported by the participants themselves; reduction in aggression was moderated by phenotype; changes in behaviors, especially pro-social and aggressive behaviors might follow and be mediated by reductions in trauma symptoms (as Ozkol et al., have suggested; 2011), or some combination of the above. If changes in aggressive behaviors are mediated by abatement of trauma symptoms during the intervention, it follows that reductions in aggression might not be observable until a subsequent downstream point that follows the intervention's end. Therefore it is recommended that any alternative participant-rated behavioral measure be administered repeatedly over the intervention and at multiple posttest points. If TD is able to clearly demonstrate decreases in aggressive attitude and behavior, it may be possible to tap funding streams that support anti-violence programs (particularly since violence is currently on the rise in cities across the United States [Brown, 2021; Los Angeles Police Department, 2021; New York City Police Department, 2021; Philadelphia Police Department, 2021]).

Conclusion

This exploratory study begins to build a methodology and a parsimonious matrix of variables with which to study the TD intervention (a synthesis of CPTSD expert-treatment guidelines and the improvisational theatre form). I propose continued triangulation of longitudinal quantitative physiological and questionnaire assessment at multiple time points from pre- to posttest to follow up, with qualitative-interview data collection at posttest. Suggested assessments include:

1. IPA qualitative interviews to confirm TD Constituents (mediators) and essential outcomes

2. a physiological index of nervous-system flexibility and balance, capable of sorting out typological subtypes (moderating subtypes)—for instance, the novel HF HRV calculation used in this study
3. quantitative instrumentation that assesses (a) potentially generalizable constructs across study participants, including CPTSD, Attachment Schemas, and Therapeutic Alliance (which may produce results that are generalizable across study participants) and (b) constructs that are likely to show differential longitudinal trends moderated by subtype, including executive function, depression, and dissociation (and possibly aggression)

By implicit means, TD appeared to target and deliver precision treatment to sites of complex trauma injury (including sites of preverbal trauma injury). The CPTSD diagnosis, as newly legitimized by the ICD-11 (World Health Organization, 2018), seems to be a relevant diagnosis around which to formulate a cross-setting and cross-cultural research agenda. A coordinated agenda that drills down to innate healing programs embedded in processes of the naturalistic arts may formally help to legitimize this type of CPTSD intervention fused with drama, a natural form of trauma healing that people have turned to for millennia. Future study should seek to further refine and elucidate the key mechanisms shifted by TD, by phenotype.

*The thing about performance,
even if it's only an illusion,
is that it is a celebration of the fact
that we do contain within ourselves
infinite possibilities.*

—Daniel Day Lewis

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Appendix A

Terms and Definitions

Absence: The inability to see or experience the self except as a defective entity that is identified with the most negative aspects of past trauma. In Absence, participants seemed to feel disconnected and empty.

Absence vs. Presence: Absence vs. Presence (see “Presence” below) is the most reduced phenomenological essence of all Trauma Drama (TD) themes. At the same time, it is also the primary qualitative outcome of the TD study. It is a superordinate outcome over other themes and represents the progression of TD participants from a state of Absence to a state of greater Presence over the course of the intervention. It is characterized by a lessening of dissociation, which in this study means a move away from habitual defenses of aggression or dissociative checking-out/avoidance.

Advocacy: Once Sense of Identity had become more solid, participants found themselves spontaneously advocating for self and enrolling themselves as navigators for others. They incorporated the characteristics of “advocate” into Sense of Identity and expressed the urge to pass on the folkway of navigation (in the form of advocacy) to the next generation of initiates (an example of the way in which folkways were self-perpetuating).

BSD (Behavioral Self Disclosure): The act of allowing aspects of the authentic self to be revealed and observed via spontaneous behaviors that are generated through action.

CPTSD (Complex Post-Traumatic Stress Disorder): Complex trauma is “the experience of multiple, chronic, and prolonged developmentally adverse traumatic events, most often of an interpersonal nature” (van der Kolk, 2005, p. 401) and occurs most often during development. Cloitre et al. (2019) point out that the clinical condition of Complex PTSD is defined by the

presence of a stable negative self-concept and avoidance of relationships. Until recently, there was no formal diagnostic classification for complex trauma. The eleventh edition of the International Classification of Diseases and Related Health Problems (ICD 11; the official diagnostic system worldwide [World Health Organization, 2018]) introduced the diagnosis of Complex PTSD (CPTSD). CPTSD shares three symptom clusters with the diagnosis of PTSD and has three of its own symptom clusters. The shared PTSD clusters are reexperiencing of the traumatic event in the present, avoidance of traumatic reminders, and a sense of current threat. The three additional CPTSD-only clusters are related to disturbances in self-organization (DSO): affect dysregulation, negative self-concept, and disturbances in relationships (Cloitre et al., 2019). The International Trauma Questionnaire (ITQ), a self-report measure to assess the presence or absence of CPTSD and its symptoms clusters, was also published in 2018 (Cloitre et al., 2018)].³⁴

Discrete session: A single TD session.

Emotion regulation: “A form of emotion processing—deliberate or automatic—that acts to augment or diminish the duration or intensity of an emotional response to a more manageable level. Regulation may occur before (e.g., avoidance, cognitive preparation) or during an emotional response (e.g., suppression, reattribution). Regulation may also result from low-level neural processes such as habituation and extinction and/or the behavioral concomitants of emotion in the service of accomplishing affect-related biological or social adaptation or achieving individual goals” (Pace-Schott et al., 2019, p. 269).

³⁴ Data for the TD study was collected from 2013 to 2105, which was prior to the legitimization of the CPTSD diagnosis by the ICD II, and prior to the publication of the ITQ in 2018.

Energy (structural folkway, subordinate to play and fun): A dynamic, healthy excitement that was pleasurable and infectious in the group. The group's energy appeared to fuel a forward thrust that edged out fear.

Folkways: TD folkways are an operationalization of the intervention's primary value of *egalitarianism*. Folkways are considered "correct," "right," or "best practices" that are not explicitly taught but transmitted/handed down through active modeling by cultural mentors (Sumner, 1906) to their cultural progeny.

Folkways categories: Folkways fit into patterns capable of containing and framing various experiences and processes:

- pattern/structural folkways
 - Green Room, On Stage, and Dressing Room (see "Stages of TD" below)
 - Fun/Play (see below)
- skill-and-practice folkways
 - paced breathing for self-regulation and for support of focus under challenge
 - tuning into and observing of personal reactions to challenges
 - group-sourced creative problem solving
 - group-sourced meaning-making
- cultural folkways
 - behavioral self-disclosure (see BSD above)
 - identification (see below)
 - equal participation, the expectation of equal effort, investment, and authentic engagement by troupe members, staff members, and participants attending TD
 - advocacy for self and/or for vulnerable others
 - values, such as egalitarianism or self-determination

Folkways transmission: The method by which theatre professionals learn their craft.

Fun/Play (pattern folkway): Fun and play seemed to provide the buoyancy and elasticity to accommodate serious topics. Levity and intensity mixed to stretch in and out in dynamically changing proportions, according to the tolerance of participants and the needs of the moment.

Identification (cultural folkway): Group members' recognition of and resonance with shared experiences, feelings, and/or characteristics of others in the group (initially as with troupe members).

I→MAJN (identification, materialization, action-potential, judgment, and navigation [change process]): Five associative domains of presence, which expanded subsequent to MAPs.

1. **Identification:** When participants related to experiences, feelings, and characteristics shared in common with other admired people, identification grew. As identification with admired others increased, identification with past trauma receded and sense of stigma and isolation decreased. Identification was a pre-condition for the remaining four domains of Presence (2–5 directly below), but it directly affected #2, Materialization.
2. **Materialization:** Participants slowly became visible and known to themselves and to others with a concentrated force of integrated consciousness, as opposed to the fragmentation that was characteristic of the state of greater Absence.
3. **Action potential:** Participants became more flexibly responsive to the moment (rather than being inert, lacking in focused energy, or reflexively reactive), while maintaining perspective on and awareness of multiple dimensions of experience. Action-potential participants were poised to more confidently and capably risk the exercise of newly acquired skills.
4. **Judgment:** Via newly acquired skills, participants were able to gather data from/on the self, others, and the environment, were able to analyze that data in the context of the environment, and then were able to draw strategic conclusions.
5. **Navigation:** The selective utilization and strategic application of skills and resources, as judged to be matched to circumstances at hand. Troupe members and participants tapped into this domain of Presence when they became a proxy or co-processing Navigator for participants who required support during the intervention.

Liminal space: A space of creativity and possibility participants entered when they stepped beyond the threshold of what had been known to them and suspended prior definitions of self in favor of becoming available to what was dynamically present. MAPs occurred in a liminal space. Transformational work in the liminal space has been described as constituting a ritualistic rite of passage (Turner, 1995; van Gennep, 1960).

MAP (Modification of Associations Process): A process of change initiated differentially and spontaneously for each participant when an aspect of the intervention challenged trauma-

fixated associations that were interfering with necessary next steps in emotional development. The change process appeared to update and modify associations that had been previously fixated by trauma. Associations are the ideas, thoughts, values, beliefs, memories, behaviors, emotions, and/or feelings connected to (or, at times, paradoxically dissociated from) other ideas, thoughts, values, beliefs, memories, behaviors, emotions, and/or feelings that related to self, others, and the world.

- MAP Stage I: Green Room
 - Step 1 – Active practicing of folkways
- MAP Stage II: On Stage
 - Step 2 – Encountering *surprise* that challenged trauma-fixated associations
 - Step 3 – Taking a *risk* as a result of the surprise. Surprise and risk were frequently reversed in the sequence of MAP steps, meaning that sometimes Step 3 immediately preceded Step 2.
 - Step 4 – Making a *discovery* as a result of risk/risks taken.
- MAP Stage III: Dressing Room
 - Step 5 – Adjusting, re-calibrating, and stabilizing via folkways practice in order to prepare for exit into the next task or environment.

Opportunities for surprise and for iteration of the MAPs pattern came often in TD. The MAP could (a) fully manifest from start to finish within one part of the session, (b) occur over the length of the session, (c) occur multiple times within a session, or (d) occur over combined sessions.

Navigation: Navigation is performed by a guide, or navigator. The navigator acted as a proxy (acting in place of the participant) and/or acted as a co-regulator/supporter/facilitator in co-processing difficult emotions and memories (supplying the “training wheels” to steady the process). The navigator could be one person, multiple people, or the entire group (acting as guide

for one or more participants). A pre-condition for navigation was the existence of implicit trust between/among the navigator and the person/people to be assisted.

PAXT (Population of associations x time): Modifications of associations (see “MAP” above) appeared to populate across time domains, thus influencing perspective and personal narrative across past, present, and future.

Presence: Derived from the theatrical concept of *stage presence*, which describes a performer’s composure and a command of self. It is the projection of “a concentrated force [that is not a] fixed, definable quality but rather a process of continuous growth and change that takes place before the eyes of the audience” (Barker & Beckerman, 2009, para. 4). Similarly, in achieving aspects of Presence, TD participants became visible and known to themselves, to others, and to the world with a concentrated force of integrated consciousness (as opposed to the fragmentation, inertia, and lack of focused energy that is characteristic of Absence). As they moved toward greater Presence, participants gradually ascended a hierarchy of developmental levels leading to increased emotional maturation.

Reflection-in-Action (Schön, 1983): A type of practical, critical thinking. Hypotheses are formulated and tested in action. Data is gathered and actions reappraised and adjusted. In an iterative manner, reflection-in-action calls for feedback, reinterrogation, and readjustment. Implications of findings are examined on micro and macro levels. Practitioners acquire an increased expertise in the art and science of each activity itself and an evolving expertise in the skillful use of reflection-in-action as a navigational tool.

Sense of Identity: A developing sense of identity is characterized by a feeling of “being myself.” Part of Sense-of-Identity for TD participants was a generative urge to advocate for and

to pass on hard-won wisdom and lessons learned to other people suffering from complex trauma sequelae.

Stages of TD: Three-stage structural frame/pattern (pattern folkway):

- *Green Room*, Stage I (beginning) – During Green Room, participants became acquainted with and practiced the patterns, skills, and culture of TD in preparation for safe transition to the more intensive work of the intervention. (In theatre, the Green Room is where actors prepare to transition to the stage.)
- *On Stage*, Stage II (middle) – During On Stage, participants engaged in the more intensive work phase of the intervention, during which fixated trauma-related associations were confronted (often via improvisational scene work).
- *Dressing Room*, Stage III (end) – During Dressing Room, participants divested the residual of the more intense On Stage working phase. In Dressing Room, participants adjusted to the initial insights that had come out of On Stage work. They emotionally and physically recalibrated in order to reorient to and safely transition into the next task or environment.

Stuck point: The impasse of mind/emotion/body/spirit that occurred when a participant was exposed to and oriented to a trauma trigger (a point of fixation resulting from the trauma).

TD: Trauma Drama

Appendix B

HRV Protocols



How to Get Ready for **Your Heartbeat Measurement (Trauma Drama Study)**

Thank you so much for being part of my study! I am grateful for your help. There are a few simple instructions for the hour and a half before you have your heartbeat measured.

90 minutes before please:

- Do **NOT** eat a big meal or a lot of food

60 minutes before please:

- Do **NOT** exercise
- Do **NOT** drink coffee, tea, or anything with caffeine

30 minutes before please:

- Do **NOT** smoke

Right before please:

- **DO** take off any earrings that you are wearing (if you have spacers that you can't take off, I can use a Velcro-attached finger sensor instead—not to worry)
- **DO** take your gum out (can't chew or drink anything during recording)
- **DO** put on your glasses if you need them to see the computer screen

When you come to have your heartbeat measured, I will gently wipe your earlobe with alcohol. Then I'll place a painless clip on your earlobe. The clip does not pinch or hurt. It is very comfortable. The clip will read your heartbeat.

You'll be asked to sit quietly and still for five minutes. I'll ask you to just rest, almost as if you're waiting for a bus. I want to see what your heartbeat is like when you're doing nothing. ...So please **DON'T** meditate, or pray, or say mantras to yourself, and please **DON'T** think about anything too hard. I'll tell you all of this again when you come to be measured, so you don't have to worry about remembering the instructions.

After the 5 minutes of resting, I'll ask you to breathe deeply while you watch a ball on a computer screen for 2 minutes.

After the last **Trauma Drama** session we'll do this all over again, to see if your heartbeat measurements are the same or are different.

That's it! It's pretty easy. Thank you again ☺.

Any questions? Give me a call. I'm happy to answer any questions or worries.



Mimi Sullivan, MSW, LCSW, xxx-xxx-xxxx

F.K. 4.6



Trauma Drama HRV Collection Sheet



Cohort 1, Time 1

Researcher: "What is your fake name?"

Participant pseudonym: _____

Measurement: ___1 ___2 ___3

Time: _____ **Date:** _____ **Location** _____

Large meal in last 90 minutes? _____ **Aerobic exercise in the last hour?** _____

Caffeine (coffee, tea, other caffeine)? _____ **Smoking in the last 30 minutes?:** _____

Medications/Inhalers today? _____

Last night's sleep: very poor __, poor __, neither poor nor well __, well __, very well __

Do you have a cold or upper-respiratory infection? Yes No

Alcohol or other drugs in the last 12 hours? Yes No **If yes what** ___ **amount** _____

Observations of presentation: _____

Checklist

- ___ Chair with head and neck support with slight angle of not more than 15%
- ___ Feet comfortably reaching the floor and flat (need a footrest?)
- ___ Gum out
- ___ Earrings off and earlobe cleaned and warmed if necessary
- ___ Ear sensor (___ finger sensor—reason why _____)
- ___ HRV screen hidden from participant
- ___ Quiet room
- ___ Glasses if needed- to see the computer screen pacer

Instructions

Resting breath:

Researcher: *When I start the measurement, try not to move much and please don't talk. Large movements and talking can cause the heartbeat recording to be wrong. If you have to move, don't worry. We'll just stop and then start the measurement again.*

Are you comfortable? (Make person comfortable if not comfortable).

I'm measuring your heartbeat when you're resting. So just rest as best as you can. You should rest kind of as if you were waiting for a bus.

Also by resting, I mean don't pease out or try to calm yourself down too much. That means don't meditate, or repeat mantras, or pray. And on the other side of the scale,

don't think too hard or too much either—for instance, don't try to solve problems in your head while you're resting. Please just rest as comfortably and quietly as you can. Again, like waiting for a bus.

Any questions? If yes, what are the questions: _____

Observations:

Participant during recording (any breathing issues):

Recording itself (e.g. artifacts and causes):

Instructions

Paced breath:

Researcher: Now I'm going to ask you to breathe along with the little ball on this computer screen. As the ball goes up, breathe in and as the ball goes down, breathe out. Try to match the movement of the ball so that you for the entire time the ball is going up you are breathing in and for the entire time the ball is going down, you are breathing out. The breaths should be full and as deep and as smooth as is comfortably possible. The breaths will probably be fuller and deeper and longer than you usually breathe, but the breathing shouldn't feel uncomfortable. We'll practice for a minute, so that you get the hang of it, and then I'll record your heartbeat measurement for six breaths--which is about one minute. Then I'll stop and you can breathe normally again. .

If you have any problems, we'll just stop and start over again.

Any questions? If yes, what are the questions: _____

Participant pseudonym & date: _____

Notes:

FK level is grade 6.0.

Trauma Drama



 **Trauma Drama HRV Collection Sheet** 
Cohort 2

Mimi
Time: _____ **Date:** _____ **Location** _____
Measurement: ___ **Post-test**
Time: ___1 ___2 ___3
Participant pseudonym: _____

Birth date _____
Large meal in last 90 minutes? _____ **Aerobic exercise in the last hour?** _____
Caffeine (coffee, tea, other caffeine)? _____ **Smoking in the last 30 minutes?:** _____

Medications/Inhalers today? _____

Last night's sleep: very poor __, poor __, neither poor nor well __, well __, very well __
Do you have a cold or upper-respiratory infection? Yes No
Alcohol or other drugs in the last 12 hours? Yes No **If yes what** _____ **amount** _____

Enter session title into the journal section of the computer program before closing the computer session (e.g. SamBlue-092193-022314-1415-1. for 1 minute recording)

Participant pseudonym & date: _____
Favorite snack: _____
Gift Certificate: _____
Sensor used (circle correct): Finger Ear Left Right
Notes:

F.K of script is grade 6.0.

Trauma Drama 

**Instructions for:
Heartmath Equipment and Data Collection**



Trauma Drama Study

Turn on the computer,

Insert the emWave jump drive and connect the finger sensor to the jump drive.

Click on the emWave Pro Icon located on the desktop (p.s. you'll want to test the equipment on yourself to make sure it's capturing properly before you call in the participant).

Make sure the sound is turned **off** (lower right hand corner of the screen is the sound on/off button---when the sound is on the program gives reward cues that will invalidate the data collection process)

Make sure the computer screen is turned away from where the participant will be sitting.

Call in the participant and have them sit in the Adirondack chair

Consult the top portion of the TD HRV Collection Sheet and

Obtain demographic and other information in **Bold Type** on the top half of the form

Enter the participant as a New User

Use the first name of their pseudonym as the User Name

Go to the toolbar and click on User

Then click on New (say no to the question about the Heartmath Cloud)

Answer the questions in the box (except for the e-mail question)

(For subsequent recordings on the same person you go to the box on the upper left hand corner of the screen, where a participant's name appears and scroll down until you reach the participants name. Click on the participants name and it should then appear in the box.)

Consult the HRV-form checklist and check off elements

Gently wipe the infra-red finger sensor with a tissue—oil residue interrupts the signal (don't use any kind of cleaner please)

Wipe the person's index finger with an alcohol swab

Velcro the forefinger to the sensor so that it is pretty firmly attached (but not like a tourniquet ☺)

Start reading the HRV data collection script and follow the script

Important: Please always conduct the six minute recording first

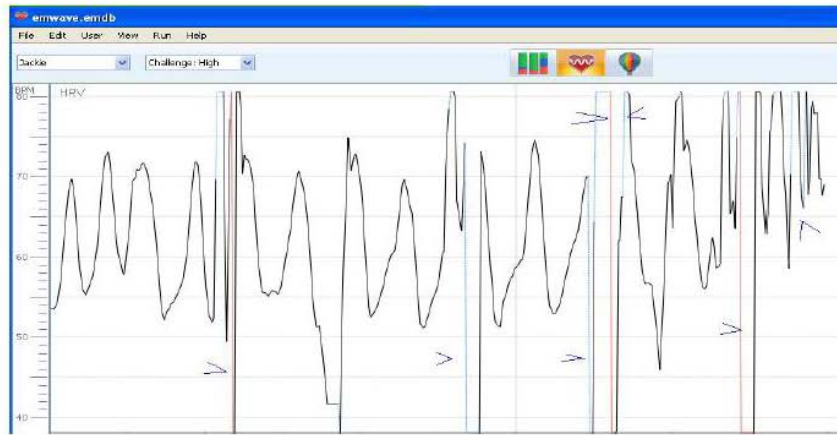
Also Important: Although I am asking for a six minute recording and also a 1 minute recording, I usually record for a longer time in order to ensure that I have the required number of minutes clear, without too much artifact (which can come from movement or sneezing etc... or just from feedback within the person's body).

For instance:

1.) Although the below trace has artifacts (the circled anomalies) it is acceptable to analyze, but I would have to edit the artifacts out, so the recording would need to run longer:



2.) This recording really has too many artifacts (arrows indicate artifacts) to be very useful, but occasionally there is a person whose system is going so crazy that you can't get a clear trace no matter what you do. If you get a lot of artifacts, try cleaning the sensor and finger again, and playing with the tightness of the Velcro cuff. If that doesn't work, try the ear sensor (using alcohol to clean the ear first). If nothing changes the trace, just run it for a double the time (at least) and I will try to edit out the artifacts.



For the one minute recording you will turn the computer screen so that the participant will see it.

**Appendix C
Tables**

Table C1
Baseline Demographic Characteristic of Treatment Group, Comparison Group, and Total Group

Characteristics	Treatment			Comparison			Total		
	<i>n</i> = 27			<i>n</i> = 20			<i>N</i> = 47		
	<i>f</i> ² (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range
Age	27	17.56	14-22	19	18.16	15-22	46	17.80	14-22
14-17	10 (37)			6 (31.6)			16 (34.8)		
18-22	17 (63)			13 (68.4)			30 (65.2)		
Gender	27 (100)			19			46		
Male ^a	9 (33.3)			9 (45)			18 (38.3)		
Female	18 (66.7)			11 (55)			29 (61.7)		
Race	15			14			29		
Asian	1 (6.7)			2 (14.3)			3 (3.4)		
Black/African American	0			1 (7.1)			1 (3.4)		
White	10 (66.7)			10 (71.4)			20 (69.0)		
Biracial/multiracial	4 (26.7)			1 (7.1)			5 (17.2)		
Ethnicity	15			14			29		
Hispanic/Latino	5 (33.3)			1 (7.1)			6 (20.7)		
Not Hispanic/Latino	10 (66.7)			13 (92.9)			23 (79.3)		
Residential program ^b	27			20			47		
Residential school	22 (81.5)			12 (60)			34 (72.3)		
Group home	5 (18.5)			8 (40)			13 (27.7)		
Prior living									
Ever fostered? ^c	22			15			47		

Characteristics	Treatment			Comparison			Total		
	<i>f</i> ² (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range
Yes	12 (54.5)			6 (40)			18 (48.6)		
No	10 (45.5)			9 (60)			19 (51.4)		
Average number of foster placements ^d	18	2.67 (3.93)	0-15	12	.92 (1.51)	0-5	30	1.97 (3.26)	0-15
Prior mental health	27			20			47		
Yes	22 (81.5)			13 (65)			35 (74.5)		
No	5 (18.5)			7 (35)			12 (25.5)		
Custody	23			15			38		
Biological parent	8 (34.8)			6 (30)			14 (36.8)		
Adoptive parent	7 (30.4)			1 (6.7)			8 (21.1)		
State child and family protective services	4 (17.4)			6 (40)			10 (26.3)		
Other	4 (17.4)			2 (13.3)			6 (15.8)		
Trauma history	22			12			34		
Age of first trauma exposure	22	1.82	0-18	12	1.83	0-14	34	1.82 (4.39)	0-18
Exposed at < 1 year-of-age ^e	18 (66.7)			9 (75)			27 (79.4)		
No. of trauma years ^f	22	5.95	1-18	12	6.33	1-18	34	6.09	1-18
No. of cumulative trauma years (total load years) ^g	22	13.64 (13.66)	1-64	12	16.42 (18.84)	1-63	34	14.62 (15.45)	1-64
No. of trauma types	22	5.23	2-10	12	8	1-7	34	4.88 (2.13)	1-10
Types of trauma	22			12			34		
Neglect	19 (82.6)			9 (64.3)			28 (75.7)		

Characteristics	Treatment <i>n</i> = 27			Comparison <i>n</i> = 20			Total <i>N</i> = 47		
	<i>f</i> ² (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range
Impaired caregiver	12 (54.5)			5 (41.7)			17 (50)		
Emotional/verbal	16 (72.7)			9 (64.3)			25 (69.4)		
Physical	13 (56.5)			6 (42.9)			19 (50.5)		
Sexual	14 (60.9)			4 (28.6)			18 (48.6)		
DV exposure	9 (39.1)			4 (28.6)			13 (35.1)		
Loss/bereavement	6 (26.1)			3 (21.4)			9 (24.3)		
Substance-abuse history	22			16			38		
Yes	8 (36.4)			6 (37.5)			14 (36.8)		
No	14 (63.6)			10 (62.5)			24 (63.2)		
Suicidal ideation history	21			12			33		
Yes	16 (76.2)			5 (41.7)			21 (63.6)		
No	5 (23.8)			7 (58.3)			12 (36.4)		
Suicide attempt	21			14			35		
Yes	7 (33.3)			2 (14.3)			9 (25.7)		
No	14 (51.9)			12 (85.7)			26 (74.3)		
Self-injury history	23			15)			38		
Yes	14 (60.9)			3 (20)			17 (44.7)		
No	9 (39.1)			12 (80)			21 (55.3)		
School years behind ^h	23	3.26	1-6	14	2.64	1-4	37	3.03 (1.36)	0-6
Learning disability	21			15			36 (100)		
Yes	12 (57.1)			11 (73.3)			23 (69.9)		
No	9 (42.9)			4 (26.7)			13 (36.1)		
Arrested/adjudicated	23			15			38		
Yes	2 (8.7)			4 (26.7)			6 (15.8)		

Characteristics	Treatment			Comparison			Total		
	<i>f</i> ² (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range
No	21 (91.3)			11 (73.3)			32 (84.2)		
Diagnoses									
Average no. of diagnoses ⁱ	13	2.62 (.96)	1-4	12	2.67 (.98)	1-4	35	2.51 (.85)	1-4
PTSD	8 (36.4)			5 (38.5)			13 (37.1)		
RAD	8 (36.4)			3 (23.1)			11 (31.4)		
Dissociative disorder	1 (4.8)			1 (7.7)			2 (5.7)		
Eating disorder	0			1 (7.7)			1 (2.9)		
Mood/depression	14 (63.6)			7 (53.8)			21 (60)		
Bipolar disorder	2 (9.1)			3 (23.1)			5 (14.3)		
Psychotic disorder	1 (4.5)			1 (7.7)			2 (5.7)		
Autistic spectrum	1 (4.5)			1 (7.7)			2 (5.7)		
Generalized anxiety	4 (18.2)			4 (30.8)			8 (29.9)		
ADHD	6 (27.3)			3 (23.1)			9 (25.7)		
GAF ¹⁹	19	44.42 (6.54)	35-59	12	49.08 (6.95)	35-60	31	46.23 (7.00)	35-60
Psychiatric medications	16			12			28 (100)		
No. of medications	16	2.69	1-6	12	2.33	1-4	28 (100)	2.54	0-6
Antidepressants	6 (22.2)		0-2	3 (25)		0-1	9 (32.2)		0-2
Mood stabilizers	9 (33.3)		0-1	5 (41.6)		0-2	14 (50)		0-2
Antipsychotic	10 (62.5)		0-1	4 (33.3)		0-1	14 (50)		0-1
Benzodiazepines	0 (0)		0	1 (8.3)		0-1	1 (3.6)		0-1
Blood pressure	6 (37.5)		0-1	5 (41.7)		0-1	11 (39.3)		0-1
Antihistamines	2 (12.5)		0-1	2 (16.7)		0-1	4 (14.3)		0-1
Sleep medication	3 (18.8)		0-1	0		0	3 (10.7)		0-1
Stimulant (ADHD)	4 (25.1)		0-2	6 (50)		0-1	10 (35.7)		0-2

Note. Demographic data were collected by the residential program. The above is my secondary analysis. Baseline demographics characteristics were gathered upon participants' entry into the residential program. There were many missing demographic data, so I have counted the number of endorsements for each demographic variable. Percentage was based on the available data for that specific variable. DV exposure = Domestic violence exposure; PTSD = posttraumatic stress disorder; RAD = reactive attachment disorder; Mood/depression = mood and depressive disorders; ADHD = attention deficit hyperactivity; GAF = global assessment of functioning score. The treatment group experienced a markedly higher level of adversity on some demographic variables than did the comparison group, and where that occurred, those numbers are in bold type.

^a Two participants labeled "male" (one in the treatment group and one in the comparison group) spoke to me of being or transitioning to nonmale gender (though each was listed as male in the demographic data). ^b Participants in the trauma drama study were enrolled in and living at 1 of 4 residential schools or 1 of 3 group homes. ^c Has the participant ever been in foster care? ^d Mean number of foster-home placements prior to admittance into the residential program. ^e Exposure to complex trauma in the first months of life (meaning before the first birthday). ^f Mean number of years across the lifespan during which trauma occurred. ^g The cumulative-trauma-years variable represents the mean total load of trauma that each participant experienced over the lifespan. The variable accounts for the years that each type of trauma was experienced and sums all years together, even when the years overlap; for instance, one participant may have experienced neglect from ages 1–5 (4 years), sexual trauma from ages 4–7 (counted as 3 years, even though sexual-trauma years overlap with neglect-trauma years), and an impaired caregiver from ages 1–7 (counted as 6 caregiver-impairment-trauma years even though those years overlap with both other types of trauma years). In this case the cumulative-trauma years would be 4 years + 3 years + 6 years = 13 years of cumulative-trauma load. ^h The mean number of trauma types experienced by the participant over the lifespan. ⁱ The mean number of years that participants were behind in school, respective to chronological age. ^j Mean number of mental health diagnoses for participants.

Table C2

*Trend Analysis on the Child Behavior Checklist Syndrome Scores of the Treatment Group
(Clinician Report)*

Measure	Subscales	Time 1 M(SD)	Time 2 M(SD)	Time 3 M(SD)	Linear (<i>p</i>)	η^2	Quadratic (<i>p</i>)	η^2
		Syndrome scale*						
Internalizing		13.22 (7.41)	14.83 (6.79)	13.96 (7.84)	.565	.02	.187	.08
	Anxious/Depressed	6.43 (4.14)	7.22 (3.30)	6.61 (3.51)	.798	.00	.315	.05
	Withdrawn/Depressed	4.48 (2.87)	4.96 (3.44)	5.04 (3.38)	.383	.04	.531	.02
	Somatic Complaints	2.30 (3.67)	2.65 (3.69)	2.30 (3.43)	1.00	.00	.297	.05
Externalizing		14.61 (8.43)	13.91 (7.26)	15.65 (5.89)	.544	.02	.121	.11
	Rule breaking Behavior ^a	4.48 (4.69)	3.83 (3.38)	4.35 (3.01)	.882	.00	.068 [†]	.14
	Aggressive Behavior	10.13 (5.23)	10.09 (4.66)	11.30 (3.76)	.292	.05	.291	.05
Problem subscales								
	Social Problems	4.74 (2.82)	4.83 (3.17)	5.22 (2.88)	.415	.03	.721	.01
	Thought Problems	2.30 (2.06)	2.35 (2.27)	2.13 (2.30)	.712	.01	.718	.01
	Attention Problems ^b	7.65 (3.14)	7.09 (2.66)	8.39 (3.82)	.345	.04	.058 [†]	.15

Measure	Subscales	Time 1 M(SD)	Time 2 M(SD)	Time 3 M(SD)	Linear (<i>p</i>)	η^2	Quadratic (<i>p</i>)	η^2
	Other Problems	3.48 (2.25)	4.43 (2.19)	4.22 (2.66)	.178	.08	.154	.09
	<u>Total Syndrome score</u>	46.00 (17.61)	47.43 (15.33)	49.57 (15.56)	.354	.04	.868	.00

Note. Repeated-measures analysis of variance for treatment-group participants ($n = 23$). All above subscales contribute to the total syndrome score. The Syndrome scale has two factors—Internalizing Behaviors (composed of three subscales: Anxious/Depressed, Withdrawn/Depressed, and Somatic Complaints) and Externalizing Behaviors (composed of Rule Breaking and Aggressive Behavior)—and then four additional Problem subscales that are not accounted for by a factor, but are added into the total syndrome score.

^a Rule-Breaking Behavior significant curvilinear-convex quadratic trend ($F(1, 22) = 3.68$, $p = .068$; $\eta^2 = .14$). ^b Attention Problems: significant curvilinear-convex quadratic trend ($F(1, 22) = 4.01$, $p = .058$; $\eta^2 = .15$).

† $p < .10$.

Table C3

Trend Analysis on the Posttraumatic Stress Disorder Reaction Index Scores of the Treatment Group (Self-Report)

Subscales	Time 1 <i>M(SD)</i>	Time 2 <i>M(SD)</i>	Time 3 <i>M(SD)</i>	Linear (<i>p</i>)	η^2	Quadratic (<i>p</i>)	η^2
Intrusion ^a	6.38 (5.75)	4.92 (4.31)	4.31 (5.00)	.040*	.31	.635	.02
Avoidance	3.00 (2.35)	2.69 (2.25)	2.69 (3.04)	.744	.01	.748	.01
Cognitions/Mood ^b	10.54 (7.37)	8.69 (6.52)	7.7 (5.45)	.091†	.22	.713	.01
Arousal/Reactivity ^c	8.46 (5.49)	6.54 (4.05)	6.08 (2.98)	.074†	.24	.418	.55
Depersonalization	1.38 (2.53)	1.15 (2.08)	1.38 (2.40)	1.00	.00	.363	.07
Derealization	1.46 (2.47)	1.23 (1.96)	.62 (1.33)	.189	.14	.209	.13
<u>Total score^d</u>	28.38 (17.84)	22.85 (14.98)	20.85 (15.19)	.060†	.26	.473	.04

Note. Repeated-measures analysis of variance for treatment-group participants ($n = 13$).

^a Intrusion: significant linear downtrend (fewer symptoms) $F(1, 12) = 5.30, p = .040; \eta^2 = .31$. ^b Cognitions/Mood: significant linear downtrend (fewer symptoms) $F(1, 12) = 3.38, p = .091; \eta^2 = .22$. ^c Arousal/Reactivity: significant linear downtrend (fewer symptoms) $F(1, 12) = 3.84, p = .074; \eta^2 = .24$. ^d Total score: significant linear downtrend (fewer symptoms) $F(1, 12) = 4.31, p = .060; \eta^2 = .26$.

† $p < .10$. * $p < .05$.

Table C4

Trend Analysis of the Abbreviated Dysregulation Inventory Scores of the Treatment Group (Self Report)

Subscales	Time 1 <i>M(SD)</i>	Time 2 <i>M(SD)</i>	Time 3 <i>M(SD)</i>	Linear (<i>p</i>)	η^2	Quadratic (<i>p</i>)	η^2
Affective Dysregulation	12.35 (6.78)	11.70 (5.47)	11.15 (4.89)	.392	.04	.952	.00
Behavioral Dysregulation	15.60 (6.46)	15.10 (6.43)	14.25 (5.41)	.345	.05	.872	.00
Cognitive Dysregulation	16.35 (6.68)	15.85 (7.43)	15.00 (6.51)	.194	.09	.852	.00
<u>Total score</u>	44.30 (15.03)	42.65 (14.99)	40.40 (11.79)	.215	.08	.88	.00

Note. Repeated-measures analysis of variance for treatment-group participants ($n = 20$).

Table C5

Trend Analysis on the Children's Depression Inventory 2 Scores of the Treatment Group (Self-Report)

Measure	Subscales	Time1 M(SD)	Time 2 M(SD)	Time 3 M(SD)	Linear (p)	η^2	Quadratic (p)	η^2
Emotional Problems Factor		8.90 (5.87)	8.50 (5.62)	7.00 (6.03)	.146	.11	.428	.03
	Negative Self Esteem	3.05 (3.19)	2.90 (2.92)	2.60 (3.15)	.492	.03	.879	.00
	Negative Mood ^a	5.85 (3.48)	5.60 (3.25)	4.40 (3.27)	.069†	.16	.205	.08
Functional Problems Factor ^b		8.00 (5.03)	8.00 (5.63)	6.15 (5.71)	.079†	.15	.288	.06
	Ineffectiveness	5.00 (3.69)	5.20 (4.01)	4.10 (3.92)	.243	.07	.263	.07
	Interpersonal Problems ^c	3.0 (2.20)	2.80 (1.99)	2.05 (2.35)	.024*	.24	.450	.03
	<u>Total score^d</u>	16.90 (10.0)	16.5 (10.32)	13.15 (11.80)	.082†	.15	.295	.06

Note. Repeated-measures analysis of variance for treatment-group participants ($n = 20$).

^a Negative Mood: significant linear downtrend (fewer symptoms) $F(1, 19) = 3.72, p = .069; \eta^2 = .16$. ^b Functional Problems: significant linear downtrend $F(1, 19) = 3.45, p = .079; \eta^2 = .15$.

^c Interpersonal Problems: significant linear downtrend (fewer symptoms) $F(1, 19) = 6.02, p = .024; \eta^2 = .24$. ^d Total score: significant linear downtrend (fewer symptoms) $F(1, 19) = 3.37, p = .082†; \eta^2 = .15$.

† $p < .10$. * $p < .05$.

Table C6

Trend Analysis of the Children's Alexithymia Measure (CAM) Scores of the Treatment Group (Clinician Report)

CAM Measure	Time 1 <i>M(SD)</i>	Time 2 <i>M(SD)</i>	Time 3 <i>M(SD)</i>	Linear (<i>p</i>)	η^2	Quadratic (<i>p</i>)	η^2
Total score	11.04 (7.01)	12.38 (7.22)	13.87 (6.80)	.086†	.12	.94	.00

Note. Repeated-measures analysis of variance for treatment-group participants ($n = 24$). Total score: significant linear uptrend (greater symptomatology) $F(1, 23) = 3.23, p = .086; \eta^2 = .12.$
† $p < .10.$

Table C7

Trend Analysis of the Body Awareness Measure Scores of the Treatment Group (Self-Report)

Measure	Subscales	Time 1 <i>M(SD)</i>	Time 2 <i>M(SD)</i>	Time 3 <i>M(SD)</i>	Linear (<i>p</i>)	η^2	Quadratic (<i>p</i>)	η^2
	Somatic Sensory Sensitivity	6.00 (.95)	7.30 (1.11)	6.10 (.95)	.93	.00	†.07	.16†
	Somatic Problems	5.25 (.82)	4.75 (.73)	5.45 (.93)	.84	.00	.19	.09
	Body Awareness	9.85 (1.32)	9.65 (1.19)	7.90 (1.23)	.16	.10	.19	.09
	<u>Total score</u>	21.10 (2.64)	21.70 (2.56)	19.45 (2.82)	.58	.02	.21	.08

Note. Repeated-measures analysis of variance for treatment-group participants ($n = 20$).
† $p < .10.$

Table C8

Trend Analysis of the Behavior Rating Inventory of Executive Function, Parent Form (BRIEF P) completed by Residential Milieu Staff

Measure	Subscales	Time 1 M(SD)	Time 2 M (SD)	Time 3 M(SD)	Linear (<i>p</i>)	η^2	Quadratic (<i>p</i>)	η^2
Behavioral Regulation		56.15 (10.16)	56.96 (9.79)	59.27 (10.61)	.249	.05	.541	.02
	Inhibit ^a	19.42 (5.05)	18.65 (4.34)	20.62 (5.19)	.303	.04	.058 [†]	.14
	Shift	16.46 (3.06)	17.15 (2.94)	17.19 (3.15)	.295	.04	.407	.03
	Emotional Control	20.27 (4.09)	21.15 (4.12)	21.46 (4.30)	.314	.04	.614	.01
Metacognition ^b		83.96 (14.30)	87.54 (16.92)	92.00 (15.00)	.010*	.24	.837	.00
	Initiate ^c	16.23 (2.83)	16.38 (3.30)	18.04 (3.38)	.010*	.24	.129	.09
	Working Memory	18.62 (4.29)	18.62 (4.58)	19.81 (4.41)	.150	.08	.325	.04
	Plan Organize	22.54 (3.89)	24.04 (5.23)	25.00 (4.78)	.015*	.21	.719	.01
	Organization of Materials ^d	10.73 (3.26)	11.69 (3.77)	12.35 (3.60)	.022*	.193	.809	.00
	Monitor	15.85 (2.94)	16.81 (3.53)	16.81 (2.79)	.133	.09	.348	.04
Global Executive Composite [GEC] ^e		140.12 (22.01)	144.50 (23.50)	151.27 (22.03)	.035*	.17	.684	.01

Note. Repeated-measures analysis of variance for treatment-group participants ($n = 26$). Although the Brief P is designed to be completed by a parent, in the case of this study it was completed by milieu (house-parent) staff at each participant's respective residence. Please note that the above Brief P is a different version of the Brief than the Brief T, which was filled out by participants' teachers.

^a Inhibit: significant curvilinear-convex quadratic trend $F(1, 25) = 3.95, p = .058; \eta^2 = .14$.

^d Metacognition: significant linear uptrend (greater symptoms) $F(1, 25) = 7.89, p = .010; \eta^2 = .19$.

^c Initiate: significant linear uptrend (greater symptoms) $F(1,25) = 7.81, p = .010; \eta^2 = .24$.

Plan/Organize: significant linear uptrend (greater symptoms) $F(1, 25) = 6.81, p = .015; \eta^2 = .21$.
^d Organization of Materials: significant linear uptrend (greater symptoms) $F(1, 25) = 5.99,$
 $p = .022^*;$ $\eta^2 = .24$. ^e Global Executive Composite: significant linear uptrend (greater
symptoms) $F(1,25) = 4.50, p = .035; \eta^2 = .17$.
[†] $p < .10$. $*p < .05$.

Table C9

Trend Analysis of the Behavior Rating Inventory of Executive Function, Teacher Form (BRIEF T), Completed by Participants' Classroom Teachers

Measure	Subscales	Time 1 M(SD)	Time 2 M(SD)	Time 3 M(SD)	Linear (<i>p</i>)	η^2	Quadratic (<i>p</i>)	η^2
Behavioral Regulation ^{fa}		61.62 (14.31)	63.33 (15.41)	66.33 (14.17)	.016*	.26	.653	.01
	Inhibit	21.05 (6.34)	21.00 (7.10)	21.81 (6.53)	.406	.04	.537	.02
	Shift ^b	21.14 (4.66)	22.19 (4.61)	23.57 (3.89)	.008*	.30	.763	.01
	Emotional Control ^c	19.43 (5.34)	20.14 (5.09)	20.95 (5.40)	.053†	.17	.932	.00
Metacognition ^d		87.81 (21.15)	96.95 (23.14)	97.43 (21.04)	.015*	.26	.074†	.15
	Initiate ^e	14.67 (3.23)	17.00 (3.46)	16.71 (3.12)	.003*	.365	.026*	.223
	Working Memory ^f	19.52 (4.56)	21.62 (5.51)	22.10 (4.97)	.014*	.26	.259	.06
	Plan Organize ^g	20.29 (5.07)	22.62 (5.70)	22.76 (4.77)	.015*	.26	.091†	.14
	Organization of Materials	12.05 (4.71)	13.67 (5.51)	13.33 (4.72)	.138	.11	.196	.08
	Monitor	21.29 (5.46)	22.14 (5.49)	22.52 (5.47)	.233	.07	.693	.01
Global Executive Composite [GEC] ^h		149.43 (33.03)	160.29 (36.55)	163.76 (34.01)	.008*	.30	.277	.06

Note. Repeated-measures analysis of variance for treatment-group participants ($n = 21$). Please note that the Brief T is a different version of the Brief than the Brief P.

^a Behavioral Regulation: significant linear uptrend (greater symptoms) $F(1, 20) = 6.99, p = .016; \eta^2 = .26$.

^b Shift: significant linear uptrend (greater symptoms) $F(1, 20) = 8.69, p = .008; \eta^2 = .30$.

^c Emotional Control: significant linear uptrend (greater symptoms) $F(1, 20) = 4.22, p = .053; \eta^2 = .17$.

^d Metacognition: significant linear uptrend (greater symptoms) $F(1, 20) = 7.01, p = .015; \eta^2 = .14$; significant curvilinear-concave quadratic trend $F(1, 20) = 3.155, p = .074; \eta^2 = .15$.

^e Initiate: significant linear uptrend (greater symptoms) $F(1, 20) = 11.51, p = .003; \eta^2 = .37$; significant curvilinear-concave quadratic trend $F(1, 20) = 5.75, p = .026; \eta^2 = .22$. ^f Working Memory: significant linear uptrend greater symptoms) $F(1, 20) = 7.17, p = .014; \eta^2 = .26$. ^g Plan Organize: significant linear uptrend (greater symptoms) $F(1, 20) = 7.14, p = .015; \eta^2 = .26$, but also, a higher-order significant curvilinear-concave quadratic trend $F(1, 20) = 3.15, p = .091; \eta^2 = .14$. Focus on the quadratic trend. ^h Global Executive Composite: significant longitudinal mean changes $F(2, 40) = 5.79, p = .006$; significant linear uptrend (greater symptoms) $F(1, 20) = 8.53, p = .008; \eta^2 = .30$.
[†] $p < .10$. * $p < .05$.

Table C10*Between Group: ANCOVA of HRV Variables in 5-Minute Resting Condition*

Dependent Variable	Treatment Group		Comparison Group		Mean Sq.	F	p <
	Mean	SE	Mean	SE			
Inter-Beat Interval, ms	724.956	14.583	747.368	16.489	5046.78	1.034	ns
SDNN, ms	46.501	4.934	47.427	5.578	8.614	0.015	ns
Ln RMSSD, ms	3.836	0.077	3.85	0.087	0.002	0.014	ns
NN50	96.588	9.221	109.193	10.429	1592.287	0.817	ns
Ln Total power, ms ² /Hz	7.189	0.175	7.317	0.198	0.163	0.232	ns
Ln Very low frequency, ms ² /Hz	5.924	0.2	6.189	0.221	0.692	0.79	ns
Ln Low frequency, ms ² /Hz	5.677	0.179	5.837	0.203	0.247	0.342	ns
Ln High frequency, ms ² /Hz	6.303	0.229	6.285	0.267	0.003	0.003	ns
Ln Low frequency / High frequency ratio	-0.474	0.146	-0.417	0.172	0.03	0.064	ns

Note. ANCOVA = Analysis of covariance. HRV = Heart rate variability. Inter-beat interval, ms = Interval between successive heartbeats. ms = Milliseconds. SDNN = Mean of the standard deviations of all the NN intervals for each 5 minute segment of a 24 h HRV recording. NN intervals = inter-beat intervals from which artifacts have been removed. Ln RMSSD = Natural logarithm root mean square of successive RR interval differences. RR intervals = Inter-beat intervals between all successive heartbeats. NN50 = Successive RR intervals that differ by more than 50 ms. LN Total Power ms²/Hz = Natural logarithm of milliseconds squared divided by cycles per second (Hz = hertz). LN Very low frequency = Natural logarithm of power of the very-low-frequency band (0.0033–0.04 Hz). Natural logarithm of power of the high-frequency band (0.15–0.4 Hz). LN High frequency = Natural logarithm of power of the high-frequency band (0.15–0.4 Hz). LN Low frequency/High frequency ratio = Natural logarithm of the low-frequency band (0.04–0.15 Hz) divided by natural logarithm of the high-frequency band (0.15–0.4 Hz).

Table C11*Between Group: ANCOVA of HRV Variables in 1-Minute Deep Breathing Test*

Dependent Variable	Treatment Group		Comparison Group		Mean Sq.	F	p <
	Mean	SE	Mean	SE			
Inter-Beat Interval, ms	738.507	15.157	776.669	17.135	14679.528	2.78	ns
SDNN, ms	90.625	5.62	82.089	6.566	670.049	0.947	ns
Ln RMSSD, ms	4.012	0.109	4.079	0.127	0.043	0.159	ns
NN50	25.509	2.088	28.991	2.143	116.817	1.346	ns
Ln Low frequency, ms ² /Hz	8.511	0.169	8.323	0.178	0.337	0.573	ns
Ln High frequency, ms ² /Hz	6.481	0.22	6.569	0.238	0.076	0.075	ns
Ln Low frequency / High frequency ratio	1.839	0.184	1.9	0.214	0.036	0.046	ns

Note. ANCOVA = Analysis of covariance. HRV = Heart rate variability. Inter-beat interval, ms = Interval between successive heartbeats in milliseconds. ms = Milliseconds. SDNN = Mean of the standard deviations of all the NN intervals for each 5 min segment of a 24 h HRV recording, NN intervals = Inter-beat intervals from which artifacts have been removed. Ln RMSSD = Natural logarithm root mean square of successive RR interval differences. RR intervals = Inter-beat intervals between all successive heartbeats. NN50 = Successive RR intervals that differ by more than 50 ms. LN Low frequency ms²/Hz = Natural logarithm of the low-frequency band (0.04–0.15 Hz) ms squared divided by cycles per second (Hz = hertz). LN High frequency = Natural logarithm of power of the high-frequency band (0.15–0.4 Hz). LN Low frequency/High frequency ratio = Natural logarithm of the low-frequency band (0.04–0.15 Hz) divided by natural logarithm of the high-frequency band (0.15–0.4 Hz).

Table C12*Treatment Group: Within-Subjects t Test of HRV Variables in 5-Minute Resting Condition*

	N	Pre			Post			Paired Differences			t	df	p <
		Mean	SD	SEM	Mean	SD	SEM	Mean	SD	SEM			
RR Interval, ms	23	736.37	105.77	22.05	719.97	112.52	23.46	-16.40	75.23	15.69	-1.05	22	ns
HR, bpm	23	84.78	13.49	2.81	84.74	13.51	2.82						
SDNN, ms	23	48.31	24.62	5.13	45.83	30.31	6.32	-2.49	30.90	6.44	-0.39	22	ns
RMSSD, ms	23	56.43	29.27	6.10	51.23	32.62	6.80						
Ln RMSSD, ms	23	3.93	0.45	0.09	3.80	0.50	0.10	-0.13	0.44	0.09	-1.38	22	ns
NN50	23	104.96	68.57	14.30	93.00	64.53	13.46	-11.96	45.68	9.53	-1.26	22	ns
pNN50	23	28.25	19.43	4.05	24.35	20.00	4.17	-3.90	14.03	2.92	-1.33	22	ns
Total power, ms ² /Hz	23	2485.17	3139.47	654.62	2519.87	4655.84	970.81						
Ln Total power, ms ² /Hz	23	7.19	1.16	0.24	7.11	1.14	0.24	-0.07	1.11	0.23	-0.31	22	ns
Very low frequency, ms ² /Hz	23	460.96	534.46	111.44	725.96	1571.29	327.64						
Ln Very low frequency, ms ² /Hz	22	5.69	0.98	0.21	5.93	1.00	0.21	0.25	1.31	0.28	0.88	21	ns
Low frequency, ms ² /Hz	23	706.96	1183.55	246.79	498.61	728.05	151.81						
Ln Low frequency, ms ² /Hz	23	5.76	1.25	0.26	5.58	1.12	0.23	-0.18	1.15	0.24	-0.73	22	ns
High frequency, ms ² /Hz	23	1313.17	2060.02	429.54	1292.57	2447.27	510.29						
Ln High frequency, ms ² /Hz	23	6.34	1.28	0.27	6.20	1.39	0.29	-0.14	1.15	0.24	-0.58	22	ns
LF/HF	23	0.90	1.57	0.33	0.73	0.62	0.13	-0.17	1.53	0.32	-0.53	22	ns
Ln LF/HF	22	-0.58	0.90	0.19	-0.52	0.70	0.15	0.06	0.80	0.17	0.33	21	ns

Note. RR intervals = Inter-beat intervals between all successive heartbeats. HR, bpm = Heart rate beats per minute. SDNN, ms = Mean of the standard deviations of all the NN intervals for each 5 min segment of a 24 HRV recording in ms (milliseconds). RMSSD = Root mean square of successive RR interval differences. Ln RMSSD = Natural logarithm root mean square of successive RR interval differences. NN50 = Successive RR intervals that differ by more than 50 ms. pNN50 = Percentage of successive RR intervals that differ by more than 50 ms. Total Power ms²/Hz = ms squared divided by cycles per second (Hz = hertz). LN Total Power ms²/Hz = Natural logarithm of ms squared divided by cycles per second (Hz = hertz). Very low frequency = Power of the very-low-frequency band (0.0033–0.04 Hz). LN Very low frequency = Natural logarithm of power of the very-low-frequency band (0.0033–0.04 Hz). Low frequency = Power of the low-frequency band (0.04–0.15 Hz). LN Low frequency = Natural logarithm of the power of the low-frequency band (0.04–0.15 Hz). High frequency = Power of the high-frequency band (0.15–0.4 Hz). LN High frequency = Natural logarithm of power of the high-frequency band (0.15–0.4 Hz). LF/HF is LN Low frequency/High frequency ratio = Power of the low-frequency band (0.04–0.15 Hz) divided by power of the high-frequency band (0.15–0.4 Hz).

Table C13*Comparison Group: Within Subjects t Test of HRV Variables in 5-Minute Resting Condition*

	N	Pre			Post			Paired Differences			t	df	p <
		Mean	SD	SEM	Mean	SD	SEM	Mean	SD	SEM			
RR Interval, ms	18	750.67	98.45	23.20	753.74	98.95	23.32	3.08	67.85	15.99	0.19	17	ns
HR, bpm	18	82.20	10.77	2.54	81.68	13.12	3.09						
SDNN, ms	18	51.72	25.48	6.01	48.29	18.77	4.42	-3.43	21.08	4.97	-0.69	17	ns
RMSSD, ms	18	66.56	40.41	9.53	53.68	23.96	5.65						
Ln RMSSD, ms	18	4.06	0.51	0.12	3.90	0.43	0.10	-0.16	0.35	0.08	-1.97	17	ns
NN50	18	116.22	61.33	14.46	113.78	64.41	15.18	-2.44	48.97	11.54	-0.21	17	ns
pNN50	18	31.02	20.90	4.93	30.92	18.54	4.37	-0.11	16.24	3.83	-0.03	17	ns
Total power, ms ² /Hz	18	2820.83	2660.40	627.06	2327.89	1804.24	425.26						
Ln Total power, ms ² /Hz	18	7.49	1.07	0.25	7.41	0.91	0.22	-0.07	0.70	0.16	-0.45	17	ns
Very low frequency, ms ² /Hz	18	422.72	389.17	91.73	750.44	760.16	179.17						
Ln Very low frequency, ms ² /Hz	18	5.63	0.98	0.23	6.18	1.00	0.24	0.55	0.74	0.18	3.11	17	0.01
Low frequency, ms ² /Hz	18	653.11	481.61	113.52	500.11	355.50	83.79						
Ln Low frequency, ms ² /Hz	18	6.20	0.83	0.19	5.95	0.77	0.18	-0.25	0.80	0.19	-1.32	17	ns
High frequency, ms ² /Hz	18	1521.39	2209.77	520.85	1072.44	1267.66	298.79						
Ln High frequency, ms ² /Hz	17	6.71	1.21	0.29	6.42	1.27	0.31	-0.29	1.21	0.29	-1.01	16	ns
LF/HF	18	0.84	0.52	0.12	1.09	1.08	0.25						
Ln LF/HF	16	-0.32	0.50	0.12	-0.35	0.83	0.21	-0.03	0.77	0.19	-0.13	15	ns

Note. RR intervals = Inter-beat intervals between all successive heartbeats. HR, bpm = Heart rate beats per minute. SDNN, ms = Mean of the standard deviations of all the NN intervals for each 5 min segment of a 24 hour HRV recording in ms (milliseconds). RMSSD = Root mean square of successive RR interval differences. Ln RMSSD, ms = Natural logarithm root mean square of successive RR interval differences. NN50 = Successive RR intervals that differ by more than 50 ms. pNN50 = Percentage of successive RR intervals that differ by more than 50 ms. Total Power ms²/Hz = ms squared divided by cycles per second (Hz = hertz). LN Total Power ms²/Hz = Natural logarithm of ms squared divided by cycles per second (Hz = hertz). Very low frequency = Power of the very-low-frequency band (0.0033–0.04 Hz). LN Very low frequency = Natural logarithm of power of the very-low-frequency band (0.0033–0.04 Hz). Low frequency = Power of the low-frequency band (0.04–0.15 Hz). LN Low frequency = Natural logarithm of the power of the low-frequency band (0.04–0.15 Hz). High frequency = Power of the high-frequency band (0.15–0.4 Hz). LN High frequency = Natural logarithm of power of the high-frequency band (0.15–0.4 Hz). LF/HF is LN Low frequency/High frequency ratio = Power of the low-frequency band (0.04–0.15 Hz) divided by power of the high-frequency band (0.15–0.4 Hz).

Table C14*Treatment Group: Within Subjects t Test of HRV Variables in 1-Minute Deep Breathing Test*

	N	Pre			Post			Paired Differences			t	df	p <
		Mean	SD	SEM	Mean	SD	SEM	Mean	SD	SEM			
RR Interval, ms	23	731.72	103.04	21.49	735.34	125.65	26.20	3.62	76.87	16.03	0.23	22	ns
HR, bpm	23	85.07	13.11	2.73	83.59	13.72	2.86						
SDNN, ms	23	77.61	36.55	7.62	83.77	45.20	9.42	6.17	32.52	6.78	0.91	22	ns
RMSSD, ms	23	61.79	28.07	5.85	64.86	40.31	8.41						
Ln RMSSD, ms	23	6.03	9.62	2.01	4.02	0.56	0.12	-2.02	9.60	2.00	-1.01	22	ns
NN50	20	25.65	9.61	2.15	24.70	12.17	2.72	-0.95	10.81	2.42	-0.39	19	ns
Low frequency, ms ² /Hz	23	4648.70	4160.02	867.42	6084.91	6584.01	1372.86						
Ln Low frequency, ms ² /Hz	21	7.92	1.38	0.30	8.33	1.14	0.25	0.40	0.97	0.21	1.90	20	ns
High frequency, ms ² /Hz	23	1326.91	1396.70	291.23	1322.17	2385.52	497.41						
Ln High frequency, ms ² /Hz	21	6.60	1.34	0.29	6.46	1.37	0.30	-0.14	1.16	0.25	-0.57	20	ns
LF/HF	23	62.63	275.43	57.43	9.39	9.49	1.98						
Ln LF/HF	23	1.67	1.38	0.29	1.84	0.92	0.19	0.18	1.33	0.28	0.63	22	ns

Note. HRV = Heart rate variability. RR intervals = Inter-beat intervals between all successive heartbeats. HR, bpm = Heart rate beats per minute. SDNN, ms = Mean of the standard deviations of all the NN intervals for each 5 min segment of a 24 hour HRV recording in ms (milliseconds). ms = Milliseconds. RMSSD = Root mean square of successive RR interval differences. Ln RMSSD = Natural logarithm root mean square of successive RR interval differences. NN50 = Successive RR intervals that differ by more than 50 ms. Low frequency = Power of the low-frequency band (0.04–0.15 Hz). LN Low frequency = Natural logarithm of the power of the low-frequency band (0.04–0.15 Hz). High frequency = Power of the high-frequency band (0.15–0.4 Hz). LN High frequency = Natural logarithm of power of the high-frequency band (0.15–0.4 Hz). LF/HF is LN Low frequency/High frequency ratio = Power of the low-frequency band (0.04–0.15 Hz) divided by power of the high-frequency band (0.15–0.4 Hz).

Table C15*Comparison Group: Within Subjects t Test of HRV Variables in 1-Minute Deep Breathing Test*

	N	Pre			Post			Paired Differences			t	df	p <
		Mean	SD	SEM	Mean	SD	SEM	Mean	SD	SEM			
RR Interval, ms	18	739.93	95.60	22.53	780.72	94.96	22.38	40.78	67.03	15.80	2.58	17	0.05
HR, bpm	19	86.00	8.67	1.99	81.54	12.28	2.82						
SDNN, ms	17	96.51	40.34	9.78	91.36	36.72	8.91	-5.15	16.02	3.89	-1.32	16	ns
RMSSD, ms	19	67.88	29.96	6.87	100.43	119.39	27.39						
Ln RMSSD, ms	17	4.08	0.46	0.11	4.07	0.44	0.11	0.00	0.28	0.07	-0.07	16	ns
NN50	19	27.74	10.64	2.44	29.84	12.25	2.81	2.11	7.69	1.77	1.19	18	ns
Low frequency, ms ² /Hz	19	7420.95	5566.31	1277.00	8703.58	8897.68	2041.27						
Ln Low frequency, ms ² /Hz	19	8.46	1.18	0.27	8.53	1.27	0.29	0.07	0.65	0.15	0.45	18	ns
High frequency, ms ² /Hz	19	1261.05	1047.95	240.42	3780.05	9212.40	2113.47						
Ln High frequency, ms ² /Hz	18	6.67	1.16	0.27	6.60	1.37	0.32	-0.07	0.89	0.21	-0.34	17	ns
LF/HF	19	7.52	6.78	1.56	9.50	9.99	2.29						
Ln LF/HF	17	1.65	0.51	0.12	1.90	0.93	0.23	0.24	0.92	0.22	1.09	16	ns

Note. HRV = Heart rate variability. RR intervals = Inter-beat intervals between all successive heartbeats. HR, bpm = Heart rate beats per minute. SDNN, ms = Mean of the standard deviations of all the NN intervals for each 5 min segment of a 24 hour HRV recording in ms (milliseconds). ms = Milliseconds. RMSSD = Root mean square of successive RR interval differences. Ln RMSSD = Natural logarithm root mean square of successive RR interval differences. NN50 = Successive RR intervals that differ by more than 50 ms. Low frequency = Power of the low-frequency band (0.04–0.15 Hz). LN Low frequency = Natural logarithm of the power of the low-frequency band (0.04–0.15 Hz). High frequency = Power of the high-frequency band (0.15–0.4 Hz). LN High frequency = Natural logarithm of power of the high-frequency band (0.15–0.4 Hz). LF/HF is LN Low frequency/High frequency ratio = Power of the low-frequency band (0.04–0.15 Hz) divided by power of the high-frequency band (0.15–0.4 Hz).

Table C16*Baseline Demographic Characteristics of Heart Rate Variability (HRV) Subgroups*

Characteristics	HRV subgroup 1 n = 13			HRV subgroup 2 n = 10			HRV subgroup 3 n = 19		
	f(%)	M(SD)	Range	f(%)	M(SD)	Range	f(%)	M(SD)	Range
Age	13	17.31 (2.25)	14-22	10	17.5 (1.65)	15-20	19	18.26 (2.10)	15-22
14-17	6 (46.2)			4 (40)			5 (26.3)		
18-22	7 (53.8)			6 (60)			14 (73.7)		
Gender	13			10			19		
Male ^a	5 (38.5)			4 (40)			8 (42.1)		
Female	8 (61.5)			6 (60)			11 (57.9)		
Race	8			5			13		
Asian	0			1 (20)			2 (15.4)		
Black/African American	0			0			1 (7.7)		
White	6 (75)			2 (40)			9 (69.2)		
Biracial/Multiracial	2 (25)			2 (40)			1 (7.7)		
Ethnicity	9			5			2		
Hispanic/Latino	3 (23.1)			2 (40)			1 (8.3)		
Not Hispanic/Latino	6 (66.7)			3 (60)			1 (91.7)		
Residential program	13			9			19		
Residential school	11 (84.6)			7 (70)			12 (63.2)		
Group home	2 (15.4)			2 (22)			7 (36.8)		
Prior living									
Ever fostered? ^b	9			6			10		
Yes	5 (55.6)			4 (44.4)			5 (50)		
No	4 (44.4)			5 (55.6)			5 (50)		
Average number of foster placements ^c	7	1.71 (1.70)	0-15	9	2.0	0-8	15	2.07 (4.01)	0-15

Characteristics	HRV subgroup 1 <i>n</i> = 13			HRV subgroup 2 <i>n</i> = 10			HRV subgroup 3 <i>n</i> = 19		
	<i>f</i> ² (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range
Prior mental health residential placement	13			10			19		
Yes	10 (76.9)			8 (80)			12 (63.2)		
No	3 (23.1)			2 (20)			7 (36.8)		
Custody	10			9			14		
Biological parent	4 (40)			5 (55.6)			4 (28.6)		
Adoptive parent	2 (15.4)			2 (22.2)			4 (28.6)		
State child and family protective services	2 (15.4)			2 (22.2)			4 (28.6)		
Other	2 (15.4)			0			2 (14.3)		
Trauma history	10			7			13		
Age of first trauma exposure	10	2.20 (5.69)	0-18	7	1.00 (2.65)	0-7	13	1.92 (4.56)	0-14
Exposed at < 1 year-of-age ^d	8 (80.0)			6 (85.7)			10 (76.9)		
No. of trauma years ^e	10	8.20 (6.49)	2-18	7	5.43 (2.37)	3-9	13	4.23 (4.66)	1-17
No. of cumulative-trauma years (total load years) ^f	10	17.4 (19.92)	1-64	7	10.14 (5.21)	3-18	13	11.62 (11.00)	1-33
No. of trauma types ^g	10	5.60 (2.17)	2-10	7	4.57 (2.44)	2-8	13	4.38 (2.26)	2-8
Types of trauma	10			7			13		
Neglect	7 (63.6)			6 (66.7)			11 (84.6)		
Impaired caregiver	6 (54.5)			4 (44.4)			5 (50)		
Emotional/verbal	8 (80.0)			5 (55.6)			8 (61.5)		
Physical	7 (63.6)			1 (11.1)			7 (53.8)		
Sexual	8 (72.7)			4 (44.4)			4 (30.8)		
DV exposure	3 (27.3)			4 (44.4)			5 (38.5)		
Loss/bereavement	3 (27.3)			0			4 (30.8)		

Characteristics	HRV subgroup 1 <i>n</i> = 13			HRV subgroup 2 <i>n</i> = 10			HRV subgroup 3 <i>n</i> = 19		
	<i>f</i> ² (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range	<i>f</i> (%)	<i>M</i> (<i>SD</i>)	Range
Substance-abuse history	10			9			14		
Yes	4 (40)			2 (22.2)			6 (42.9)		
No	6 (60)			7 (77.8)			8 (57.1)		
Suicidal-ideation history	10			7			11		
Yes	6 (60)			4 (57.1)			7 (63.6)		
No	4 (40)			3 (42.9)			4 (36.4)		
Suicide attempt	9			7			14		
Yes	1 (11.1)			2 (28.6)			3 (21.4)		
No	8 (88.9)			5 (71.4)			11 (78.6)		
Self-Injury history	10			7			14		
Yes	5 (50)			3 (33.3)			7 (50)		
No	5 (50)			6 (66.7)			7 (50)		
School years behind ^h	10	2.70 (.95)	1-4	9	3.44 (1.94)	0-6	14	2.57 (.65)	2-4
Learning disability	8			9			14		
Yes	5 (62.5)			6 (66.7)			7 (50.0)		
No	3 (37.5)			3 (33.3)			7 (50.0)		
Arrested/adjudicated	10			9			14		
Yes	3 (30)			0			1 (21.4)		
No	7 (70)			9			11 (78.6)		
Diagnoses									
No. of diagnoses ⁱ	9	2.56 (1.01)	1-4	9	2.44 (.88)	1-4	12	2.50 (.90)	1-4
PTSD	4 (44.4)			3 (33.3)			3 (25)		
RAD	4 (44.4)			1 (11.1)			4 (33.3)		
Dissociative disorder	0			0			1 (8.3)		
Eating disorder	0			0			1 (8.3)		
Mood/depression	3 (33.3)			7 (77.8)			9 (75)		
Bipolar disorder	1 (11.1)			2 (22.2)			2 (16.7)		

Characteristics	HRV subgroup 1 n = 13			HRV subgroup 2 n = 10			HRV subgroup 3 n = 19		
	f ² (%)	M(SD)	Range	f(%)	M(SD)	Range	f(%)	M(SD)	Range
Psychotic disorder	1 (7.7)			0			1 (8.3)		
Autistic spectrum	1 (7.7)			0			0		
Generalized anxiety	4 (44.4)			2 (22.2)			1 (8.3)		
ADHD	1 (11.1)			2 (22.2)			4 (33.3)		
GAF ¹⁹	7	44.29 (7.86)	35-60	8	46.25 (2.51)	35-55	11	48.55 (7.30)	35-60
Psychiatric medications	6			7			11		
Taking psych meds	6			7			11		
No. of meds	6	2.67 (1.03)	1-4	7	2.57 (.79)	2-4	11	2.00 (1.27)	0-4
Antidepressants	2 (33.3)		0-1	1 (14.3)		0-1	3 (27.3)		0-1
Mood stabilizers	2 (33.3)		0-2	5 (71.4)		0-1	5 (45.5)		0-1
Anti-psychotic	4 (66.7)		0-1	5 (71.4)		0-1	3 (27.3)		0-1
Benzodiazepines	0		0	0			0		0
Blood pressure	3 (50.0)		0-1	4 (57.1)		0-1	2 (18.2)		0-1
Antihistamines	1 (16.7)		0-1	0			2 (18.2)		0-1
Sleep medication	1 (16.7)		0-1	1 (14.3)		0-1	0		0
Stimulant (ADHD)	2 (33.3)		0-1	1 (14.3)		0-1	5 (45.5)		0-1

Note. N = 42. PTSD = posttraumatic stress disorder; RAD = reactive attachment disorder; Mood/depression = mood and depressive disorders; ADHD = attention deficit hyperactivity; GAF = global assessment of functioning score.

Demographic data was collected by the residential program. The above is my secondary analysis. Baseline demographics characteristics were gathered upon participants' entry into the residential program. There were many missing demographic data, so I have counted the number of endorsements for each demographic variable. Percentage was based on the available data for that specific variable. Participants in the TD study were enrolled in and living at one of four residential schools or one of three group homes.

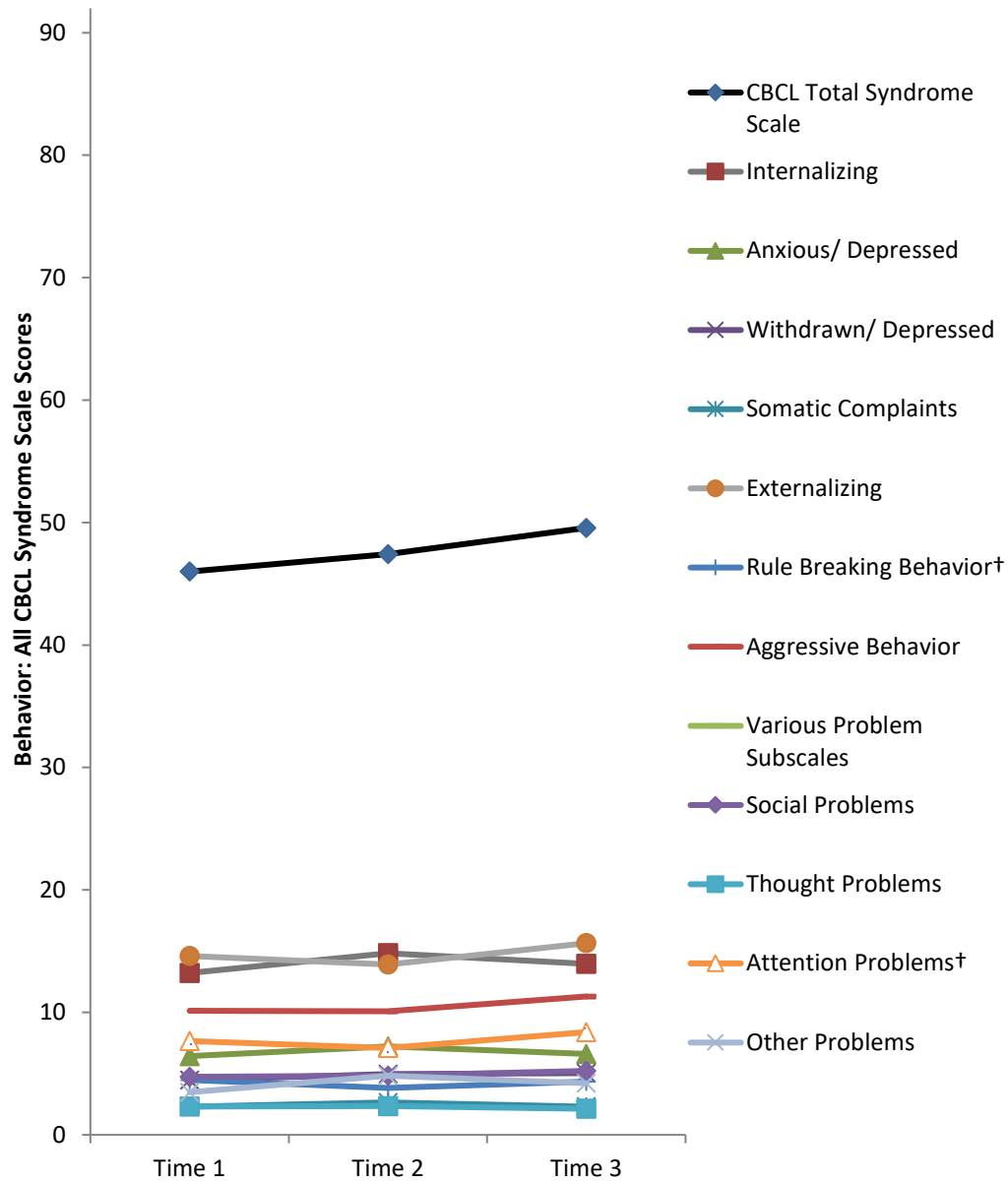
^a Two "male" participants (one in the treatment group and one in the comparison group) spoke to me of being or transitioning to non-male gender (though each was listed as male in the demographic data). ^b Has the participant ever been in foster care? ^c Mean number of foster-home placements prior to admittance into the residential program. ^d Exposure to complex trauma in the first months of life (meaning before the first birthday). ^e Mean number of years across the lifespan during which trauma occurred. ^f The *cumulative-trauma-years* variable represents the mean total load of trauma that each participant experienced over the lifespan. The variable accounts for the years that each type of trauma was experienced and sums all years together, even when the years overlap. For

instance, one participant may have experienced neglect from ages 1–5 (4 years), sexual trauma from ages 4–7 (counted as 3 years, even though sexual-trauma years overlap with neglect-trauma years), and an impaired caregiver from ages 1–7 (counted as 6 caregiver-impairment-trauma years even though those years overlap with both other types of trauma years). In this case the cumulative-trauma years would be 4 years + 3 years + 6 years = 13 years of cumulative-trauma load. ^g The mean number of trauma types experienced by the participant over the lifespan. ^h The mean number of years that participants were behind in school, respective to chronological age. ⁱ Mean number of mental health diagnoses for participants.

Appendix D Figures

Figure D1

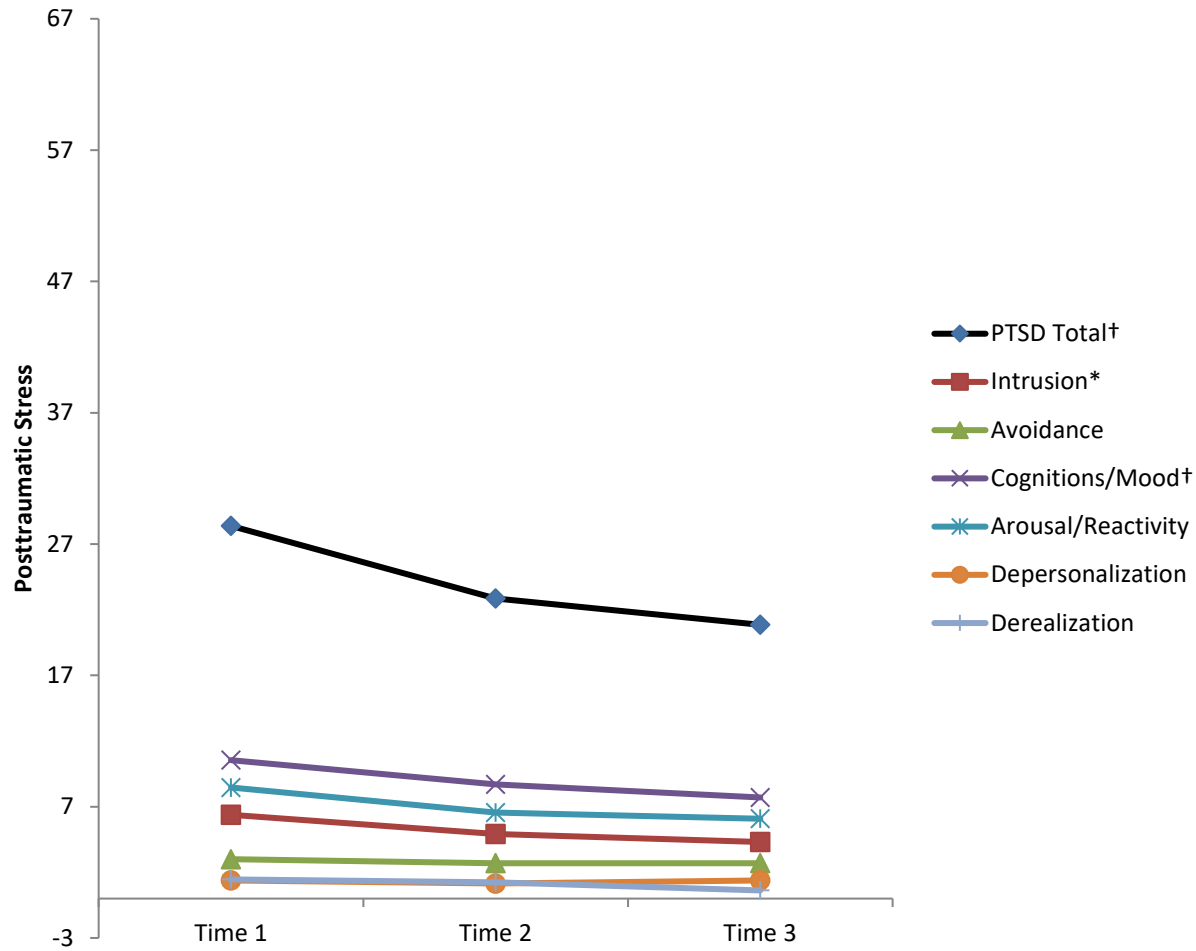
CBCL Syndrome Scale: Total Score, Two Factors, and Subscales (n = 23)



Note. Repeated measures analysis of variance for treatment-group participants ($n = 23$).
 CBCL = Child Behavior Checklist.
 † $p < .10$.

Figure D2

PTSD RI: Total Score and Subscales, (n = 13)

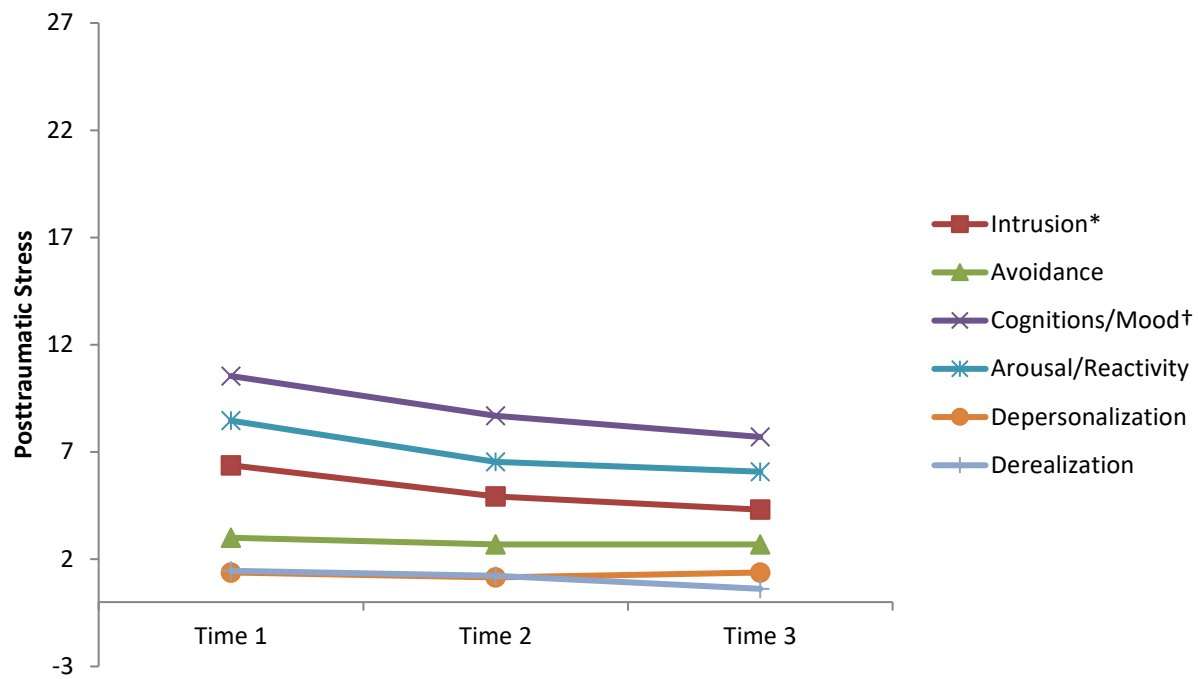


Note. Repeated measures analysis of variance for treatment-group participants ($n = 13$). PTSD RI = Posttraumatic Stress Disorder Reaction Index.

† $p < .10$. * $p < .05$.

Figure D3

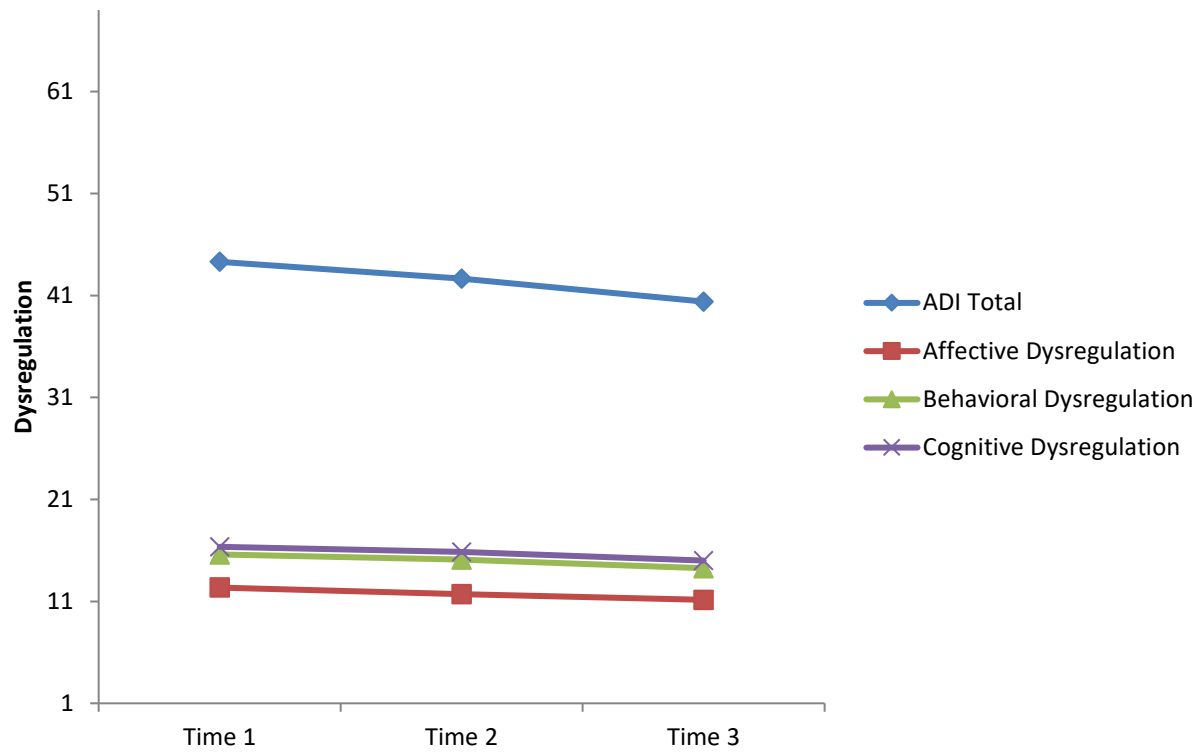
PTSD RI: Subscales Only (n = 13)



Note. Repeated measures analysis of variance for treatment-group participants ($n = 13$). PTSD RI = Posttraumatic Stress Disorder Reaction Index.
† $p < .10$. * $p < .05$.

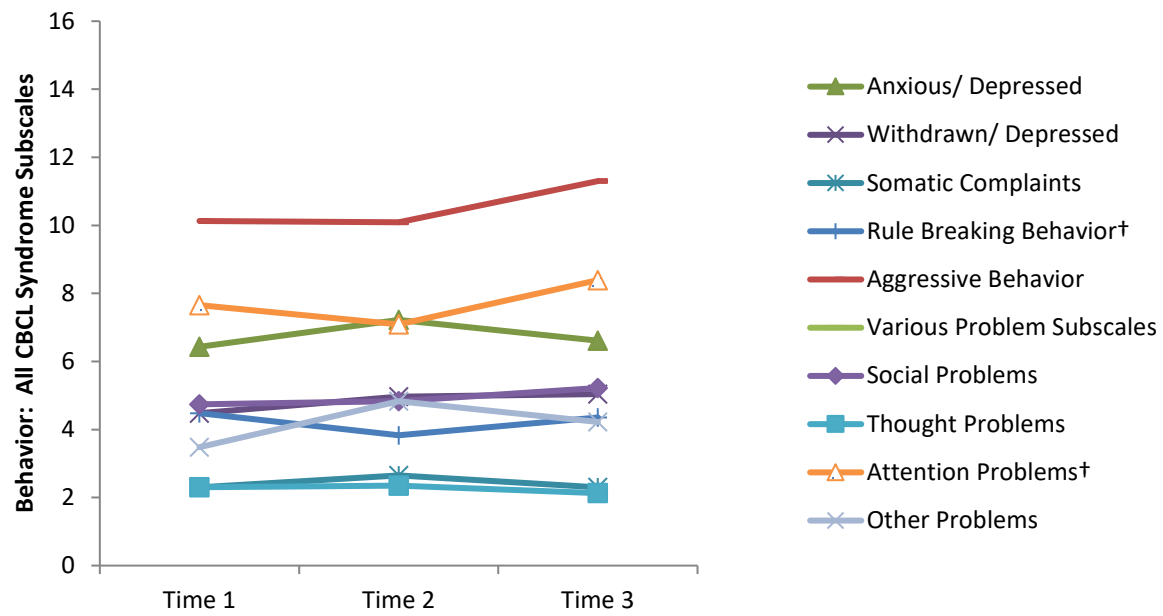
Figure D4

ADI: Total Score and Subscales (n = 20)



Note. Repeated measures analysis of variance for treatment-group participants ($n = 20$).
ADI = Abbreviated Dysregulation Inventory.

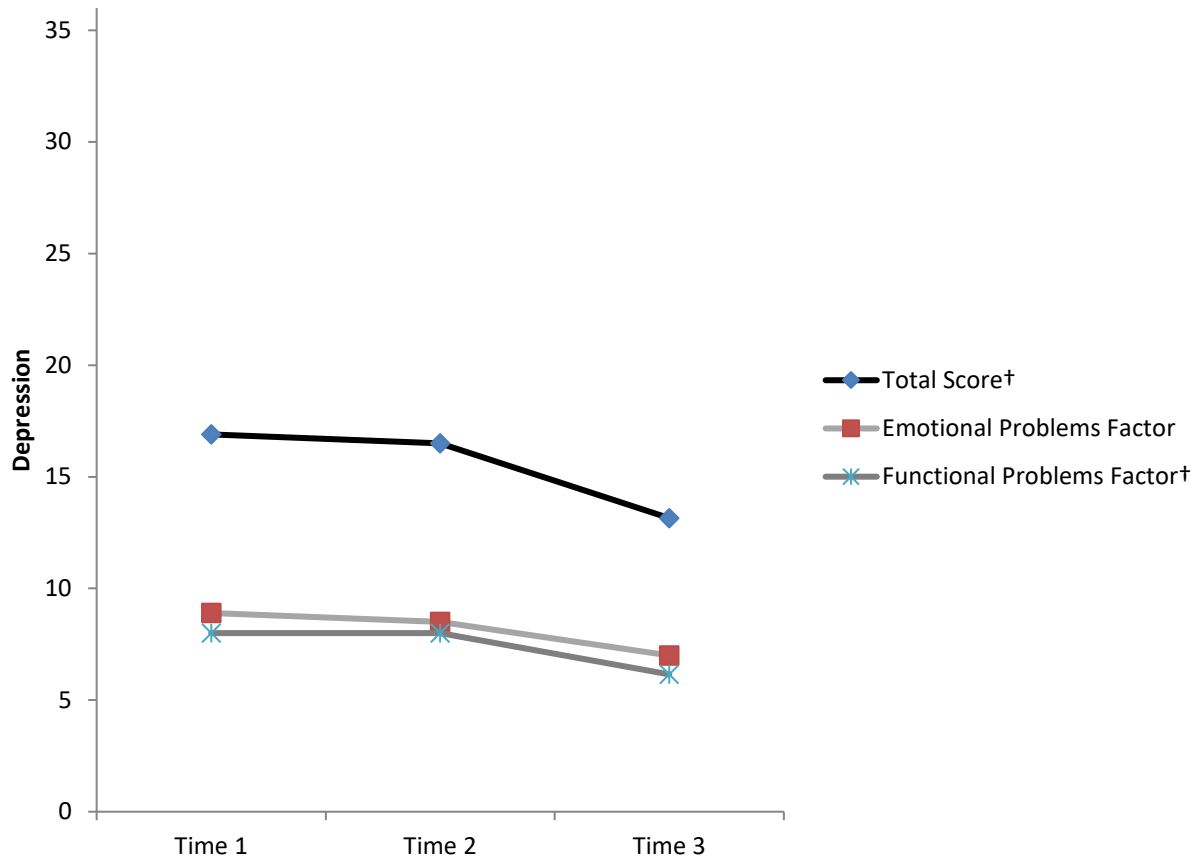
Figure D5
CBCL Syndrome Subscales (n = 23)



Note. Repeated measures analysis of variance for treatment-group participants ($n = 23$).
 CBCL = Child Behavior Checklist.

Figure D6

CDI-II: Total Score and Two Factors (n = 20)

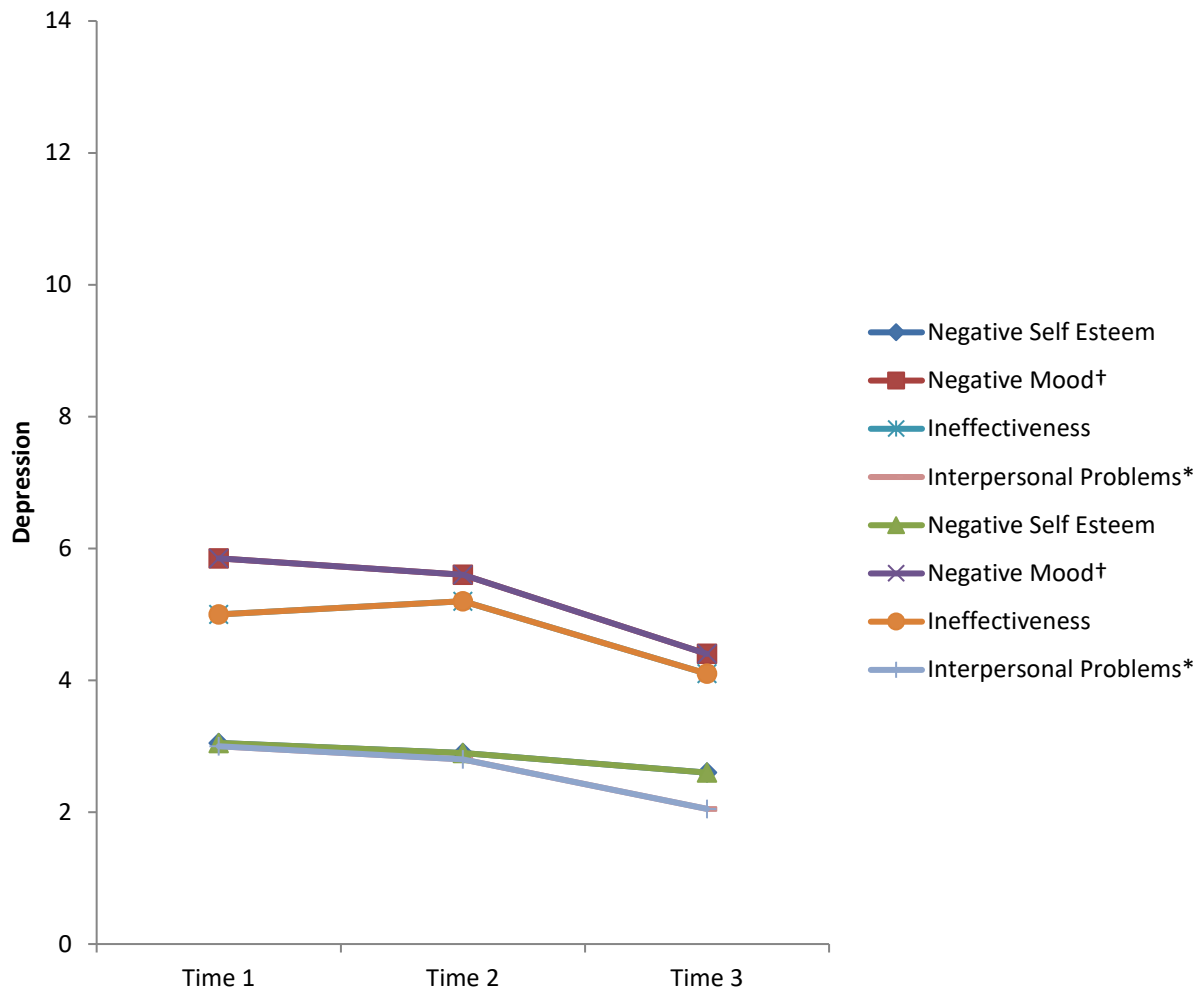


Note. Repeated measures analysis of variance for treatment-group participants ($n = 20$).

CDI 2 = Children's Depression Inventory-2.

† $p < .10$.

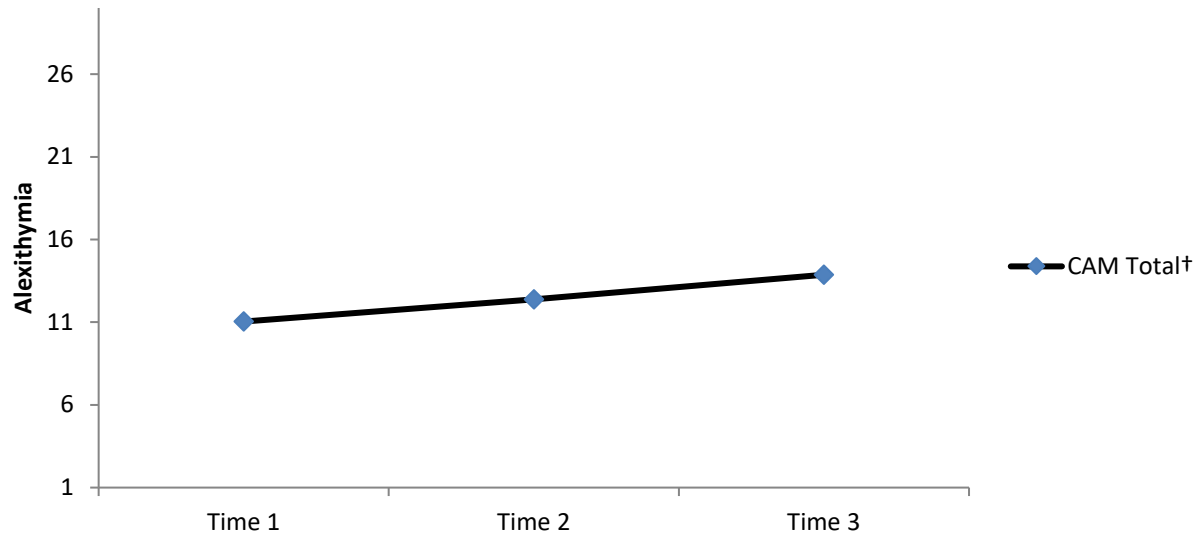
Figure D7
CDI-II: Subscales Only (n = 20)



Note. Repeated measures analysis of variance for treatment-group participants ($n = 20$).
 CDI 2 = Children's Depression Inventory-2.
 $\dagger p < .10$. $*p < .05$.

Figure D8

CAM: Total (n = 24)



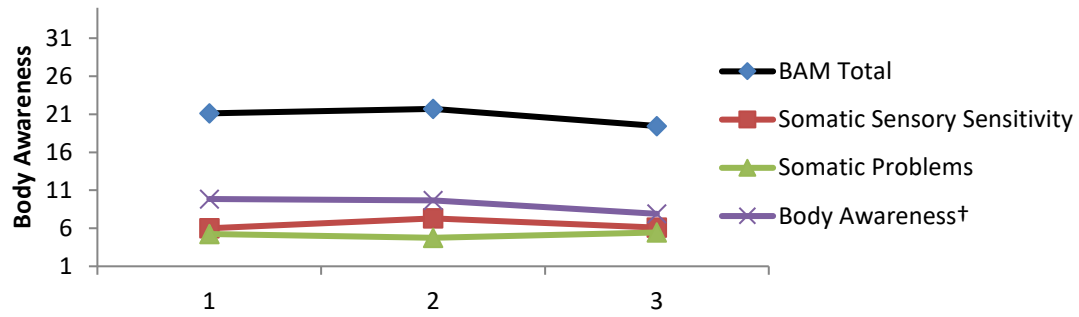
Note. Repeated measures analysis of variance for treatment-group participants ($n = 24$).

CAM = Children's Alexithymia Measure.

† $p < .10$.

Figure D9

BAM: Total Score and Subscales (n = 20)

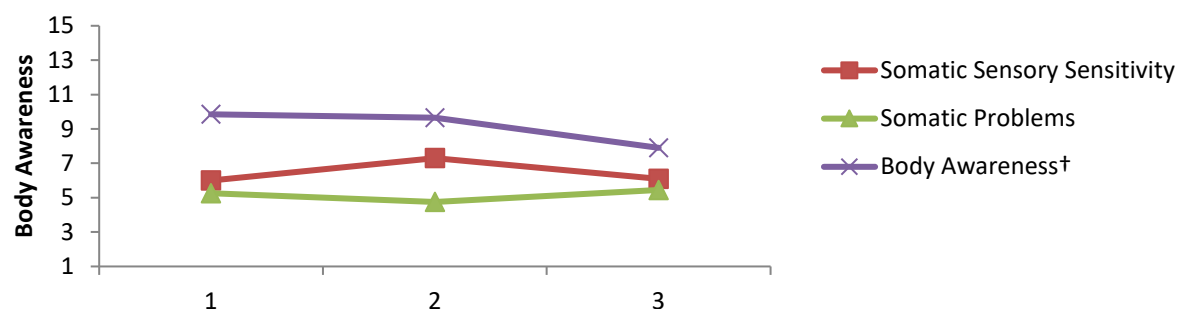


Note. Repeated measures analysis of variance for treatment-group participants ($n = 20$). BAM = Body Awareness Measure.

† $p < .10$.

Figure D10

BAM: Subscales (n = 20)

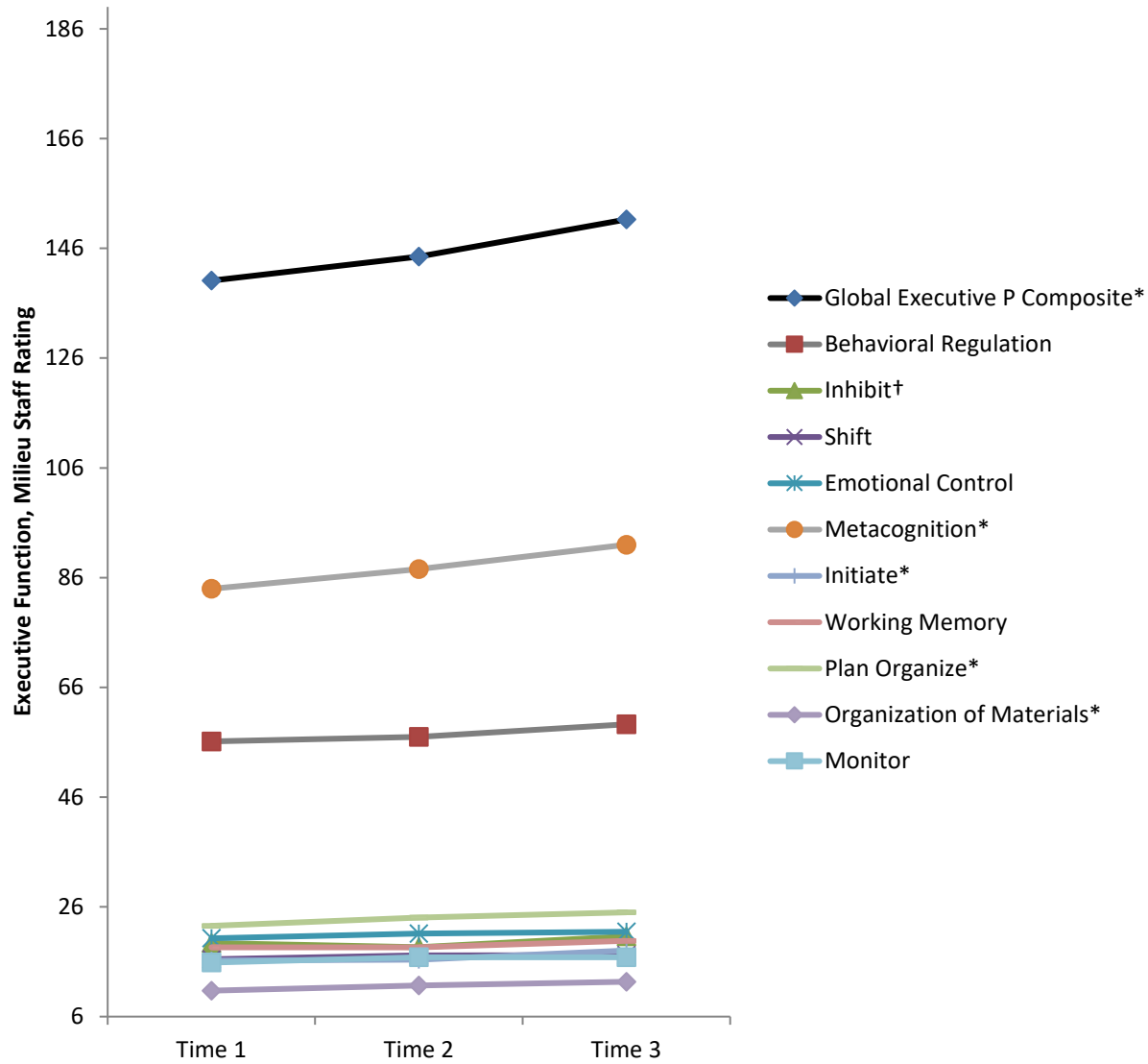


Note. Repeated measures analysis of variance for treatment-group participants ($n = 20$). BAM = Body Awareness Measure.

† $p < .10$.

Figure D11

BRIEF P: Total GEC, Two Factors, and Subscales (n = 26)



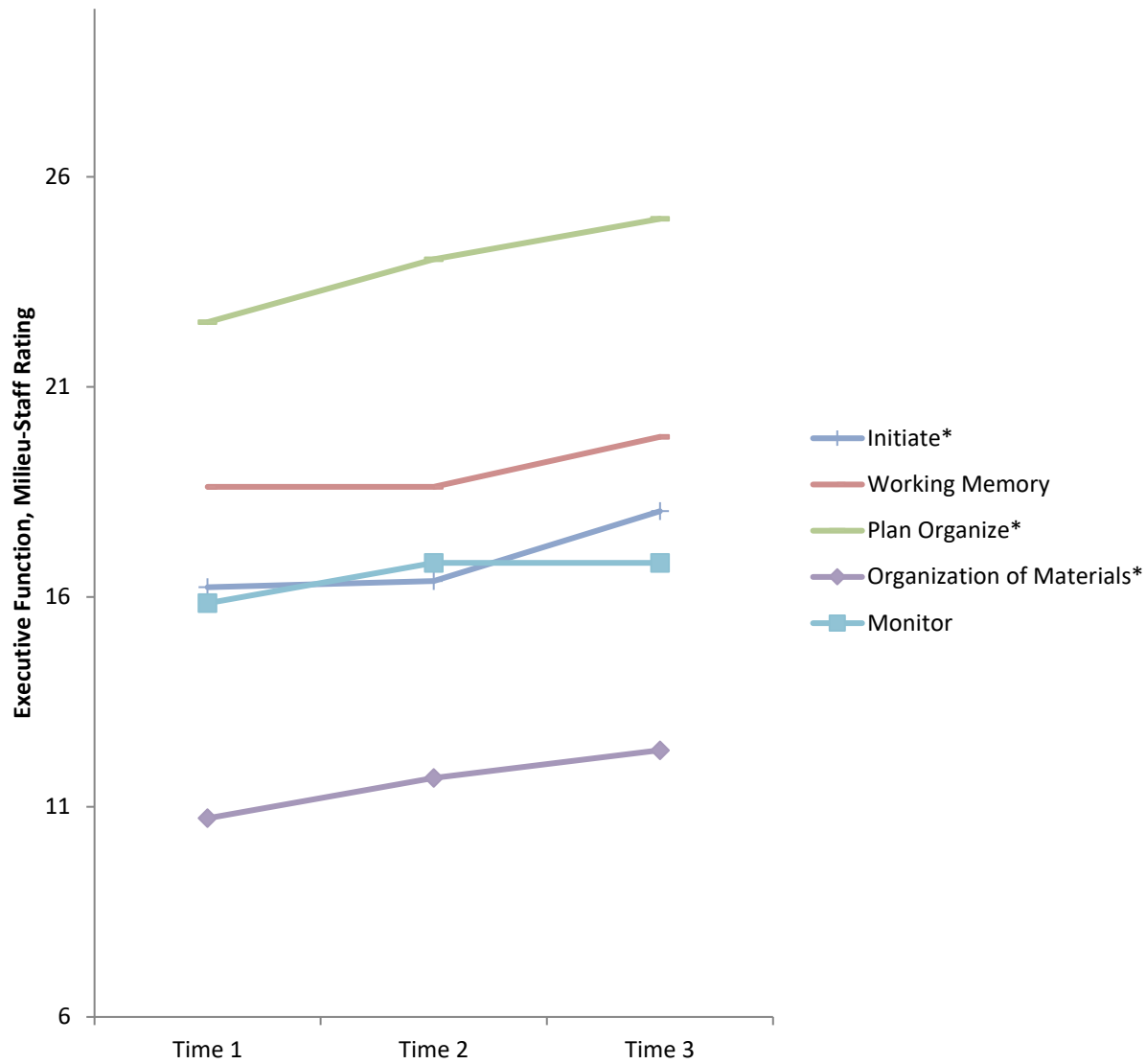
Note. Repeated measures analysis of variance for treatment-group participants ($n = 26$).

BRIEF P = Behavior Rating Inventory of Executive Function – Parent Version.

* $p < .05$.

Figure D12

BRIEF P: Metacognition Factor, Subscales Only (n = 26)

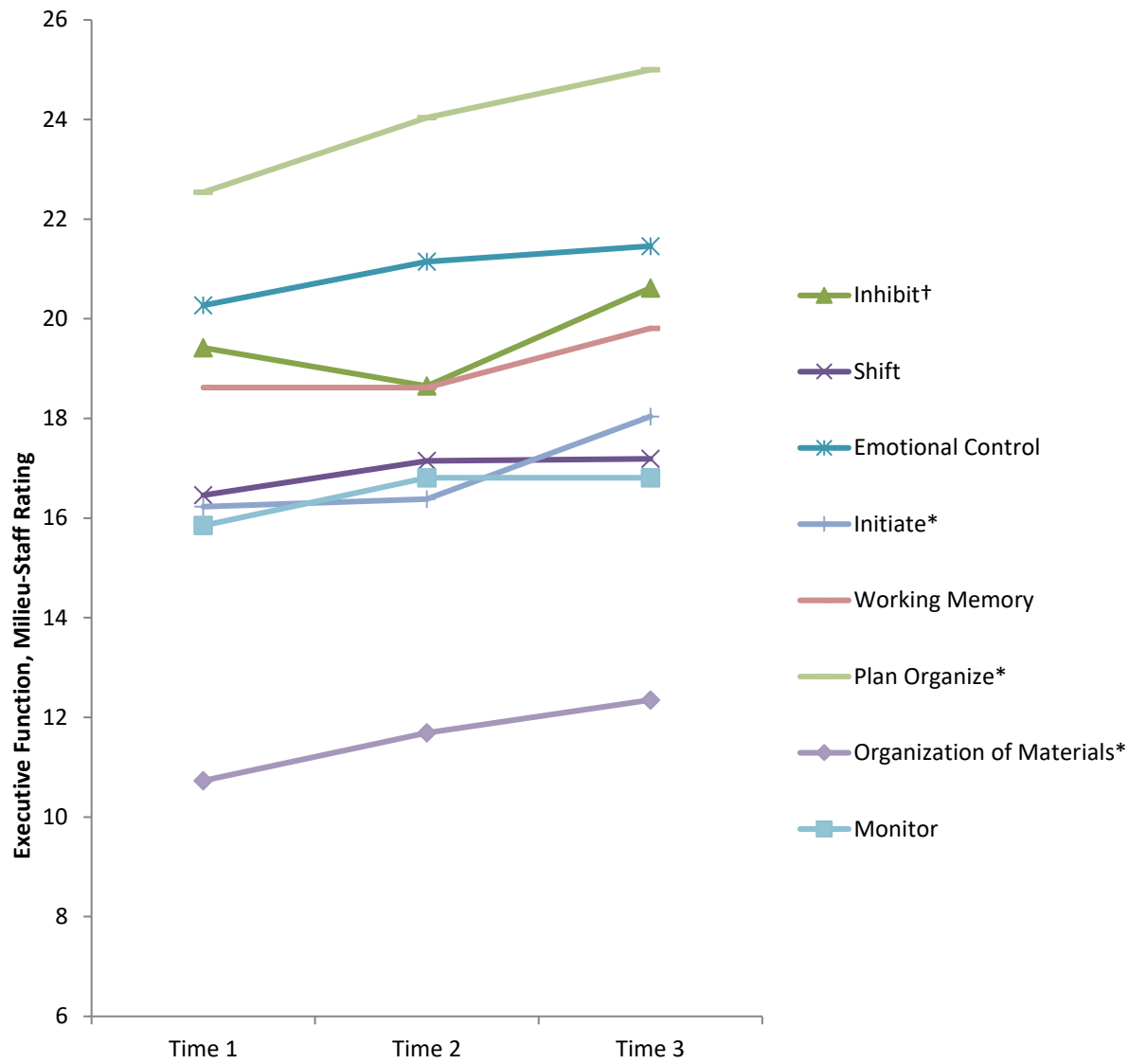


Note. Repeated measures analysis of variance for treatment-group participants ($n = 26$). BRIEF P = Behavior Rating Inventory of Executive Function – Parent Version.

* $p < .05$.

Figure D13

BRIEF P:Subscales Only (n = 26)



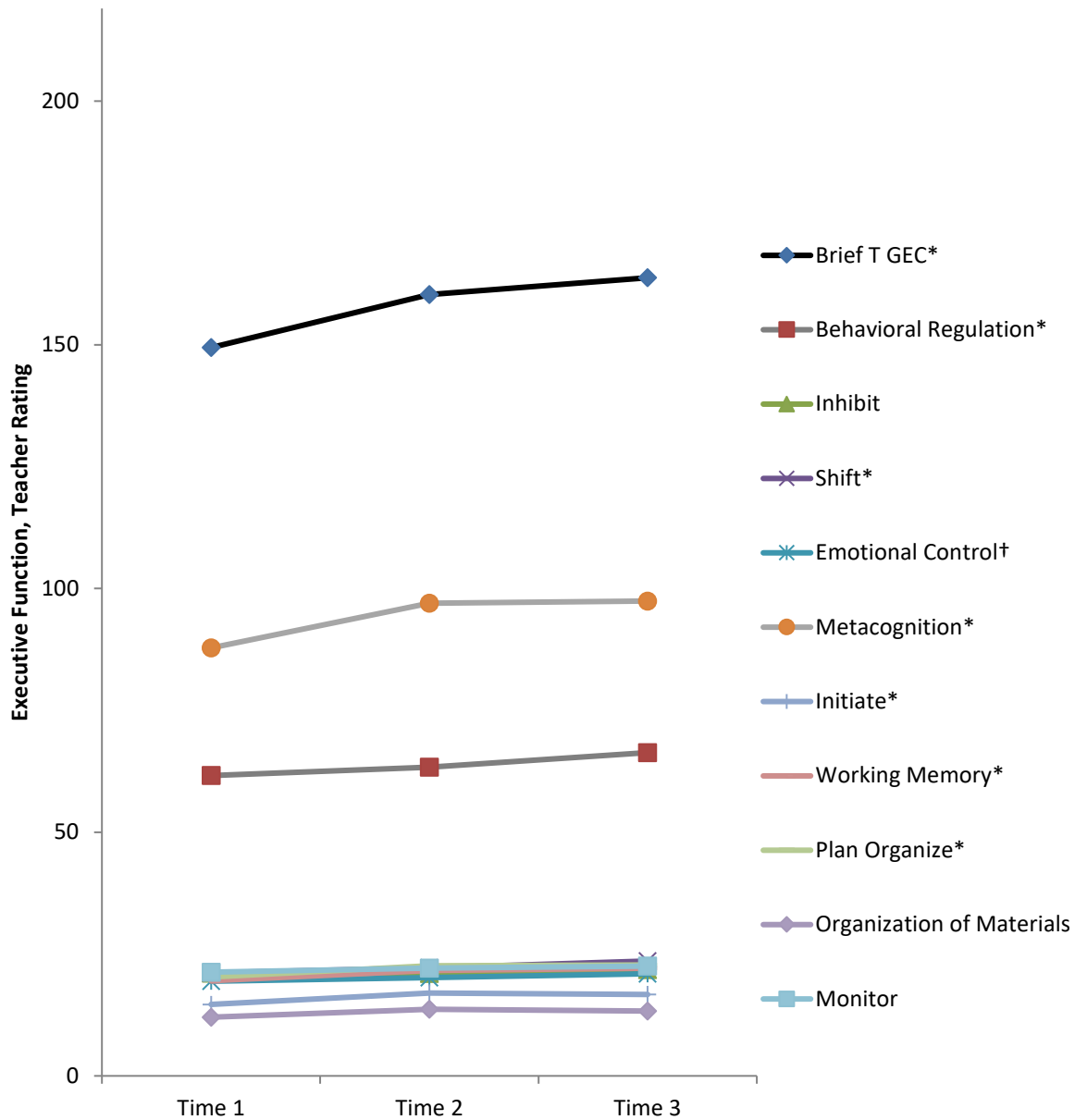
Note. Repeated measures analysis of variance for treatment-group participants ($n = 26$).

BRIEF P = Behavior Rating Inventory of Executive Function – Parent Version.

† $p < .10$. * $p < .05$.

Figure D14

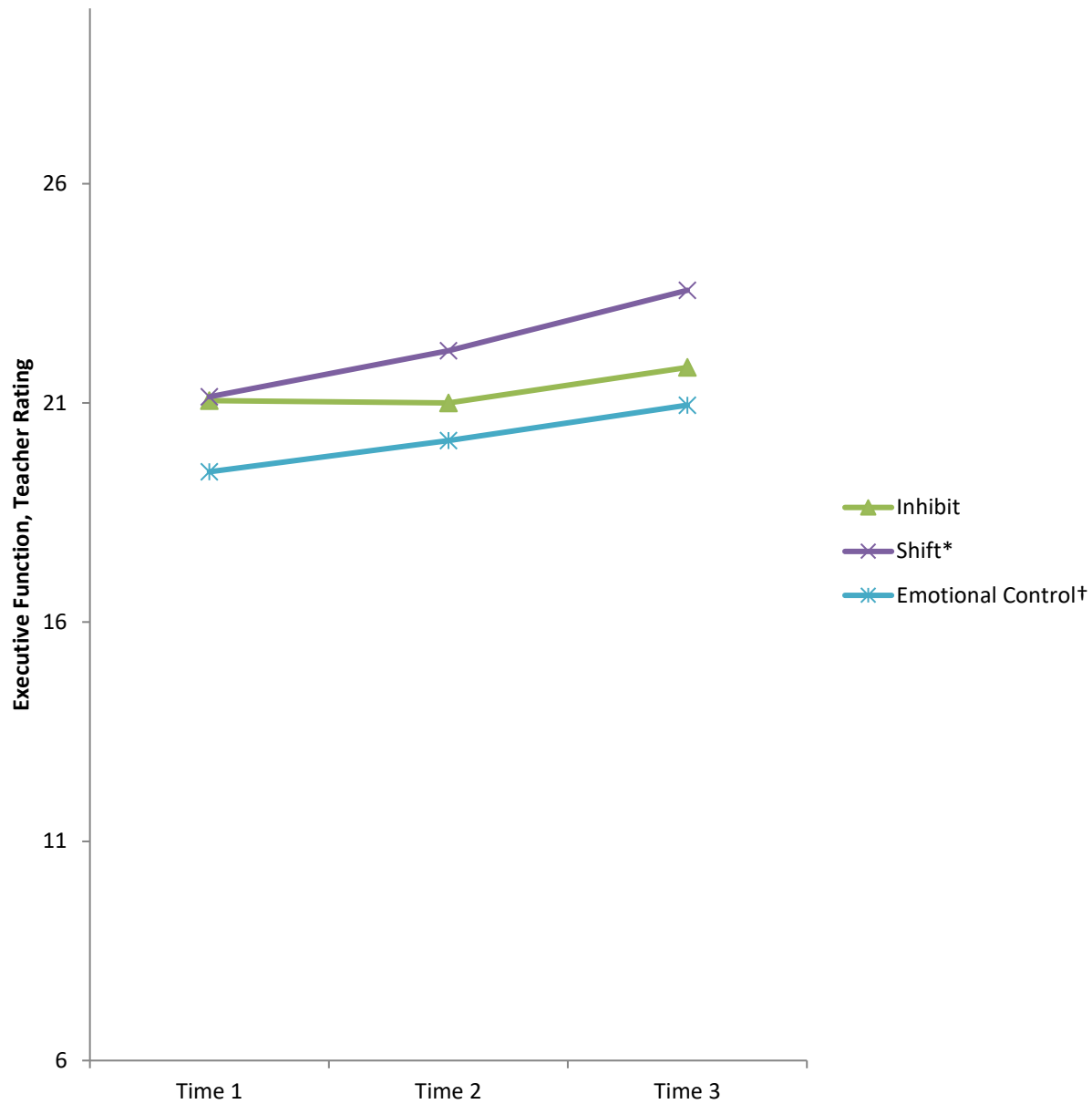
BRIEF T: GEC Total, Two Factors, and Subscales (n = 21)



Note. Repeated measures analysis of variance for treatment-group participants ($n = 21$).
BRIEF T = Behavior Rating Inventory of Executive Function – Teacher Version. GEC = Global Executive Composite.
† $p < .10$. * $p < .05$.

Figure D15

BRIEF T: Behavior Regulation Factor, Subscales Only (n = 21)



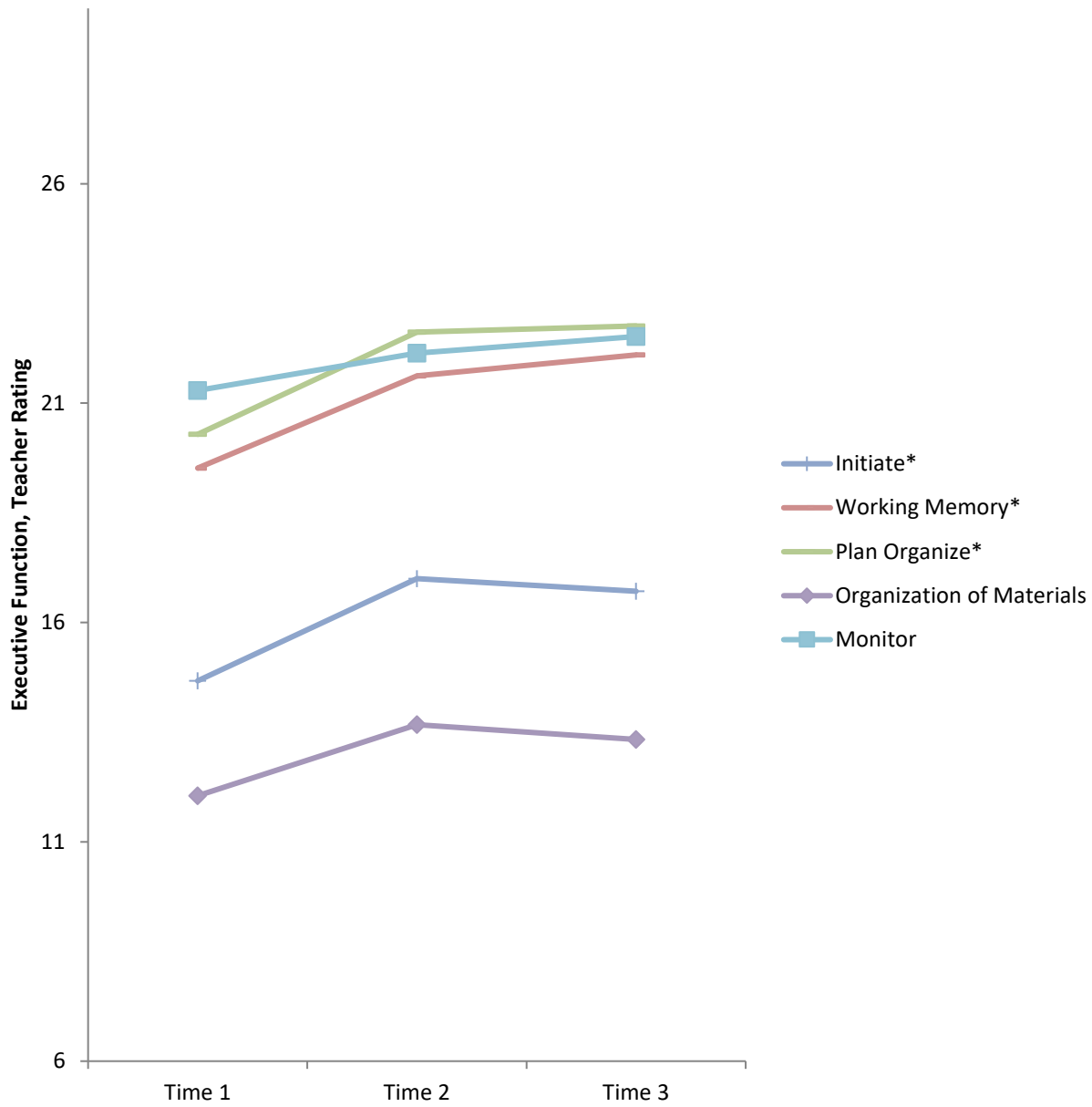
Note. Repeated measures analysis of variance for treatment-group participants ($n = 21$).

BRIEF T = Behavior Rating Inventory of Executive Function – Teacher Version.

† $p < .10$. * $p < .05$.

Figure D16

BRIEF T: Metacognition Factor Subscales Only (n = 21)

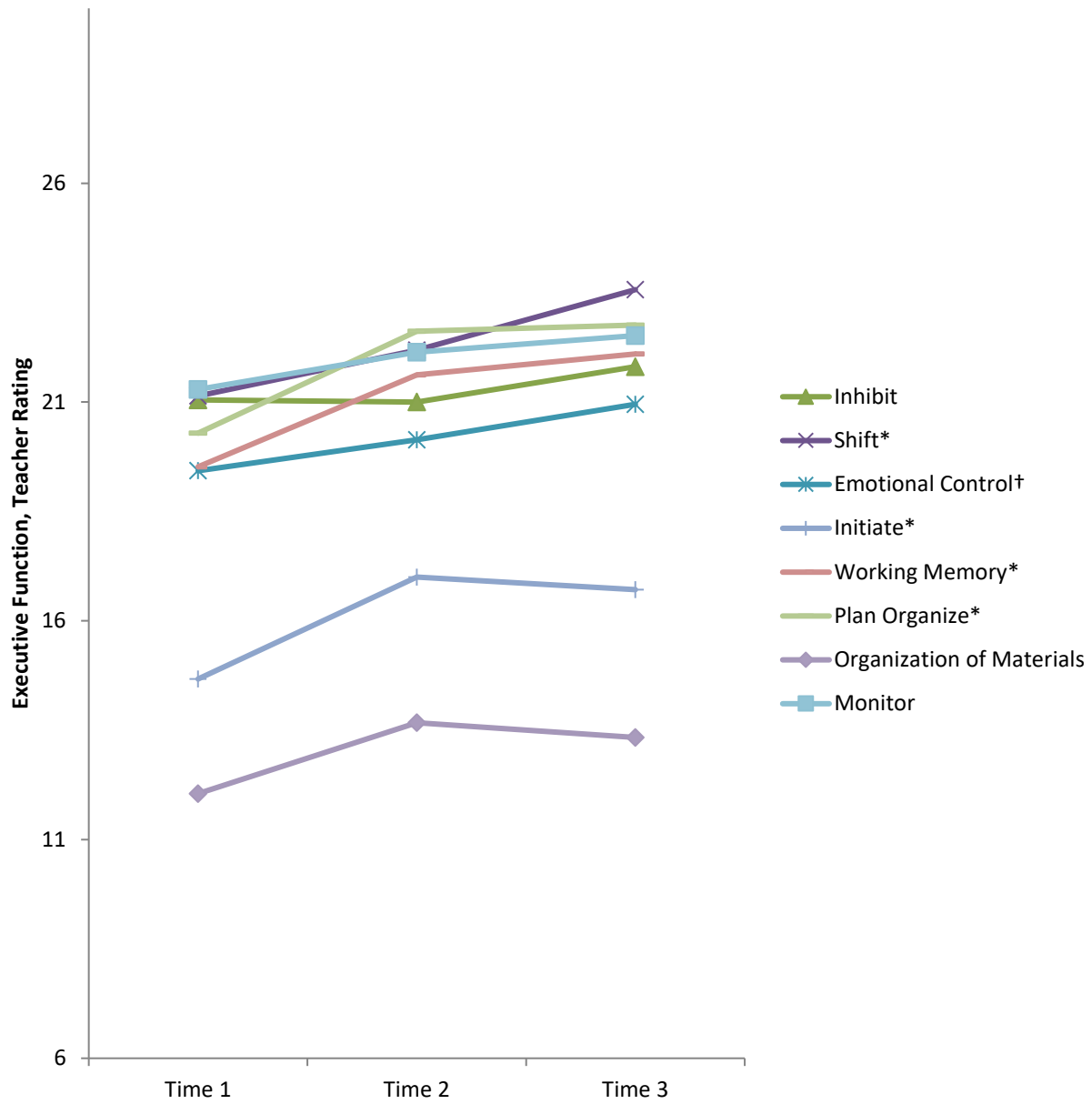


Note. Repeated measures analysis of variance for treatment-group participants ($n = 21$).

BRIEF T = Behavior Rating Inventory of Executive Function – Teacher Version.

* $p < .05$.

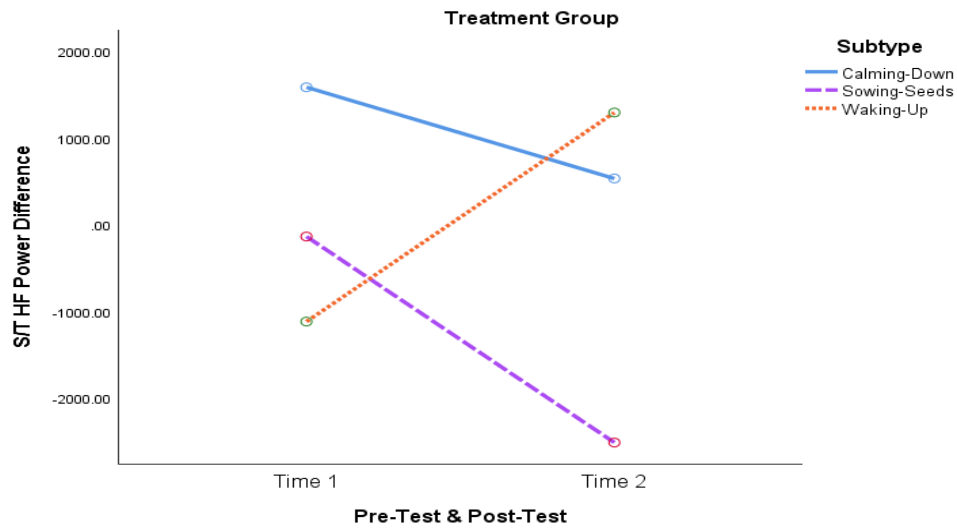
Figure D17
BRIEF T: Subscales Only (n = 21)



Note. Repeated measures analysis of variance for treatment-group participants ($n = 21$).
 BRIEF T = Behavior Rating Inventory of Executive Function – Teacher Version.
 † $p < .10$. * $p < .05$.

Figure D18

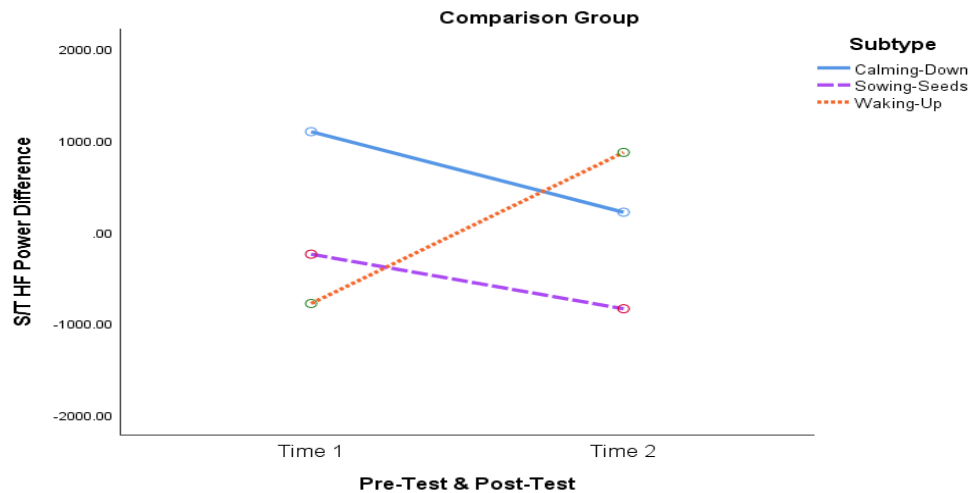
State/Trait High Frequency (S/T HF) Balance in the Treatment Condition by Three Subtypes Pre- Versus Posttest for the Treatment Group



Note. $n = 24$ (Subtype 1 = 10, Subtype 2 = 5, Subtype 3 = 9).

Figure D19

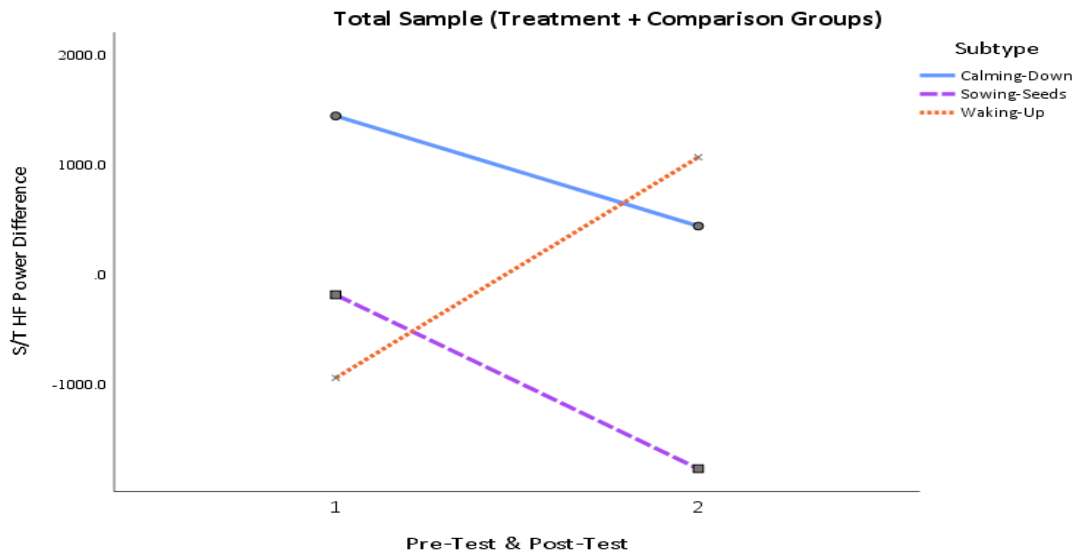
State/Trait High Frequency (S/T HF) Balance in the Comparison Condition by Three Subtypes Pre- Versus Posttest for the Comparison Group



Note. $n = 18$ (Subtype 1 = 4, Subtype 2 = 4, Subtype 3 = 10).

Figure D20

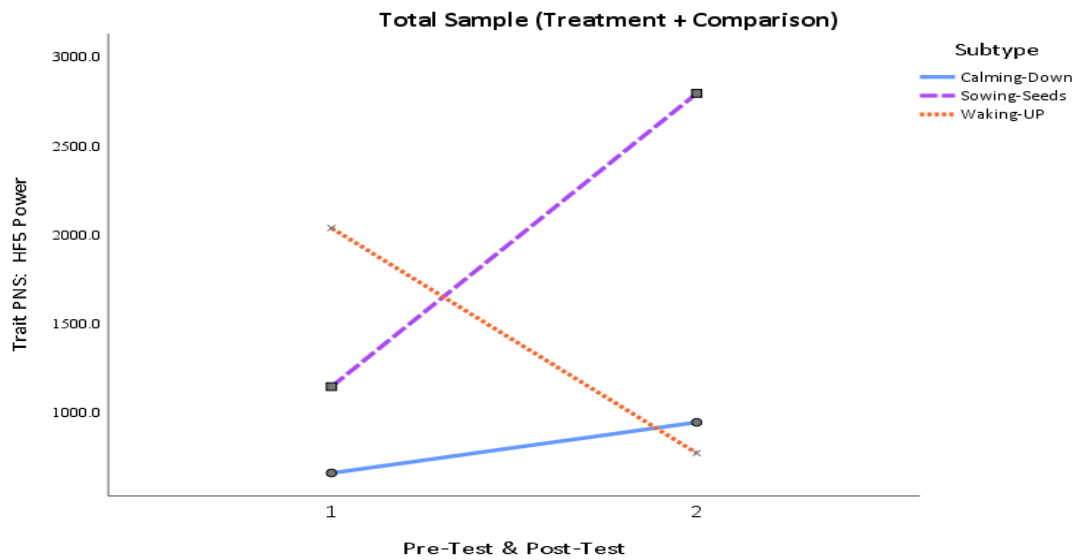
State/Trait High Frequency (S/T HF) Balance for the Entire Sample



Note. $n = 42$ (Subtype 1 = 14, Subtype 2 = 9, Subtype 3 = 19).

Figure D21

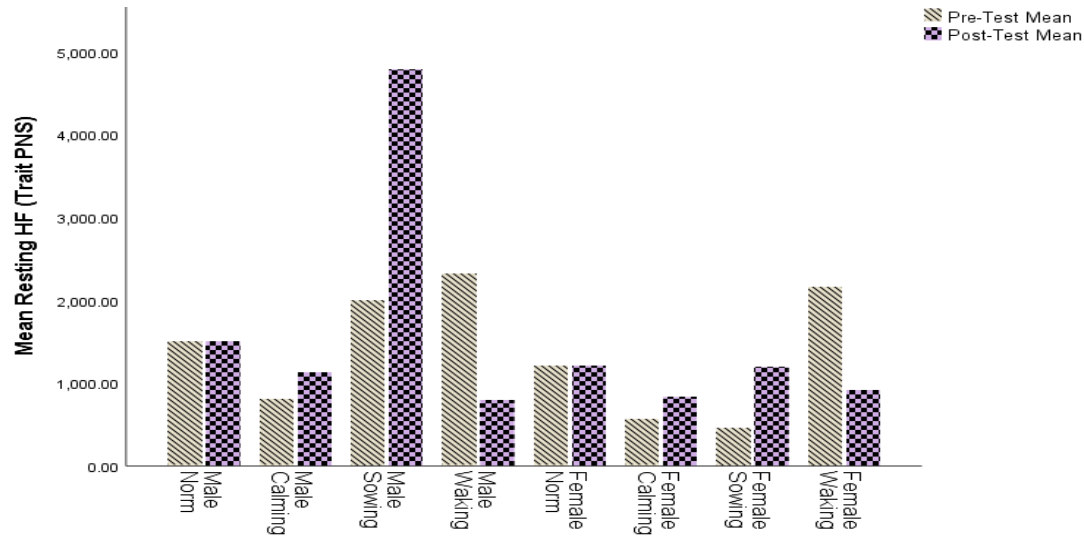
Trait High Frequency (HF) for the Entire Sample



Note. $n = 42$ (Subtype 1 = 14, Subtype 2 = 9, Subtype 3 = 19).

Figure D22

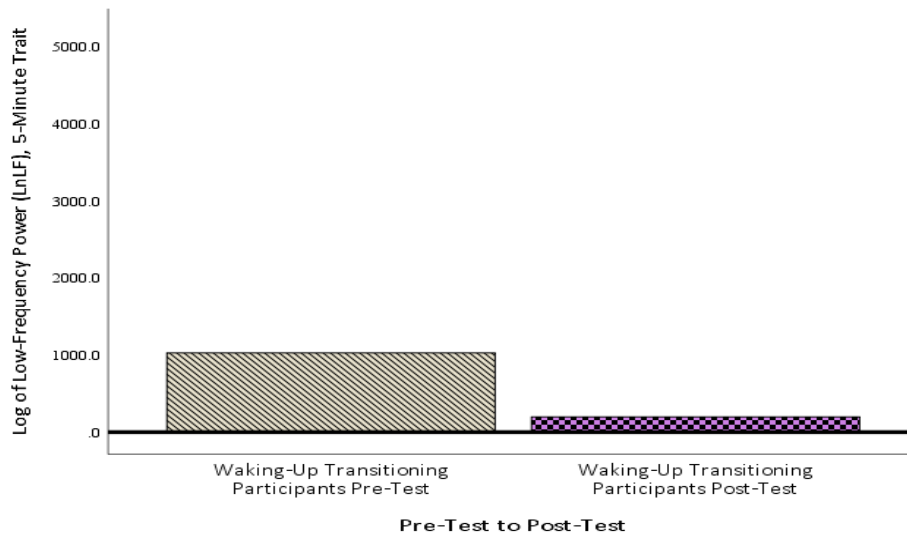
Trait PNS HF Power: Mean Resting Norm Values Versus Longitudinal HF5 for all TD Participants, by Cisgender Identity, and Subtype



Note. For resting HF norm sample $n = 100$ participants between the ages of 18-25 (men, $n = 50$; women, $n = 50$; Corrales et al., 2012, p. 377). For total TD cisgender sample: $n = 39$ (male Calming-Down subtype = 5, male Sowing-Seeds subtype = 4, male Waking-Up subtype = 6; female Calming-Down subtype = 14, female Sowing-Seeds subtype = 9, female Waking-Up subtype = 16). Norms differ between people who are cisgender men and people who are cisgender women; therefore, I have provided cisgender norms and separated subtypes by male/female cisgender identity. PNS = Parasympathetic nervous system. HF = High Frequency. HF5 – High Frequency 5 minute measure.

Figure D23

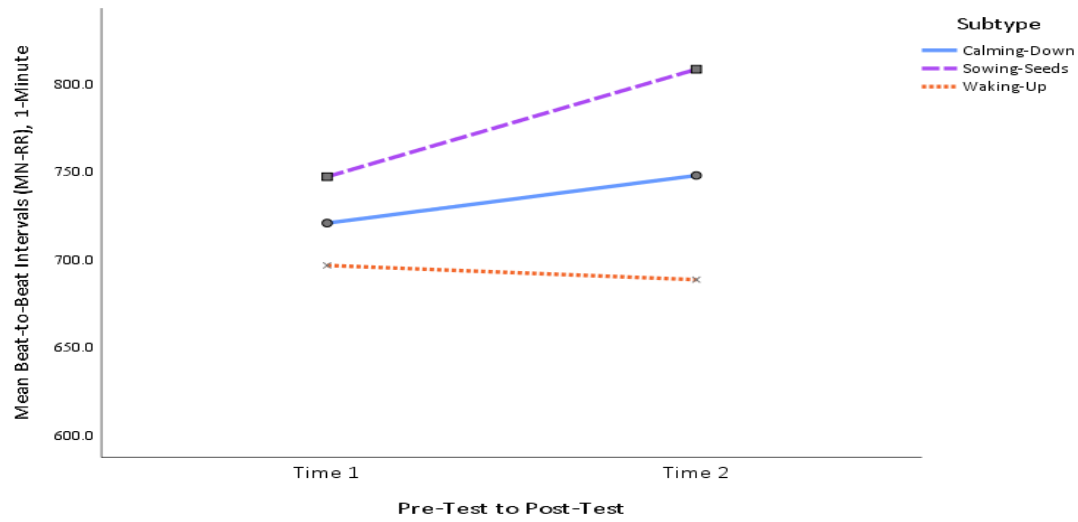
Trait PNS HF Power: Mean Resting Longitudinal HF5 for all TD Participants by Transgender Identity and Subtype



Note. For total TD participants who were transgender/transitioning, $n = 3$. All transgender/transitioning participants belonged to the Waking-Up subtype. No norms are available for people who were transitioning/transgender. PNS = Parasympathetic nervous system. HF = High Frequency. HF5 – High Frequency 5 minute measure.

Figure D24

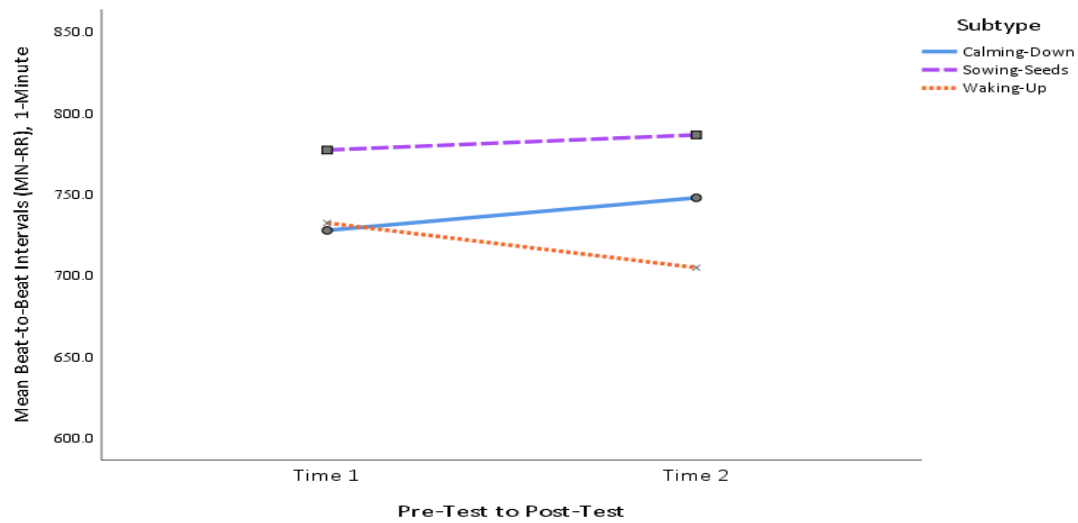
Treatment Group: Mean Beat-to-Beat Intervals (MN-RR), 1 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D25

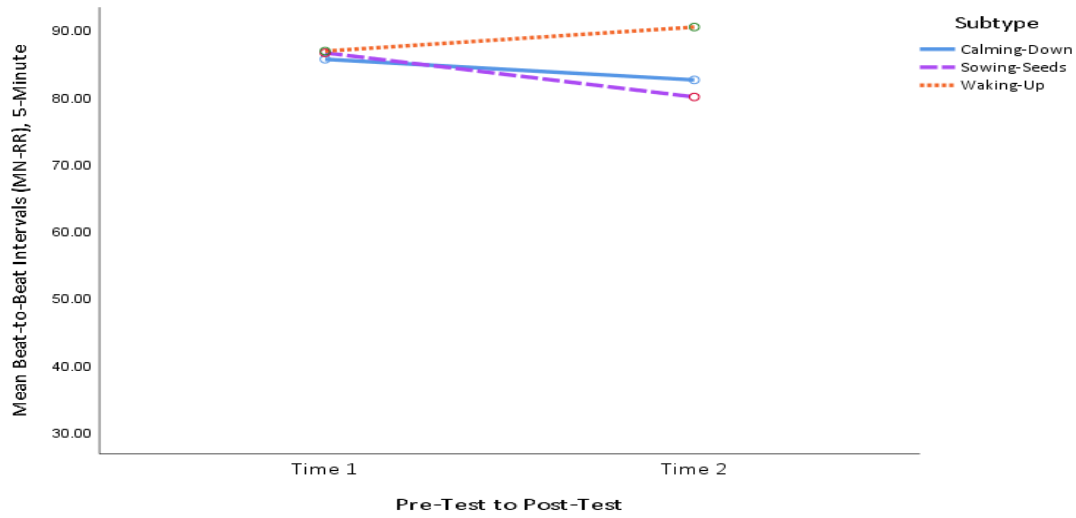
Comparison Group: Mean Beat-to-Beat Intervals (MN-RR), 1 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D26

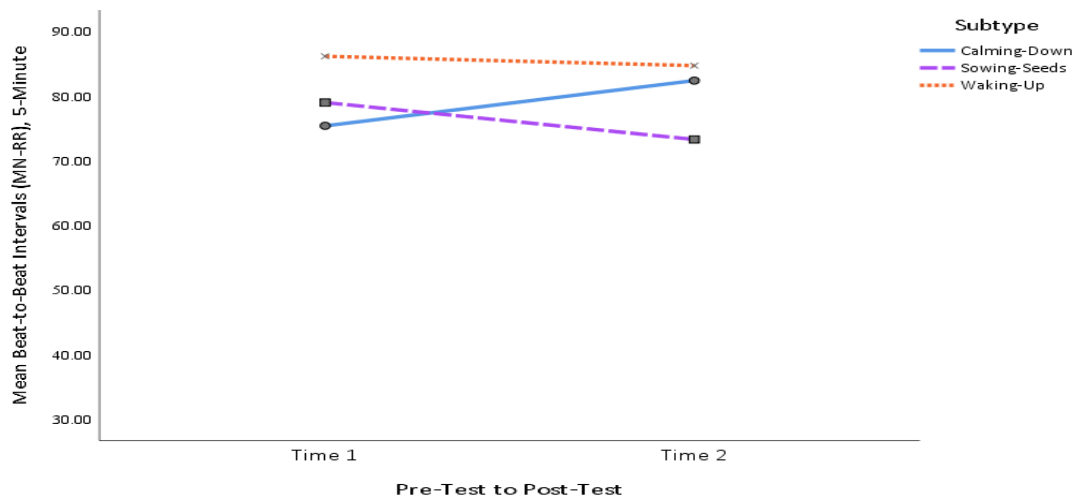
Treatment Group: Mean Beat-to-Beat Intervals (MN-RR), 5 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D27

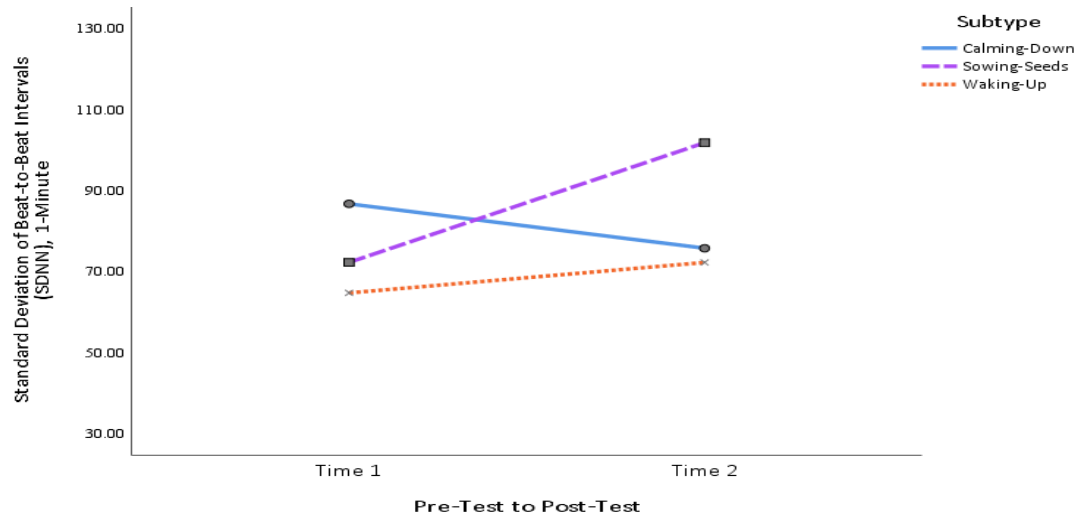
Comparison Group: Mean Beat-to-Beat Intervals (MN-RR), 5 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D28

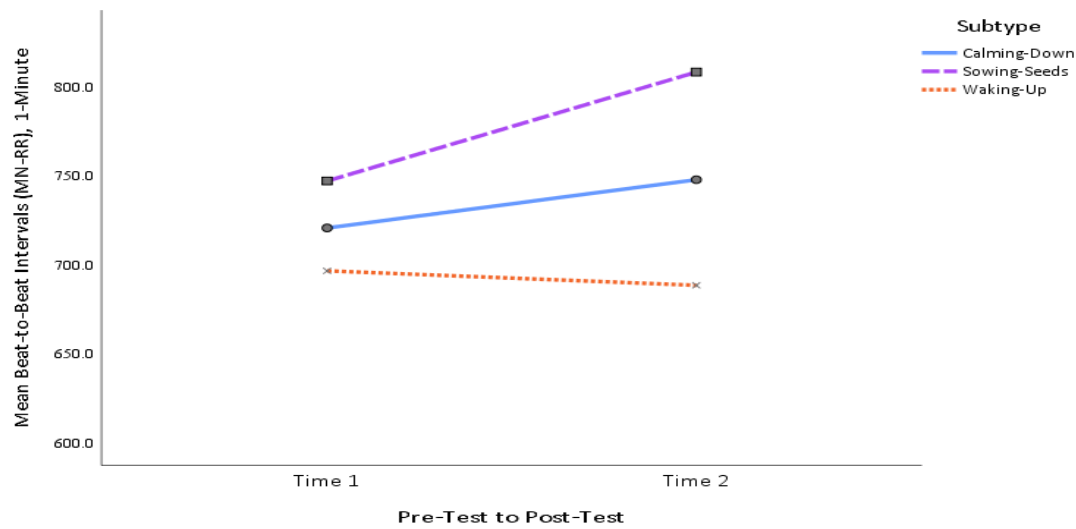
Treatment Group: Standard Deviation of Beat-to-Beat Intervals (SDNN), 1 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D29

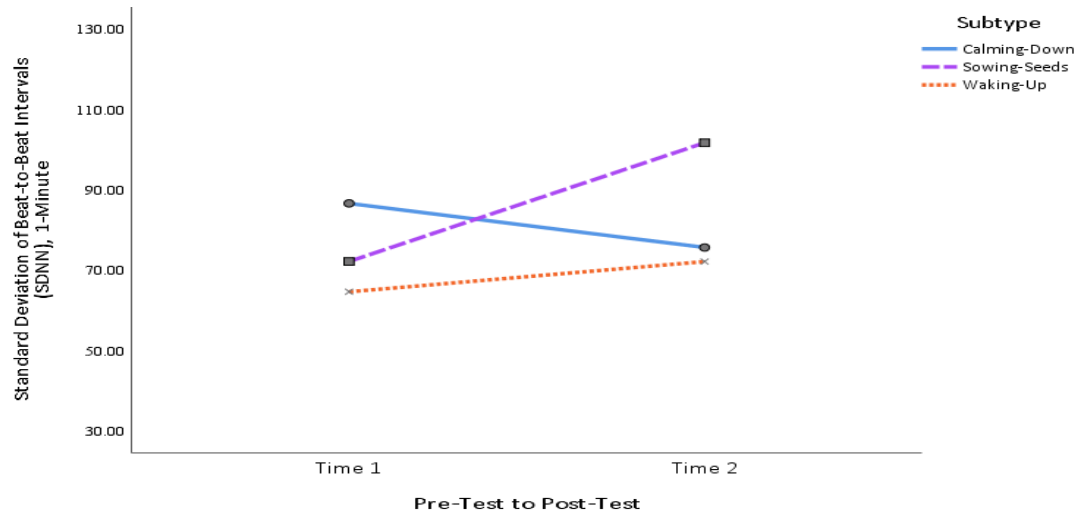
Comparison Group: Standard Deviation of Beat-to-Beat Intervals (SDNN), 1 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D30

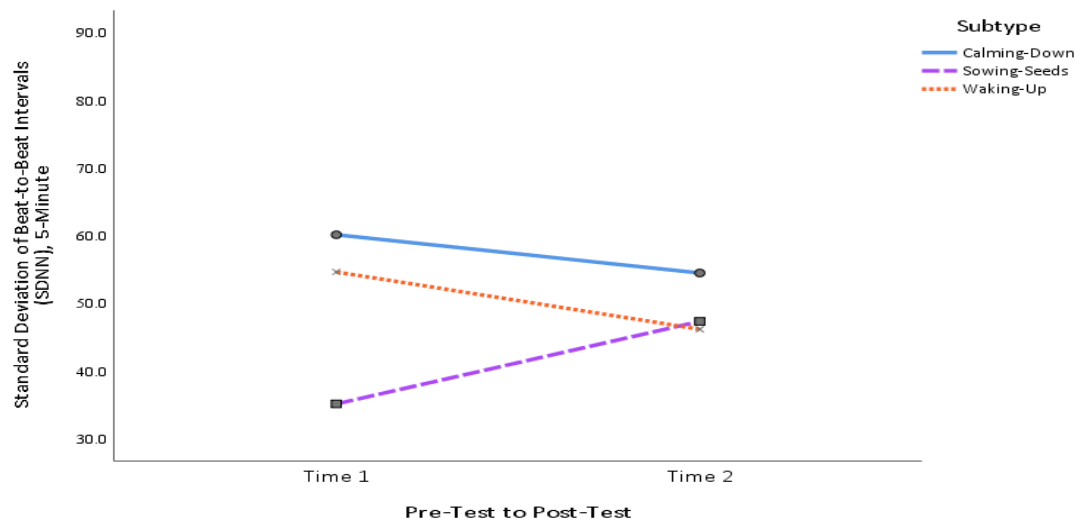
Treatment Group: Standard Deviation of Beat-to-Beat Intervals (SDNN), 5 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D31

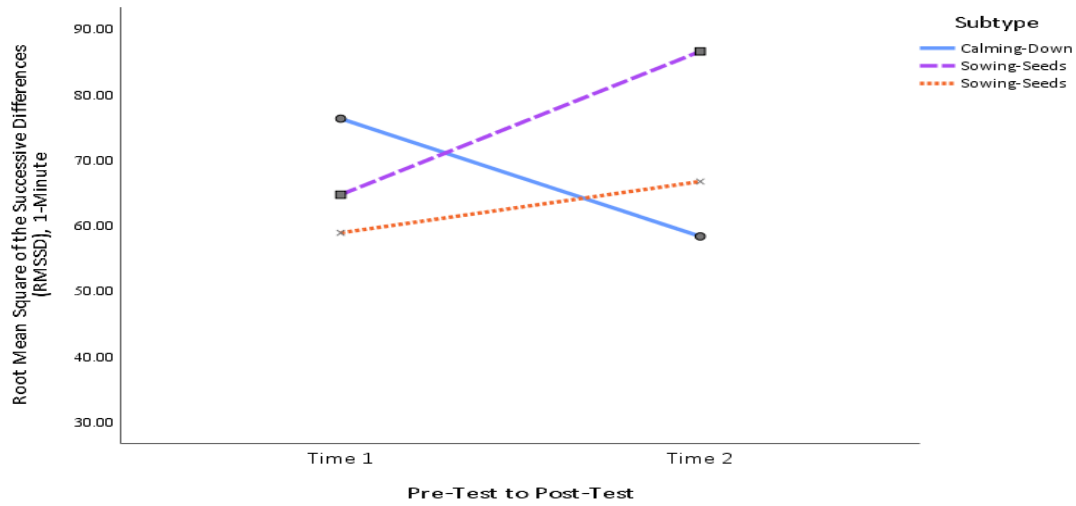
Comparison Group: Standard Deviation of Beat-to-Beat Intervals (SDNN), 5 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D32

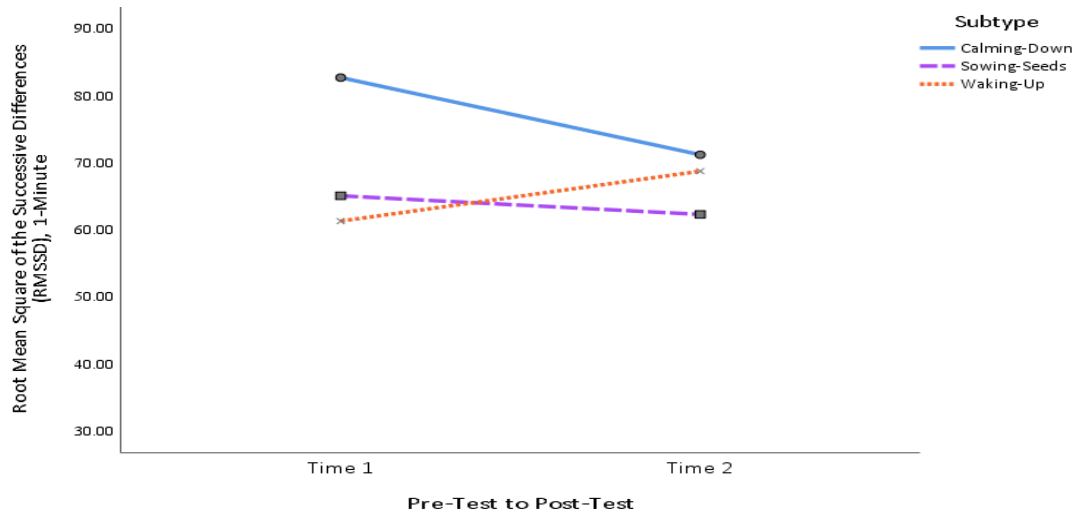
Treatment Group: Root Mean Square of the Successive Differences (RMSSD), 1 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D33

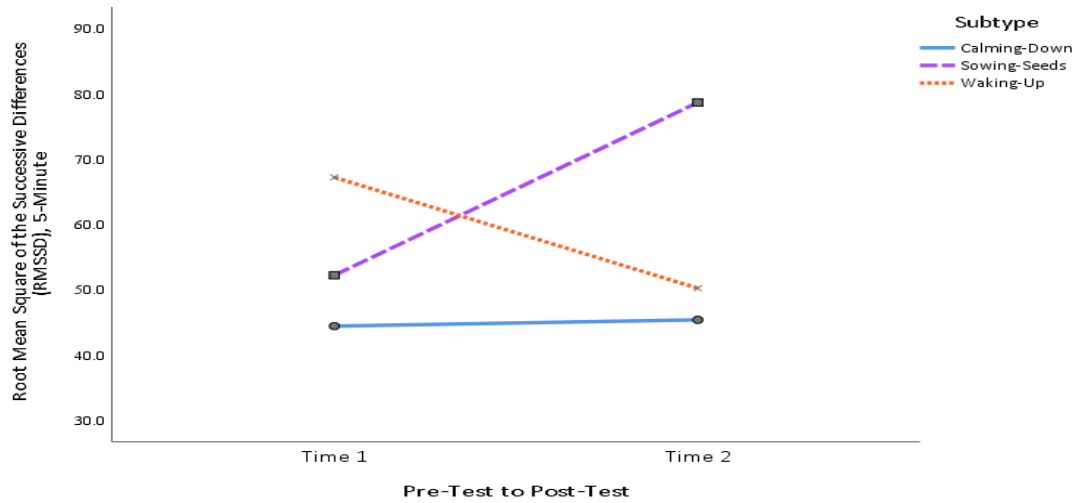
Comparison Group: Root Mean Square of the Successive Differences (RMSSD), 1 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D34

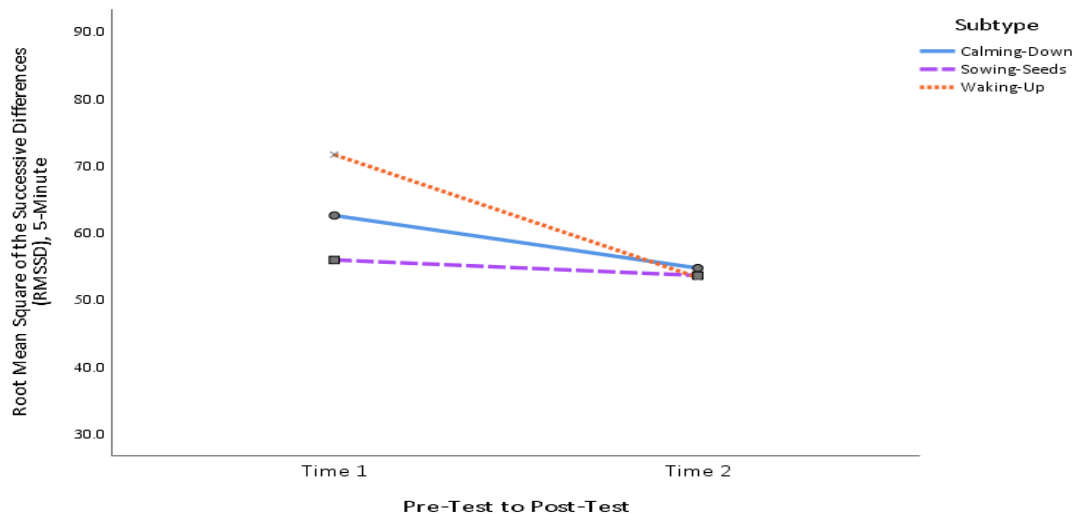
Treatment Group: Root Mean Square of the Successive Differences (RMSSD), 5 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D35

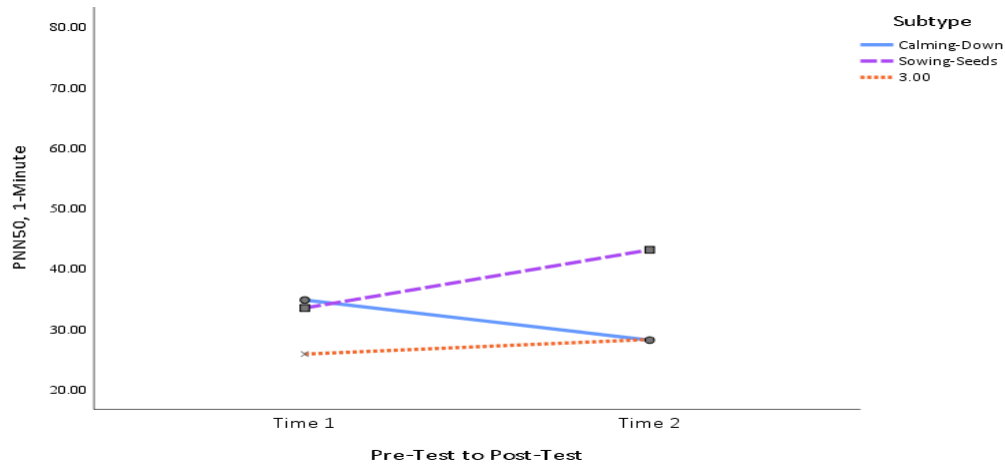
Comparison Group: Root Mean Square of the Successive Differences (RMSSD), 5 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D36

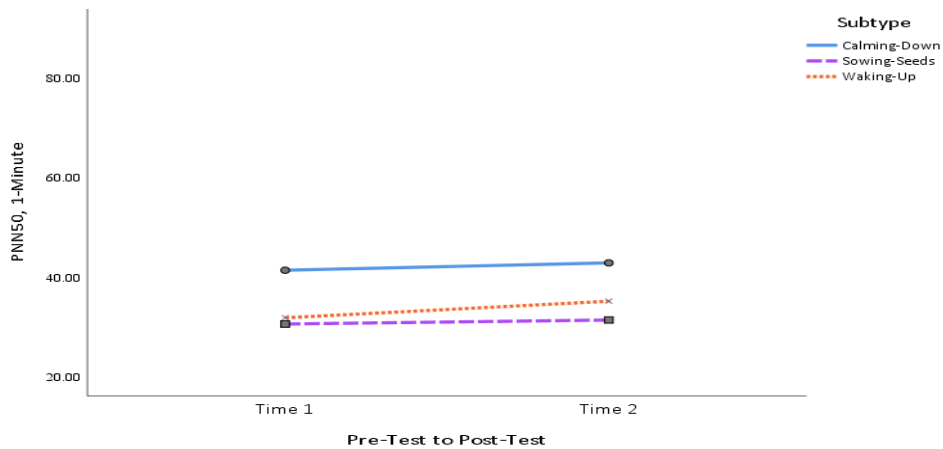
Treatment Group: PNN50, 1 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9). PNN50 = the mean number of times an hour in which the change in successive normal sinus (NN) intervals exceeds 50 ms.

Figure D37

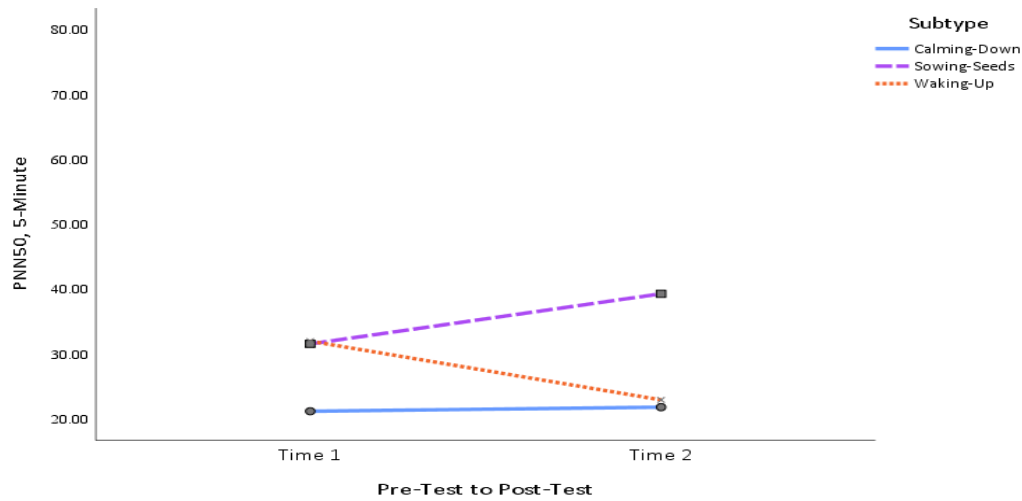
Comparison Group: PNN50, 1 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10). PNN50 = the mean number of times an hour in which the change in successive normal sinus (NN) intervals exceeds 50 ms.

Figure D38

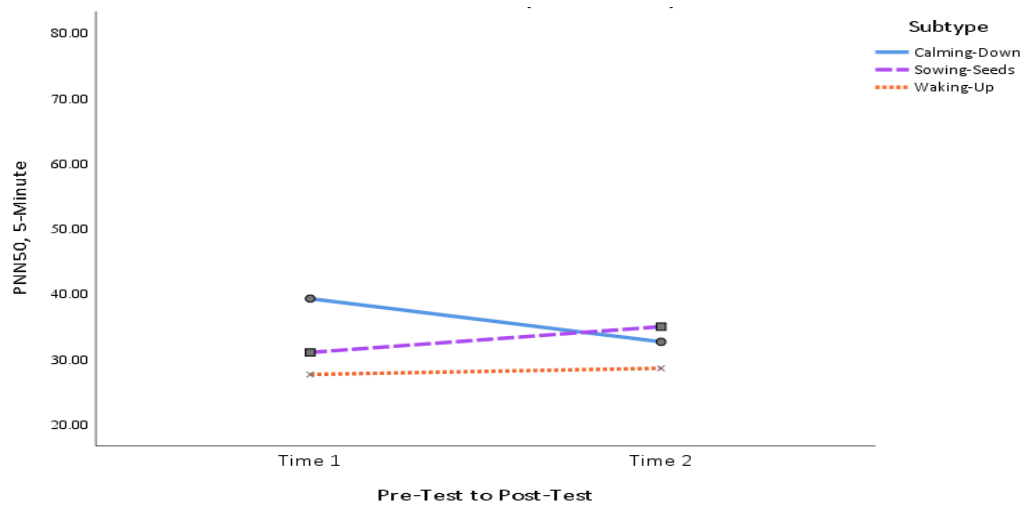
Treatment Group: PNN50, 5 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9). PNN50 = the mean number of times an hour in which the change in successive normal sinus (NN) intervals exceeds 50 ms.

Figure D39

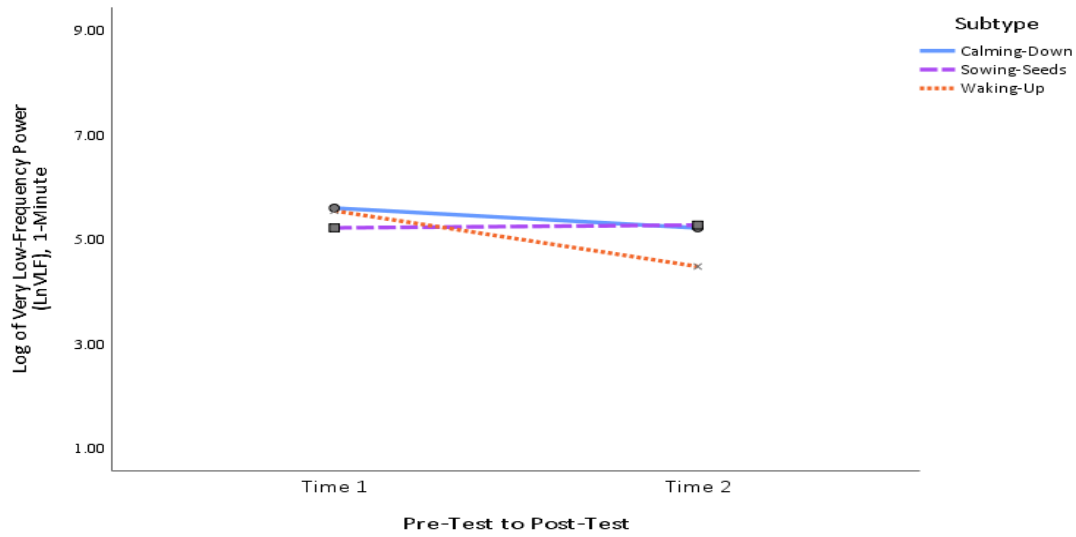
Comparison Group: PNN50, 5 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10). PNN50 = the mean number of times an hour in which the change in successive normal sinus (NN) intervals exceeds 50 ms.

Figure D40

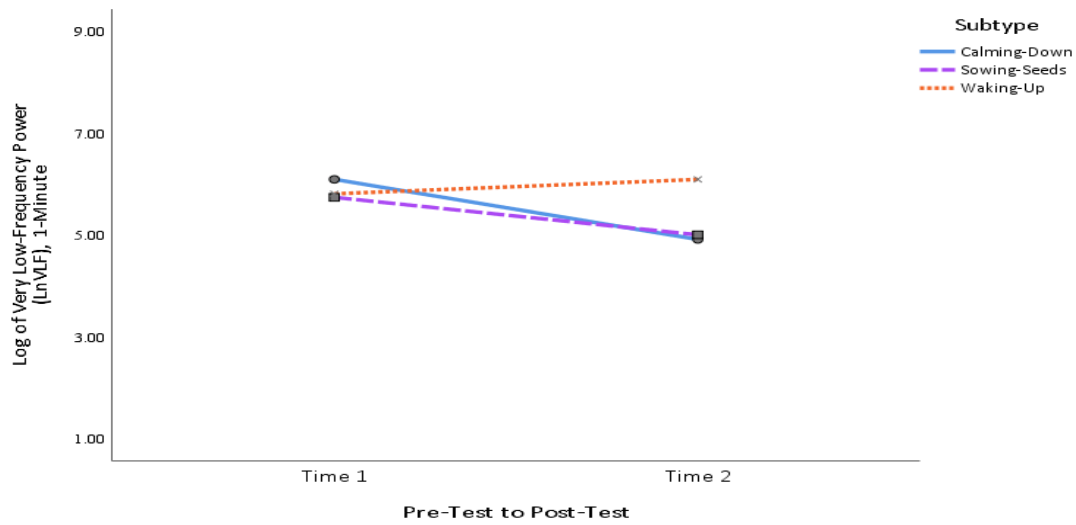
Treatment Group: Log of Very Low-Frequency Power (LnVLF), 1 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D41

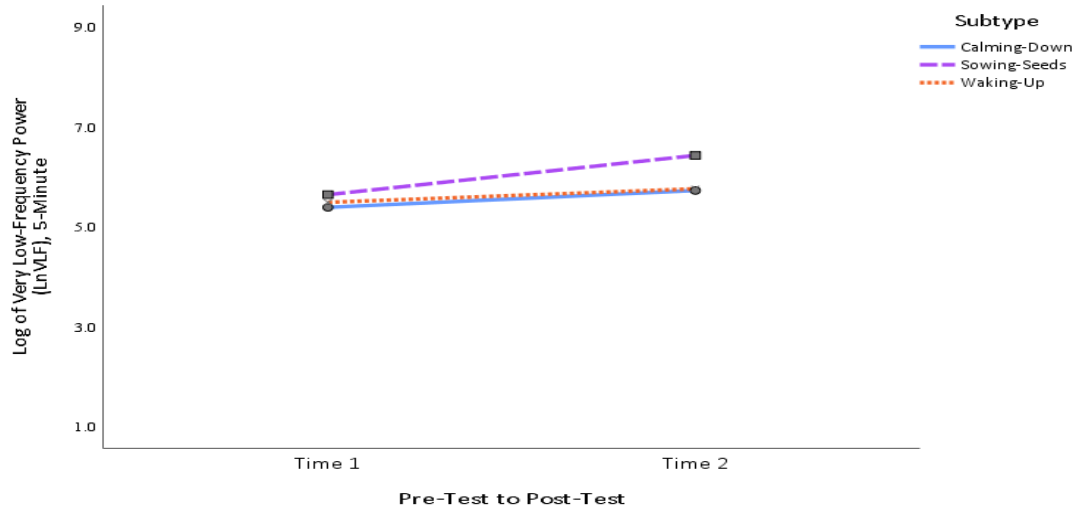
Comparison Group: Log of Very Low-Frequency Power (LnVLF), 1 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D42

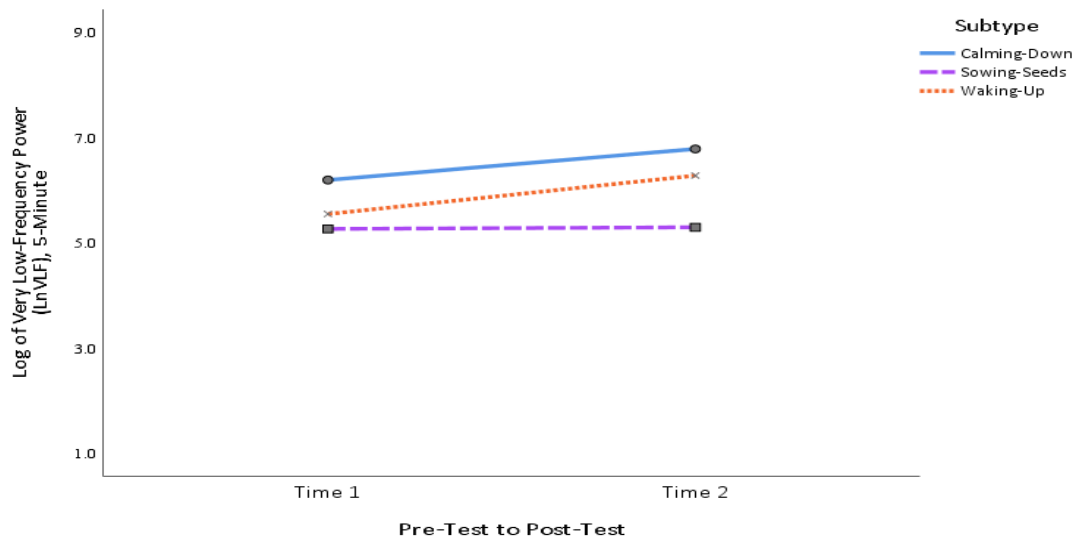
Treatment Group: Log of Low-Frequency Power (LnLF), 5 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D43

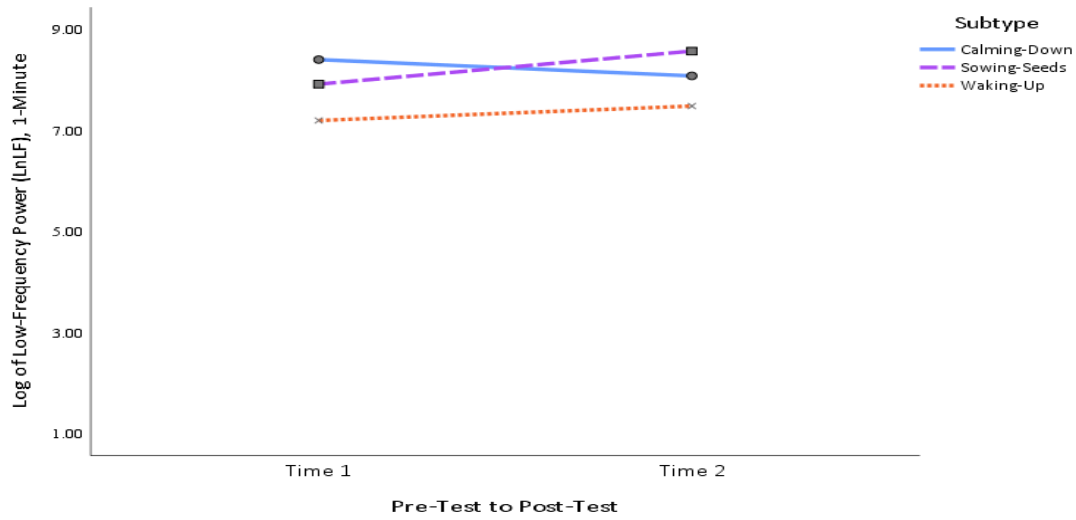
Comparison Group: Log of Very Low-Frequency Power (LnLF), 5 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D44

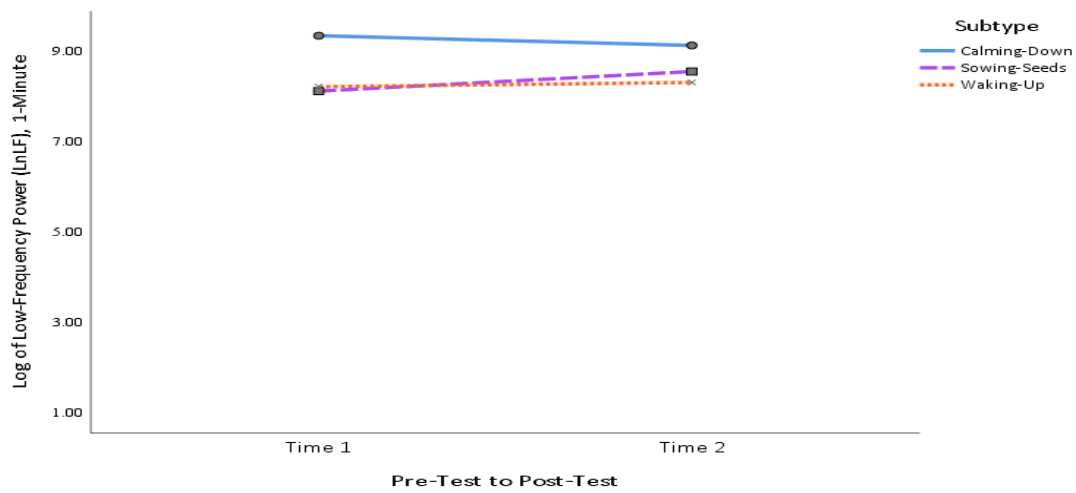
Treatment Group: Log of Low-Frequency Power (LnLF), 1 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D45

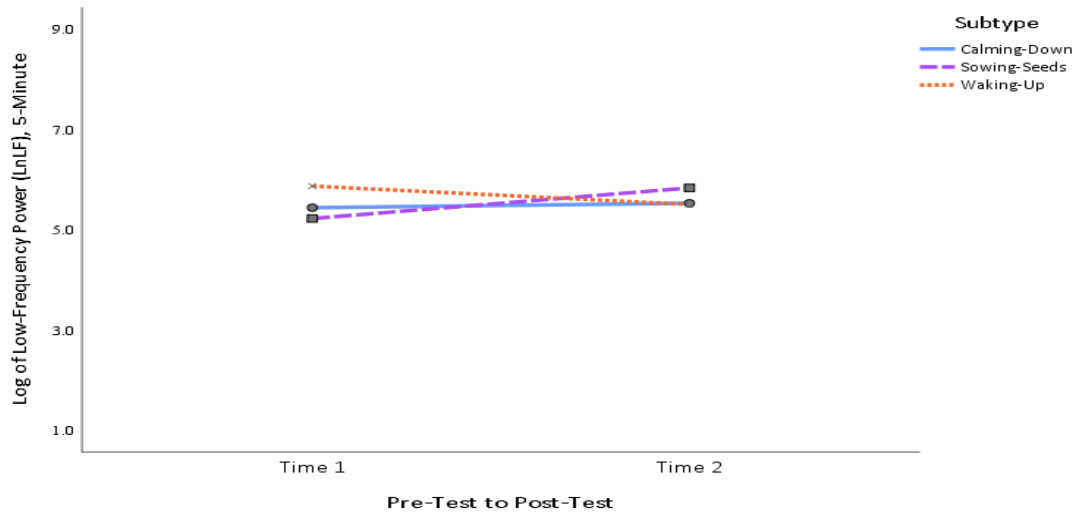
Comparison Group: Log of Low-Frequency Power (LnLF), 1 Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D46

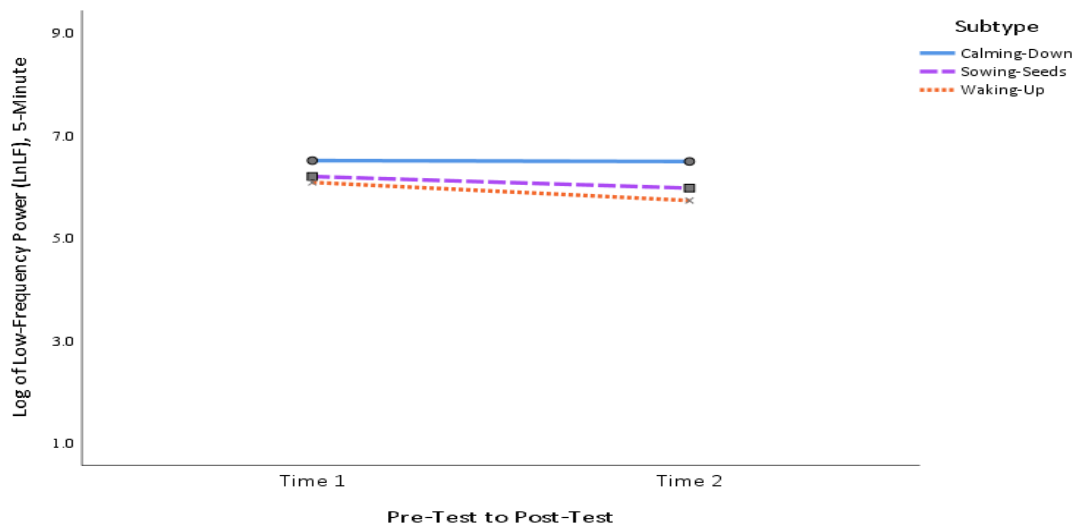
Treatment Group: Log of Low-Frequency Power (LnLF), 5 Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D47

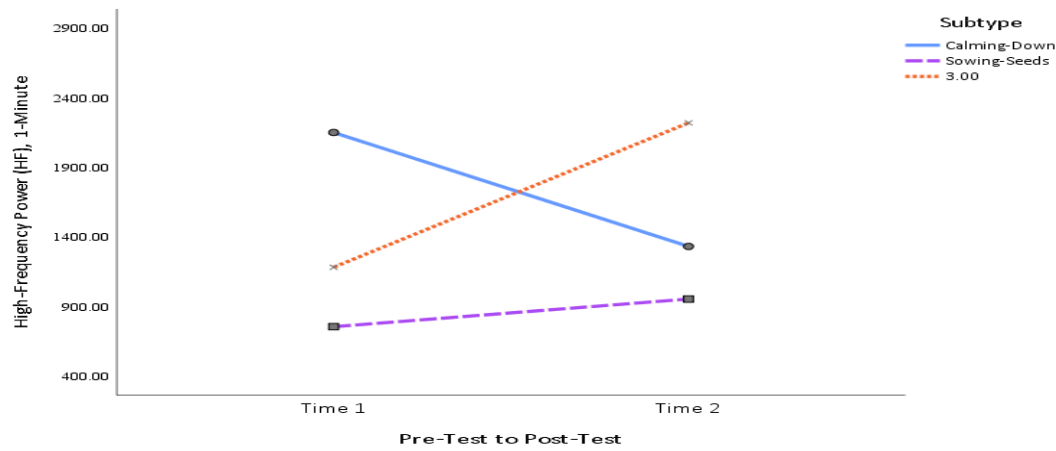
Comparison Group: Log of Low-Frequency Power (LnLF), 5-Minute Trait



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D48

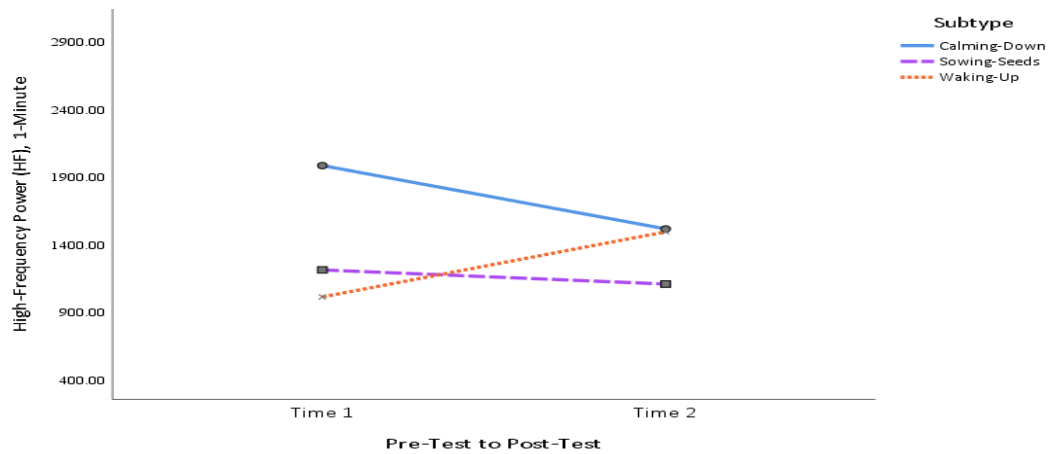
Treatment Group: High-Frequency Power (HF), 1-Minute State



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D49

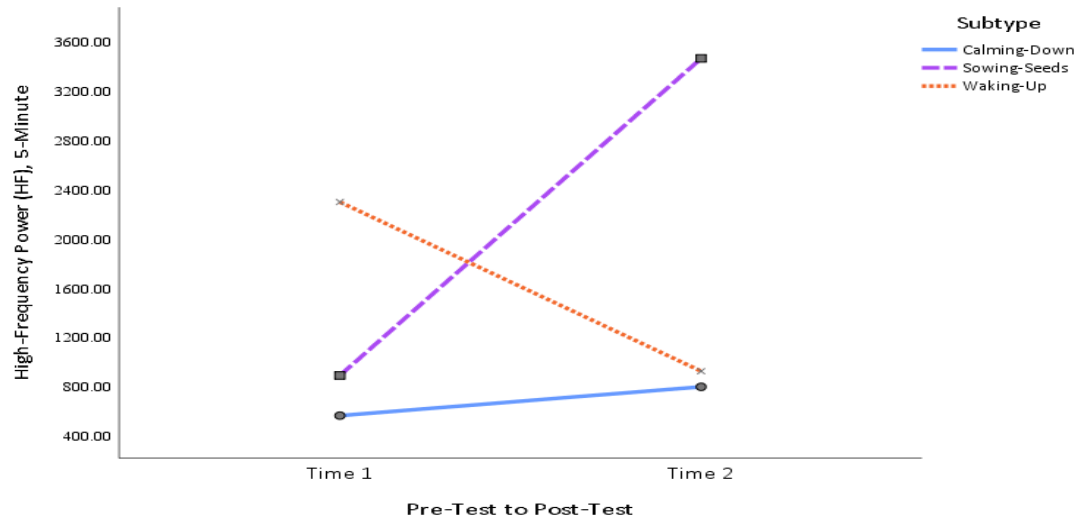
Comparison Group: High-Frequency Power (HF), 1-Minute State



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D50

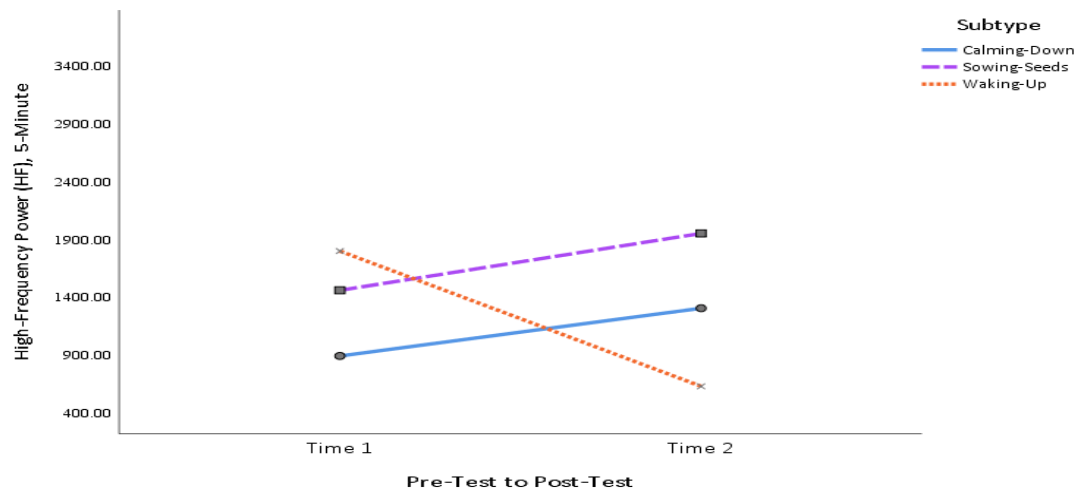
Treatment Group: High-Frequency Power, 5-Minute Trait



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D51

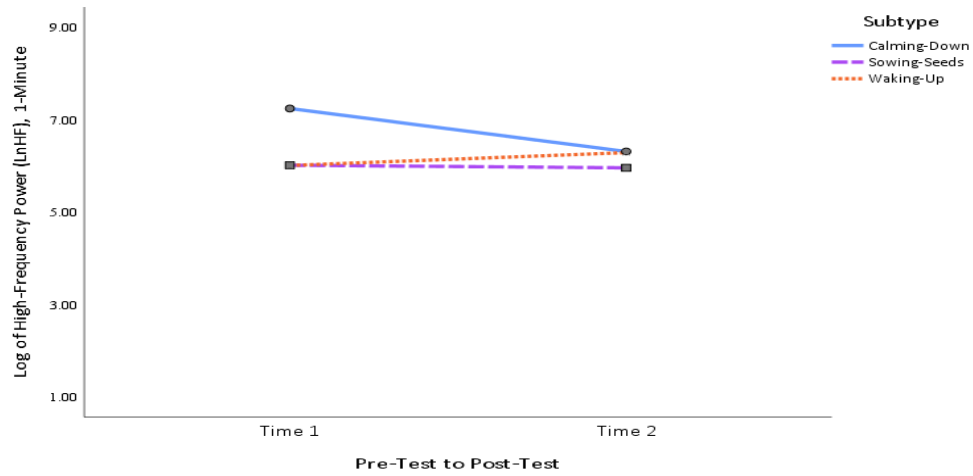
Comparison Group: High-Frequency Power (HF), 5-Minute Trait



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D52

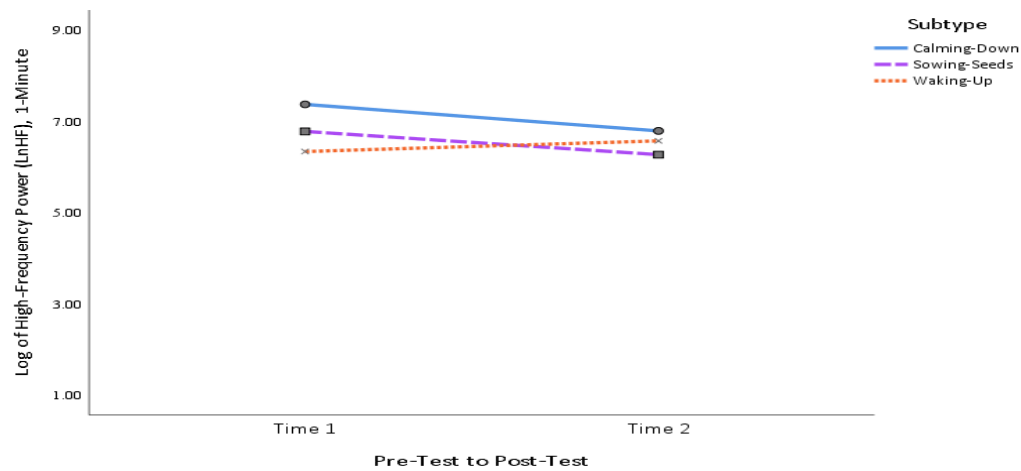
Treatment Group: Log of High-Frequency Power (LnHF), 1-Minute State



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D53

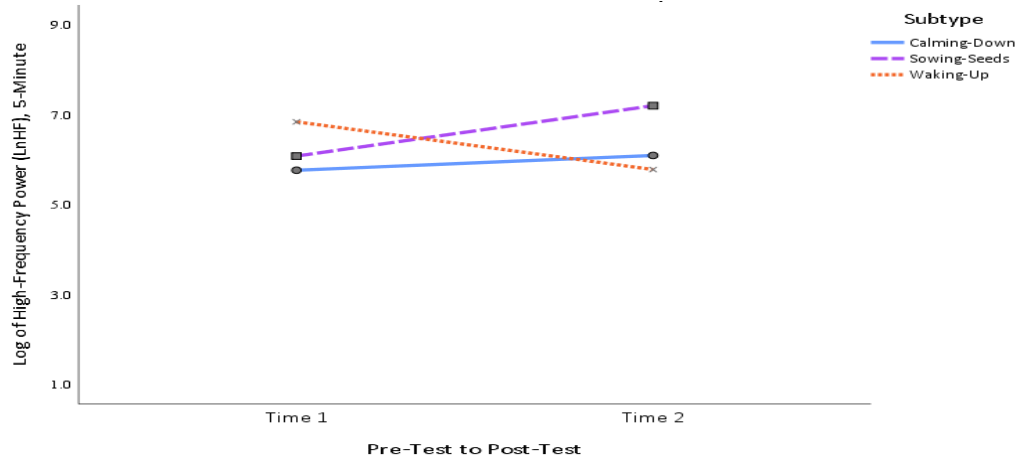
Comparison Group: Log of High-Frequency Power (LnHF), 1-Minute State



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D54

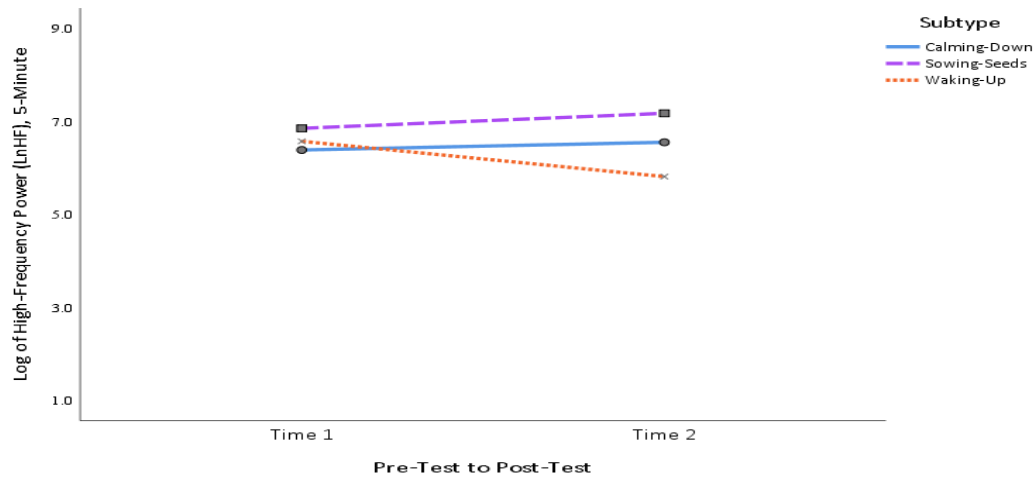
Treatment Group: Log of High-Frequency Power (LnHF), 5-Minute Trait



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D55

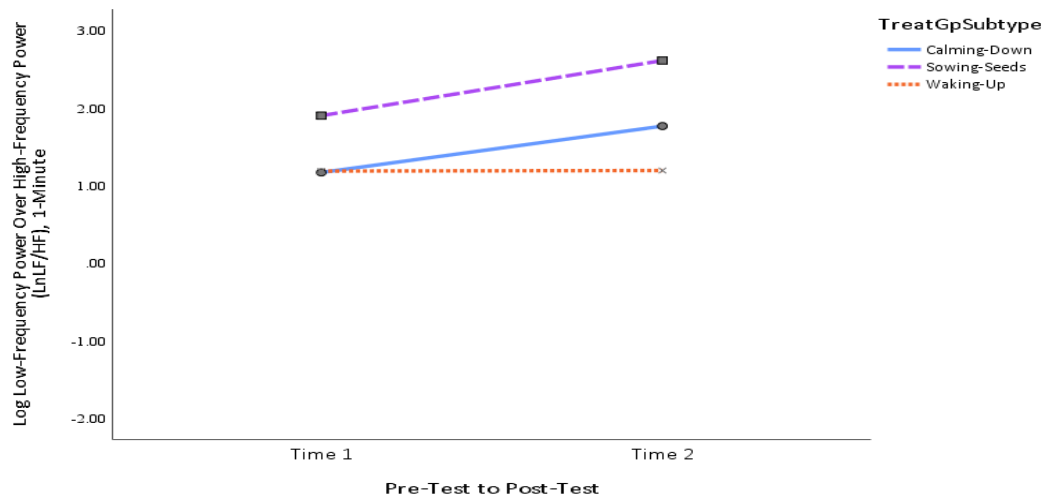
Comparison Group: Log of High-Frequency Power (LnHF), 5-Minute Trait



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D56

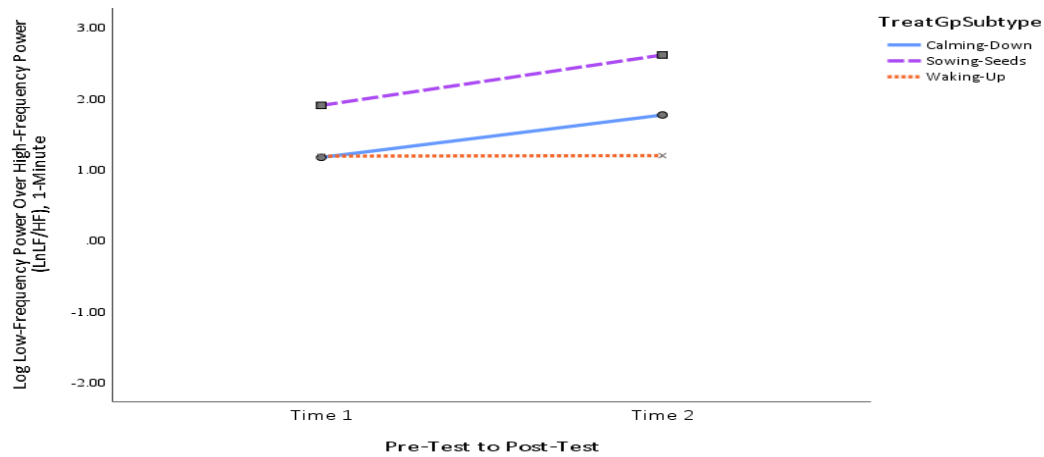
Treatment Group: Log Low-Frequency Power Over High-Frequency Power (LnLF/HF), 1-Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D57

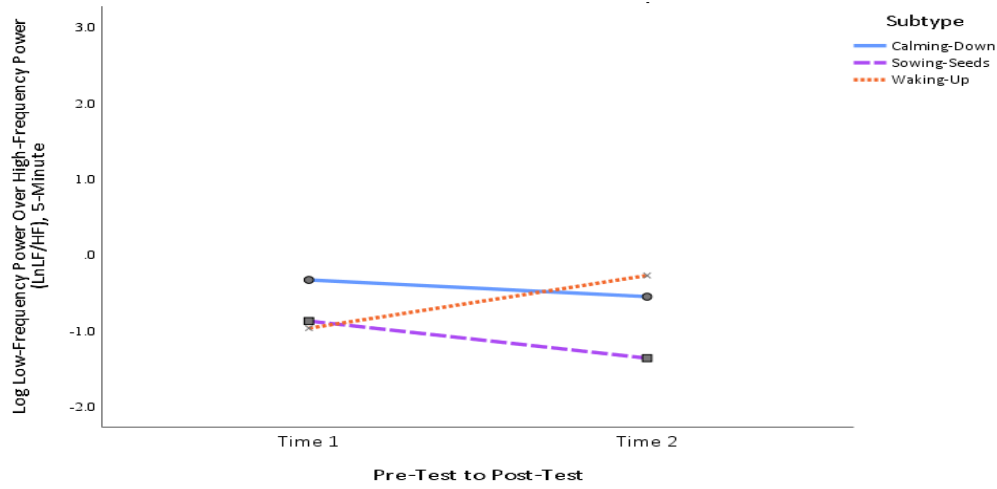
Comparison Group: Log Low-Frequency Power Over High-Frequency Power (LnLF/HF), 1-Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D58

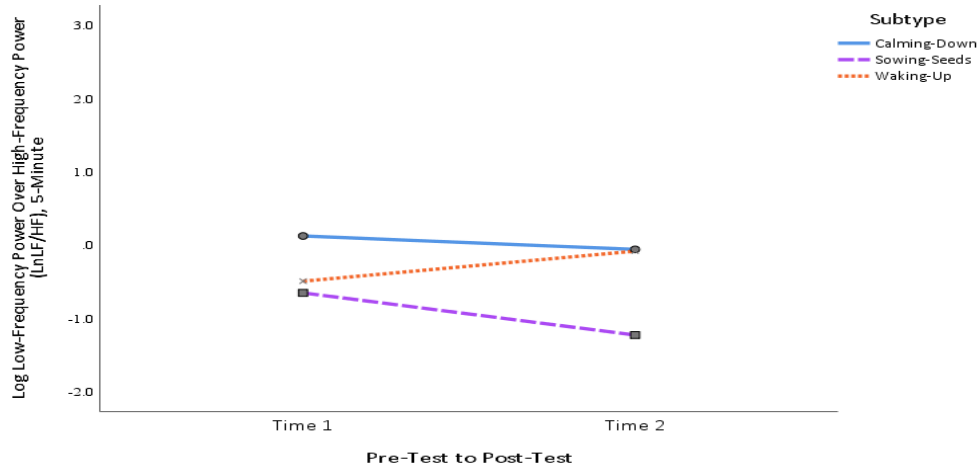
Treatment Group: Log Low-Frequency Power Over High-Frequency Power ($\ln LF/HF$), 5-Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D59

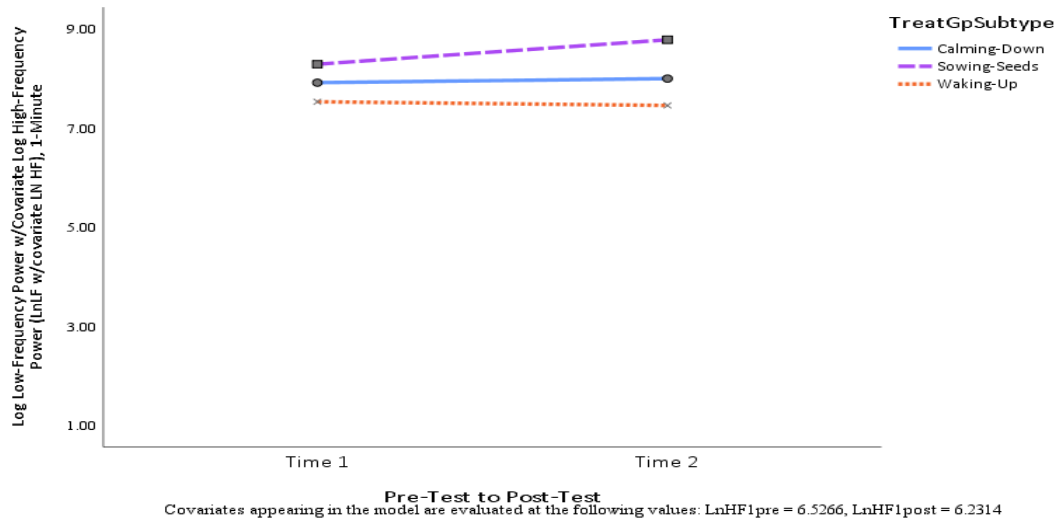
Comparison Group: Log Low-Frequency Power Over High-Frequency Power ($\ln LF/HF$), 5-minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D60

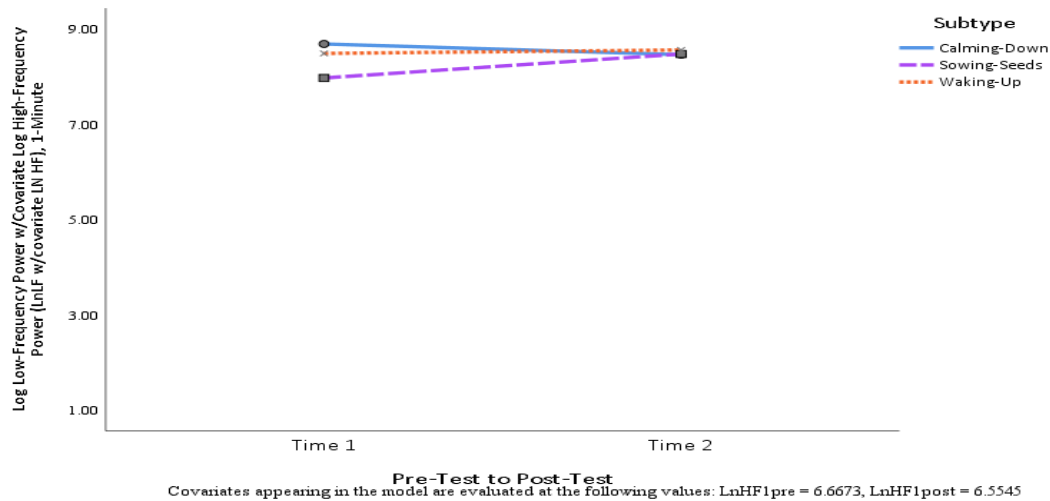
Treatment Group: Log Low-Frequency Power With Covariate Log High-Frequency Power, 1-Minute



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D61

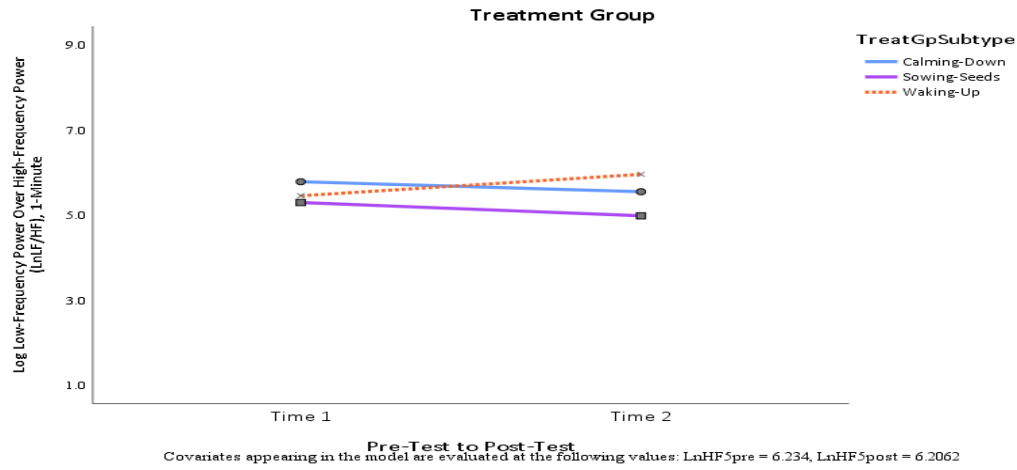
Comparison Group: Log Low-Frequency Power With Covariate Log High-Frequency Power, 1-Minute



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D62

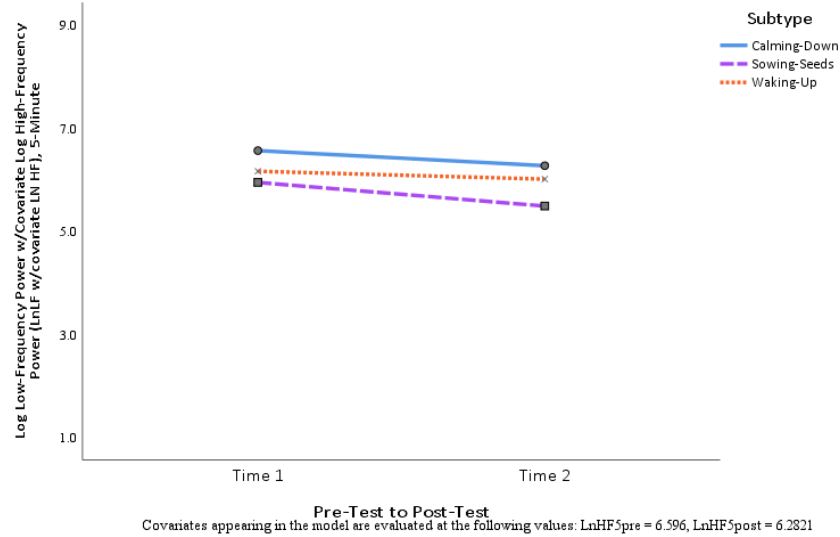
Treatment Group: Log Low-Frequency Power With Covariate Log High-Frequency Power, 5-Minute, Showing Sympathetic Activation



Note. $n = 24$ (Calming-Down subtype = 10, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).

Figure D63

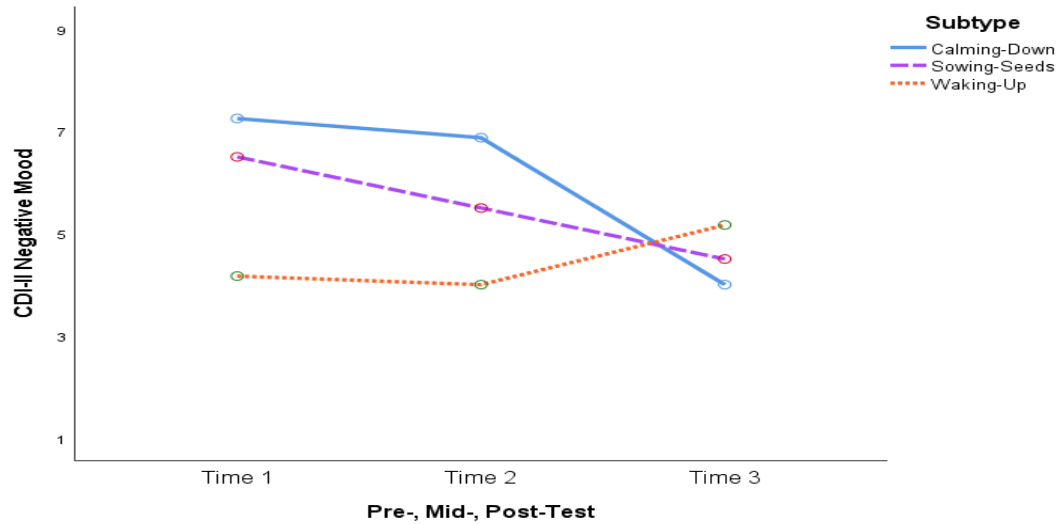
Comparison Group: Log Low-Frequency Power With Covariate Log High-Frequency Power, 5-Minute, Showing Sympathetic Activation



Note. $n = 18$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 4, and Waking-Up subtype = 10).

Figure D64

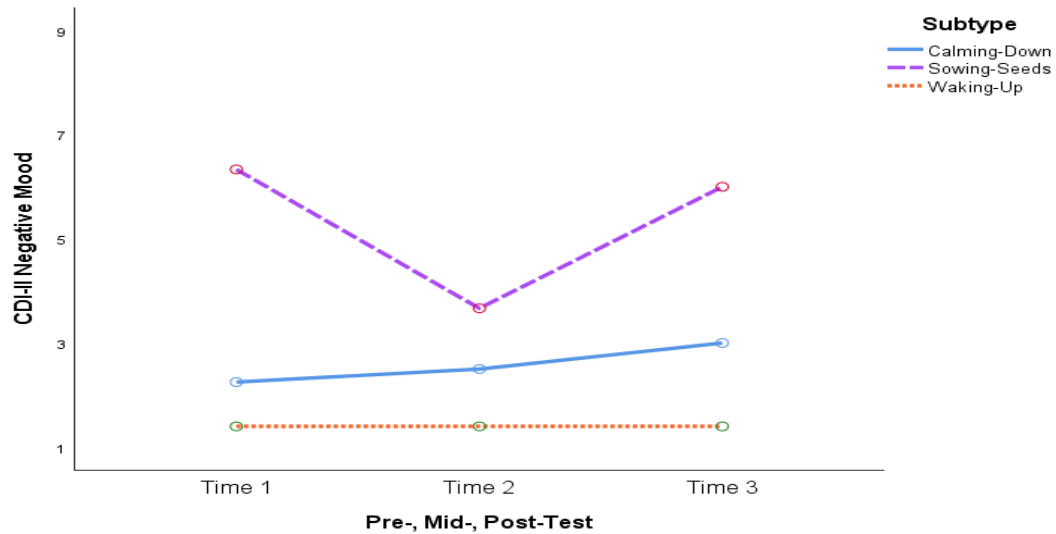
Treatment Group: CDI 2 Negative Mood



Note. $n = 18$ (Calming-Down subtype = 8, Sowing-Seeds subtype = 4, and Waking-Up subtype = 6).
CDI 2 = Children's Depression Inventory-2.

Figure D65

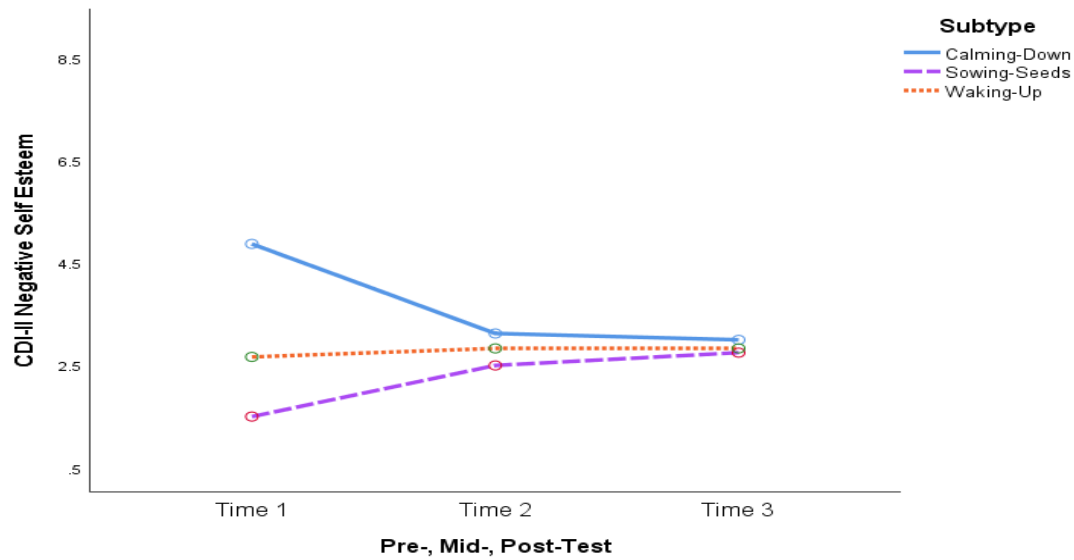
Comparison Group: CDI 2 Negative Mood



Note. $n = 12$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 5).
CDI 2 = Children's Depression Inventory-2.

Figure D66

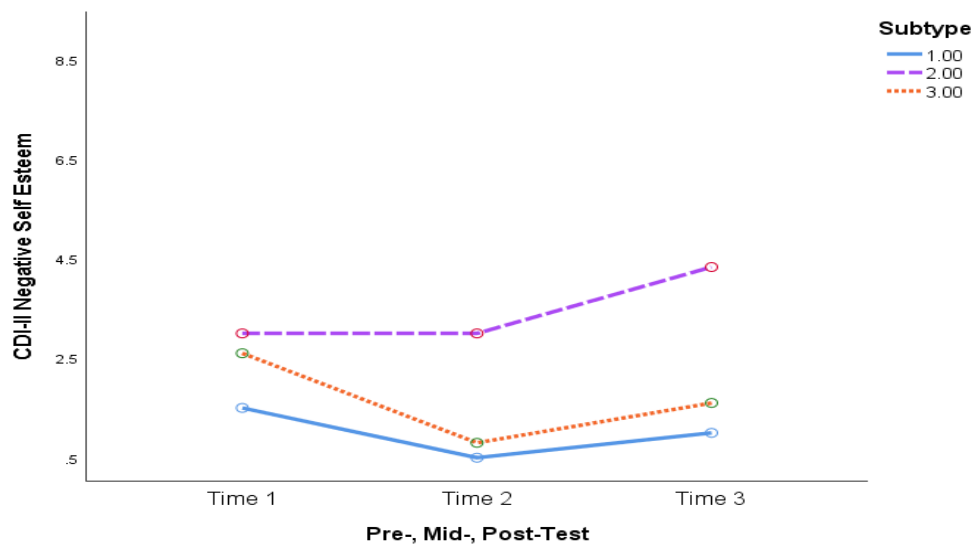
Treatment Group: CDI 2 Negative Self-Esteem



Note. $n = 18$ (Calming-Down subtype = 8, Sowing-Seeds subtype = 4, and Waking-Up subtype = 6).
CDI 2 = Children's Depression Inventory-2.

Figure D67

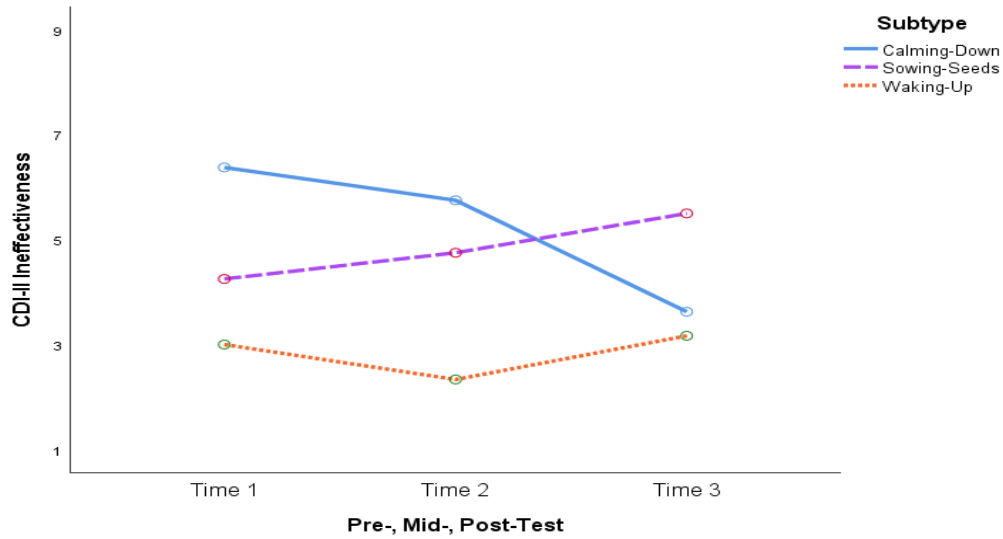
Comparison Group: CDI 2 Negative Self-Esteem



Note. $n = 12$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 5).
CDI 2 = Children's Depression Inventory-2.

Figure D68

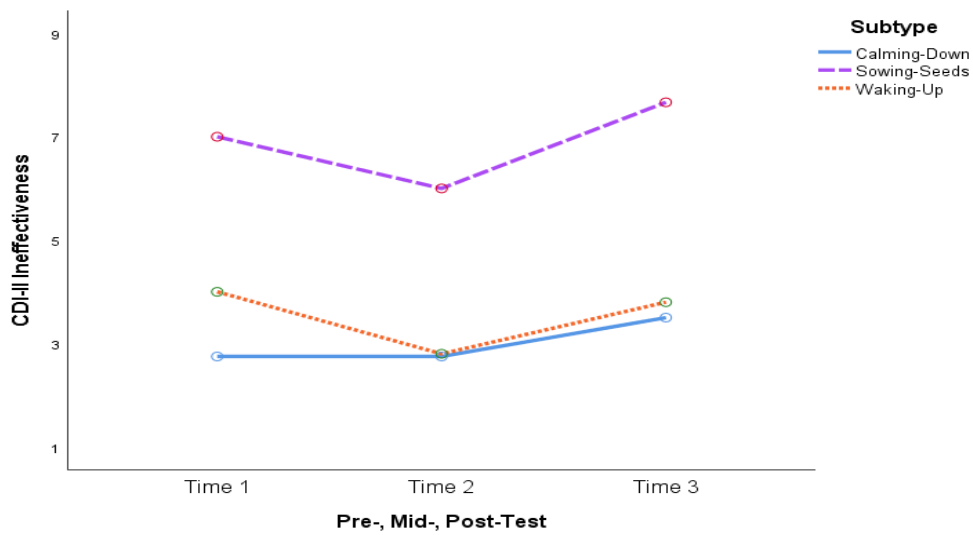
Treatment Group: CDI 2 Ineffectiveness



Note. $n = 18$ (Calming-Down subtype = 8, Sowing-Seeds subtype = 4, and Waking-Up subtype = 6).
CDI 2 = Children's Depression Inventory-2.

Figure D69

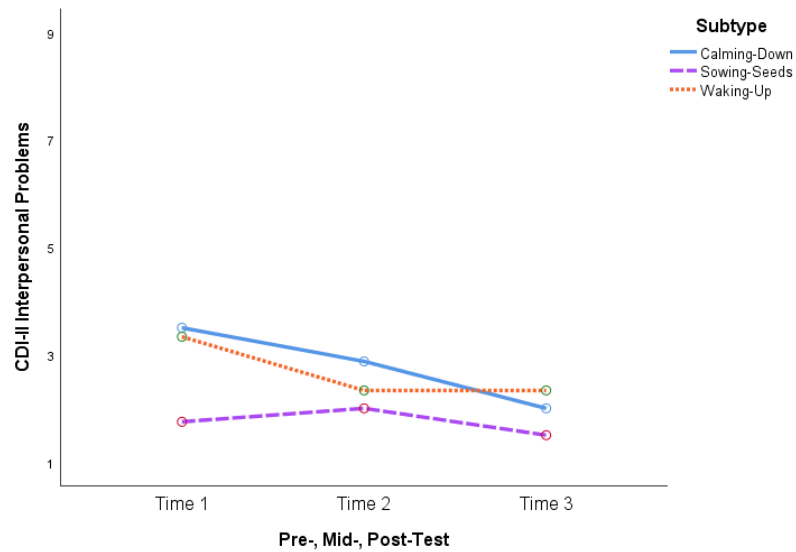
Comparison Group: CDI 2 Ineffectiveness



Note. $n = 12$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 5).
CDI 2 = Children's Depression Inventory-2.

Figure D70

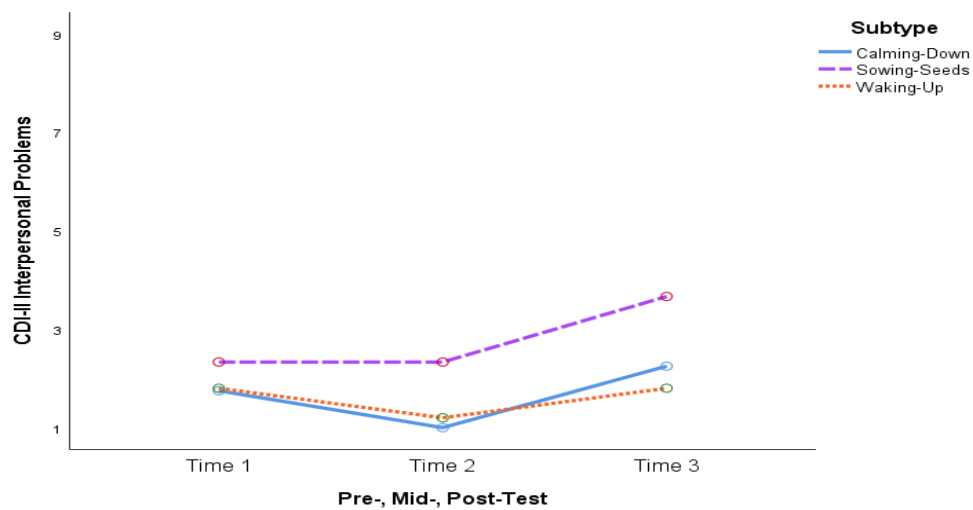
Treatment Group: CDI 2 Interpersonal Problems



Note. $n = 18$ (Calming-Down subtype = 8, Sowing-Seeds subtype = 4, and Waking-Up subtype = 6).
CDI 2 = Children's Depression Inventory-2.

Figure D71

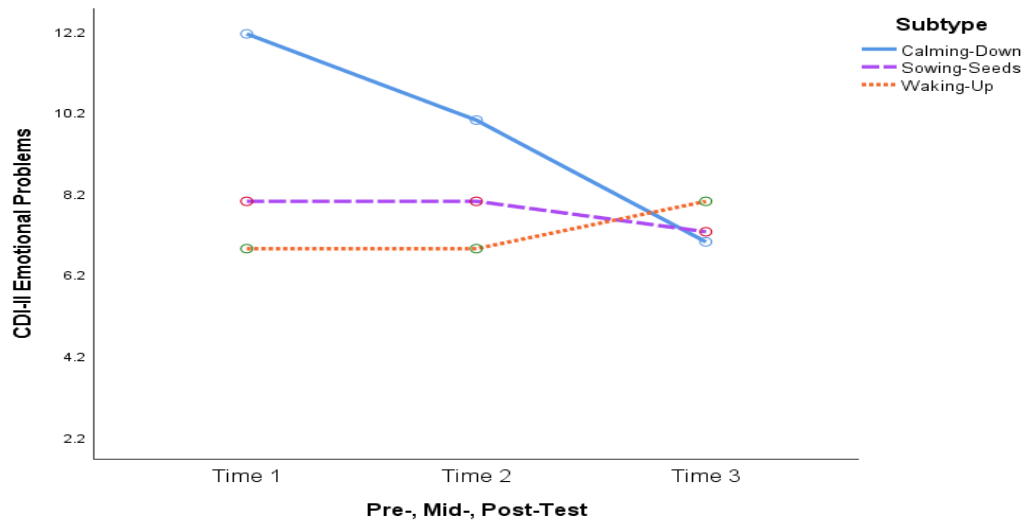
Comparison Group: CDI 2 Interpersonal Problems



Note. $n = 12$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 5).
CDI 2 = Children's Depression Inventory-2.

Figure D72

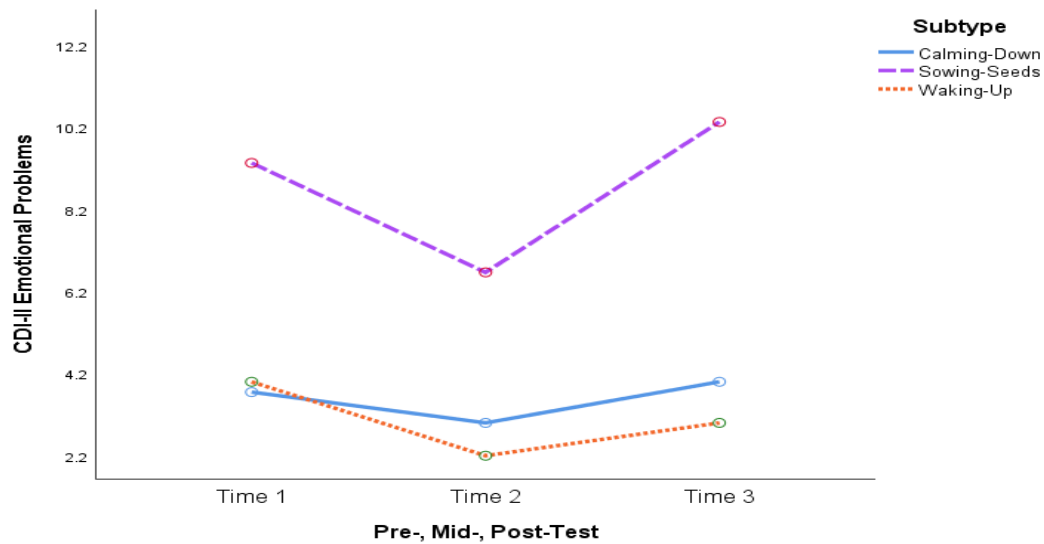
Treatment Group: CDI 2 Emotional Problems



Note. $n = 18$ (Calming-Down subtype = 8, Sowing-Seeds subtype = 4, and Waking-Up subtype = 6).
CDI 2 = Children's Depression Inventory-2.

Figure D73

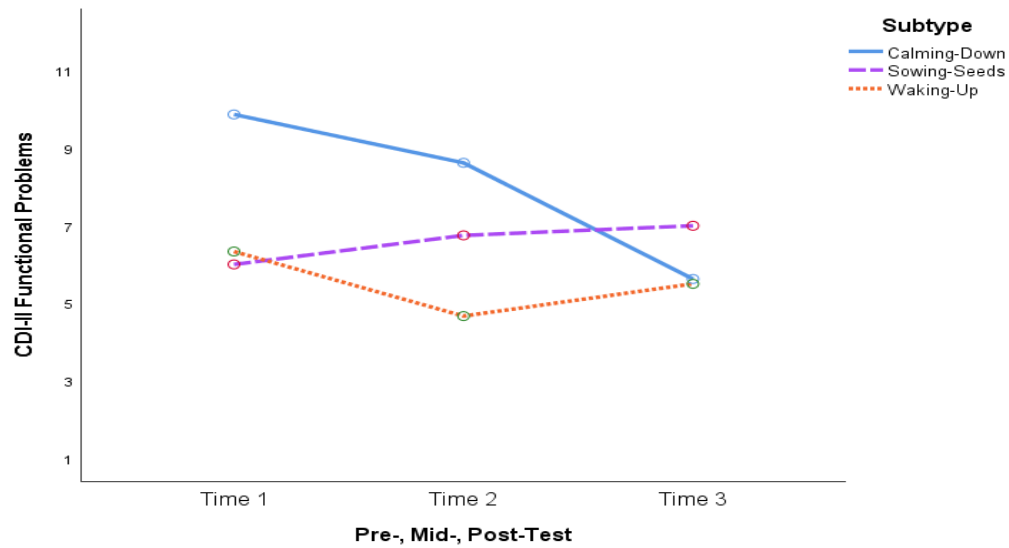
Comparison Group: CDI 2 Emotional Problems



Note. $n = 12$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 5).
CDI 2 = Children's Depression Inventory-2.

Figure D74

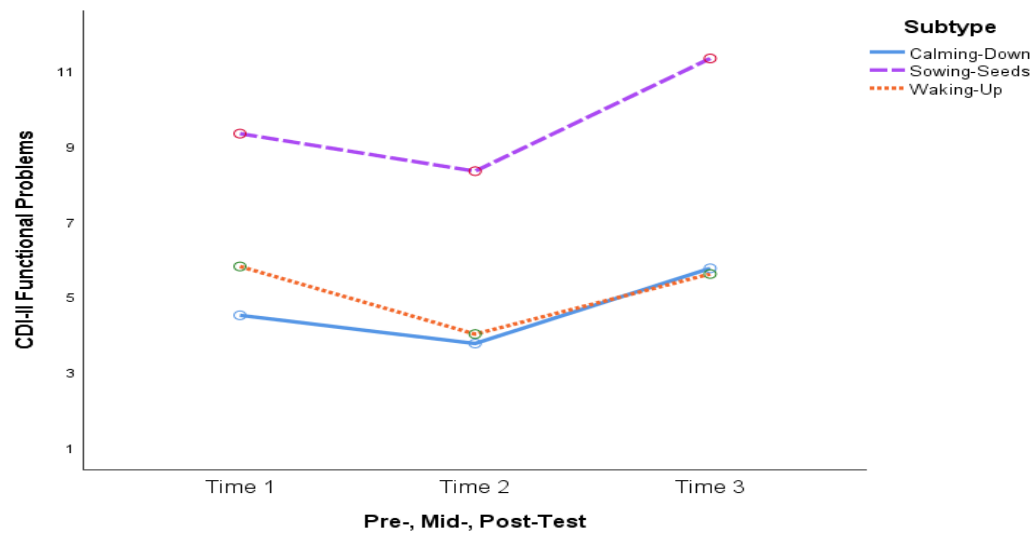
Treatment Group: CDI 2 Functional Problems



Note. $n = 18$ (Calming-Down subtype = 8, Sowing-Seeds subtype = 4, and Waking-Up subtype = 6).
CDI 2 = Children's Depression Inventory-2.

Figure D75

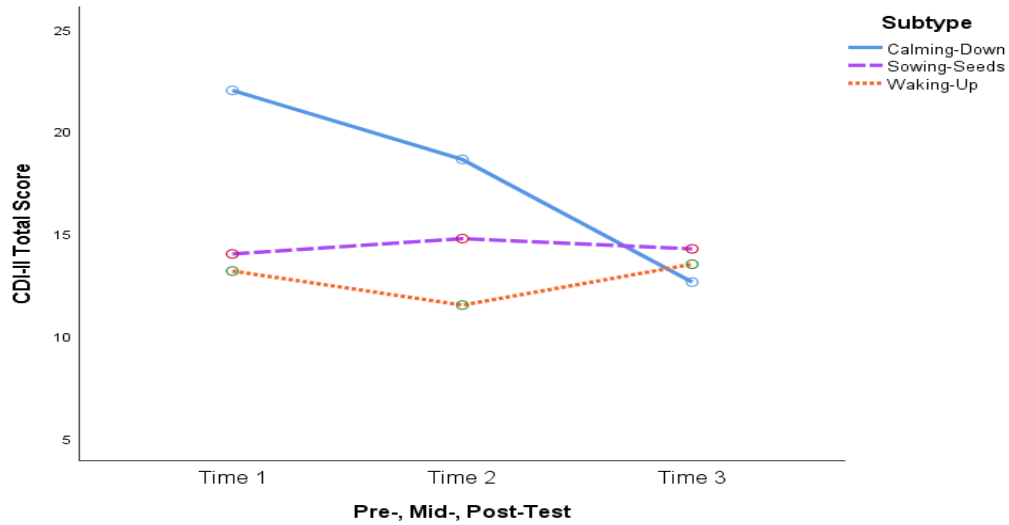
Comparison Group: CDI 2 Functional Problems



Note. $n = 12$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 5).
CDI 2 = Children's Depression Inventory-2.

Figure D76

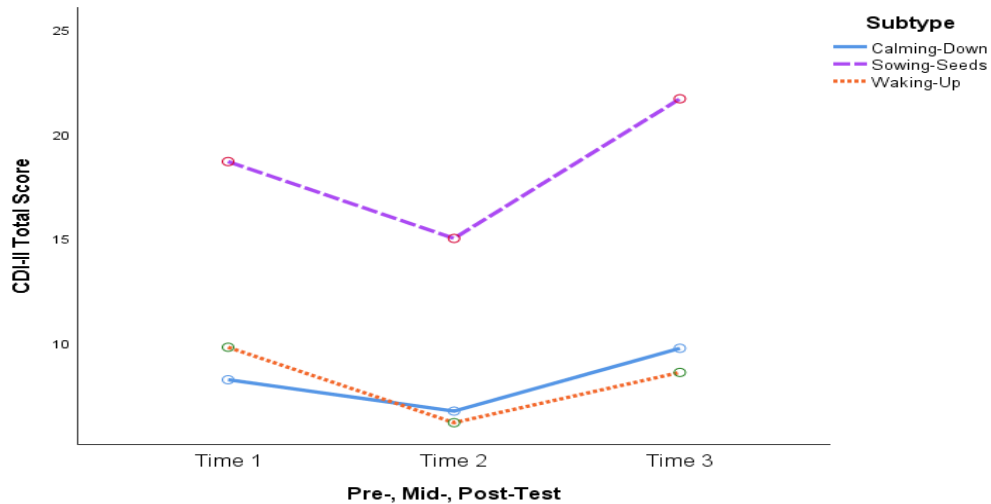
Treatment Group: CDI 2 Total Score



Note. $n = 18$ (Calming-Down subtype = 8, Sowing-Seeds subtype = 4, and Waking-Up subtype = 6).
CDI 2 = Children's Depression Inventory-2.

Figure D77

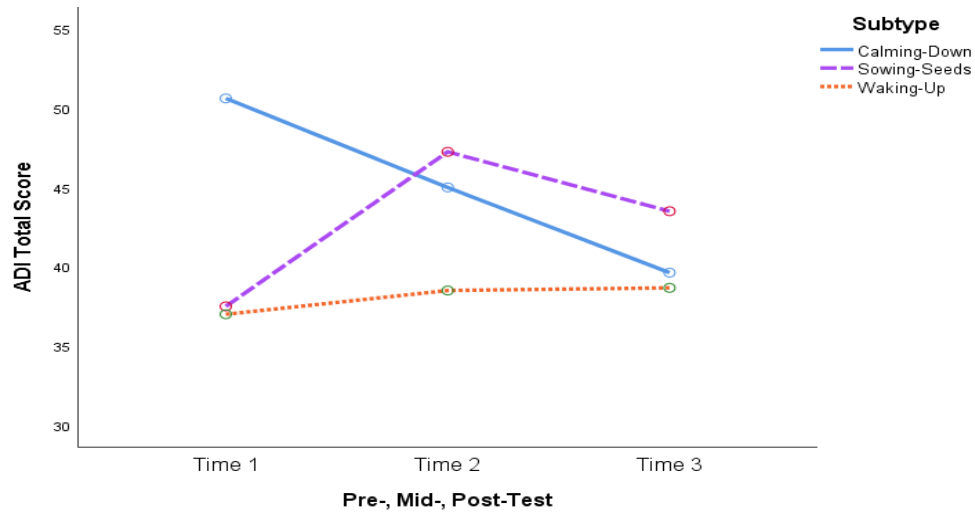
Comparison Group: CDI 2 Total Score



Note. $n = 12$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 5).
CDI 2 = Children's Depression Inventory-2.

Figure D78

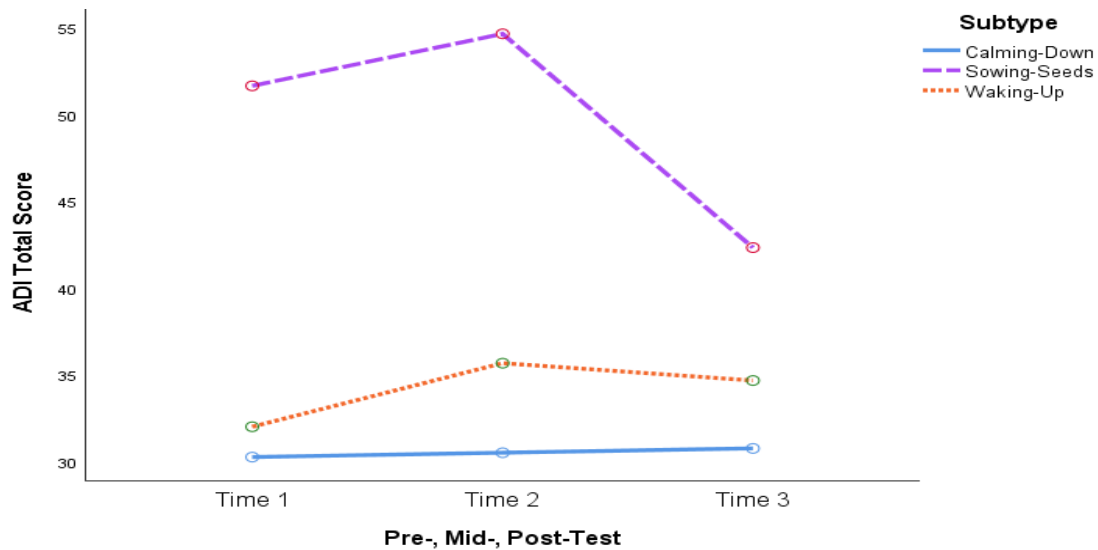
Treatment Group: ADI Total Score



Note. $n = 18$ (Calming-Down subtype = 8, Sowing-Seeds subtype = 4, and Waking-Up subtype = 6). ADI = Abbreviated Dysregulation Inventory.

Figure D79

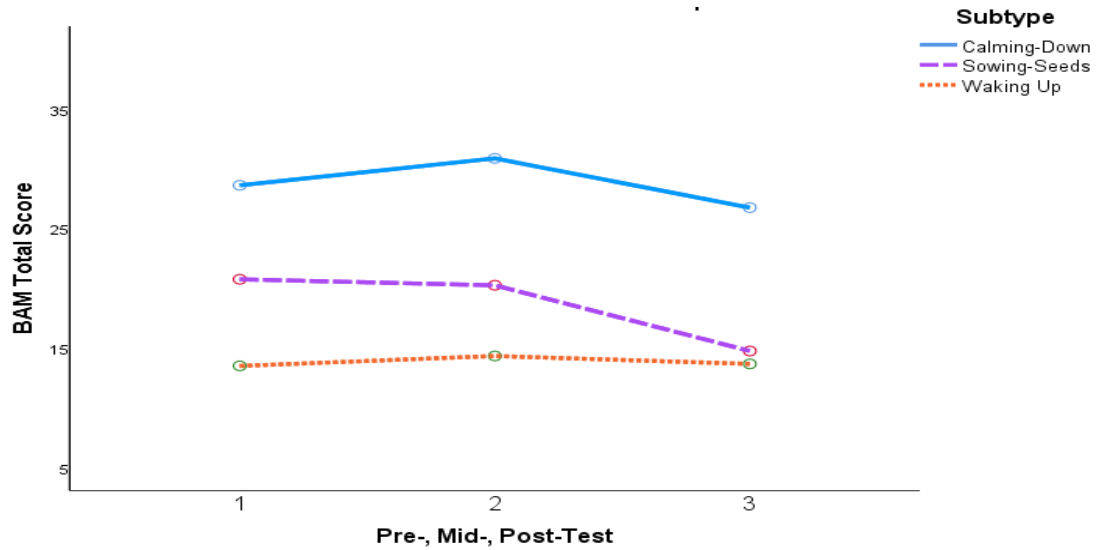
Comparison Group: ADI Total Score



Note. $n = 10$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 3). ADI = Abbreviated Dysregulation Inventory.

Figure D80

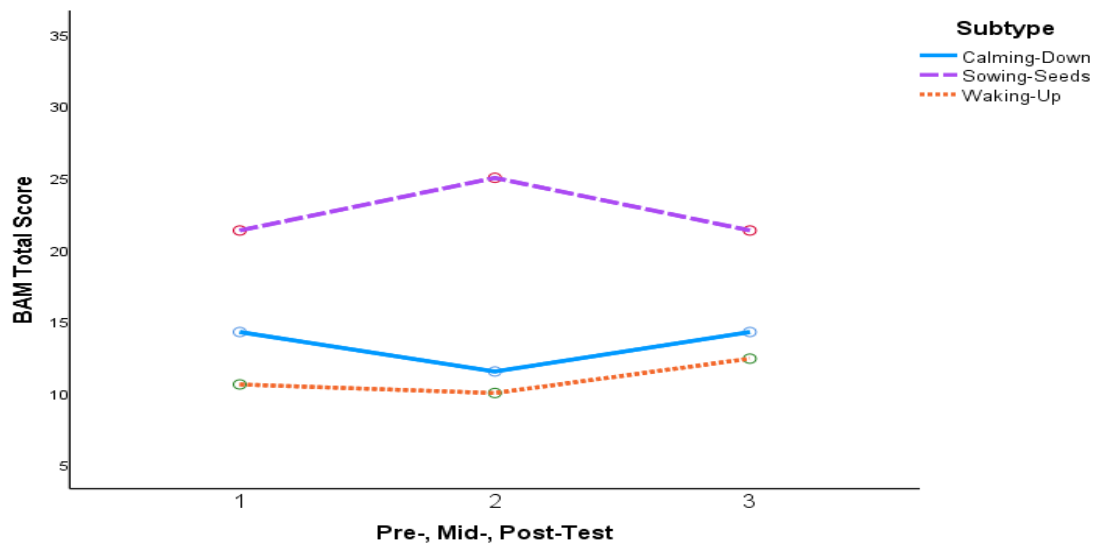
Treatment Group: BAM Total Score



Note. $n = 18$ (Calming-Down subtype = 8, Sowing-Seeds subtype = 4, and Waking-Up subtype = 6).
BAM = Body Awareness Measure.

Figure D81

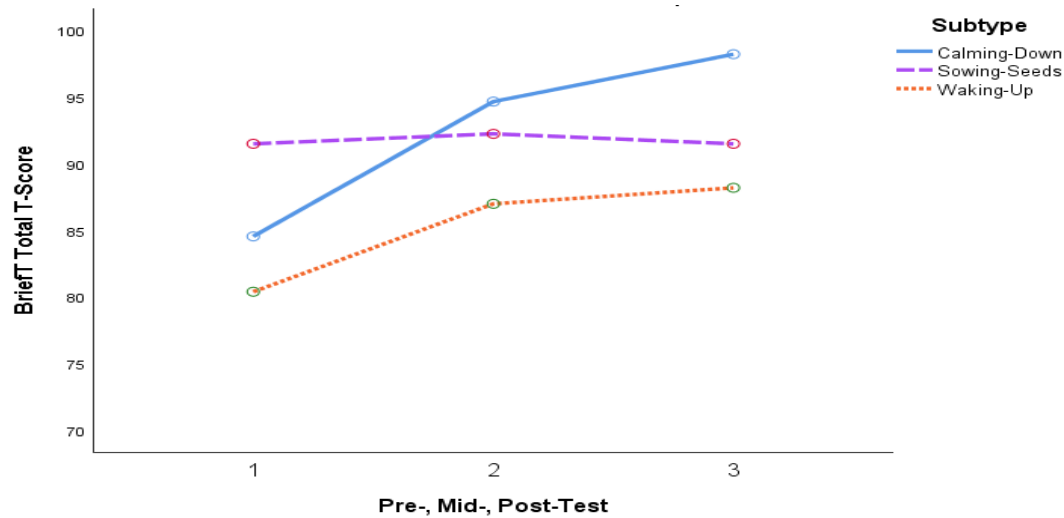
Comparison Group: BAM Total Score



Note. $n = 12$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 5).
BAM = Body Awareness Measure.

Figure D82

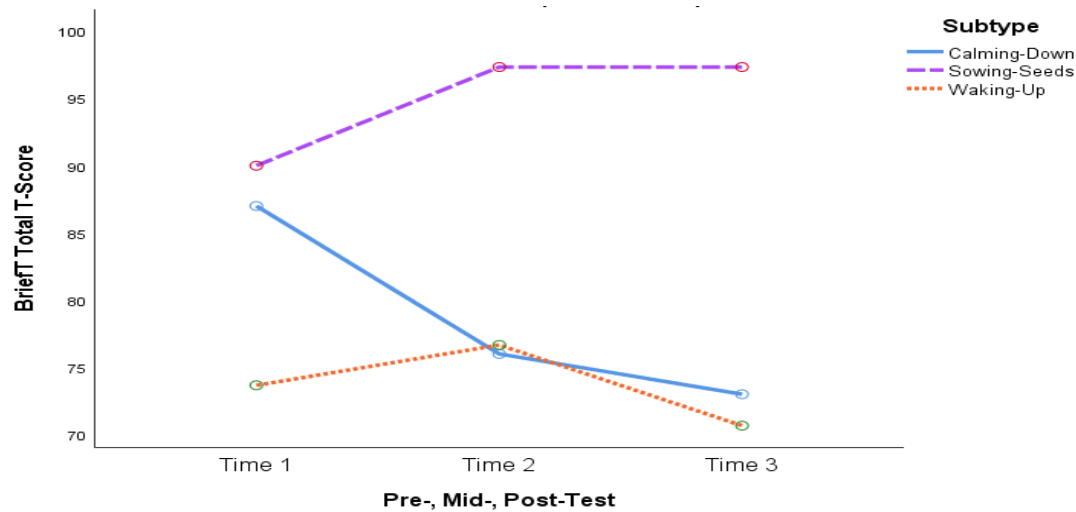
Treatment Group: BRIEF T Total t-Score



Note. $n = 18$ (Calming-Down subtype = 9, Sowing-Seeds subtype = 4, and Waking-Up subtype = 5).
BRIEF T = Behavior Rating Inventory of Executive Function – Teacher Version.

Figure D83

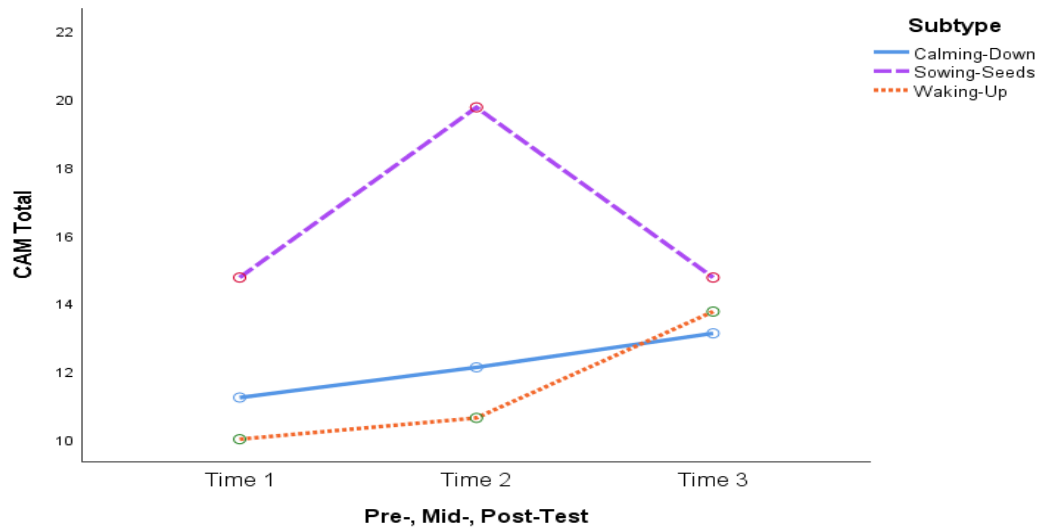
Comparison Group: BRIEF T Total t-Score



Note. $n = 8$ (Calming-Down subtype = 2, Sowing-Seeds subtype = 3, and Waking-Up subtype = 3).
BRIEF T = Behavior Rating Inventory of Executive Function – Teacher Version.

Figure D84

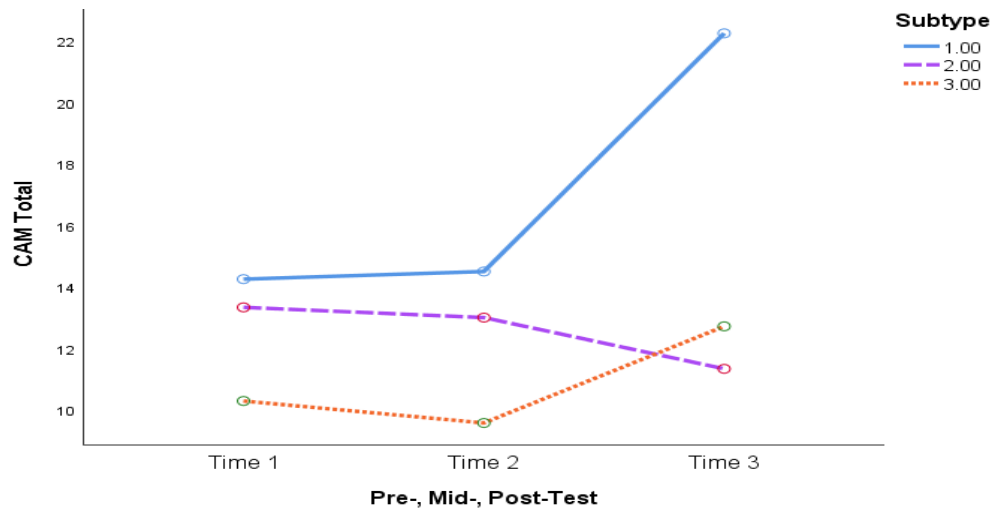
Treatment Group: CAM Total Score



Note. $n = 21$ (Calming-Down subtype = 9, Sowing-Seeds subtype = 4, and Waking-Up subtype = 8). CAM = Children's Alexithymia Measure.

Figure D85

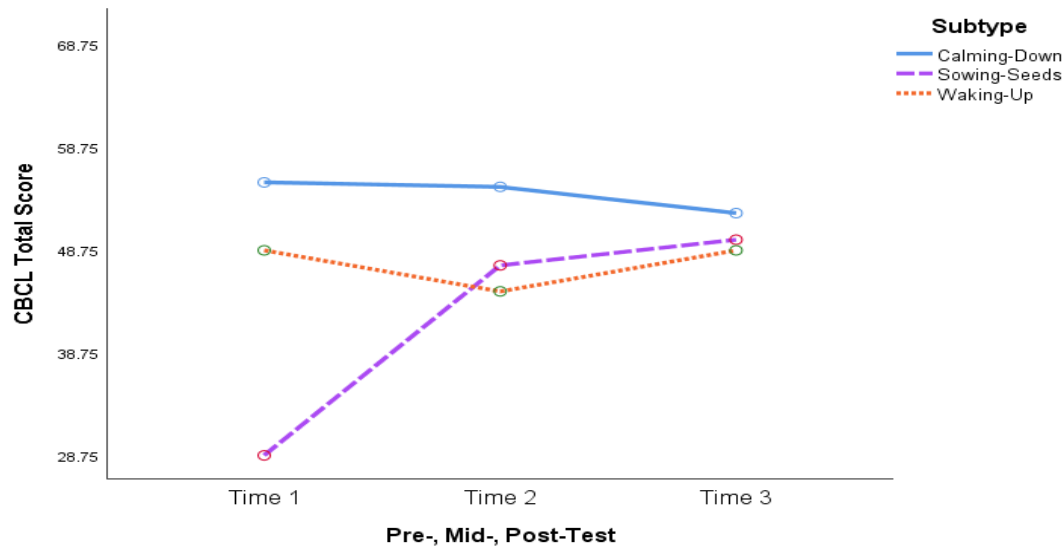
Comparison Group: CAM Total Score



Note. $n = 14$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 7). CAM = Children's Alexithymia Measure.

Figure D86

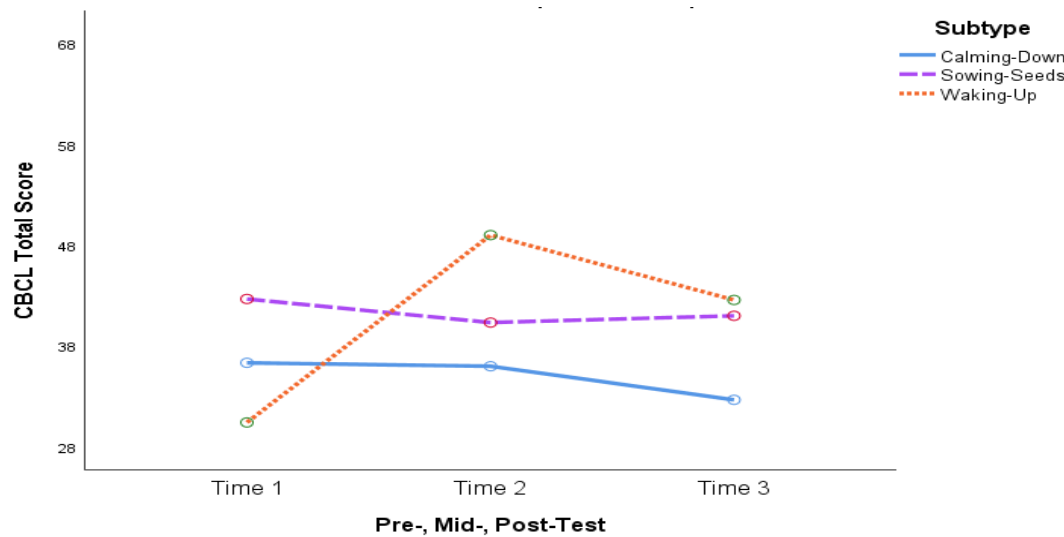
Treatment Group: CBCL Total Score



Note. $n = 20$ (Calming-Down subtype = 9, Sowing-Seeds subtype = 4, and Waking-Up subtype = 7).
CBCL = Child Behavior Checklist.

Figure D87

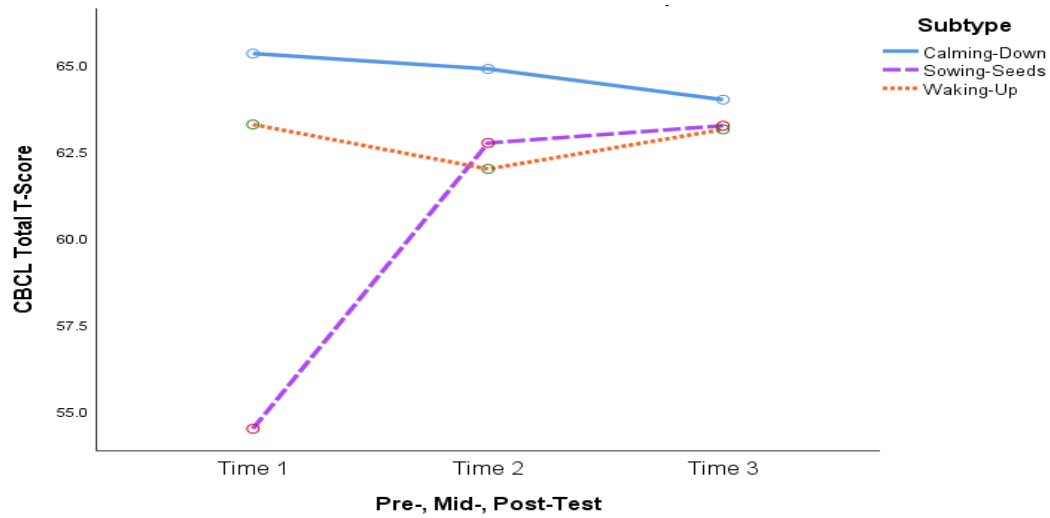
Comparison Group: CBCL Total Score



Note. $n = 13$ (Calming-Down subtype = 3, Sowing-Seeds subtype = 3, and Waking-Up subtype = 7).
CBCL = Child Behavior Checklist.

Figure D88

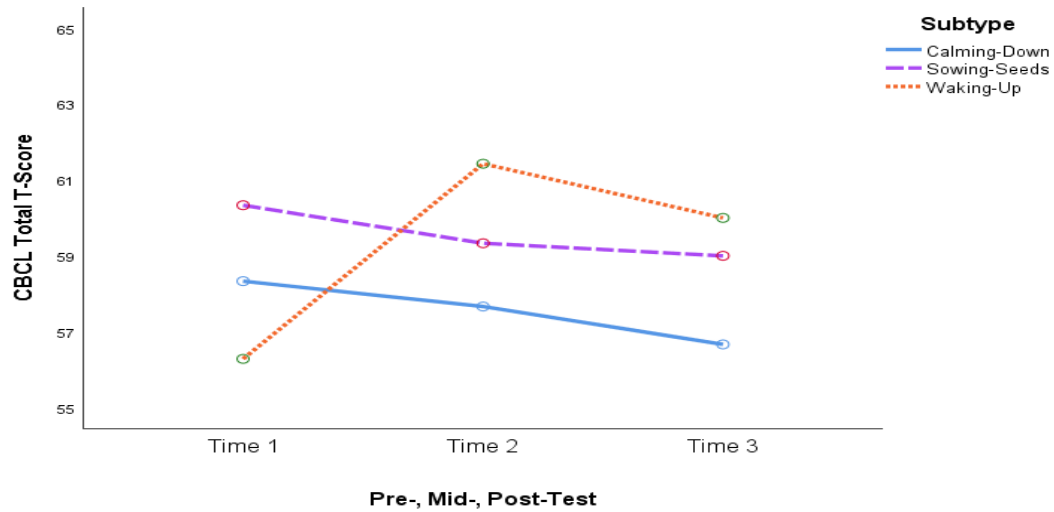
Treatment Group: CBCL Total t Score



Note. $n = 20$ (Calming-Down subtype = 9, Sowing-Seeds subtype = 4, and Waking-Up subtype = 7).
CBCL = Child Behavior Checklist.

Figure D89

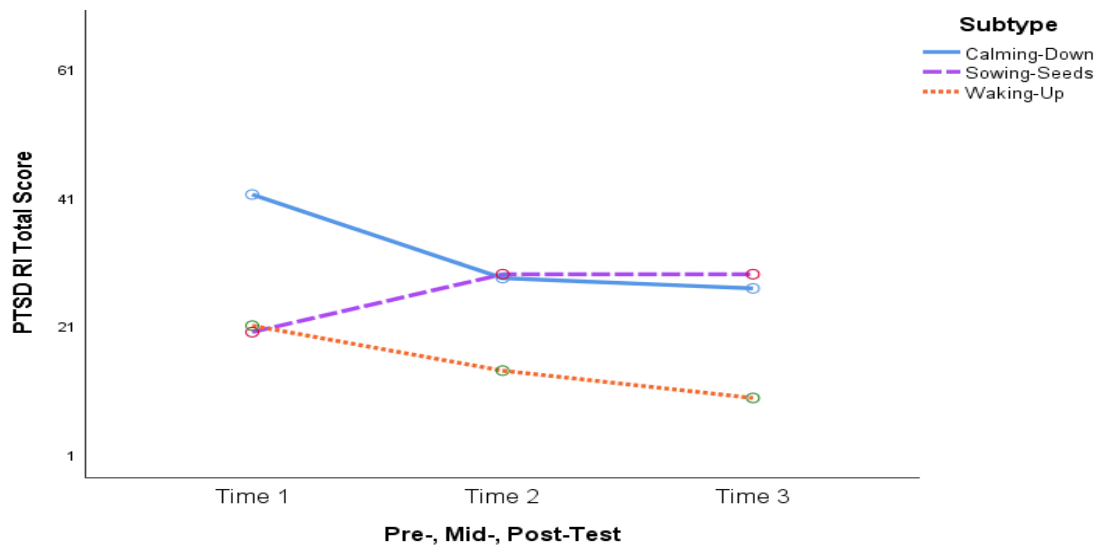
Comparison Group: CBCL Total t Score



Note. $n = 13$ (Calming-Down subtype = 3, Sowing-Seeds subtype = 3, and Waking-Up subtype = 7).
CBCL = Child Behavior Checklist.

Figure D90

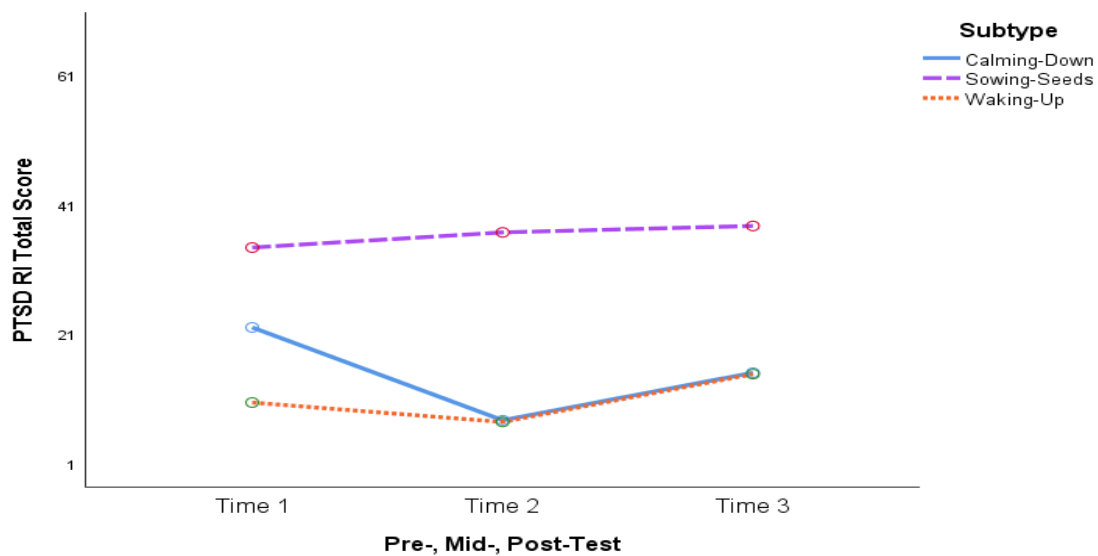
Treatment Group: PTSD RI Total Score



Note. $n = 12$ (Calming-Down subtype = 5, Sowing-Seeds subtype = 3, and Waking-Up subtype = 4).
PTSD RI = Posttraumatic Stress Disorder Reaction Index.

Figure D91

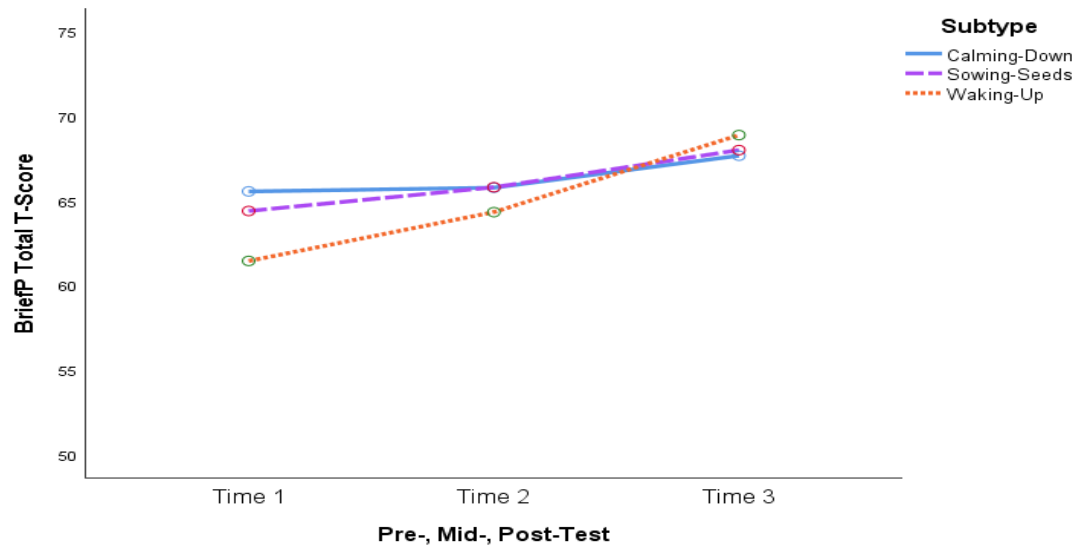
Comparison Group: PTSD RI Total Score



Note. $n = 11$ (Calming-Down subtype = 3, Sowing-Seeds subtype = 3, and Waking-Up subtype = 5).
PTSD RI = Posttraumatic Stress Disorder Reaction Index.

Figure D92

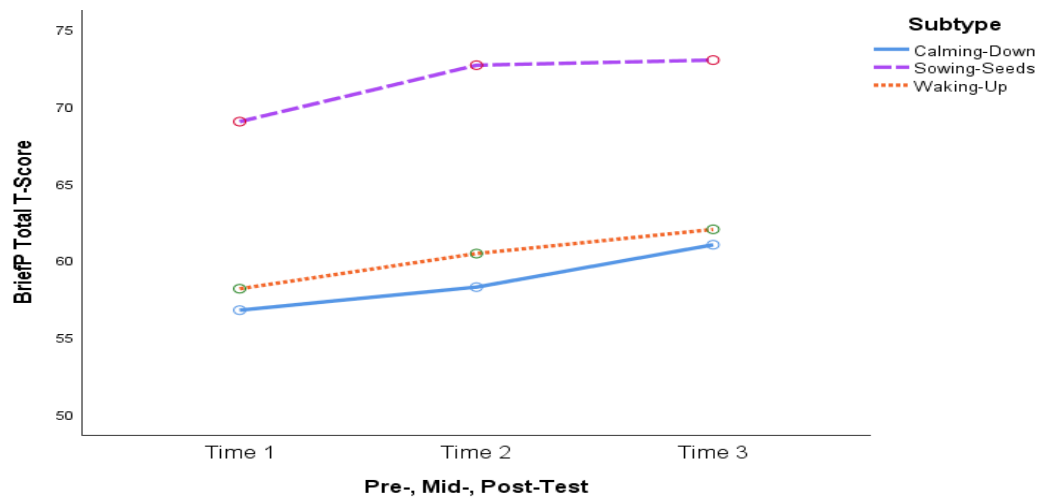
Treatment Group: BRIEF P Total t-Score



Note. $n = 23$ (Calming-Down subtype = 9, Sowing-Seeds subtype = 5, and Waking-Up subtype = 9).
BRIEF P = Behavior Rating Inventory of Executive Function – Parent Version.

Figure D93

Comparison Group: Brief P Total t-Score



Note. $n = 14$ (Calming-Down subtype = 4, Sowing-Seeds subtype = 3, and Waking-Up subtype = 7).
BRIEF P = Behavior Rating Inventory of Executive Function – Parent Version.