

UC Santa Barbara

UC Santa Barbara Electronic Theses and Dissertations

Title

Development and Evaluation of an Integrative Group Therapy Treatment for Survivors of Complex Trauma

Permalink

<https://escholarship.org/uc/item/546640qw>

Author

Meskunas, Haley

Publication Date

2020

Peer reviewed|Thesis/dissertation

University of California, Santa Barbara

**Development and Evaluation of an Integrative Group Therapy
Treatment for Survivors of Complex Trauma**

A dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of
Philosophy in Counseling, Clinical, and School Psychology.

by

Haley M. Meskunas

Professor Erika Felix, Chair

Professor Steve Smith

Professor Ty Vernon

September 2021

The dissertation of Haley M Meskunas is approved.

Steve Smith

Ty Vernon

Erika Felix, Committee Chair

June 2020

ACKNOWLEDGEMENTS

I am humbled and fortunate to have had the experiences and support that I have had thus far. I am particularly grateful to my advisor, mentor, and dissertation chair, Dr. Erika Felix, for her continued patience, guidance, encouragement, and structure, without which, I would not be where I am today. I admire your dedication to trauma work and to creating a context in which we, your students, can challenge ourselves and grow. With much gratitude, I would like to thank my dissertation clinical supervisor and committee member, Dr. Steve Smith, who spent countless hours supporting me in my dissertation ideas, guiding me through clinical challenges, and generally helping me make what seemed impossible, possible. With regard to my dissertation committee, I am thankful to Dr. Ty Vernon, the third and final committee member, particularly for supporting me in his knowledge of research methods and pilot studies. I would like to acknowledge and thank Andrew Teton, LMFT, for inspiring me, teaching me about the magic of group therapy, sharing his joy in therapy, and continually augmenting my clinical growth. I would be remiss not to acknowledge Dr. Ryan Smith, without whose generous mentorship and clinical and emotional support I would not be the clinician that I have become. I would like to thank my undergraduate research assistant, Molly Delzio, for her commitment, enthusiasm, and hard work on this project. I would also like to acknowledge the funding source, the Ray E. Hosford Memorial Fund award, which helped me provide my participants with compensation and to make this research possible. Additionally, I would like to thank my partner and my family for loving and supporting me through the ups, downs, and completion of this dissertation project. And in particular thanks to my mom for many early morning pep talks and my partner for always being my cheerleader and believing in me to accomplish anything

that I put my mind to.

Last, but certainly not least, I would like to send my unending gratitude and admiration to Delaney Baril, the trauma-informed yoga instructor, who so beautifully and gently guided the participants through healing poses. And a last enormous thank you to the participants of this study who made themselves vulnerable week after week. You are the strength and heart of this study.

VITA OF HALEY M MESKUNAS
June 2020

EDUCATION

Doctor of Philosophy in Counseling, Clinical, and School Psychology with an emphasis in Clinical Psychology, University of California, Santa Barbara, June 2021 (expected)
Master of Arts in Clinical Psychology, University of California, Santa Barbara, June 2017
Bachelor of Arts in Psychology, University of Miami, May 2014 (cum laude)

PROFESSIONAL EMPLOYMENT

Teaching Assistant
January 2017 – June 2020
Department of Applied Psychology
University of California, Santa Barbara

Graduate Student Researcher
September 2015 – June 2016
First 5 Santa Barbara County Evaluation—Investigator
University of California, Santa Barbara

Research Coordinator
August 2014 – August 2015
Healing Emotions and Resilience to Traumatic Stress (HEARTS) Program, Manhattan, NY
Principal Investigators: Chris Branson, Ph.D. and Jacob Ham, Ph.D.

PUBLICATIONS

Meskunas, H., Felix, E. D. (in preparation). Psychometric properties of the evaluation des pratiques educatives parentales behavioral parenting scale in a United States sample.

Felix, E.D., Afifi, T., Horan, S. M., **Meskunas, H.** & Garber, A. (under review). Why family communication matters: The role of co-rumination and topic avoidance in understanding post-disaster mental health.

Reed, L. A., Boyer, M. P., **Meskunas, H.**, Tolman, R. M., & Ward, L. M. (2020). How do adolescents experience sexting in dating relationships? Motivations to sext and responses to sexting requests from dating partners. *Children and Youth Services Review, 109*, 104696.

Felix, E. D., **Meskunas, H. M.**, Jaramillo, N., & Quirk, M. (2020). Measuring media exposure to acute mass violence. *Psychological trauma: theory, research, practice, and policy, 12*(4), 397.

Felix, E. D., Moore, S. A., **Meskunas, H.**, & Terzieva, A. (2017). Social and contextual influences on mental health following an episode of mass violence. *Journal of interpersonal violence*, 0886260517742915.

Felix, E.D., Terzieva, A., Moore, S., **Meskunas, H.**, & Quirk, M. (2016). *First 5 Santa Barbara County Evaluation Report 2014-2015*. Report submitted to First 5 Santa Barbara County.

AWARDS

Ray E. Hosford Memorial Fund award in support of dissertation research for Fall of 2019
Eduardo Escobedo Fellowship award for demonstrating academic promise and financial need for Fall of
2018

Ray E. Hosford Award for Excellence in Clinical Dedication for 2016-2017

FIELDS OF STUDY

Major Field: Clinical Psychology with a focus on Interpersonal and Collectively-Experienced Trauma

ABSTRACT

Development and Evaluation of an Integrative Group Therapy Treatment

for Survivors of Complex Trauma

by

Haley M Meskunas

Almost 700,000 cases of child abuse and neglect have been substantiated annually, with many more un-reported children being exposed to community and interpersonal violence (U.S. Department of Health and Human Services, 2017). Exposure to chronic or multiple potentially traumatic events places large numbers of children to grow up into emotionally and physically at-risk adults (Felitti et al., 1998). Although some helpful treatments already exist, examination of tailored alternative approaches is needed to address the broader somatic and psychological problems associated with complex trauma exposure. The current study involved developing and evaluating a pilot integrative group therapy treatment for adults who have experienced complex trauma. The treatment components draw from the field of interpersonal neurobiology and polyvagal theory. Interpersonal neurobiology approaches treatment through the lens of the embodied brain, including both the brain and the nervous system (Siegel, 2012). Polyvagal theory brings greater nuance to the interplay between experiencing trauma and the impacts on the autonomic nervous system via the dorsal and ventral vagal nerves (Porges, 2011). The group treatment combined process-oriented therapy with trauma-sensitive yoga delivered once weekly over the course of eight weeks. The treatment offered participants psychoeducation, opportunities for trauma processing, and various meditative grounding exercises. The study examined feasibility, acceptability, and preliminary efficacy across a range of psychological and physiological

domains including complex traumatic stress, depression, anxiety, sleep disturbance, and physical pain. Participants were recruited by flyers and an informational website through which interested individuals could message the lead researcher. Thirty eligible individuals completed intake procedures and ten participants were lost or dropped out before the treatment began. Participants (N=20) were randomly assigned to either the treatment or waitlist control group with ten participants falling into each condition. The sample included nineteen women and one man, were 60% White, with a mean age of 25.3 years. Independent samples *t*-tests indicated that at the time of intake there were no significant differences across the treatment and waitlist control conditions for all reported participant characteristics. Participants in the treatment condition felt that the group members accepted one another, that despite having differences, the group felt secure, and that the members felt that what was happening was important and there was a sense of participation. Paired samples *t*-tests examined change in depression, anxiety, complex traumatic stress symptoms, sleep disturbance, and physical pain intensity for each condition, but the only significant change was sleep disturbance between pre- and post-treatment for the treatment condition. Treatment effect sizes calculated at the conclusion of the study showed that the treatment condition saw moderate to large reductions in their complex traumatic stress symptoms ($d = .64$), and large reductions in their sleep disturbances ($d = 1.09$). Despite paired samples *t*-tests indicating no significant differences for the waitlist control condition, effect sizes also indicated that the waitlist control condition had moderate increases in their physical pain intensity ($d = -.56$) and small to moderate reductions in their complex traumatic stress symptoms ($d = .38$).

Compared to similarly integrative trauma treatments (Nguyen-Feng et al., 2019; Niles et al., 2018), the current study found comparable reductions in symptoms of traumatic stress and depression and fewer reductions in anxiety as indicated by treatment effect size calculations. The current study was subject to some unexpected situations that may have affected results. First, the final group session and post-treatment survey coincided with a period of multiple stressors and uncertainty due to ongoing campus strikes, and the onset of the COVID-19 pandemic social distancing efforts. This may have affected participants' current stress levels when completing the survey. This study supports that it is feasible to take a combined psychological and physiological approach to trauma treatment through combining trauma-sensitive yoga with more traditionally process- and trauma-oriented talk therapy for survivors of complex traumatic stress. Last, given the study findings and participant feedback, further research into the use and ways of combining somatic and psychological trauma treatment approaches is warranted.

Keywords: Complex trauma, yoga, group therapy, interpersonal neurobiology

TABLE OF CONTENTS

	Page
CHAPTER 1: INTRODUCTION.....	1
Complex Trauma and Why More Research is Needed	1
The Issue with Currently Recommended Treatments	2
Treating Complex Trauma through the Lens of Interpersonal Neurobiology.....	5
What Polyvagal Theory Adds to Trauma Treatment.....	10
The Role of Group Therapy in Treating Trauma Survivors.....	16
The Need to Address the Mind-Body Connection with Survivors of Complex Trauma	18
How Yoga Can Help Survivors of Complex Trauma.....	19
Current Study.....	25
CHAPTER 2: METHOD.....	28
Participants	28
Procedure	31
Description of Treatment.....	32
Measures.....	34
Analytic Procedure	40
CHAPTER 3: RESULTS.....	42
Clinical Trial Feasibility for Participant Factors	42
Clinical Trial Feasibility for the Treatment Protocol	46
Preliminary Efficacy of Treatment for Mental Health and Other Outcomes	48
CHAPTER 4: DISCUSSION	51

Contextual Information Potentially Affecting Results	52
Feasibility of an Integrated Yoga and Group Therapy Treatment.....	53
Participant Cohesion.....	55
The Impact of Treatment on Mental and Physiological Health.....	56
Implications	58
Strengths, Limitations, and Future Directions.....	59
Conclusion.....	61
References	62
Appendix A.....	74
Appendix B.....	75
Appendix C.....	78
Appendix D.....	82
Appendix E.....	83

LIST OF TABLES AND FIGURES

	Page
Table 1. Descriptive Statistics for Waitlist and Treatment Conditions at Intake	30
Table 2. Comparing the Treatment Conditions on Demographics and Mental Health at Intake	45
Table 3. Percentage of Participants Endorsing Aspects of Group Alliance	46
Table 4. Pre- to Post-Treatment Change in Mental Health by Condition	49
Figure 1. Recruitment, Screening, and Participation Flowchart.....	43

Development and Evaluation of an Integrative Group Therapy Treatment for Survivors of Complex Trauma

Greater than four million referrals to Child Protective Services (CPS) were made in 2017 in the United States; three and a half million of those referrals led to CPS investigations or alternative responses with almost 700,000 cases of child abuse and neglect being substantiated (U.S. Department of Health and Human Services). Additionally, thousands more children are exposed to community violence and other potentially traumatic events every year (U.S. Department of Health and Human Services). As the number of potentially traumatic events a person experiences increases, trauma survivors' risk also increases for later substance abuse, depression, anxiety, suicide attempts, heart and liver disease, unintended pregnancies, other forms of mental illness, and family and financial problems (Felitti et al., 1998). As such, traumatic experiences seem to have a cumulative effect, with higher numbers of adverse events strongly correlating with later significant impairment.

Complex Trauma and Why More Research is Needed

Despite staggering statistics attesting to the number of people experiencing significant trauma, somewhat less attention has been paid to delineating effective treatments for those who have experienced chronic, cumulative, and developmental traumas versus single-incident, acute traumatic exposure (van der Kolk, 2014). Complex posttraumatic stress disorder (CPTSD), often referred to as developmental PTSD, describes a constellation of symptoms produced by prolonged, chronic exposure to traumatic experiences, particularly those in childhood (Rosenfield et al., 2018). Research has especially fixated on using posttraumatic stress disorder (PTSD) as an outcome indicator of the impacts of trauma versus more broad-spectrum trauma impacts, such as pervasive dysregulation, difficulty concentrating, and difficulty building or maintaining healthy relationships, which are

typically present in complex trauma (van der Kolk, 2005; van der Kolk, 2014). As one example of the possible over-emphasis on PTSD, there are 34,137 results when entering the search term ‘PTSD’ into PsycINFO’s search engine including scholarly articles, books, and published dissertations, whereas there are 3,434 results for ‘developmental trauma disorder,’ 2,095 results for ‘complex PTSD,’ and only 129 results for ‘CPTSD’ (April 12, 2019). In fairness, research can be conducted more systematically with appropriate diagnoses outlining the core problems or areas of dysfunction, such as researchers have been able to do with the diagnosis of PTSD. Without an agreed upon diagnosis for developmental or complex trauma, neither researchers nor clinicians have any standards against which they can compare and uphold research findings (van der Kolk, 2014).

Similarly, since the emergence of PTSD in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1980), the field of psychology has hyper-focused on PTSD as the primary consequence of experiencing trauma (van der Kolk, 2014). In fact, the existence of a diagnosis led to entities such as the Department of Defense and the Department of Veterans Affairs spending large sums of money on researching and treating PTSD (van der Kolk, 2014). The movement to more deeply understand the phenomenon of PTSD was incredibly helpful to a wide range of trauma survivors, and yet did not always lead to effective diagnosis or treatment of survivors of more complex, interpersonal, and developmental traumas (van der Kolk, 2014).

The Issue with Currently Recommended Treatments

Notably, interpersonal traumas appear to lead to higher lifetime rates of psychiatric disorder than do non-interpersonal traumas (Green et al., 2000; Resick et al., 1993). Individuals who have experienced complex or developmental trauma, such as survivors of

childhood sexual abuse, often are diagnosed with an array of psychiatric disorders in an attempt to encompass the range of their symptoms (Van der Kolk, 2015). These diagnoses, however, often emphasize one area of dysfunction over another and do not adequately describe the core of the problem. As a result, complex trauma survivors face treatments that may only address areas of symptoms rather than a more comprehensive or holistic approach.

On their webpage for PTSD treatment guidelines, the American Psychological Association (APA; n.d.) strongly recommends four treatments for adults who have experienced trauma including cognitive behavioral therapy, cognitive processing therapy, cognitive therapy, and prolonged exposure. The APA also conditionally recommends three additional treatments for adults who have experienced trauma including eye movement desensitization reprocessing (EMDR), brief eclectic psychotherapy, and narrative exposure. Most of the recommended approaches focus on mental processes, such as noticing thoughts, exposing clients to their avoided fears through imaginal or in-vivo exposure, providing psychoeducation regarding trauma memories, and repeated exposure to written, illustrated, or verbal trauma narratives. Although each treatment approach contains within it flexibility enough to utilize mindfulness and other complementary and integrative techniques, none of the recommended treatments for survivors of traumatic experiences prioritizes treating the body's reaction to trauma. Nor do any of the treatment approaches specifically outline comprehensive mind-body techniques, and consequently, it is the clinician's prerogative of what and how much to include.

Although research evidence exists suggesting that certain treatment approaches, such as CBT (Ehlers et al., 2013) and prolonged exposure (Foa et al., 2007) are effective treatments for non-complex PTSD, there is a dearth of research investigating treatment

efficacy for complex PTSD and other more multifaceted post-trauma clinical presentations (Corrigan & Hull, 2015). Concerningly, complex presentations of posttraumatic reactions are not frequently included in research, as they do not fit into simple nosological categorizations needed for statistical power in research (Corrigan & Hull, 2015). One methodologically sound paper looking at the effectiveness of using CBT with female survivors of childhood sexual abuse experiencing chronic posttraumatic stress disorder (McDonagh et al, 2005), had a 41% dropout rate. At post-treatment, of the 74 participants who met criteria for complex PTSD, eight participants in the CBT condition no longer met criteria for PTSD, nor did seven participants in the present-centered therapy, and four from the waiting list. At the least, this calls into question relying on CBT as the sole treatment for individuals with a complex posttraumatic clinical presentation.

Moreover, the widely varying symptoms often resulting from complex trauma exposure may require more than one modality of treatment (Briere & Scott, 2015). The variability in the presentation of symptoms and symptom clusters, however, renders both clinical identification and research more challenging in the area of complex trauma. Notably, the authors of one article exploring why psychotherapy is often less effective for complex posttraumatic reactions posits, “assimilation into treatment models of the emerging affective neuroscience of adverse experience could help to redress the balance by shifting the focus from top-down regulation to bottom-up, body-based processing,” (Corrigan & Hull, 2015, p. 86). The current study moves to address this shift by utilizing affective neuroscience through interpersonal neurobiology and polyvagal theory, and by integrating more than one modality of treatment.

In response to this shortcoming, it is crucial to develop empirically-supported treatments that address the full spectrum of many trauma survivors' daily distress and impairment. As researchers begin empirically investigating the use of mind-body approaches, catching up to clinicians' use of mind-body approaches to trauma treatment, an empirical base has grown supporting the potential efficacy of integrative techniques, such as meditation, qigong, tai chi, and yoga (Kim et al., 2013). The systematic review of the literature conducted by Kim and colleagues (2013) found 16 suitable articles, most of which had small sample sizes. Despite the limited number of available studies for inclusion, the findings of the review indicated that mind-body practices have many therapeutic effects on stress responses. In particular, the review showed reductions in anger, depression, and anxiety. The review also showed elevations in pain tolerance, ability to relax, energy levels, self-esteem, and coping skills for stressful situations. These mind-body approaches target the detrimental effects of trauma on the body, while familiarizing individuals with key concepts and healing practices of self-compassion, distress tolerance, effective action, and acceptance.

The current study seeks to use the underlying theoretical bases outlined in the interpersonal neurobiology and polyvagal theory literatures to develop, administer, and evaluate the use and impact of an integrative trauma treatment involving process-oriented psychotherapy and yoga. To the current author's knowledge, only two other studies (Clark et al., 2014; Nguyen-Feng et al., 2019) have integrated yoga into group psychotherapy sessions, rather than using yoga adjunctively or as a primary treatment.

Treating Complex Trauma through the Lens of Interpersonal Neurobiology

The first theory underlying the current study's approach to trauma treatment is interpersonal neurobiology. Developed in the 1990s, interpersonal neurobiology is an

interdisciplinary approach, drawing together scientific findings from physics, psychology, anthropology, molecular biology, cognitive science, psychiatry, mathematics, computer science, education, genetics, linguistics, neuroscience, neurosurgery, and sociology in an attempt to elucidate the emergent and common principles of human experience and development (Siegel, 2012). Particularly relevant to clinical work in psychology, interpersonal neurobiology (IPNB) has moved the field forward in its understanding of, and approach to, the process of change across the lifespan. Before Dan Siegel and collaborators formed the theory of IPNB, the field of psychology was remiss in cohesively defining critical constructs, such as the “mind” and “mental health” (Siegel, 2012). Although countless, varied descriptions of the mind have existed since and even before the emergence of psychology, these have mostly listed attributes of the mind and what the mind does (e.g., produces behaviors), is composed of (e.g., thoughts and feelings), or includes (e.g., consciousness), rather than what the mind actually “is” (Siegel, 2012). Defining the mind is helpful for guiding the treatment approaches we choose and why.

Together with scientists of over a dozen disciplines, Siegel and his colleagues developed a definition of the mind as “an emergent, self-organizing, embodied and relational process that regulates the flow of energy and information,” and includes both consciousness and subjective experience (Siegel, 2015, p. 160). This adds to previous descriptions of the mind by creating a working definition from which clinicians can seek to understand psychological phenomena in greater depth. This also provides an interdisciplinary approach to understanding and defining the mind, encouraging researchers and clinicians across disciplines to find shared universal meanings (Siegel, 2012). The mind regulates the flow of energy and information both within and between persons, despite the field’s historical focus

on the singular and individual approach to psychology of the mind (Cushman, 1995; Siegel, 2012).

Siegel, on the contrary, offers a theory of mental health and well-being that is equally rooted in relationship with others as it is in individual processes (Siegel, 2012; Siegel & Bryson, 2011). Offering a definition of the mind as inherently including our relationships with others, ourselves, and our bodies, IPNB also aligns well with psychotherapy formats that highlight these components, such as group therapy and mind-body practices like yoga. Likewise, this theory supports that therapists can utilize group encounters as fertile grounds for activation and co-regulation.

Siegel (2012) purports that US, Westernized individuals report feeling increasingly isolated in spite of our increased digital connectedness. Siegel (2012) suggests that experiences of belonging are lacking and that increased feelings of isolation are culturally constructed through reinforcing messages of disconnection and individuality. Given the brain's proclivity to develop based in part on life experiences, then it follows that culture, constructing many of life's experiences, contributes to the way that synaptic connections and overall brain architecture forms (Siegel, 2012). In the same vein, it seems important to find ways, such as through attuned and meaningful human connection, to liberate our sense of self from an insulated and isolated "me" to a connected "we." Process-oriented group psychotherapy fits this goal by inviting a group of individuals to attune to one another and create a collaborative and interdependent sense of belonging and cohesion, or 'we-ness.' Theoretically, yoga may also improve ability to establish attuned connection to others through increased present-moment awareness and awareness of internal bodily cues.

Additionally, the brain, or the ‘embodied brain’ consists of not only the brain in our heads, but also the nervous systems splayed throughout the entirety of the body (Siegel, 2012). Siegel (2012) describes the head brain as the skull-based cluster of cells comprising the top of the central nervous system, which is integrally interconnected to the rest of the body through the peripheral nervous system and the various signals from the body’s physiological processes. Input from both the head brain and the body’s extended nervous system each have reciprocal and direct impacts on the other, so much so, that it makes little sense to consider them separately (Siegel, 2012). As a result, the ‘brain’ in interpersonal neurobiology refers to the embodied brain mentioned above. Siegel (2015) also describes the brain as the embodied mechanism of energy and information flow. This is relevant to the current study in that, through an IPNB lens, we must consider and treat the whole human, rather than isolating the activity of the head brain as a means of change. As a result, the current study emphasizes developing an integrated treatment in order to address social engagement, bodily discomfort and dysfunction, as well as internal thoughts, memories, and feelings.

Siegel (2010) theorizes that mental health or well-being occurs when differentiated and specialized areas of the brain link together and function in an integrated fashion. Integration of this kind manifests as a unique state of functioning characterized by flexibility, adaptivity, coherence, energy, and stability (FACES; Siegel, 2010). In this way, integration is both the mechanism through which health and well-being is sought and its goal. Various mental activities, such as thinking, feeling, and remembering come together to compose a state of mind, and these states of mind can interact, collaborate, and reciprocally impact each other (Siegel, 2012). Process-oriented group psychotherapy allows space for individuals to

notice, reflect upon, and integrate these states of mind while maintaining access to clinical and peer support in the process of broadening their tolerance of an array of uncomfortable emotions.

Within an interpersonal neurobiological perspective, coherent well-being lives between the two extremes of chaos on one end and rigidity on the other (Siegel, 2012; Siegel & Bryson, 2011). In fact, diagnoses found in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) can be understood as displays of chaos or rigidity. Siegel (2010) suggests that states of rigidity, chaos, or both are often manifest as symptomatic conditions and may be experienced as inflexible, incoherent, maladaptive, deflated, and unstable. For example, an adult diagnosed with obsessive compulsive disorder (OCD) refusing to leave the house without completing a series of door-knocking and locking compulsions illustrates rigidity. A child diagnosed with disinhibited social engagement disorder imprudently approaching unfamiliar adults illustrates an example of chaos. Thus, the logical next step and goal of psychotherapy is to promote experiences that move a person toward an integrated state, in which she can respond flexibly and adaptably to circumstances within herself, as well as between herself and others. As such, clinicians can facilitate growth in clients by helping them to link differentiated parts of the embodied brain and move towards neural integration. Specifically, experiences can alter previously automatic patterns of neural activation while stimulating new potential networks of neural activation (Siegel, 2001; Siegel, 2015). Group psychotherapy and trauma-sensitive yoga both offer ample opportunities for clients to stimulate and engrain new neural pathways via interpersonal interactions, using attention with intention, and actively regulating physiological responses.

Moreover, integration of this kind is best understood and viewed through the lens of neuroplasticity, a phenomenon describing the brain's ability to change its structure in response to experience throughout the lifespan (Siegel, 2012). As Siegel (2012) describes neuroplasticity, "experience activates neurons, which then can turn on genes that enable structural changes to be made that strengthen the connections among activated neurons" (p. 8-1). Siegel notes that neural firing, in some situations, initiates a process in which neurons nuclei are triggered to produce proteins, which lead to not only strengthening connectivity, but also to creating connectivity among neurons. Given our ability to create and strengthen neural connections, it follows that the field of psychotherapy would benefit from attending to the factors which maximize the potential for neuroplasticity. For example, there is evidence that we can heighten the potential for neuroplasticity in the context of moderate emotional arousal (Cozolino, 2002), closely attending to one thing at a time (Siegel, 2012), attuned interpersonal relationships (Siegel, 2006), supported experiential awareness of memories via a focus on inner sensations, images, feelings, and thoughts (Badenoch, 2008; Siegel, 2012), and experiences that disconfirm earlier implicit learnings (Toomey & Ecker, 2009). Taken together, understood through an interpersonal neurobiology lens, an integrated psychotherapy group format with a trauma-sensitive yoga component capitalizes on vast avenues for change, such as through intentional focus, experiential awareness, emotional arousal, and relationship.

What Polyvagal Theory Adds to Trauma Treatment

The second theoretical underpinning to the current study's approach to trauma treatment can be understood through Polyvagal Theory. Polyvagal Theory brings greater depth and clarification to the interplay between experiencing trauma and the autonomic

nervous system through the dorsal and ventral vagal nerves. Although interpersonal neurobiology discusses general human development and relationships, polyvagal theory sheds light on a particular bodily system that largely influences the way people experience and express stressors, and the role of trauma in disrupting social engagement. Developed by Dr. Stephen Porges, Polyvagal Theory centers on understanding the role of the vagal nerves and nervous system engagement in attachment, relationship, and trauma (Porges, 2011). Porges' theory contains within it three organizing principles including (a) neuroception, (b) hierarchy, and (c) co-regulation. Neuroception, a term coined by Porges, refers to detecting cues of safety and cues of danger happening below conscious awareness. Neuroception involves feeling what is going on inside the body, what is going on outside of the body, and between individuals (Porges & Dana, 2018).

Cues of danger often emerge for trauma survivors, first as unpleasant physiological sensations, and then as narratives, with the survivors cognitively making sense of the sensation (Porges & Dana, 2018). Importantly, the transition from sensation to cognitive story about the sensation happens quickly and automatically, engendering difficulty in parsing out physiology versus narrative. For example, a woman who was sexually abused as a child by someone who showed excitement at seeing her, each time before abusing her, may have a negative and frightening physiological response as an adult to loved ones expressing excitement at seeing her. Consequently, the woman may interpret her loved ones as threatening in that moment and come to create mental stories, such as, 'my partner is dangerous and untrustworthy.' She may also find that she avoids developing close relationships or people who show her appropriate affection. She may make sense of this experience by framing herself as someone who does not desire or need intimate relationships.

At the other end of the spectrum, cues of safety are typically fleeting and difficult for survivors of chronic, complex, or developmental trauma to identify or even notice. Folding the concept of neuroception into group psychotherapy can be helpful and normalizing for clients who frequently experience difficulty in interpersonal or intimate relationships. Similarly, calling for clients to focus attention on bodily cues of safety and danger can help unravel their sometimes confusing and frightening responses in a supportive environment.

The second organizing principle of polyvagal theory is the hierarchy of the vagal system and the mind-body's defense mechanisms (Porges & Dana, 2018). The vagal nerve is the tenth cranial nerve and polyvagal science suggests a more nuanced dynamic between the potentially competing forces of the ventrolateral motor nucleus column of the vagus and the dorsal motor nucleus column of the vagus in the process of calming and protecting the body (Porges & Dana, 2018; Wagner, 2015). Porges (2011) posits that the hierarchy of defense mechanisms goes beyond the opposing forces of the sympathetic nervous system response of fight or flight and the parasympathetic response of freeze to include a second parasympathetic response of social engagement. The ventral vagal nerve lays a path from the brain stem to the heart and lung area affecting the striated muscles of the face, the middle ear, and the larynx (Wagner, 2015). Porges and Dana (2018) explain that all of these relate to social engagement in that striated muscles of the face work to create facial expressions and help to tip and turn the head; the middle ear augments our ability to hear and focus on human voices by filtering out background noise; and, the larynx impacts vocal tone and pattern. Understanding the role of social engagement and the vagal nerve is relevant when considering treatment for survivors of trauma, especially given that trauma often disrupts survivors' abilities to regularly maintain social engagement during moments of stress or

(potentially false) neuroception cues of danger. Explaining the ventral vagal nerve to clients can help clients use social engagement, particularly in group therapy, with greater intentionality.

Heart rate variability (HRV) has been suggested in polyvagal theory to provide a marker of one's ability to respond to and recognize social cues (Quintana et al., 2012). One study tested this aspect of polyvagal theory and found that HRV was positively associated with performance on an emotion recognition task after accounting for a variety of confounding variables, such as sex, body mass index, smoking habits, physical activity, depression, anxiety, and stress. Another study of adult participants diagnosed with major depressive disorder found that depressed participants with higher vagal activity as measured by HRV displayed increased pro-social and positive feeling non-verbal behaviors (Fernandes et al., 2017). This finding was consistent across participant age, gender, and depression severity. Another study examined whether parasympathetic regulation of cardiac activity contributes to children's adaptive versus maladaptive functioning. Hastings and colleagues (2008) used cardiac respiratory sinus arrhythmia as a measure of vagal tone and found that children with relatively higher vagal tone demonstrated fewer internalizing and externalizing problems and showed better self-regulation. Given the proposed and research-supported role of heart rate variability in polyvagal theory, measuring individuals' HRV over time may provide insight into the ability of clinical treatment to strengthen trauma survivors' vagal tone, and thus, impact social engagement.

The next organizing principle is hierarchy, and a useful metaphor for understanding the hierarchy of defense responses is a ladder (Dana, 2018). In this metaphor, the top rung of the ladder involves the ventral vagal nerve column and is one of safety and interaction. Here,

individuals feel minimally threatened and can engage socially to assess or mitigate feelings of threat. As neuroception cues of danger increase, we enter the next rung down on the ladder. At this rung, the ventral vagal nerve activates the sympathetic nervous system for fight or flight survival responses. While experiencing sympathetic nervous system engagement, a person is seeking out survival rather than connection and experiences a state of hyperarousal. If sympathetic nervous system engagement does not resolve, we enter the lowest rung of the ladder, dorsal vagal immobilization and energy conservation mode. At this level of activation, neuroception cues are of life threat and manifests as hypoarousal. Importantly, individuals do not consciously decide which rung of the ladder they move to in any given situation, rather cues of safety or danger trigger nearly automatic responses of neurological and bodily shifts. Likewise, individuals frequently experience ‘flavors’ of different rungs of the ladder without experiencing a response in full. For example, a traumatized individual who is hypervigilant and hypersensitive to threat may move quickly into a state of dorsal vagal engagement (hypoarousal) without necessarily becoming wholly immobilized or shut down. Instead, he might experience a subjective sense of becoming closed off, increased bodily rigidity, and difficulty verbalizing his thoughts. Negotiating sudden bodily shifts in arousal and attention can be executed well in group psychotherapy formats with the support of clinicians and physiologically/emotionally regulated group members. Furthermore, as group members gain familiarity and awareness of their automatic bodily shifts, they can more easily utilize coping skills, such as reasserting eye-contact, to engage socially again.

The final organizing principle of Porges’ polyvagal theory (2011) is co-regulation. Porges suggests that humans are neurologically and biologically developed to connect with

one another. Moreover, we are biologically inclined to regulate one another's nervous systems via connection and relationship (e.g., Schore, 2000). One study examining coregulation of respiratory sinus arrhythmia in adult romantic partners found that men's and women's RSA were associated with their partners' previous RSA responses (Helm et al., 2014). Moreover, for couples reporting higher relationship satisfaction, the pattern of coregulation was stronger. Just as romantic couples' physiological shifts impact one another, psychotherapy group clients are likely to influence each other's physiology through activation, dysregulation, and regulation. As clients practice mind-body techniques to increase regulation, they may be able to support others in managing their own regulation through non-verbal, para-verbal, and verbal behaviors.

Trauma survivors may retain internalized narratives that were at one point adaptive during times of danger or abuse but have become maladaptive when maintained over longer periods of life (e.g., regarding self-reliance and others' untrustworthiness); however, humans are built to rely on connections and relationships with other humans. In an article connecting polyvagal theory with attachment trauma, Wagner (2015) synthesizes attachment styles through the lens of polyvagal science. She reports that secure attachment manifests as the tendency towards utilizing the social engagement system over fight, flight, or freeze reactions in response to threat, particularly interpersonal threats. The anxious/ambivalent attachment style reveals itself through the tendency towards a sympathetic fight/flight response, observed through frantic or erratic behaviors in response to threat. An avoidant attachment style has been theorized to display itself via a tendency towards a parasympathetic shut-down response to threat. Last, disorganized attachment is characterized by both excessive

approach and withdrawal, and it likely involves vacillating between sympathetic hyperarousal and parasympathetic immobilization.

In line with the polyvagal analysis of attachment theory, Siegel (2012) purports that the key to a secure relational attachment style is a persistent intention for connection with an attuned other and repair of disruption to attunement in the face of unavoidable miscommunication with others. Notably, attachment characteristics exist along a spectrum, rather than existing as rigidly defined categories, and can be best understood as descriptions of aspects of how individuals adapt to relationships (Siegel, 2012) with most humans having elements of every cluster. As humans require connection to others, utilizing an integrated treatment that involves both building a support network and practicing physiological regulation may be critical in moving clients towards a physiologically secure attachment style.

The Role of Group Therapy in Treating Trauma Survivors

Group psychotherapy, however, has existed in practice and research for over a century (Burlingame et al., 2004) and has been efficacious across a broad range of diagnoses and settings (Burlingame et al., 2003). Moreover, group therapy has been effectively used as a stand-alone treatment and in conjunction with individual therapy. In fact, the extant literature shows that group therapy is a cost-effective and beneficial format that can be used as an alternative to individual treatment (McRoberts et al., 1998). Group therapy also offers an economic advantage for survivors of trauma who typically incur higher health care costs over their lifetimes (Lundqvist et al., 2009).

Clinicians and researchers, Badenoch and Cox (2010) suggest that, from an interpersonal neurobiological perspective, group psychotherapy is a useful format for

promoting neural integration. They also explore the role of group members as a source of both emotion dysregulation and regulation. That is, group members are likely to activate other individuals in the group through their disclosures, non-verbal cues, and sometimes, mere presence. Similarly, in the process of learning to emotionally regulate themselves, group members also learn to co-regulate. Co-regulation is a vital skill for many who have experienced complex trauma, given that complex trauma survivors are prone to feelings of isolation and distrust (Badenoch & Cox, 2010). A recent systematic review and meta-analysis examined the use of psychological group therapy for individuals experiencing symptoms associated with C-PTSD (Mahoney et al., 2019). The results evidenced large significant effect sizes for group treatments involving a trauma memory processing component. Treatment effects were largest for symptoms of depression, distress, and traumatic stress. The findings of a meta-analysis on the efficacy of group therapy for individuals experiencing PTSD symptoms suggested that group therapy is significantly more effective than no treatment and comparably effective to other active treatments (Sloan et al., 2013).

Group therapy is also an ideal format when the primary goal of treatment is to increase neural integration, accurate neuroception, social engagement, and affect regulation (Flores & Porges, 2017). Recurring face-to-face social interactions are integral to group psychotherapy, which serve to encourage group members to engage with each other emotionally and naturally promotes needed elements for attachment and affect regulation. Group therapy informed by IPNB and polyvagal theory relies on the group leader to prioritize developing and maintaining safety, such that group members are provided ample opportunities for strengthening the social engagement system through implicit non-verbal

communication (Flores & Porges, 2017). Group psychotherapy also engenders a simple format for combining with a yoga intervention, given that both can be conducted in any room spacious enough to contain the group. Likewise, group format offers more frequent and varied opportunities to exercise the vagal break (i.e., move through sequences of calm, vigilant, startled, and back to calm; Flores & Porges, 2017).

The Need to Address the Mind-Body Connection with Survivors of Complex Trauma

Despite existing group and individual treatments, many trauma survivors who seek treatment do not always experience relief from all of their painful symptoms (Steenkamp et al., 2015) with significant proportions enduring debilitating symptom levels. For example, in one study examining the efficacy of cognitive processing therapy and prolonged exposure—both empirically support treatments for trauma exposure—found that 30% to 51% of participants did not achieve clinically meaningful change in their clinician and/or self-reported symptom levels, with approximately two thirds retaining their PTSD diagnoses post-treatment (Steenkamp et al., 2015). Unfortunately, even effective treatments, such as therapies that involve trauma memory processing, are privy to high dropout rates or are not markedly helpful (Niles et al., 2017; Steenkamp et al., 2015). One review of empirically supported trauma treatments found that across 31 studies, attrition accounted for about 20% of participants (Spinazzola et al., 2005). Thus, empirically supported treatments are needed to address physiological and psychological symptoms for trauma survivors who cannot or choose not to engage in currently available treatments, or who undergo treatment and continue to experience significant symptoms. Likewise, some findings indicate that treatment ineffectiveness for survivors of complex trauma is at least partially rooted in the fact that most current treatments do not focus on trauma’s impact on the body in spite of

escalating evidence of physiologic ramifications. An example of physiologic ramifications, Afari et al. (2014) found that trauma survivors develop functional somatic syndromes (e.g., gastrointestinal issues, pain, fatigue, cognitive difficulties, and sleep difficulties) at 2.7 times the rate of those not exposed to traumatic events. That is, experiencing trauma places survivors strongly at risk for negative somatic changes in addition to cognitive and behavioral changes.

How Yoga Can Help Survivors of Complex Trauma

Given the aim of increasing treatment efficacy, yoga has great potential as a treatment option or treatment component. Yoga is particularly pertinent when considering adding an integrative and somatic component because it is highly portable, requires active involvement, and is typically delivered in group settings with minimal need for equipment (Niles et al., 2018). For the purposes of this discussion, we consider yoga in its modified and Westernized form, which branches away from its traditionally Eastern practice. Yoga, as it pertains to this discussion, involves a combination of breath practices (pranayama), meditation, physical postures (asanas), and sometimes chanting (Cramer et al., 2013).

Yoga, like other mind-body interventions, is not geared specifically towards getting rid of distressing symptoms in and of themselves. Rather, yoga may be most helpful in changing the relationship individuals have with their mental states and physical sensations. These interventions aid practitioners in observing present-moment changes in their mind-bodies without judgment, avoidance, or reactivity. As a result, yoga may support trauma survivors in tolerating distressing physical and emotional states while maintaining a semblance of control and grounding. As such, yoga may promote approach-oriented coping (Vujanovic et al., 2013) that empowers individuals to actively inhabit their bodies and

engage in healthier lifestyle choices. Despite aiming to help individuals tolerate distressing sensations, yoga interventions may additionally provoke a positive cycle of health by decreasing persistent hyperarousal symptoms that maintain psychophysiological dysregulation (e.g., Seppala et al., 2014).

Notably, over one-third of US adults use some form of complementary and integrative practices and mind-body practices to improve their well-being (Barnes et al., 2008). Frequent use notwithstanding, empirical investigations of yoga as or part of trauma interventions has fallen sharply behind its clinical use. Moreover, few systematic reviews of yoga's clinical use for trauma-exposed populations exist, with only one systematic quantitative review (Nguyen-Feng et al., 2018) existing to this author's knowledge.

Nguyen-Feng and colleagues' (2018) review included 10 randomized controlled trials (RCTs) and two non-RCTs with all studies involving yoga as a primary treatment or adjunctive co-treatment. Most of the studies included both male and female participants and, on average, 85% of participants completed the yoga intervention. Individual yoga sessions ranged from 45 minutes to 300 minutes across the studies with an average of approximately 90 minutes per session. Outcome findings suggested that large within- and between-group effect sizes exist for yoga's ability to decrease PTSD symptoms, moderate to large within- and between-group effect sizes exist for yoga's ability to decrease depressive symptoms, and medium within- and between-group effect sizes exist for yoga's ability to decrease anxious symptoms.

Yoga interventions were compared primarily to waitlist control groups in Nguyen-Feng and colleagues' (2018) review. Most of the studies included in the review were judged at risk for bias concerning issues such as lack of allocation concealment (i.e., participants

and/or clinicians were not blinded to study conditions) for studies including active comparison groups, not clearly identifying how missing data were addressed, and potential for selective reporting. Nguyen-Feng et al. (2018) concluded that yoga as a primary or adjunctive intervention appears promising but requires further investigation with more rigorous studies and protocols that detail the yoga/therapeutic intervention. In fact, Barnes and colleagues (2008) have suggested that researchers develop treatment manuals with detailed descriptions and/or audio or video recordings of the components of interventions. The current study will include a detailed protocol describing the treatment used in order to increase accessibility and replicability for future researchers and clinicians.

Clark and colleagues (2014) tested the feasibility and safety of a 12-week trauma-sensitive yoga treatment that was designed to improve the mental health of women receiving group psychotherapy for interpersonal violence. In particular, the authors were interested in examining recruitment, safety, acceptability, and participant reaction. The study involved two conditions with one condition incorporating a trauma-sensitive yoga component, and the other remaining as group psychotherapy alone. The groups comprised women who had previously sought group treatment at a community agency, and the primary outcomes measured were depression, anxiety, and PTSD symptoms. Both conditions were conducted in the community agency and were held in traditional group psychotherapy rooms.

Study participants included adult women aged 18 years or older who had completed 16 weeks of group therapy at the same community agency sometime between 2008 and 2012 (Clark et al., 2014). Clark and colleagues (2014) excluded potential participants who were currently pregnant, observed to have disruptive behavioral issues in the original 16-week group therapy program, unable to provide written informed consent, unable to read or write

in English, currently injured, had a heart condition, or another self-reported condition that would preclude them from being able to engage in mild exercise. The trauma-sensitive yoga protocol (van der Kolk et al., 2014) was developed by the Trauma Center at the Justice Resource Institute in Boston, Massachusetts and involved adapting the yoga instruction to meet the needs of trauma-exposed individuals. This was done, at least in part, by “removing strongly suggestive language, deemphasizing posture intensity, emphasizing feeling, and eliminating hands-on assists from the teacher,” (Clark et al., 2014, p. 153). In addition to this, themes including fully experiencing and attending to the present moment, taking effective action, making choices, and creating rhythms were emphasized by the yoga instructor during the practice.

Clark and colleagues (2014) integrated the yoga practice into the weekly group psychotherapy by including it as the last 30-40 minutes of group treatment led by a certified yoga instructor. The control and treatment groups were structured in the same way, with both groups receiving psychoeducation and traumatic event processing led by the same therapist. To accommodate the yoga treatment component, the treatment group was lengthened to two hours and fifteen minutes and the psychoeducation portion of group was shortened by fifteen minutes. The control group was approximately two hours in length, and at the end of each session, both the treatment and control groups completed study questionnaires.

The final sample included 17 adults and baseline characteristics were examined as a whole rather than by condition due to the small samples for each group (treatment group: $n = 8$, control group: $n = 9$; Clark et al., 2014). Clark and colleagues (2014) found that it was feasible to incorporate a trauma-sensitive yoga component into a group psychotherapy

session and they were able to successfully recruit 85% of those screened as eligible. At the conclusion of the study, there was a 25% treatment-group dropout rate. Long-term effects were not measured beyond the 12 weeks of the treatments and the study was not sufficiently powered to detect differences by condition (Clark et al., 2014). The results showed that participants (all trauma-exposed individuals) experienced a decrease in symptoms of PTSD, depression, and anxiety, and that participants also reported feeling enthusiastic about the addition of yoga.

Nguyen-Feng and colleagues (2019) also integrated yoga into group psychotherapy for survivors of intimate partner violence. In this study, perspectives of the care providers' (i.e., yoga instructors and therapists) were examined qualitatively through structured interviews after the conclusion of 12 weeks of providing an integrated yoga and group psychotherapy treatment. The treatment group clients included survivors of intimate partner violence, although 62% of the clients reported having experienced three or more prior traumas in addition to intimate partner violence. Group therapists were present throughout the entirety of the session including the yoga portion of the group, while yoga instructors were present only during the yoga portion. The authors note that seamlessly transitioning between processing and yoga was difficult, but that it often provided helpful containment for the processing portion. The authors also suggest that greater client preparation would likely make the transitions easier and engender enhanced ability for clients to make therapeutic gains through yoga. Yoga instructors were provided training on secondary trauma and emotional support was provided for the instructors by the therapists through availability to check-in on the phone or in-person when requested.

Nguyen-Feng and colleagues (2019) also discussed their rationale for including licensed yoga instructors rather than having the mental health therapists providing both the processing and yoga portions of the treatment. The authors state that although adding a yoga instructor to the treatment can impact issues of confidentiality and privacy, yoga instructors' expertise, training, and experience in their field cannot ethically be replaced. Furthermore, their training and experience render them better able to impart knowledge to clients regarding appropriate pose modifications and other mind-body practices. Interviews conducted with seven of the nine care providers yielded several themes concerning client experiences of healing from the care providers' perspectives (Nguyen-Feng et al., 2019). Importantly, care providers noted that the clients appeared to undergo positive changes in their bodies, experience empowerment, and gain greater awareness of their breath and ability to use mind-body connections as an avenue to heal their trauma.

Some researchers and practitioners have integrated traditional psychotherapies with mind-body components (e.g., Mindfulness Based Cognitive Therapy; King et al., 2013); however, these mind-body components typically target relatively small pieces of what is included in a yoga practice. Niles and colleagues (2018) recently declared the need for future researchers to evaluate the efficacy of mind-body treatments both alone and in combination with other treatments. Ultimately, studies involving mind-body interventions utilizing stronger treatment methodologies are needed. Likewise, research on other outcomes aside from PTSD, such as quality of life and physical functioning is warranted. Nguyen-Feng and colleagues (2019) suggested that a qualitative examination of healing from the clients' perspectives would contribute to the literature by providing data that can be compared to

perceptions of healing from the care providers' perspectives collected in their recent study integrating yoga into a group psychotherapy format.

Moreover, including a yoga component aligns well with both Porges' polyvagal theory and Siegel's understanding of trauma healing through the lens of interpersonal neurobiology. Yoga instructors trained in trauma-sensitive yoga explicitly and implicitly encourage safely relating to one another and to the instructor herself via direct invitations and utilizing appropriate eye-contact, prosody, gentleness, non-judgment, and facial expressions. Relating to individuals who feel safe relays messages of safety to the brain and helps enable clients to remain within Siegel's theorized window of tolerance (Siegel, 2010). A client's window of tolerance is the optimal state of arousal between hypoarousal (e.g., lethargy, dissociation) and hyperarousal (e.g., overwhelm, high anxiety) in which the client is best able to integrate memories, sensations, experiences, and new information into the whole body. Additionally, in line with polyvagal theory, yoga has been shown to decrease allostatic load in stress response systems and improve vagal tone, thus restoring balance to the autonomic nervous system (Streeter et al., 2012). Thus, interdisciplinary evidence indicates the potential usefulness of yoga in helping heal experiences of trauma held in both the mind and body.

Current Study

In light of the significant role that trauma plays in long-term mental and physical health consequences, better addressing the needs of those who have experienced complex trauma is a public health concern and demands attention. Many trauma survivors do not experience relief from their painful psychological and physiological symptoms, even for those who undergo treatment. With the support of recent research findings (e.g., Van der Kolk, 2015) some mental health professionals hypothesize that treatment ineffectiveness can

be explained in part by the paucity of techniques adequately addressing trauma's impact on the body despite escalating evidence of physiologic ramifications. Many established theoretical orientations and techniques, such as trauma-focused cognitive and behavioral therapy (TF-CBT) and dialectical behavior therapy (DBT) involve mindfulness and relaxation components, and yet they may not devote the amount of attention to the mind-body needed by complex trauma survivors. Moreover, trauma-sensitive yoga explicitly and thoughtfully addresses common difficulties experienced by trauma survivors, which often render typical yoga practices and mindfulness exercises too physiologically activating to be useful.

That is, greater conscientiousness is required when employing techniques that may make survivors feel unsafe or inadvertently reinforce negative messages. For example, a client who has experienced physical or sexual abuse who is asked too quickly or without precaution to practice deep, slow diaphragmatic breathing may move towards panic or dissociation, as belly breathing often activates sensations in the pelvis. For example, trauma-sensitive yoga utilizes invitational language rather than wholly directive language when using mindfulness techniques, such that clients are not in potential danger of reliving coercive or violent relationships from the past.

Consequently, the current study intends to increase the use of survivor-appropriate mind-body techniques and capitalize on the findings of polyvagal science and interpersonal neurobiology for use with complex trauma survivors in a group psychotherapy format. Given these interests, trauma-sensitive yoga has great potential as a treatment component. Yoga is particularly pertinent because it is highly portable, requires active involvement, and is typically delivered in group settings with minimal need for equipment. Group therapy is

more cost-effective than individual therapy, and as such it is one of the most commonly used mental health treatments for lower-income clients (Morrison, 2001). Integrating yoga with group therapy can be achieved by holding both the psychotherapy and yoga components in the same group therapy room and does not necessarily require yoga mats. Integrating group psychotherapy and trauma-sensitive yoga also increases accessibility to more comprehensive care in that clients would be able to gain both the benefits of psychotherapy and yoga in one sitting, at one location, and for one cost. Trauma-sensitive yoga, like other mind-body treatments, may be most helpful in changing the relationship individuals have with their mental states and physical sensations, rendering it both an equitable and potentially effective treatment component that addresses the need for survivor-appropriate mindfulness. With my proposed dissertation, I plan to begin addressing these needs by pursuing the following aims:

Aim 1: Examine aspects of clinical trial feasibility for participant factors.

RQ1: Will there be the capacity to recruit, screen, and enroll an adequate number of participants to fulfill project requirements (i.e., a sample size of 12 participants per condition)?

RQ2: Will the randomization procedures sufficiently yield equitable groups in terms of age, race/ethnicity, anxiety, depression, number of traumatic experiences, and traumatic symptomology?

Aim 2: Examine aspects of clinical trial feasibility for the treatment protocol.

RQ3: Will the treatment be acceptable and tolerable as measured by program completion rate (i.e., with at least 75% of participants attending at least 6 out of 8 sessions), withdrawal statistics, and post-participation survey responses?

Aim 3: Examine the aspects of clinical trial feasibility for outcome domains including psychological and physiological symptoms.

RQ4: Will preliminary efficacy data indicate statistically significant positive changes in the treatment condition's sleep, physical pain, heart rate variability, trauma symptomology, symptoms of depression, and symptoms of anxiety?

Method

Participants

Participants were recruited between October of 2019 and December 2019 through various outlets including mental health centers (e.g., University of California's Counseling and Psychological Services), local mental health clinicians, local yoga studios, Facebook, and the university resource center. Flyers were distributed to the above outlets and individuals interested in participating were able to access a website listed on the flyer, see Appendix A. The website included information about the study, inclusion and exclusion criteria, and a means to contact the current author. Interested individuals contacted the head researcher via a Google number, directly through a message option in the website, or a Gmail account created for the study. Once an interested individual has contacted the head researcher, the head researcher messaged the individual through her Google number and arranged a time to conduct the brief phone screen. The phone screen was used to provide further information about the study, answer any questions, and determine participant eligibility, see Appendix B for the phone screen.

Participants eligible if they were adults over age 18 years, endorsed at least two traumatic events, and who preliminarily met criteria for complex PTSD (CPTSD) based on items derived from the ICD-11 Trauma Questionnaire (ICD-TQ; Version 1.2). Potential

participants were excluded if they were younger than 18 years old, pregnant, unable to provide written informed consent, unable to read or write in English, unable to engage in mild exercise or bodily movements due to injury or another self-reported condition, did not have a smart phone, or were actively suicidal.

During the phone screen, the lead researcher read aloud traumatic events based off of the Clinical Adverse Childhood Experiences (ACEs) Questionnaire, and in order to meet eligibility criteria, potential participants had to endorse at least two events, or note two other significantly traumatic experiences not listed in the ACEs questionnaire. Participants had to endorse at least two items from each of six trauma-related criteria in the ICD-TQ to be considered eligible to complete an intake and participate in the study. If a person was deemed eligible to participate, they were invited to set up an appointment to complete the intake procedures. Eligible individuals that the lead researcher was unable to contact after three attempts were removed from the list of potential participants. Intake procedures involved completing informed consent forms, answering any remaining questions about the study, and completing the baseline survey and measure of heart-rate variability. To achieve this sample size, 30 eligible participants were given intakes to account for potential attrition before the start of the treatment. Individuals not meeting study eligibility, or who were no longer able or interested to participate, were offered referrals for services at local agencies.

Participants were randomly assigned to one of two conditions: treatment or waitlist control, see Figure 1 for a detailed recruitment/screening flowchart. The lead researcher then divided the treatment condition into two therapy groups of five participants each, such that individuals were assigned to their therapy cohort. At the completion of data collection, the waitlist control condition was divided into two groups in order to create groups small enough

for them to receive the treatment. Descriptive characteristics of participants can be found in Table 1, separated by waitlist and treatment conditions. In December, participants were sent their group schedule along with a document containing information concerning which measures they would complete and the dates they were asked to complete them.

Table 1

Descriptive Statistics for Waitlist and Treatment Conditions at Intake (N = 20)

Characteristic		Waitlist (n=10)	Treatment (n=10)
Age		median* = 22	Median* = 21
Race			
	White	70%	50%
Gender			
	Woman	100%	90%
	Man	0%	10%
Education			
	Some college	90%	90%
	Some graduate school	0%	10%
	Graduate degree	10%	0%
Previous services			
	Yes	100%	90%
Current services			
	Yes	30%	30%
Psychoactive medication			
	Yes	40%	30%
Spirituality			
	Spiritual	40%	40%
	Religious	10%	10%
	Both	10%	0%
	Neither	40%	50%
Employment status			
	Employed	60%	80%
Relationship status			
	In relationship	60%	70%

Note. *Given the skewed nature of the age variable, the median was a better indicator of centrality relative to the mean, and thus the median age for each condition is reported above.

Procedure

Participants were assigned to the treatment or the waitlist control condition. All participants were asked to complete baseline, weekly, and posttreatment measures. Participants completed baseline measures during the intake process one to three months before the treatment began. Participants were asked to complete a sleep questionnaire and a measure of heart rate variability once weekly throughout the treatment. The treatment condition received the integrated yoga and process-oriented trauma treatment once per week for eight consecutive weeks post intake meeting beginning January 22nd, 2020 and concluding March 13th, 2020. Studies implementing yoga as a primary or adjunctive treatment have found effects for treatments as short as two sessions, with one review indicating that most yoga-based treatments last somewhere between two and sixteen sessions spanning two to sixteen weeks (Nguyen et al., 2018). One study, in particular, investigated the efficacy of yoga for treating symptoms of PTSD and found that an eight-week treatment resulted in significant PTSD reductions (Jindani et al., 2015). At the conclusion of the treatment, post-treatment measures were administered to participants in both the treatment and waitlist condition which included most measures from the baseline assessment with the addition of a questionnaire on group alliance for those who received treatment. At the conclusion of data collection, the waitlist control condition received the treatment. However, due to the onset of the global coronavirus pandemic, participants in the waitlist control received an alternative form of the treatment over the video conferencing software, Zoom.

Description of Treatment

Each group session followed a general format but allowed for flexibility regarding topics or themes that emerged depending on what the clients' stated in the group. Each session lasted one hour and 45 minutes in length, which included 20-30 minutes of group psychotherapy, 30 minutes of trauma-sensitive yoga, and concluded with 45-55 minutes of group psychotherapy. The first session contained approximately 20 fewer minutes on processing, in order to spend 20 additional minutes at the start of group discussing group format, normalizing group concerns/anxiety, and doing group member introductions.

Subsequent group sessions began with a 30-second to one-minute-long grounding exercise inviting clients to bring themselves fully into the present moment, and into the group room. This often involved 30 seconds of imagining oneself leaving behind one's day and actively noticing the room. The therapist would then briefly review the group structure and format for the day and state that the group would move through the following items: (1) brief check-ins concerning how clients are currently feeling and any pressing issues over the past week, (2) the opportunity to request time to discuss a pertinent or pressing issue, (3) brief psychoeducation, (4) yoga intervention, (5) remainder of time spent processing reactions to yoga, or further processing client issues if additional time was requested, and (6) brief check-out to conclude.

During the check-ins, the clinician invited each client to give a "capsule" of information (1-2 minutes per person) concerning current mood, and any pressing issues, sensations, emotions, or experiences that arose over the past week. Clients are encouraged to ask for additional time to discuss pressing issues in greater depth. The clinician may offer additional time to clients who do not initially request it. After check-ins are completed, the

clinician will ask clients to each assess and rate their current anxiety on a scale from 0-10 (0 representing the most comfortable and at ease clients have ever felt and 10 representing the worst anxiety/panic that clients have ever felt). Each client is invited to share their current anxiety rating with the group, but they may choose to decline to share.

As needed throughout the group, the clinician provided brief psychoeducation concerning trauma exposure and responses, such as brief introductions to neuroplasticity, polyvagal theory, and common physiological, intrapersonal, and interpersonal responses to trauma. For example, the clinician introduced the role that implicit memories play in long-term trauma responses, and she discussed the IPNB concept of the window of tolerance. Depending on the issues presented during check-in, remaining time before yoga was used to address client concerns/issues raised, or to continue the discussion of psychoeducation. Five to ten minutes prior to the beginning of the yoga portion, the clinician gave the group members notice about transitioning to yoga in a few minutes.

The yoga instructor entered the room and conducted 30 minutes of trauma-sensitive yoga. At the end of the yoga instruction, the yoga instructor concluded the yoga practice and exited. During the yoga portion, the clinician remained in the room, seated on a yoga mat. At this point, the clinician initiated group processes again, inviting clients to reevaluate their current anxiety levels, and to rate and share with the group if they were willing. The clinician then invited clients to share their responses, reactions, thoughts, sensations, emotions, memories, etc. that may have arisen during the trauma-sensitive yoga practice. Clients had an opportunity to process their experiences and reactions, with an emphasis on making sense of them in light of their prior traumatic experiences.

Given time after the yoga portion, the clinician offered clients an opportunity to follow-up on any pressing issues that were not addressed prior to the yoga practice. The clinician initiated a check-out in which clients are invited to report one to two sentences on how group was for them, and on one activity of self-care that they are willing to commit to that day/evening. With that, the clinician reminded group members of the following week's group, the group concluded, clients completed the weekly sleep measure, and exited.

Measures

Demographics Questionnaire. A brief questionnaire asking the participants information about their demographics, such as age, religiosity, and relationship status, were asked aloud by the lead researcher to each participant during their intake interview. Answers to these questions were free response and were recorded by the lead researcher. These questions were entered into the database as both categorical and text responses, and the categorical responses were used in analyses to compare the treatment and waitlist control condition characteristics.

ICD-11 Trauma Questionnaire (ICD-TQ; Version 1.2; Cloitre et al., 2015). The ICD-TQ is a 23-item self-report questionnaire that assesses individuals' impairment resulting from symptoms of PTSD and complex posttraumatic stress disorder (CPTSD). All questions are answered on a five-point Likert scale ranging from 0 (*not at all*) to 5 (*extremely*). This measure evolved in response to the desire to discriminate individuals suffering from PTSD versus CPTSD. The first item of the questionnaire assesses an index trauma, and with the trauma in mind, respondents indicate how much they have been bothered by six PTSD symptoms in the past month. The remaining 16 items assess how respondents' disturbances in self-organization. That is, these 16 items ask respondents to reflect on how they typically

feel, think about themselves, and relate to others. CPTSD involves meeting criteria for PTSD plus disturbances in self-organization. When examined with a sample of 193 adults referred to treatment in Scotland, the ICD-TQ has supported good factorial validity, with all second order factor loadings found to be positive, high, and statistically significant at the $p < .05$ level (Karatzias et al., 2016). The measure was also found to have satisfactory internal reliability (alpha coefficients ranging between .72 and .95), and correlation results evidenced both convergent and discriminant validity (Karatzias et al., 2016). Measured for the overall sample at intake, the current study similarly evidenced good internal consistency ($\alpha = .86$). This measure was administered at both intake and conclusion of the study. Total scores were created for this measure by calculating a sum score of the number of criteria that participants endorsed across the six categories of complex trauma, including the three traditional PTSD criteria (i.e., reexperiencing, avoidance, hyperarousal) and the three additional CPTSD criteria (i.e., affect dysregulation, negative self-concept, disturbances in relationships).

Life Events Checklist (LEC; Gray et al., 2004). Participants' trauma histories will be collected using the LEC. The LEC is a self-report questionnaire consisting of 16 potentially traumatic events that respondents may have experienced (e.g., Natural disaster, Physical assault). The 17th item, "Any other very stressful event/experience," allows respondents to indicate if they experienced a traumatic event that is not listed. For each item, respondents may select one or more options from the following: (1) Happened to me, (2) Witnessed it happening to somebody else, (3) Learned about it happening to someone close to me, (4) Part of my job, (5) Not sure it applies, and (6) Doesn't apply to my experience. One study examining the psychometric properties of the LEC in both college students and combat veterans found that the measure had good reliability with a mean Kappa of .61 and a

retest correlation of $r = .82, p < .001$ (Gray et al., 2004). In the same study, the LEC was also found to have good convergent validity with another well-established measure of trauma exposure, with a mean Kappa of .55. This measure was administered once, during the intake procedures for the study. For use in analyses, a total score was created by summing the number of events that each participant experienced first-hand and/or witnessed.

Patient Health Questionnaire—9 (PHQ-9; Kroenke et al., 2001). Symptoms of depression will be measured with the PHQ-9. The PHQ-9 is a nine-item self-report questionnaire derived from a more comprehensive questionnaire, the Primary Care Evaluation of Mental Disorders (PRIME-MD; Spitzer et al, 1994). Respondents are asked to report the frequency with which they experienced depressive symptoms over the preceding two weeks. Responses are noted along a four-point Likert scale including 0 (*not at all*), 1 (*several days*), 2 (*more than half the days*), and 3 (*nearly every day*). The measure comprises items investigating various aspects of depression (e.g., feeling depressed, feeling hopeless), and has good psychometric support (Kroenke et al., 2010). A recent study of U.S. adult students demonstrated good internal consistency ($\alpha = .90$; Felix et al., 2017). A sample of 6,000 patients demonstrated that the PHQ-9 has good sensitivity (.88), specificity (.88), and test-retest reliability (.84; Kroenke et al., 2010). At the time of intake, the current study was found to have good internal consistency as well ($\alpha = .80$). This measure was administered at both intake and conclusion of the study. A simple sum score of all of the items was created for this measure for use in analyses.

Generalized Anxiety Disorder—7 (GAD-7; Spitzer et al., 2010). The GAD-7 is a seven-item self-report questionnaire and is derived from the same PRIME-MD questionnaire as is the PHQ-9 (Spitzer et al, 1994). The measure has good psychometric support, and

evidences good sensitivity and specificity for detecting a range of experiences, such as panic (sensitivity = .74, specificity = .81), generalized anxiety (sensitivity = .89, specificity = .82), and social anxiety (sensitivity = .72, specificity = .80; Kroenke et al., 2010). A study of US students demonstrated that the GAD-7 evidenced good internal consistency ($\alpha = .92$; Felix et al., 2017). Respondents are asked to report the frequency with which they experienced symptoms of anxiety over the preceding two weeks. Responses are recorded along the same four-point Likert scale as seen above in the PHQ-9. This measure was administered at both intake and conclusion of the study. At intake, results showed that the overall sample had acceptable internal consistency ($\alpha = .77$). Similar to the PHQ-9, a simple sum score of all of the items was created for this measure for use in analyses.

Patient Reported Outcome Measurement Information System Short Form v1.0 – Sleep Disturbance 8a (PROMIS®; Yu et al., 2012). Sleep quality will be measured using the eight question Short Form of the Sleep Disturbance scale developed by researchers at the Patient Reported Outcome Measurement Information System (PROMIS), an initiative instigated by the National Institutes of Health. The scale comprises one item asking generally about sleep quality of the previous seven days and responses are ranked along a five-point Likert scale ranging from 1 (*very good*) to 5 (*very poor*). The remaining items also pertain to the previous seven days but ask more specific questions (e.g., my sleep was restless). Response options for these questions fall along a five-point Likert scale ranging from 1 (*Not at all*) to 5 (*Very much*). The item bank from which the short form was created was found to have good support for reliability with test information curves indicating that the measure has reliability of .90 or above (Yu et al., 2012). For validity, moderate to high correlations were found with existing sleep quality scales and significant differences in sleep

disturbance scores were found between respondents with and without sleep disorders. This measure was administered at intake, conclusion, and once weekly throughout the duration of the study treatment. At intake, the overall sample was found to have excellent internal consistency ($\alpha = .93$). For analyses, a sum score of the eight items was created with higher scores indicating greater sleep disturbance, and therefore, worse sleep.

PROMIS® v1.0 – Pain Intensity (Cella et al., 2010). Pain intensity will be measured using the Pain Intensity scale developed by researchers at the Patient Reported Outcome Measurement Information System (PROMIS). The scale is comprised of three items assessing individuals' intensity of physical pain at its worst and on average over the prior seven days, as well as at the current moment. Response options for the items fall along a five-point Likert scale ranging from 1 (*Had no pain*) to 5 (*Very severe*). The scale has been found to have good psychometric properties, including good ecological validity (Stone, Broderick, Junghaenel, Schneider, & Schwartz, 2016). Stone and colleagues (2016) administered the Pain Intensity scale to five groups of approximately 100 respondents each, and for comparison, respondents simultaneously completed daily diaries for four consecutive weeks. The groups included community residents, osteoarthritis patients, women experiencing premenstrual syndrome, men undergoing hernia surgery, and breast cancer patients receiving chemotherapy. Study results suggested that the Pain Intensity scale evidenced good ecological validity in that it was able to yield accurate information about changes in pain experiences happening in participants' natural environments when compared to their daily diary entries. Results also indicated good known-group validity, in that pain intensity measured by the Pain Intensity scale was significantly higher in the four pain-experiencing respondent groups than for the community sample, with each prediction

yielding large effects sizes ($d < 1$). This measure was administered at both intake and conclusion of the study. At intake, the overall sample was shown to have good internal consistency ($\alpha = .87$). For analyses, a sum score of the three items was calculated with higher scores indicating more severe pain over the past week.

Heart Rate Variability (HRV; Welltory mobile application software). Heart rate variability shows the variability in time intervals between heart beats (RR-intervals) and will be collected using a smartphone app called Welltory. HRV is an indicator of how well the sympathetic and parasympathetic nervous systems are working together, and how quickly the body can adapt to changing circumstances. Decreases in HRV can suggest that the body is having a hard time coping with stress and adjusting to external demands (Thayer et al., 2012). Welltory collects HRV using photoplethysmography (PPG), which uses the bright light of the camera to track changes in the transparency of blood vessels. Blood vessel transparency changes along with heart beats and blood flow. PPG has been found to be a reliable method for collecting HRV and its validity has been supported (Lenskiy & Aitzhan, 2013). Additionally, lower HRV has been found to correlate with increased symptoms of PTSD and depression (Carney et al., 2001; Thome et al., 2017). This measure was administered at intake, conclusion, and once weekly throughout the duration of the study treatment groups.

The Group Questionnaire (GQ; Krogel et al., 2013). The GQ is a 30-item self-report questionnaire examining the therapeutic relationship in a group therapy context. The questionnaire was developed from a 60-item measure initially constructed by Johnson and colleagues (2005) based on existing measures. The GQ employed 7-point Likert-style responses ranging from 0 (*Not true at all*) to 7 (*Very true*). The measure includes 11

statements about the group leader(s) (e.g., The group leader and I agree on what is important to work on), 11 statements about other group members (e.g., The other group members and I respect each other), and 8 questions about the respondent's general group experience (e.g., There was friction and anger between the members). In a study conducted by Krogel and colleagues (2013), a CFA was conducted on the data collected from 486 individuals across three distinct group-therapy settings doing both psychoeducational and process-oriented groups. Good model fit was found for the 30-item GQ (chi-squared 775.4, $df = 381$; comparative fit index = .957; RMSEA = .046; SRMR = .930). The GQ was found to have good reliability across two of the three GQ subscales (i.e., Positive Bonding = .92, Positive Working = .90, and Negative Relationship = .80), however further tests indicated that the lower reliability found for the Negative Relationship subscale may have been due to restricted range in responses from two of the three therapeutic settings. This measure was administered once, at the conclusion of the study, and it was given only to those assigned to the treatment condition. A subset of items was selected by the lead researcher to include in analyses. Results for the overall scale indicated good internal consistency for those completing the measure (i.e., those in the treatment condition; $\alpha = .70$). A sum score of the overall questionnaire was not used, however, individual items were reviewed and response percentages reported.

Analytic Procedure

Descriptive statistics were used to examine demographic data for the overall sample and for each condition along the following characteristics: age, race, gender, level of education, having received previous mental health services, receiving current mental health

services, whether participants were prescribed and taking psychoactive medication, level of spirituality, employment status, and relationship status.

Aim 1: Examining Aspects of Clinical Trial Feasibility for Participant Factors

Research Question 1. We determined the capacity to recruit, screen, and enroll an adequate number of participants to fulfill project requirements. We calculated the number of individuals that reached out with interest in participating, the number of individuals that were screened to participate, and the number of screened individuals that enrolled. We compared whether the number of enrolled participants met the desired sample size of 12 participants per condition.

Research Question 2. We used independent samples *t*-tests to compare the treatment and waitlist conditions in terms of age, race/ethnicity, anxiety, depression, number of traumatic experiences, and trauma-related symptoms. Levene's test for equality of variances was used to determine whether we could assume equal variances when comparing group means.

Aim 2: Examining Aspects of Clinical Trial Feasibility for the Treatment Protocol

Research Question 3. To determine whether the treatment was acceptable and tolerable for the participants, we calculated the number of participants that withdrew from the study and the number of participants that completed the study treatment, defined as completing at least six out of the eight group sessions, with an a priori completion goal rate of 75%. Frequencies were used to assess the percentage of participants endorsing various statements about participant-group alliance.

Aim 3: Examining Aspects of Clinical Trial Feasibility for Outcome Domains

Research Question 4. Due to the small sample size of the current study and previously unknown effect size parameters, mixed Group \times Time analytical procedures were not conducted, which is consistent with pilot studies involving small sample sizes (e.g., Vernon et al., 2019). In lieu of this, changes in the participants' pre-post mental health and physiological symptoms were calculated by conducting paired sample *t*-tests for the treatment and waitlist conditions, separately. In situations where statistical power is low or limited, it can be useful to supplement the original analyses with other test statistics that are less influenced by factors, such as sample size (Kline, 2004). In this case, we used Cohen's *d* as a measure of effect size that is less impacted by low power and small sample size. Hence, Cohen's *d* effect sizes were calculated to better understand the degree to which the treatment shifted participants report of symptoms of anxiety, depression, and traumatic stress, sleep disturbance, and pain intensity.

Results

Clinical Trial Feasibility for Participant Factors

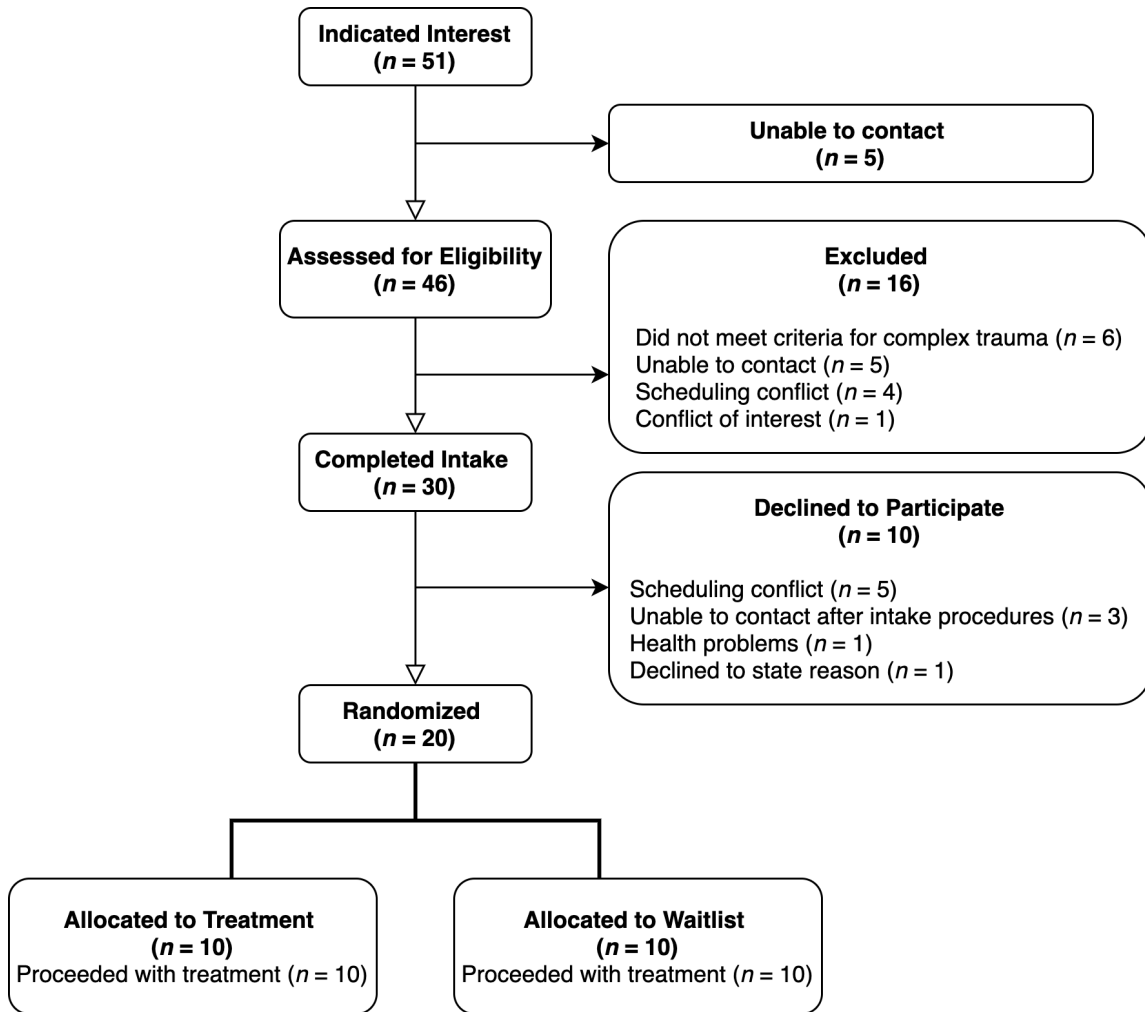
This section addresses Aim 1 and focuses on capacity to recruit participants as well as the ability to randomize by condition.

Capacity to Recruit, Screen, and Enroll Participants. During the recruitment process, 51 individuals indicated interest in participating in the study. Figure 1 shows the number of individuals involved in the recruitment and randomization process as well as the reasons potential participants did not participate in the study. The lead researcher was able to contact and successfully screen 46 potential participants for eligibility to participate. Thirty of the 46 individuals completed the intake procedures to participate and were enrolled in the study, exceeding the sought after 24 total participants with an enrollment rate of 67.7%.

After enrolling 30 eligible participants into the study over the course of 4 months, 10 participants withdrew from the study before the lead researcher assigned participants to group conditions. Some attrition between completing intakes and the start of the treatment may have been due to the length of time that it took to recruit individuals and the interruption of the student Winter holiday. Ultimately, four fewer participants than originally desired, were confirmed for participation and moved on to randomization procedures. Taken together, recruitment for this type of treatment is feasible; however, retention provides greater challenges exacerbated perhaps by the length of time between recruitment and beginning the treatment.

Figure 1

Recruitment, Screening, and Participation Flowchart



Randomization Procedures and Characteristics Across Conditions. The 20 participants were randomly assigned to either the treatment or the waitlist control condition. Using SPSS Statistics, version 25, independent samples *t*-tests and the Chi-Square test of independence were used to compare the treatment and waitlist control conditions on participant characteristics to determine if conditions were equivalent. The participants did not differ significantly across age, race/ethnicity, anxiety, depression, number of traumatic events, and traumatic symptomology, see Table 2. Age of participants in the treatment versus waitlist control conditions neared a statistically significant difference; there was an

approximate mean difference of ten years of age with waitlist control condition having a greater average age than the treatment condition.

The treatment and waitlist control conditions were found not to differ across their reported number of traumatic experiences; however, the mean differences neared statistical difference with the treatment condition reporting an average of 5.00 traumatic experiences and the waitlist control condition reporting an average of 8.50 traumatic experiences, see Table 2. Notably, the average number of traumatic experiences reported by the waitlist control condition was skewed to the right by one participant who reported having experienced and witnessed a total of 22 traumatic events. Despite the conditions nearing a significant difference in number of reported traumatic events, they did not differ significantly across reported symptoms of complex trauma. In fact, the waitlist control condition met criteria for an average of 5.40 symptoms out of six total CPTSD symptom criteria, whereas the treatment condition met criteria for an average of 5.30 symptoms out of six. Likewise, the treatment and waitlist control conditions were not found to differ across reported physical pain intensity, symptoms of anxiety, symptoms of depression, or sleep disturbance, see Table 2.

Table 2

Comparing the Treatment Conditions on Demographics and Mental Health at Intake (N = 20)

Characteristic	Waitlist %	Treatment %	χ^2	<i>p</i>
Race (White)	70%	50%	0.83	.36
Characteristic	Waitlist \bar{x} (<i>sd</i>)	Treatment \bar{x} (<i>sd</i>)	<i>t</i>	<i>p</i>
Age	30.0 (13.4)	20.6 (1.7)	2.20	.06
			0.71	.49

Traumatic events	8.5 (5.0)	5.0 (2.2)	2.03	.06
Trauma symptoms	5.4 (0.7)	5.3 (0.8)	0.29	.77
Anxiety	12.5 (4.4)	11.5 (4.4)	0.86	.40
Depression	12.5 (6.0)	10.0 (4.7)	0.71	.49

Clinical Trial Feasibility for the Treatment Protocol

This section addresses Aim 2 and focuses on the acceptability and tolerability of the integrative treatment.

Treatment Acceptability and Tolerability. Of the 10 participants assigned to the treatment condition, 100% completed the treatment at the pre-determined 75% session attendance standard, with five participants completing all eight sessions, three participants completing seven sessions, and two participants completing 6 sessions. Treatment condition participants completed a post-treatment survey group cohesiveness about their experience with the group, the leader, and other group members. Results are displayed in Table 3. Overall, results support that participants in the treatment condition experienced a sense of group cohesion, alignment with the clinician, and a bond with the other group members. In addition, members were able to achieve a sense of investment and positive connection critical to a functional therapeutic group.

Table 3

Percentage of Participants Endorsing Aspects of Group Alliance (n = 10)

Statements	% Not at all true	% Slightly true	% Moderately true	% Considerably true	% Very true
<i>Member - Group leader</i>					
The group leader and I respect each other.	0%	0%	0%	10%	90%
The group leader was friendly and warm towards me.	0%	0%	0%	10%	90%

The group leader and I agree about the things I will need to do in therapy.	0%	0%	0%	20%	80%
The group leader did not always seem to care about me.	100%	0%	0%	0%	0%
<hr/> <i>Member - Member</i> <hr/>					
The other group members and I respect each other.	0%	0%	0%	0%	100%
The other group members were friendly and warm towards me.	0%	0%	0%	10%	90%
The other group members and I are working together toward mutually agreed upon goals.	0%	0%	0%	20%	80%
The other group members did not seem to be completely genuine.	90%	10%	0%	0%	0%
The other group members did not always seem to care about me.	90%	10%	0%	0%	0%
<hr/> <i>Member - Overall group</i> <hr/>					
The members liked and cared about each other.	0%	0%	10%	20%	70%
The members felt what was happening was important and there was a sense of participation.	0%	0%	0%	10%	90%
Even though we have differences, our group feels secure to me.	0%	0%	0%	0%	100%
The group members accept one another.	0%	0%	0%	0%	100%

Preliminary Efficacy of Treatment for Mental Health and Other Outcomes

This section addresses Aim 3 and focuses on the impact that the treatment had on participants' mental and physiological health.

Examining Changes in Mental Health Symptoms Over Time by Condition.

Results are displayed in Table 4. Using separate paired sample *t*-tests, no significant changes

over time were found for either the waitlist control or the treatment condition across reported traumatic stress symptoms, symptoms of depression, or symptoms of anxiety. The treatment condition approached significance for its change in traumatic stress symptoms. Given the limited power of the analyses due to the small sample size, other indicators of preliminary treatment efficacy were warranted, such as Cohen's d measure of effect size. The treatment condition was found to have a negligible effect size for anxiety, a small effect size for symptoms of depression, and a moderate to large effect size for the change in complex traumatic stress symptoms. A different pattern of effect sizes was found for the waitlist control condition. This group evidenced a negligible effect size for both depressive and anxious symptoms, and a small to moderate effect size for complex traumatic stress symptoms. Together, this suggests that, perhaps as a result of the treatment, those in the treatment condition experienced moderately to largely reduced symptoms of traumatic stress and slightly reduced symptoms of depression, with little to no change in their anxious symptoms. On the contrary, those in the waitlist control condition experienced little to no change in their anxious or depressive symptoms and slightly reduced symptoms of traumatic stress.

Examining Change in Physical Pain Intensity and Sleep Disturbance. Paired sample t -tests and Cohen's d were also used to examine whether any statistically or clinically significant change occurred for participants between pre- and post- data collection, see Table 4. Participants in the treatment condition did not experience significant change in pain intensity. However, the effect size was small and negative, indicating participants reported slightly more pain at the time of the post-treatment survey. Treatment participants did experience significantly fewer sleep disturbances by post-treatment, supported by a large

positive effect size. The waitlist control condition participants were not found to experience significant differences in their pain intensity between the pre- and post- study surveys, however, the effect size was moderate and negative, indicating that the participants were experiencing moderately more pain at the time of the post-study survey. There was not a significant difference between pre- and post-study surveys for sleep disturbance, supported by a negligible effect size. Overall, participants in the treatment condition were found to be sleeping significantly better at the end of treatment, but those in the waitlist control condition showed no changes in sleep. Pain increased for both, but those in the waitlist control condition were experiencing moderately more physical pain, although this change did not reach the level of statistical significance.

Table 4

Pre- to Post-Treatment Change in Mental Health by Condition Responses (N = 20)

Participant condition	Mean Difference	95% Confidence Interval of the Difference		<i>t</i>	<i>df</i>	<i>p</i>	Cohen's <i>d</i>
		Lower	Upper				
<hr/>							
Treatment condition (<i>n</i> = 10)							
Complex trauma symptoms	1.10	-0.14	2.34	2.01	9	0.08	0.64**
Anxiety	-0.90	-4.81	3.01	-0.52	9	0.62	0.16
Depression	1.10	-2.21	4.41	0.75	9	0.47	0.24
Physical pain	-0.60	-2.63	1.43	-0.67	9	0.52	-0.21
Sleep disturbance	6.10	2.10	10.10	3.45	9	<0.01	1.09***
<hr/>							
Waitlist control (<i>n</i> = 10)							
Complex trauma symptoms	0.60	-0.53	1.73	1.20	9	0.26	0.38
Anxiety	0.40	-2.58	3.38	0.30	9	0.77	0.10

Depression	-1.00	-9.66	7.66	-0.26	9	0.80	-0.08
Physical pain	-0.70	-1.60	0.20	-1.77	9	0.11	-0.56*
Sleep disturbance	1.40	-6.01	8.81	0.43	9	0.68	0.14

Note. * indicates a moderate effect size, ** indicates a moderate to large effect size, *** indicates a large effect size

Examining Change in Heart Rate Variability (HRV). Participant HRV data was not viable and we were unable to analyze it for changes by condition. Participants were meant to collect their HRV measures once per week shortly after waking up, on the same day each week. In contrast to the weekly sleep questionnaires, participants did not systematically receive weekly prompts to complete their Welltory measurements. When asked by the lead researcher, several participants noted that they had forgotten to complete the HRV measurements for several weeks over the course of the study duration. Many participants also noted that they did not collect their HRV measures shortly after waking up, engendering that data less useful. Additionally, through human error in the collection process, much of the data that was collected by participants was not correctly transferred to the lead researcher to store. Consequently, for a number of reasons, collecting HRV data as it was attempted in the current study was not feasible and requires further thought and planning for ways to more successfully measure this valuable data in the future.

Discussion

This study of a group treatment for complex trauma moves the trauma treatment field forward as it is one of the first studies to incorporate trauma-sensitive yoga into group therapy with participants who have experienced complex traumatic stress. The mental health field has published far more studies looking at effective treatments for individuals experiencing PTSD relative to CPTSD according to the PsycINFO search engine (April 12,

2019). The modern westernized field of mental health has excelled in conceptualizing and treating cognitive components of traumatic stress; however, more research is needed to address the interconnected impact of trauma on the body in addition to the mind and brain. As such, the current study took one of the many possible steps in beginning to fill this need.

The current study developed and examined the feasibility and preliminary efficacy of an integrated treatment addressing the cognitive and physiological aspects of complex traumatic stress. The treatment combined process-oriented group therapy and trauma-sensitive yoga into a unified eight-week treatment. The study grounded itself in the theoretical underpinnings of interpersonal neurobiology (Siegel, 2006) and polyvagal theory (Porges, 2011). Together, these theories support the idea that a group format for trauma-focused therapy can be beneficial and support the potential use yoga offers to approach the ways in which trauma is held in the body. We found that there was interest in this type of integrative group treatment, as we could feasibly recruit and retain participants. Preliminary efficacy indicated that those in the treatment condition experienced significantly improved sleep and evidence of moderate to large treatment effects along participants' complex traumatic stress symptoms. However, there was no change over the course of treatment in their anxious symptoms, small reductions in depressive symptoms, and minimal increases in their reported physical pain intensity. Those in the waitlist control condition did not experience any significant changes in their mental health or physiological outcome measures, however, effect sizes indicated a moderate worsening of physical pain, a small to moderate reduction in traumatic stress symptoms, and negligible increases in depressive, anxious, and sleep disturbance symptoms between the pre- and post-study questionnaires.

Contextual Information Potentially Affecting Results

There are certain events throughout history which impact people's collective experience and require acknowledgement in order to fully understand the context in which other events unfold. In the case of the present study, there were significant events which undoubtedly impacted the participants' daily stress levels during the course of the data collection post-treatment. First, the week of post-treatment data collection marked the start of social distancing and a global rise in concern and awareness of the dangers of the coronavirus pandemic. University of California, Santa Barbara initiated its remote instruction on March 10th, 2020, on the Tuesday of the final week of Winter Quarter instruction. A familiar story for many, participants reported experiencing a range of emotional responses to the changes and the coronavirus more broadly, including anxiety, fear, concern for loved ones and one's own health, anger, and disappointment. Recent research on the COVID-19 pandemic from China has similarly shown evidence of increased anxiety and the need to monitor college students' mental health during this crisis (Cao et al., 2020). In the midst of this chaos, participants completed the study's conclusion survey, which asked them about psychological and physiological symptoms over the last one to four weeks, depending on the measure.

Second, all of the participants in the treatment condition and most of the participants in the waitlist control condition were students (undergraduate and graduate level), and the week that the post-treatment surveys were collected was the last week of Winter quarter instruction (March 7—March 13, 2020). The final week of the quarter is a time during which students are preparing to take or are already taking final exams and are working on final projects and papers. Typically, this alone instigates a period of increased anxiety, concern, and uncertainty for many.

The last noteworthy factor potentially affecting participants were the ongoing and increasingly visible graduate student Cost of Living Adjustment strikes that began at UC Santa Cruz and spread to the other UC campuses over the course of the Winter quarter. Towards the end of the study, several treatment condition participants noted uncertainty and concern about the ongoing strikes and how they would impact their grades and tuition-support. Many students faced class cancellations and reduced support from their striking Teaching Assistants. Taken together, there is reason to believe that participants were experiencing an increase in some of their negative mental and physical symptoms in a way that was unrelated to the potential efficacy of the group treatment. As such, it is important to take these powerful extraneous circumstances into consideration when reviewing the findings of this study.

Feasibility of an Integrated Yoga and Group Therapy Treatment

The current study was a pilot study and it examined feasibility, acceptability, and preliminary efficacy across a range of psychological and physiological domains including complex traumatic stress, depression, anxiety, sleep disturbance, and physical pain. This study demonstrated the feasibility of recruiting and retaining participants for an integrated group therapy treatment involving trauma-sensitive yoga. Of the 30 individuals deemed eligible to participate, 20 were able and chose to participate in the study, indicating a 67.7% enrollment rate. Of the individuals that chose to participate, there was no attrition for either the treatment or waitlist control conditions. In examining the feasibility of combining trauma-sensitive yoga and group therapy for survivors of domestic violence, Clark and colleagues (2014) noted an 85.0% enrollment rate for those deemed eligible to participate (i.e., 20 people deemed eligible and 17 enrolled; Clark et al., 2014). The current study had a

lower enrollment rate; however, more individuals were screened and deemed eligible, resulting in a higher number of enrolled participants ($N = 20$). In addition, the participants in the study conducted by Clark et al. (2014) were recruited through a community organization from a pool of adults who had already completed a 16-week trauma-focused therapy group. Consequently, it may be that individuals who have previously shown their tenacity and motivation to complete 16 weeks of therapy may be more likely than those drawn from a general community sample to be aware of the benefits of therapy, feel that they fit well with a group therapy format, and have already been able to carve time out for group in their schedules. Moreover, the current study retained all participants in the follow-up procedures, whereas Clark and colleagues lost five participants to the follow-up procedures.

The randomization procedures successfully assigned participants into the waitlist and control conditions in an equitable way. At the time of intake there were no significant differences across the treatment and waitlist control conditions for all reported participant characteristics. The groups did, however, trend towards significant differences for exposure to traumatic events (i.e., number of events experienced or witnessed first-hand) and participant age, with waitlist control participants reporting higher exposure to traumatic events and older age (in years).

Participant Cohesion

Participants in the treatment condition felt that the group members accepted one another, that despite having differences, the group felt secure, and that the members felt that what was happening was important and there was a sense of participation. Most members also agreed that the group members respected one another and that they felt cared about by the clinician. The overall responses to the measure examining group cohesion indicated that

group members felt connected to the clinician, one another, and the group as an entity. This is consistent with results from Clark and colleagues (2014), where 100% of participants in their treatment condition reported that they found participating personally meaningful and beneficial.

Participants also reported satisfaction with the group. For example, one participant stated, “I’ve learned a lot about myself. I feel like the way I respond to things makes more sense given what I’ve been through, and that helps me have more self-compassion which has always been hard for me.” Several participants also commented on feeling like they were understood by their fellow group members in a way that made them feel less isolated in their experiences. Feeling understood and having a safe space to be with others who have had similar experiences may have contributed to both the reduction in traumatic stress symptoms as well as the depressive symptoms. Participants also indicated their appreciation and enthusiasm for the addition of trauma-sensitive yoga into group therapy. One participant stated, “Yoga lets me process my emotions in a non-judgmental way—when I’m in safe poses I can just notice I’m having an emotion and say to myself, ‘Body, I don’t know why you need this right now, but I’ll just let you do your thing.’” Other participants noted that yoga helped prompt them to slow down and check-in with themselves, which helped them to improve their ability to feel embodied and aware of their emotions. Clark and colleagues (2014) also found that participants in the treatment condition were engaged and reported enthusiasm about the addition of yoga into group therapy.

The Impact of Treatment on Mental and Physiological Health

When comparing the treatment condition and waitlist control condition responses at the conclusion of the study, analyses showed that despite neither condition evidencing

statistically significant changes in their complex traumatic stress symptoms, the treatment condition experienced moderate to large reductions ($d = .64$). The waitlist control condition, instead, saw small to moderate reductions in their complex traumatic stress symptoms ($d = .38$). The current study's findings that the integrated treatment group helped reduce complex traumatic stress symptoms aligns with literature that demonstrates the efficacy of yoga for those with other types of trauma exposure, such as non-interpersonal traumatic experiences (e.g., Telles et al., 2007). These findings also support findings from a systematic review (Nguyen-Feng et al., 2018), which found that overall effect sizes ranged from $ds = 0.40$ — 1.06 . The reduction in traumatic stress symptoms is in line with comments made by participants in the treatment condition. For example, one participant stated, "I've learned a lot about myself. I feel like the way I respond to things makes more sense given what I've been through, and that helps me have more self-compassion which has always been hard for me." Several participants also commented on feeling like they were understood by their fellow group members in a way that made them feel less isolated in their experiences.

Analyses showed that the only statistically significant change for either condition was experienced by the treatment condition for their sleep disturbances. The treatment condition saw large reductions in their sleep disturbances ($d = 1.09$), whereas the waitlist control condition saw negligible to no change in their sleep disturbances. Furthermore, although neither condition experienced statistically significant changes in their depressive or anxious symptoms, the treatment condition indicated small reductions in their depressive symptoms while the waitlist control condition was shown to have negligible increases. Neither condition experienced clinically relevant changes in their anxious symptoms, both showing negligible decreases. The results are consistent with findings from systematic reviews on

mind-body practices for trauma-exposed individuals which have found positive impacts on PTSD and other psychological symptoms (Kim et al., 2013; Nguyen-Feng et al., 2018).

Moreover, the treatment condition saw negligible increases in their physical pain intensity, while the waitlist control condition saw moderate increases in their physical pain intensity ($d = -.56$). Notably, while both the treatment and waitlist control conditions showed an increase in physical pain intensity, the treatment condition experienced far less of an increase. It is also important to note that at the conclusion of the study, one participant from the waitlist control condition reportedly spent the previous eight weeks in a trauma-focused therapy group, which may have impacted the small sample's response averages. Finally, the current findings differ slightly from previous research conducted by Kim and colleagues (2013) which showed evidence of reductions in anxiety, depression, and pain-tolerance, whereas, the current study found negligible to small reductions in treatment-condition anxiety and depression and negligible to small increases in pain intensity.

Implications

This was one of the first studies to examine incorporating trauma-sensitive yoga into group therapy with participants who have experienced complex traumatic stress. Integrating mind- and body-oriented treatments in a structured and intentional way appears to be relatively rare in the Westernized field of mental health and the current study plays a role in forging a path into combined mind-body treatment for complex traumatic stress. Given the well-documented and deleterious impact of complex trauma on mental health (U.S. Department of Health and Human Services, 2017; Felitti et al., 1998), this feasibility study is one step in the direction of better understanding how mental health clinicians and agencies can consider broaching mind-body treatments. Particularly pertinent to distress as it relates

to traumatic experiences, it is important that research catches up to the use of mind-body treatments in the clinical sector of mental health treatment. Research such as this can help shed light on how we can broaden our skills to most effectively support clients who may not respond well to traditionally cognitive-focused treatments.

This dissertation project supports that we can smoothly integrate talk therapy and yoga into each session, and that people will be interested and enthusiastic about the combination. It is useful to know that those receiving the treatment transitioned smoothly from engaging with one another verbally, to quietly engaging with the yoga flow, and back to engaging verbally. Despite the pause created by the yoga in the middle of session, participants appeared to engage well with the talk therapy portion of treatment. In fact, the grounding and centering effect of the yoga seemed to enable participants to delve more deeply into vulnerable spaces without becoming panicked or dissociated. It would be worthwhile to investigate this phenomenon further in future research. Additionally, this study's findings indicate that the integrated group therapy and yoga treatment may be efficacious, despite a global pandemic potentially interfering with the results. It would be useful to conduct a larger-scale version of this study to examine treatment efficacy once the global pandemic stabilizes.

Last, this study moved the research forward in its inclusion of adults of diverse types of traumatic exposure, whereas the few studies on similar group treatments have included only individuals with the same kind of traumatic exposure (e.g., intimate partner violence; Nguyen-Feng et al., 2019). In this way, we can see that it is possible to effectively open some therapeutic trauma groups to multiple types of trauma, particularly for those who

experiencing complex traumatic stress, which has strong patterns in symptoms underpinning distress.

Strengths, Limitations, and Future Directions

This study demonstrated several strengths and unique contributions. First, the study offers a detailed, structured, yet flexible integrated mind-body treatment model for clients who have experienced complex traumatic stress. It is useful to have a detailed description of the treatment so that other researchers may fully investigate the treatment methods or include them in future studies. This study also helped to lay the groundwork for future studies by piloting the integrated treatment and establishing feasibility and areas that would benefit from alteration. The current study drew together the interdisciplinary findings from interpersonal neurobiology (Siegel, 2012) and polyvagal theory (Porges, 2011) and created a feasible and preliminarily effective treatment for individuals suffering from the pervasive psychological, physical, and relational distress associated with complex trauma.

Although the study begins to fill a gap in the trauma treatment field, it was not without limitations worth acknowledging. First, the study was underpowered due to the small sample size, and thus it was not able to detect statistically significant differences by study condition. The primary purpose of the study was to design the treatment and test the feasibility of implementation, which was successful. Given the scarcity of previous studies investigating mind-body integrative approaches to treating complex traumatic stress, the current study plays a role in beginning to lay the foundation of our understanding of how feasible integrative treatments are and their preliminary effectiveness. Future research should replicate this study at a larger scale, in order to bolster the statistical power of the analyses and gain further insight into treatment efficacy. It may also be interesting to recreate the

treatment with co-facilitators leading therapy groups, rather than a single clinician as the extant literature suggests increased efficacy with two facilitators relative to one when concerning group work (Kivlighan et al., 2012).

Likewise, the potential duration of treatment effects was not measured beyond immediate post-treatment. This is important for future research because it is reasonable to expect that changes in participants' mental health and relationship to their trauma might continue to unfold over a period of time after the study has concluded. Future research should reassess mental and physical health at several different points post-treatment, to understand the duration of potential treatment gains. Another potential limitation is that qualitative interviews were not gathered with the clients or the care providers (clinician and yoga instructor), nor were participants blinded to the treatment intents of the intervention. In order to accrue a more detailed understanding of the use and impact of this integrated treatment, it would be useful for future research to qualitatively explore participants' experiences and reactions to the treatment, particularly since this area of research is in its nascent stages.

A final limitation is that the study focused mostly on participant impairment rather than strengths, and a strengths-based approach might provide a more balanced examination of the benefits and challenges of an integrated trauma-sensitive yoga and group therapy treatment. Future research should assess participant strengths and how they are affected by integrated treatment which would provide us with a more balanced understanding of the benefits and challenges of this type of treatment.

Conclusion

In conclusion, the findings of this study suggest that it is feasible to combine group therapy with trauma-sensitive yoga and that community members are interested in this type of integrated trauma treatment. Despite being underpowered, the study results indicated preliminary efficacy in terms of improved sleep and reduced complex traumatic stress symptoms for the integrated yoga-group therapy treatment with survivors of complex trauma. Last, the study is a small step in weaving together mind-body approaches into a replicable treatment. Future research should expand upon the current findings as we seek to more effectively support survivors of complex, developmental, and childhood trauma.

References

- American Psychological Association. (n.d.) *Clinical practice guideline for the treatment of posttraumatic stress disorder (PTSD)*. apa.org/ptsd-guideline/
- Afari, N., Ahumada, S. M., Wright, L. J., Mostoufi, S., Golnari, G., Reis, V., & Cuneo, J. G. (2014). Psychological trauma and functional somatic syndromes: a systematic review and meta-analysis. *Psychosomatic Medicine, 76*(2).
<https://doi.org/10.1097/psy.0000000000000010>
- Badenoch, B. (2008). *Being a brain-wise therapist: A practical guide to interpersonal neurobiology (Norton Series on Interpersonal Neurobiology)*. W. W. Norton & Company. <https://doi.org/10.1007/s10615-010-0273-6>
- Badenoch, B. & Cox, P. (2010). Integrating interpersonal neurobiology with group psychotherapy. *International Journal of Group Psychotherapy, 60*, 462-481.
<https://doi.org/10.1521/ijgp.2010.60.4.462>
- Barnes, P. M., Bloom, B., & Nahin, R. L. (2008). Complementary and alternative medicine use among adults and children; United States, 2007.
<https://doi.org/10.1037/e623942009-001>
- Briere, J., & Scott, C. (2015). Complex trauma in adolescents and adults: Effects and treatment. *Psychiatric Clinics, 38*(3), 515-527.
<https://doi.org/10.1016/j.psc.2015.05.004>
- Burlingame, G. M., Fuhriman, A., & Mosier, J. (2003). The differential effectiveness of group psychotherapy: A meta-analytic perspective. *Group Dynamics: Theory, Research, and Practice, 7*, 3. <https://doi.org/doi:10.1037/1089-2699.7.1.3>

- Burlingame, G. M., MacKenzie, K. R., & Strauss, B. (2004). Small group treatment: Evidence for effectiveness and mechanisms of change. *Handbook of Psychotherapy and Behavior Change*, 5, 647-696.
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry research*, 112934.
<https://doi.org/10.1016/j.psychres.2020.112934>
- Carney, R. M., Blumenthal, J. A., Stein, P. K., Watkins, L., Catellier, D., Berkman, L. F., Czajkowski, S.M., O'Connor, C., Stone, P.H., & Freedland, K. E. (2001). Depression, heart rate variability, and acute myocardial infarction. *Circulation*, 104(17), 2024-2028.
<https://doi.org/doi:10.1161/hc4201.097834>
- Cella, D., Riley, W., Stone, A., Rothrock, N., Reeve, B., Yount, S., ... & Cook, K. (2010). The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005–2008. *Journal of Clinical Epidemiology*, 63(11), 1179-1194.
<https://doi.org/doi:10.1016/j.jclinepi.2010.04.011>
- Clark, C. J., Lewis-Dmello, A., Anders, D., Parsons, A., Nguyen-Feng, V., Henn, L., & Emerson, D. (2014). Trauma-sensitive yoga as an adjunct mental health treatment in group therapy for survivors of domestic violence: A feasibility study. *Complementary Therapies in Clinical Practice*, 20, 152-158.
<https://doi.org/doi:10.1016/j.ctcp.2014.04.003>

- Corrigan, F. M., & Hull, A. M. (2015). Neglect of the complex: why psychotherapy for post-traumatic clinical presentations is often ineffective. *BJPsych Bulletin*, 39(2), 86-89.
- Cozolino, L. (2002). *The neuroscience of psychotherapy: building and rebuilding the human brain (Norton Series on Interpersonal Neurobiology)*. W. W. Norton & Company.
- Cramer, H., Lauche, R., Langhorst, J., & Dobos, G. (2013). Yoga for depression: A systematic review and meta-analysis. *Depression and Anxiety*, 30(11), 1068-1083. <https://doi.org/doi:10.1002/da.22166>
- Cushman, P. (1995). *Constructing the Self. Constructing America: A Cultural History of Psychotherapy*. Addison Wesley Longman.
- Dana, D. [Deirdre Fay]. (2018, May 28). The pied piper of polyvagal theory: Deb Dana [Video file]. <https://www.youtube.com/watch?v=0f3ErVPMV5w&t=1538s>
- Ehlers, A., Grey, N., Wild, J., Stott, R., Liness, S., Deale, A., Handley, R., Albert, I., Cullen, D., Hackmann, A., Manley, J., McManus, F., Brady, F., Salkovskis, P., & Clark, D.M. (2013). Implementation of cognitive therapy for PTSD in routine clinical care: effectiveness and moderators of outcome in a consecutive sample. *Behaviour Research and Therapy*, 51, 742-752.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14, 245-258. [https://doi.org/doi:10.1016/s0749-3797\(98\)00017-8](https://doi.org/doi:10.1016/s0749-3797(98)00017-8)

- Fernandes, R. A., Fiquer, J. T., Gorenstein, C., Razza, L. B., Fraguas, R., Borrione, L., Benseñor, I. M., Lotufo, P. A., Dantas, E. M., Carvalho, A. F., Brunoni, A. R. (2017). Nonverbal Behaviors are Associated with Increased Vagal Activity in Major Depressive Disorder: Implications for the Polyvagal Theory. *Journal of Affective Disorders*, 209, 18-22. <https://doi.org/10.1016/j.jad.2016.11.010>
- Flores, P. J., & Porges, S. W. (2017). Group psychotherapy as a neural exercise: Bridging polyvagal theory and attachment theory. *International Journal of Group Psychotherapy*, 67(2), 202-222. <https://doi.org/10.1080/00207284.2016.1263544>
- Foa, E., Hembree, E., & Rothbaum, B. O. (2007). *Prolonged Exposure Therapy for PTSD: Emotional Processing of Traumatic Experiences Therapist Guide*. Oxford University Press.
- Gray, M. J., Litz, B. T., Hsu, J. L., & Lombardo, T. W. (2004). Psychometric properties of the life events checklist. *Assessment*, 11, 330-341. <https://doi.org/doi:10.1177/1073191104269954>
- Green, B.L., Goodman L.A., Krupnick J.L., Corcoran, C.B., Petty R.M., Stockton P., & Stern N.M. (2000). Outcomes of Single Versus Multiple Trauma Exposure in a Screening Sample. *Journal of Traumatic Stress*, 13, 271–286. <https://doi.org/10.1023/A:1007758711939>
- Hastings, P.D., Nuselovici, J.N., Utendale, W.T., Coutya J., McShane, K.E., & Sullivan C. Applying the Polyvagal Theory to Children’s Emotion Regulation: Social Context, Socialization, and Adjustment. *Biological Psychology*, 79(3), 299-306. <https://doi.org/10.1016/j.biopsycho.2008.07.005>

- Helm, J.L., Sbarra, D. A., & Ferrer, E. (2014). Coregulation of Respiratory Sinus Arrhythmia in Adult Romantic Partners. *Emotion, 14*(3), 522-3.
<https://doi.org/10.1037/a0035960>
- Hoge, C. W., Castro, C. A., Messer, S. C., McGurk, D., Cotting, D. I., & Koffman, R. L. (2004). Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *New England Journal of Medicine, 351*, 13-22.
<https://doi.org/doi:10.1056/nejmoa040603>
- Hooper, L. M., Stockton, P., Krupnick, J. L., & Green, B. L. (2011). Development, use, and psychometric properties of the Trauma History Questionnaire. *Journal of Loss and Trauma, 16*, 258-283.
<https://doi.org/doi:10.1080/15325024.2011.572035>
- Jindani, F., Turner, N., & Khalsa, S. B. S. (2015). A yoga intervention for posttraumatic stress: A preliminary randomized control trial. *Evidence-Based Complementary and Alternative Medicine, 2015*. <https://doi.org/doi:10.1155/2015/351746>
- Johnson, J. E., Burlingame, G. M., Olsen, J. A., Davies, D. R., & Gleave, R. L. (2005). Group climate, cohesion, alliance, and empathy in group psychotherapy: Multilevel structural equation models. *Journal of Counseling Psychology, 52*(3), 310. <https://doi.org/10.1037/0022-0167.52.3.310>
- Karatzias, T., Shevlin, M., Fyvie, C., Hyland, P., Efthymiadou, E., Wilson, D., ... & Cloitre, M. (2017). Evidence of distinct profiles of posttraumatic stress disorder (PTSD) and complex posttraumatic stress disorder (CPTSD) based on the new ICD-11 trauma questionnaire (ICD-TQ). *Journal of Affective Disorders, 207*, 181-187. <https://doi.org/doi:10.1016/j.jad.2016.09.032>

- Kim, S. H., Schneider, S. M., Kravitz, L., Mermier, C., & Burge, M. R. (2013). Mind-body practices for posttraumatic stress disorder. *Journal of Investigative Medicine*, *61*, 827-834. <https://doi.org/doi:10.2310/jim.0b013e3182906862>
- King, A. P., Erickson, T. M., Giardino, N. D., Favorite, T., Rauch, S. A., Robinson, E., ... & Liberzon, I. (2013). A pilot study of group mindfulness-based cognitive therapy (MBCT) for combat veterans with posttraumatic stress disorder (PTSD). *Depression and Anxiety*, *30*, 638-645. <https://doi.org/doi:10.1002/da.22104>
- Kivlighan Jr, D. M., London, K., & Miles, J. R. (2012). Are two heads better than one? The relationship between number of group leaders and group members, and group climate and group member benefit from therapy. *Group Dynamics: Theory, Research, and Practice*, *16*(1), 1. <https://doi.org/doi:10.1037/a0026242>
- Kline, R. B. (2004). *Beyond significance testing: Reforming data analysis methods in behavioral research*. American Psychological Association.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*, 606-613. <https://doi.org/doi:10.1046/j.1525-1497.2001.016009606.x>
- Kroenke, K., Spitzer, R. L., Williams, J. B., & Löwe, B. (2010). The Patient Health Questionnaire somatic, anxiety, and depressive symptom scales: A systematic review. *General Hospital Psychiatry*, *32*, 345-359. <https://doi.org/doi:10.1016/j.genhosp- psych.2010.03.006>

- Krogel, J., Burlingame, G., Chapman, C., Renshaw, T., Gleave, R., Beecher, M., & MacNair-Semands, R. (2013). The Group Questionnaire: A clinical and empirically derived measure of group relationship. *Psychotherapy Research*, 23(3), 344-354. <https://doi.org/10.1080/10503307.2012.729868>
- Lenskiy, A. A., & Aitzhan, Y. (2013). Extracting heart rate variability from a smartphone camera. *Journal of Information and Communication Convergence Engineering*, 11, 216-222. <https://doi.org/doi:10.6109/jicce.2013.11.3.216>
- Lundqvist, G., Hansson, K., & Svedin, C. G. (2009). Group therapy for women sexually abused as children: Social interaction, adjustment, and relationships before and after group therapy. *Psychoanalytic Social Work*, 16, 158-175. <https://doi.org/doi:10.1080/15228870903200335>
- Mahoney, A., Karatzias, T., & Hutton, P. (2019). A systematic review and meta-analysis of group treatments for adults with symptoms associated with complex post-traumatic stress disorder. *Journal of Affective Disorders*, 243, 305-321. <https://doi.org/doi:10.1016/j.jad.2018.09.059>
- McDonagh, A., Friedman, M., McHugo, G., Ford, J., Sengupta, A., Mueser, K., Demment, C.C., Fournier, D., Schnurr, P.P., & Descamps, M. (2005). Randomized trial of cognitive-behavioral therapy for chronic posttraumatic stress disorder in adult female survivors of childhood sexual abuse. *Journal of Consulting and Clinical Psychology*, 73, 515.
- McRoberts, C., Burlingame, G. M., & Hoag, M. J. (1998). Comparative efficacy of individual and group psychotherapy: A meta-analytic perspective. *Group*

Dynamics: Theory, Research, and Practice, 2, 101.

<https://doi.org/doi:10.1037/1089-2699.2.2.101>

- Morrison, N. (2001). Group cognitive therapy: Treatment of choice or sub-optimal option? *Behavioural and Cognitive Psychotherapy*, 29, 311-332.
- Nguyen-Feng, V. N., Clark, C. J., & Butler, M. E. (2019). Yoga as an intervention for psychological symptoms following trauma: A systematic review and quantitative synthesis. *Psychological services*, 16(3), 513. <https://doi.org/10.1037/ser0000191>
- Nguyen-Feng, V. N., Morrissette, J., Lewis-Dmello, A., Michel, H., Anders, D., Wagner, C., & Clark, C. J. (2019). Trauma-sensitive yoga as an adjunctive mental health treatment for survivors of intimate partner violence: A qualitative examination. *Spirituality in Clinical Practice*, 6(1), 27–43. <https://doi.org/10.1037/scp0000177>
- Niles, B. L., Mori, D. L., Polizzi, C., Pless Kaiser, A., Weinstein, E. S., Gershkovich, M., & Wang, C. (2018). A systematic review of randomized trials of mind-body interventions for PTSD. *Journal of Clinical Psychology*, 74, 1485-1508. <https://doi.org/doi:10.1002/jclp.22634>
- Niles, A. N., Valenstein-Mah, H., Bedard-Gilligan, M., & Kaysen, D. (2017). Effects of trauma and PTSD on self-reported physical functioning in sexual minority women. *Health Psychology*, 36(10), 947.
- Ninness, C., Newton, R., Saxon, J., Rumph, R., Bradfield, A., Harrison, C., & Vasquez III, E. (2002). Small group statistics: A Monte Carlo comparison of parametric and randomization tests. *Behavior and Social Issues*, 12, 53-63. <https://doi.org/doi:10.5210/bsi.v12i1.79>

- Phillips, K. F. V., & Power, M. J. (2007). A new self-report measure of emotion regulation in adolescents: The Regulation of Emotions Questionnaire. *Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice*, 14, 145-156. <https://doi.org/doi:10.1002/cpp.523>
- Porges, S. W. (2011). *The polyvagal theory: neurophysiological foundations of emotions, attachment, communication, and self-regulation (Norton Series on Interpersonal Neurobiology)*. WW Norton & Company.
<https://doi.org/doi:10.1521/ijgp.2014.64.4.593>
- Porges, S. W., & Dana, D. A. (2018). *Clinical Applications of the Polyvagal Theory: The Emergence of Polyvagal-Informed Therapies (Norton Series on Interpersonal Neurobiology)*. WW Norton & Company.
- Quintana D.S., Guastella A.J., Outhred T., Hickie I.B., & Kemp A.H. (2012) Heart Rate Variability is Associated with Emotion Recognition: Direct Evidence for a Relationship Between the Autonomic Nervous System and Social Cognition. *Int J Psychophysiol*, 86(2), 168-72. <https://doi.org/10.1016/j.ijpsycho.2012.08.012>.
- Resick, P. A., & Schnicke, M. (1993). *Cognitive Processing Therapy for Rape Victims: A Treatment Manual* (Vol. 4). Sage.
- Rosenfield, J. M., Stratyner, A., Tufekcioglu, S., Karabell, S., Mckelvey, J., Litt, L. (2018). Complex PTSD in ICD-11 A Case Report on a New Diagnosis. *Journal of Psychiatric Practice*, 24(5), 364-370.
<https://doi.org/10.1097/PRA.0000000000000327>

- Salsman, J. M., Lai, J. S., Hendrie, H. C., Butt, Z., Zill, N., Pilkonis, P. A., ... & Cella, D. (2014). Assessing psychological well-being: self-report instruments for the NIH Toolbox. *Quality of Life Research, 23*, 205-215.
<https://doi.org/doi:10.1007/s11136-013-0452-3>
- Schore, A. N. (2000). Attachment and the regulation of the right brain. *Attachment & Human Development, 2*(1), 23-47. <https://doi.org/10.1080/146167300361309>
- Schore, A. N. (2001). The effects of early relational trauma on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal, 22*(1-2), 201-269. [https://doi.org/doi:10.1002/1097-0355\(200101/04\)22:1<201::aid-imhj8>3.0.co;2-9](https://doi.org/doi:10.1002/1097-0355(200101/04)22:1<201::aid-imhj8>3.0.co;2-9)
- Seppälä, E. M., Nitschke, J. B., Tudorascu, D. L., Hayes, A., Goldstein, M. R., Nguyen, D. T., ... & Davidson, R. J. (2014). Breathing-based meditation decreases posttraumatic stress disorder symptoms in US Military veterans: A randomized controlled longitudinal study. *Journal of Traumatic Stress, 27*, 397-405.
<https://doi.org/doi:10.1002/jts.21936>
- Shapiro, F. (2017). *Eye Movement Desensitization and Reprocessing (EMDR) Therapy: Basic Principles, Protocols, and Procedures*. Guilford Publications. Guilford Publications.
- Siegel, D. J. (2006). An interpersonal neurobiology approach to psychotherapy. *Psychiatric Annals, 36*(4).
- Siegel, D. J. (2010). *Mindsight: The New Science of Personal Transformation*. Bantam.

- Siegel, D. J. (2012). *Pocket Guide to Interpersonal Neurobiology: An Integrative Handbook of the Mind (Norton Series on Interpersonal Neurobiology)*. W. W. Norton & Company.
- Siegel, D. J. (2015). Interpersonal neurobiology as a lens into the development of wellbeing and resilience. *Children Australia*, 40, 160-164.
<https://doi.org/doi:10.1017/cha.2015.7>
- Siegel, D. J., & Bryson, T. P. (2011). *The Whole-Brain Child: 12 Revolutionary Strategies to Nurture your Child's Developing Mind*. Bantam.
- Sloan, D. M., Feinstein, B. A., Gallagher, M. W., Beck, J. G., & Keane, T. M. (2013). Efficacy of group treatment for posttraumatic stress disorder symptoms: A meta-analysis. *Psychological Trauma: Theory, Research, Practice, and Policy*, 5(2), 176. <https://doi.org/doi:10.1037/a0026291>
- Spinazzola, J., Blaustein, M., & Van Der Kolk, B. A. (2005). Posttraumatic stress disorder treatment outcome research: The study of unrepresentative samples? *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies*, 18(5), 425-436.
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, 166, 1092-1097. <https://doi.org/doi:10.1001/archinte.166.10.1092>
- Spitzer, R. L., Williams, J. B., Kroenke, K., Linzer, M., deGruy, F. V., Hahn, S. R., Brody, D., Johnson, J. G. (1994). Utility of a new procedure for diagnosing mental disorders in primary care: The PRIME-MD 1000 study. *Journal of the*

American Medical Association, 272(22), 1749-1756.

<https://doi.org/doi:10.1001/jama.1994.03520220043029>

Steenkamp, M. M., Litz, B. T., Hoge, C. W., & Marmar, C. R. (2015). Psychotherapy for military-related PTSD: a review of randomized clinical trials. *Journal of the American Medical Association*, 314(5), 489-500.

<https://doi.org/doi:10.1001/jama.2015.8370>

Stone, A. A., Broderick, J. E., Junghaenel, D. U., Schneider, S., & Schwartz, J. E. (2016). PROMIS fatigue, pain intensity, pain interference, pain behavior, physical function, depression, anxiety, and anger scales demonstrate ecological validity. *Journal of Clinical Epidemiology*, 74, 194-206.

<https://doi.org/doi:10.1016/j.jclinepi.2015.08.029>

Streeter, C. C., Gerbarg, P. L., Saper, R. B., Ciraulo, D. A., & Brown, R. P. (2012). Effects of yoga on the autonomic nervous system, gamma-aminobutyric-acid, and allostasis in epilepsy, depression, and post-traumatic stress disorder. *Medical Hypotheses*, 78, 571-579.


Telles, S., Naveen, K. V., & Dash, M. (2007). Yoga reduces symptoms of distress in tsunami survivors in the Andaman Islands. *Evidence-Based Complementary and Alternative Medicine*, 4(4), 503-509. <https://doi.org/10.1093/ecam/nem069>

Thayer, J. F., Åhs, F., Fredrikson, M., Sollers III, J. J., & Wager, T. D. (2012). A meta-analysis of heart rate variability and neuroimaging studies: implications for heart rate variability as a marker of stress and health. *Neuroscience & Biobehavioral Reviews*, 36(2), 747-756. <https://doi.org/doi:10.1016/j.neubiorev.2011.11.009>

- Thome, J., Densmore, M., Frewen, P. A., McKinnon, M. C., Théberge, J., Nicholson, A. A., ... & Lanius, R. A. (2017). Desynchronization of autonomic response and central autonomic network connectivity in posttraumatic stress disorder. *Human Brain Mapping, 38*(1), 27-40. <https://doi.org/doi:10.1002/hbm.23340>
- Toomey, B., & Ecker, B. (2009). Competing visions of the implications of neuroscience for psychotherapy. *Journal of Constructivist Psychology, 22*(2), 95-140. <https://doi.org/doi:10.1080/10720530802675748>
- 2018 Welltory Inc. (2018). Welltory (2.4.3) [Mobile application software]. <https://welltory.com/>.
- U.S. Department of Health and Human Services, Administration for Children and Families. (2017). *Child maltreatment 2017*. <https://www.acf.hhs.gov/sites/default/files/cb/cm2017.pdf>.
- Van der Kolk, B. A. (2015). *The body keeps the score: Brain, mind, and body in the healing of trauma*. Viking.
- Van der Kolk, B. A. (2017). Developmental Trauma Disorder: Toward a rational diagnosis for children with complex trauma histories. *Psychiatric Annals, 35*(5), 401-408. <https://doi.org/doi:10.3928/00485713-20050501-06>
- Van der Kolk, B. A., Roth, S., Pelcovitz, D., Sunday, S., & Spinazzola, J. (2005). Disorders of extreme stress: The empirical foundation of a complex adaptation to trauma. *Journal of Traumatic Stress: Official Publication of the International Society for Traumatic Stress Studies, 18*(5), 389-399. <https://doi.org/10.1002/jts.20047>

- Van der Kolk, B. A., Stone, L., West, J., Rhodes, A., Emerson, D., Suvak, M., & Spinazzola, J. (2014). Yoga as an adjunctive treatment for posttraumatic stress disorder: A randomized controlled trial. *J Clin Psychiatry, 75*(6), 559-65.
- Vernon, T. W., Holden, A. N., Barrett, A. C., Bradshaw, J., Ko, J. A., McGarry, E. S., Horowitz, E. J., Tagavi, D. M., & German, T. C. (2019). A pilot randomized clinical trial of an enhanced pivotal response treatment approach for young children with autism: The PRISM model. *Journal of autism and developmental disorders, 49*(6), 2358-2373. <https://doi.org/10.1007/s10803-019-03909-1>
- Vujanovic, A. A., Niles, B., Pietrefesa, A., Schmertz, S. K., & Potter, C. M. (2013). Mindfulness in the treatment of posttraumatic stress disorder among military veterans. *Spirituality in Clinical Practice, 1*, 15-25.
<https://doi.org/doi:10.1037/2326-4500.1.s.15>
- Wagner, D. (2015). Polyvagal theory and peek-a-boo: How the therapeutic pas de deux heals attachment trauma. *Body, Movement and Dance in Psychotherapy, 10*, 256-265. <https://doi.org/doi:10.1080/17432979.2015.1069762>
- Yu, L., Buysse, D. J., Germain, A., Moul, D. E., Stover, A., Dodds, N. E., ... & Pilkonis, P. A. (2012). Development of short forms from the PROMIS™ sleep disturbance and sleep-related impairment item banks. *Behavioral Sleep Medicine, 10*(1), 6-24.
<https://doi.org/doi:10.1080/15402002.2012.636266>

Appendix A



HEALING FROM TRAUMA

✓ Have you ever experienced any adverse events as a child or adult?

✓ Do you ever feel like your emotions control you?

✓ Have you ever struggled with developing or keeping healthy relationships?

You might be eligible to participate in a research study involving free group psychotherapy combined with trauma-sensitive yoga.

If interested, you can find details and contact information at:
Discoverhealingtrauma.com

Location: 970 Embarcadero Del Mar
Time and date: Option of Tuesdays or Thursdays 11am - 12:45pm

Groups held by UCSB doctoral student/masters-level clinician

UCSB IRB Approved: Protocol 17-19-0588
Supervised by licensed clinical psychologist: Dr. Steve Smith (license 20096)

Appendix B

Screening Questionnaire

Hello! Thank you for calling. My name is Haley and I am a researcher at UCSB, are you calling in regards to the group therapy and yoga study?

Great! Do you have some time now to hear about the study or may I schedule a better time?

If NO: No problem, is there a better time that I can call you back to discuss the study?
[Schedule time and conclude phone call.]

If YES: Wonderful! This should take about 10 minutes in total for me to tell you about the study, answer any questions you might have, and ask you a few questions to see if you might be eligible to participate.

The study involves completing some surveys and brief weekly assessments along with participating in eight weeks of a therapy group helping you process traumatic or adverse experiences. The therapy group also involves a component of trauma-sensitive yoga. Does this still sound interesting to you?

Do you have any questions so far?

Okay! So, now I'm going to ask you a few questions to help me get a better idea of whether you might be eligible to participate in the study.

[exclusion criteria screening questions:]

1. Are you able to understand, read, and write English?
2. Are you currently pregnant?
3. Are you able and willing to engage in mild exercise without concern?
4. Are you 18 years old or older?
5. Do you have a smart phone?

[Inclusion criteria screening questions:]

[[For each of the following questions, I may ask clarifying questions concerning frequency of event and subjective sense of fear]]

1. Before your 18th birthday, did a parent or other adult in the household often swear at you, insult you, put you down, or act in a way that made you afraid that you might be hurt?
2. Before your 18th birthday, did any adult in your household often push, grab, slap, or throw something at you? Or were you ever hit you so hard that you had marks or were injured?
3. Before your 18th birthday, did an adult or person at least five years older than you ever touch you or ask you to touch them inappropriately?

4. Before your 18th birthday, did you often feel that no one in your family loved you or thought you were important or special?
5. Before your 18th birthday, did you often feel that you didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? Or, did you ever feel that your parents were not capable of taking care of you?
6. Before your 18th birthday, was a biological parent ever lost to you through divorce, abandonment, or another reason?
7. Before your 18th birthday, did you ever witness a parent being hit, slapped, or hurt in some other way?
8. Before your 18th birthday, did you live with anyone struggling with addiction?
9. Before your 18th birthday, was a household member depressed or mentally ill?
10. Before your 18th birthday, did a household member ever go to prison?
11. Do you find that you're easily startled or often 'on edge?' [**hyperarousal**]
12. Do you find that you often do your best to avoid certain memories, feelings, places, people or otherwise? [**avoidance**]
13. Do you find that you have upsetting thoughts, images, or memories come into your mind even though you don't want them to? [**intrusive re-experiencing**]
14. Do you react intensely to things that don't seem to affect other people very much?
15. Would you say that when you're upset, it takes you a long time to calm down?
16. Do you sometimes feel numb or emotionally shut down?
17. Would you say it's hard for you to experience pleasure or joy?
18. Do you sometimes feel guilty or ashamed of yourself whether it makes sense or not?
19. Do you have a difficult time staying emotionally close to people?
20. When you're stressed out or reminded of something painful from your past, do you ever feel like you "zone out" or feel outside of your body?

Okay, all done with the questions! Thanks so much for answering those. Based on your responses, it looks like...

IF POTENTIALLY ELIGIBLE... you might be eligible to participate in the study. Would you like to schedule a time for you to come in, learn more about the study, and complete consent procedures to get started? If you would like to do that, the intake meeting can take between 20 minutes and an hour depending on whether you are ultimately eligible to participate. If you are eligible to participate, you will complete a packet of questionnaires at this first meeting. The questionnaires will ask you questions about things like how well you're sleeping, feelings of anxiety and depression, how you manage your emotions, and what sorts of stressful or traumatic experiences you might have had.

IF INTERESTED...Great! [schedule a time to meet and conclude phone call.]

IF NOT INTERESTED...No problem! I appreciate you having taken the time to talk and answer some questions. I am happy to offer you some information on other therapy group resources that may be interesting to you. Would you be interested in that? [Offer resources and conclude phone call.]

IF NOT ELIGIBLE...you're not eligible to participate in this study, but I appreciate you taking the time to talk, and I am happy to offer you some information on other resources that may be interesting to you. Would you be interested in that?

Great! [Offer resources if they want them, extend appreciation for their time, and conclude phone call.]

Script to inform individual that they are not eligible to participate:

"I really appreciate the time that you have taken to read through our website and chat on the phone with me answering questions, however, based on your responses it looks like you're not eligible to participate in this study. Still, there are many resources for mental health support in the community. If you are interested, I would be happy to provide you with some referrals and phone numbers of sites that may be a better fit for you. Are you interested in getting a few referral options?"

IF INTERESTED... Great! [Offer resources including access line and 24hr suicide hotline]

IF SOMEONE ASKS IN PARTICULAR WHY THEY ARE NOT ELIGIBLE... We are looking for a very particular profile of participant, and so for the purposes of the study you are not eligible to participate. [If appropriate, I will remind them that I can provide resources for other mental health options.]

Appendix C

Development and Evaluation of an Integrative Group Therapy Treatment for Survivors of Complex Trauma

Introduction:

You are being asked to be in a research study. This form is designed to tell you everything you need to think about before you decide to consent (agree) to be in the study or not to be in the study. **It is entirely your choice. If you decide to take part, you can change your mind later on and withdraw from the research study. You can skip any questions that you do not wish to answer.** You or the investigator may terminate your participation at any time.

Before making your decision:

- Please carefully read this form or have it read to you.
- Please ask questions about anything that is not clear.

Feel free to take your time thinking about whether you would like to participate. By agreeing to be in the study you will not give up any legal rights. You will be provided with a copy of the consent form for your records.

Purpose:

You are being asked to participate in a research study. The purpose of the study is to understand the impact that combining group psychotherapy with a trauma-sensitive yoga component has on your mental and physical symptoms over the course of eight (8) weeks.

Procedures:

If you decide to participate, you will be randomly assigned to one of two groups: 1) the treatment group, or 2) the waitlist treatment group. Both groups will receive the treatment, but the treatment group will receive it first and the waitlist group will receive it later. Each group will contain 6-8 participants and the overall study will contain approximately 24 individuals. For both groups, we will ask you to complete a 30-minute survey today asking about your emotions, including feelings of anxiety, depression, and stress; physical pain; sleep quality; and experiences of adverse events in childhood and adulthood. You will be asked to complete a similar survey in 9 to 12 weeks from today.

If you decide to participate, you will also be asked to participate in a psychotherapy group for 8 consecutive weeks, which will be held on starting the week of January 20th, 2020 if you are assigned to the treatment group and will be held beginning the first week of April if you are assigned to the waitlist group. Each group therapy session will last one hour and 45 minutes (one group per week for 8 weeks). The group session begins with 30 minutes of therapy, then transitions into 30 minutes of trauma-sensitive yoga, and concludes with 45 minutes of therapy. For those in the treatment group, you will be asked to complete a 1-minute survey at the start of group regarding your sleep quality. For those in the waitlist group, you will be asked to complete a 1-minute survey once per week at home, which you will then either take

a photo of or scan and send to the lead researcher. If you are in the waitlist group, you will complete the weekly survey for 8 consecutive weeks beginning the week of January 20th, 2020 and concluding the week of March 10th, 2020.

Once per week, regardless to which group you are assigned, you will be asked to measure your heart rate variability via a Smart phone app called Welltory. Measuring your heart rate variability requires you to download the free phone app and takes approximately 2-3 minutes to calculate per measurement.

Once you have been assigned to a group, you will be given a printed and emailed (optional) copy of your group schedule, along with the dates and times for the surveys to be completed.

Alternatives:

If you would prefer to not participate in the study, the lead researcher will be happy to provide you with community group therapy resources.

Risks:

We do not expect any risks related to filling out this survey. On occasion, a person may feel temporarily sad or upset as they recall a difficult situation when answering questions, in this case, questions about past adverse events. There is a risk of being triggered by content covered during the course of the psychotherapy group, however, you may leave the session at any point and are encouraged to disclose at your own pace and to the extent to which you feel comfortable.

The name assigned to your Welltory account will also be your randomly assigned ID number, and thus risk of a privacy breach is low. When sharing data through Welltory, the shared data file is identified by your assigned ID number only. If you are upset after the survey or group sessions and would like to discuss it, you may contact the lead investigator, Haley Meskunas at (914) 380-2052.

Benefits:

This research will help us understand how clinicians can better support individuals who have experienced adverse events and who continue to struggle with difficult symptoms. This can aid in developing services that are helpful to other individuals who have experienced adverse events. As a result of this study, you may benefit from the integrated group psychotherapy by seeing a reduction in your painful symptoms.

Compensation:

There is no cost for the group therapy. You will receive a \$50 Amazon gift card at the completion of the final survey as a token of appreciation for participating. If you choose to end your participation before the end of study, you will be given a \$25 Amazon gift card for partial completion.

Confidentiality:

The surveys will be completed in person. Your survey responses will be kept private (confidential) and will be stored as files on a secure BOX account.

Surveys completed during the course of the study will be completed on hard copies and the lead researcher will take a photo of these data, upload them onto the secure BOX server and the hard copies will be shredded to maintain confidentiality. You will be assigned a random ID number at the start of the study, and you will assign this ID number to all surveys completed. Data collected from the Welltory phone app will be shared with the lead researcher and stored on a secure BOX server.

Given that there is always a risk that a participant may break the group confidentiality, this risk will be discussed during the consent procedures and again during the first group session. Your confidentiality will also be maintained to the degree permitted by the technology used. Specifically, no guarantees can be made regarding the interception of data sent via the Internet by any third parties.

As a mandated reporter, there are certain limits to confidentiality. Confidentiality may be broken in the following circumstances:

1. A report would have to be made if we learn of any current or previous child abuse.
2. A report would have to be made if we suspect current suicidal or homicidal ideation.
3. If your information is subpoenaed by a court.
4. A report would have to be made if we suspect any current or previous elder or domestic adult abuse.

Right to Refuse or Withdraw:

You may decide to not participate or withdraw from the study at any time. You may change your mind about being in the study and remove yourself after the study has started. You can also skip questions on the surveys that you do not want to answer.

You may not participate in the therapy group if you decline to participate in the research portion of the study, however, you may be provided with community referrals for group therapy.

Other Relevant Information:

In addition to being the lead researcher, the therapy portion of the group will be led by Haley Meskunas, a masters-level clinician in the process of working towards her doctoral degree in clinical psychology. She has experience working with survivors of trauma and other mental health issues. She has focused both her academic and clinical trajectories on the impacts of trauma. She has worked for several years at community mental health agencies in Goleta and Santa Barbara. She has experience conducting group therapy as well as individual therapy, and she has training in skills to help individuals manage intense emotional reactions. For the duration of this study, Haley will be supervised by Dr. Steve Smith, a licensed clinical psychologist and professor at the University of California, Santa Barbara. Dr. Smith can be reached at ssmith13@ucsb.edu.

Appendix D

Demographics Questionnaire

~To be asked aloud by the lead researcher to the participant~

1. Name
2. Age
3. Gender
4. Highest level of education
5. Have you previously received any type of mental health services (psychotherapy, psychiatric services, etc.)?
6. Are you currently receiving any type of mental health services?
7. Are you currently taking any prescription medication? If yes, what are you currently taking?
8. How often would you say that you drink alcohol?
9. Are you currently in a romantic relationship? If yes, for how long, and how would you characterize your relationship?
10. Are you currently employed? If yes, do you enjoy your work?
11. Do you currently have any thoughts about wanting to harm or kill yourself?
IF YES: [Follow up with risk assessment on frequency, content of thoughts, intent, means, and plan.]
12. Do you consider yourself to be spiritual or religious?
13. What do you consider to be some of your strengths?

****If participant endorses active suicidal behaviors or ideation, the lead researcher will offer the participant resources, encourage them to seek further support and intervention, and will conclude their participation in the study.

Appendix E
Baseline Survey

Generalized Anxiety Disorder 7-item (GAD-7) scale

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all sure	Several days	Over half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it's hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Patient Health Questionnaire (PHQ-9)

	Not at all	Several days	More than half the days	Nearly every day
1. Over the <i>last 2 weeks</i> , how often have you been bothered by any of the following problems?				
a. Little interest or pleasure in doing things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Feeling down, depressed, or hopeless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Trouble falling/staying asleep, sleeping too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Feeling tired or having little energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Poor appetite or overeating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Feeling bad about yourself or that you are a failure or have let yourself or your family down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Trouble concentrating on things, such as reading the newspaper or watching television.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Moving or speaking so slowly that other people could have noticed. Or the opposite; being so fidgety or restless that you have been moving around a lot more than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Thoughts that you would be better off dead or of hurting yourself in some way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

LEC-5

Listed below are a number of difficult or stressful things that sometimes happen to people. For each event check one or more of the boxes to the right to indicate that: (a) it happened to you personally; (b) you witnessed it happen to someone else; (c) you learned about it happening to a close family member or close friend; (d) you were exposed to it as part of your job (for example, paramedic, police, military, or other first responder); (e) you're not sure if it fits; or (f) it doesn't apply to you.

Be sure to consider your entire life (growing up as well as adulthood) as you go through the list of events.

<i>Event</i>	<i>Happened to me</i>	<i>Witnessed it</i>	<i>Learned about it</i>	<i>Part of my job</i>	<i>Not Sure</i>	<i>Doesn't Apply</i>
1. Natural disaster (for example, flood, hurricane, tornado, earthquake)						
2. Fire or explosion						
3. Transportation accident (for example, car accident, boat accident, train wreck, plane crash)						
4. Serious accident at work, home, or during recreational activity						
5. Exposure to toxic substance (for example, dangerous chemicals, radiation)						
6. Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)						
7. Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)						
8. Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)						
9. Other unwanted or uncomfortable sexual experience						
10. Combat or exposure to a war-zone (in the military or as a civilian)						
11. Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)						
12. Life-threatening illness or injury						
13. Severe human suffering						
14. Sudden violent death (for example, homicide, suicide)						
15. Sudden accidental death						
16. Serious injury, harm, or death you caused to someone else						
17. Any other very stressful event or experience						

Please identify the experience that troubles you most and answer the questions in relation to this experience.
Brief description of experience:

X

Please read each item carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

	Not at all	A little bit	Moderately	Quite a bit	Extremely
Having upsetting dreams that replay part of the experience or are clearly related to the experience?	0	1	2	3	4
Having powerful images or memories that sometimes come into your mind in which you feel the experience is happening again in the here and now?	0	1	2	3	4
Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
Avoiding internal reminders of the experience (for example, thoughts, feelings, or physical sensations)?	0	1	2	3	4
Avoiding external reminders of the experience (for example, people, places, conversations, objects, activities, or situations)?	0	1	2	3	4
Being "super-alert," watchful, or on guard?	0	1	2	3	4
Feeling jumpy or easily startled?	0	1	2	3	4

Below are problems or symptoms that people who have had stressful or traumatic events sometimes experience. The questions refer to ways you *typically* feel, ways you *typically* think about yourself and ways you *typically* relate to others. Answer the following thinking about how true each statement is of you.

How true is this of you?...

	Not at all	A little bit	Moderately	Quite a bit	Extremely
I react intensely to things that don't seem to affect other people so much.	0	1	2	3	4
When I am upset, it takes me a long time to calm down.	0	1	2	3	4
My feelings tend to be easily hurt.	0	1	2	3	4
I experience episodes of uncontrollable anger.	0	1	2	3	4

I do things that people have told me are dangerous or reckless (for example, driving very fast).	0	1	2	3	4
I feel numb or emotionally shut down.	0	1	2	3	4
I am the kind of person who has difficulty experiencing feelings of pleasure or joy.	0	1	2	3	4
When I am under stress or confronted with reminders of my trauma, I often feel that the world is distant or that the world seems different (for example, time slows down, things look different).	0	1	2	3	4
When I am under stress or confronted with reminders of my trauma, I often feel outside of my body or feel that there is something strange about my body.	0	1	2	3	4
I have difficulty knowing what I feel and describing my feelings.	0	1	2	3	4
I feel like a failure.	0	1	2	3	4
I feel worthless.	0	1	2	3	4
I often feel ashamed of myself whether it makes sense or not.	0	1	2	3	4
I feel guilty about things I have done or failed to do.	0	1	2	3	4
I feel distant or cut off from people.	0	1	2	3	4
I find it hard to stay emotionally close to people.	0	1	2	3	4
I avoid relationships because they end up being too difficult or painful.	0	1	2	3	4

Pain Intensity – Scale

Please respond to each item by marking one box per row.

In the past 7 days...		Had no pain	Mild	Moderate	Severe	Very severe
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PAINQU8	How intense was your pain at its worst?....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PAINQU8	How intense was your average pain?.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
		No pain	Mild	Moderate	Severe	Very severe
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PAINQU21	What is your level of pain right now?.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Sleep Disturbance – Short Form 8a

Please respond to each question or statement by marking one box per row.

In the past 7 days...		Very poor	Poor	Fair	Good	Very good
Sleep109	My sleep quality was	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
In the past 7 days...		Not at all	A little bit	Somewhat	Quite a bit	Very much
Sleep116	My sleep was refreshing	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
Sleep20	I had a problem with my sleep	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sleep44	I had difficulty falling asleep	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sleep108	My sleep was restless	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sleep72	I tried hard to get to sleep	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sleep67	I worried about not being able to fall asleep	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sleep115	I was satisfied with my sleep	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1

Appendix F

Conclusion Survey

The Group Questionnaire

The following questions ask about your personal experience in your therapy group.

I felt that I could trust the group leader during today's session.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The group leader and I respect each other.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
I feel the group leader cares about me even when I do things that they do not approve of.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The group leader was friendly and warm towards me.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The group leader and I agree about the things I will need to do in therapy.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The group leader and I agree on what is important to work on.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The group leader and I have established a good understanding of the kind of changes that would be good for me.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The group leader and I are working together toward mutually agreed upon goals.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
Sometimes the group leader did not seem to be completely genuine.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The group leader did not always seem to care about me.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The group leader did not always understand the way I felt inside.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
I felt that I could trust the other group members during today's session.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The other group members and I respect each other.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
I feel the other group members care about me even when I do things that they do not approve of.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true

The other group members were friendly and warm towards me.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The other group members and I agree about the things I will need to do in therapy.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The other group members and I agree on what is important to work on.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The other group members and I have established a good understanding of the kind of changes that would be good for me.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The other group members and I are working together toward mutually agreed upon goals.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
Sometimes the other group members did not seem to be completely genuine.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The other group members did not always seem to care about me.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The other group members did not always understand the way I felt inside.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
There was friction and anger between the members.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The members were distant and withdrawn from each other.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
There was tension and anxiety between the members.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The members liked and cared about each other.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The members felt what was happening was important and there was a sense of participation.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
We cooperate and work together in group.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
Even though we have differences, our group feels secure to me.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true
The group members accept one another.	Not at all true	A little true	Slightly true	Somewhat true	Moderately true	Considerably true	Very true

Generalized Anxiety Disorder 7-item (GAD-7) scale

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all sure	Several days	Over half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it's hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Patient Health Questionnaire (PHQ-9)

	Not at all	Several days	More than half the days	Nearly every day
1. Over the <i>last 2 weeks</i> , how often have you been bothered by any of the following problems?				
a. Little interest or pleasure in doing things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Feeling down, depressed, or hopeless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Trouble falling/staying asleep, sleeping too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Feeling tired or having little energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Poor appetite or overeating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Feeling bad about yourself or that you are a failure or have let yourself or your family down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Trouble concentrating on things, such as reading the newspaper or watching television.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Moving or speaking so slowly that other people could have noticed. Or the opposite; being so fidgety or restless that you have been moving around a lot more than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Thoughts that you would be better off dead or of hurting yourself in some way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please identify the experience that troubles you most and answer the questions in relation to this experience.
 Brief description of experience:

✕

Please read each item carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

	Not at all	A little bit	Moderately	Quite a bit	Extremely
Having upsetting dreams that replay part of the experience or are clearly related to the experience?	0	1	2	3	4
Having powerful images or memories that sometimes come into your mind in which you feel the experience is happening again in the here and now?	0	1	2	3	4
Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
Avoiding internal reminders of the experience (for example, thoughts, feelings, or physical sensations)?	0	1	2	3	4
Avoiding external reminders of the experience (for example, people, places, conversations, objects, activities, or situations)?	0	1	2	3	4
Being "super-alert," watchful, or on guard?	0	1	2	3	4
Feeling jumpy or easily startled?	0	1	2	3	4

Below are problems or symptoms that people who have had stressful or traumatic events sometimes experience. The questions refer to ways you *typically* feel, ways you *typically* think about yourself and ways you *typically* relate to others. Answer the following thinking about how true each statement is of you.

How true is this of you?...

	Not at all	A little bit	Moderately	Quite a bit	Extremely
I react intensely to things that don't seem to affect other people so much.	0	1	2	3	4
When I am upset, it takes me a long time to calm down.	0	1	2	3	4
My feelings tend to be easily hurt.	0	1	2	3	4
I experience episodes of uncontrollable anger.	0	1	2	3	4

I do things that people have told me are dangerous or reckless (for example, driving very fast).	0	1	2	3	4
I feel numb or emotionally shut down.	0	1	2	3	4
I am the kind of person who has difficulty experiencing feelings of pleasure or joy.	0	1	2	3	4
When I am under stress or confronted with reminders of my trauma, I often feel that the world is distant or that the world seems different (for example, time slows down, things look different).	0	1	2	3	4
When I am under stress or confronted with reminders of my trauma, I often feel outside of my body or feel that there is something strange about my body.	0	1	2	3	4
I have difficulty knowing what I feel and describing my feelings.	0	1	2	3	4
I feel like a failure.	0	1	2	3	4
I feel worthless.	0	1	2	3	4
I often feel ashamed of myself whether it makes sense or not.	0	1	2	3	4
I feel guilty about things I have done or failed to do.	0	1	2	3	4
I feel distant or cut off from people.	0	1	2	3	4
I find it hard to stay emotionally close to people.	0	1	2	3	4
I avoid relationships because they end up being too difficult or painful.	0	1	2	3	4

Pain Intensity – Scale

Please respond to each item by marking one box per row.

In the past 7 days...		Had no pain	Mild	Moderate	Severe	Very severe
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PAINQU6	How intense was your pain at its worst?....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
PAINQU8	How intense was your average pain?.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
		No pain	Mild	Moderate	Severe	Very severe
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PAINQU21	What is your level of pain right now?.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Sleep Disturbance – Short Form 8a

Please respond to each question or statement by marking one box per row.

In the past 7 days...		Very poor	Poor	Fair	Good	Very good
Sleep109	My sleep quality was	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
In the past 7 days...		Not at all	A little bit	Somewhat	Quite a bit	Very much
Sleep116	My sleep was refreshing	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
Sleep20	I had a problem with my sleep	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sleep44	I had difficulty falling asleep	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sleep108	My sleep was restless	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sleep72	I tried hard to get to sleep.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sleep67	I worried about not being able to fall asleep.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Sleep115	I was satisfied with my sleep.....	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1

What race or ethnicity do you identify with? You may circle more than one option.

- American Indian or Alaska Native
- Black or of African descent
- Native Hawaiian or Pacific Islander
- White or of European descent
- Asian or of Asian descent
- Latinx or Hispanic
- Not listed above or prefer to write in –
please write in: _____

