EFFECTIVENESS OF THE TRAUMA PRACTICE APPROACH FOR ADULTS IN TRAUMA TREATMENT

CASSANDRA WYERS

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

GRADUATE PROGRAM IN CLINICAL DEVELOPMENTAL PSYCHOLOGY

YORK UNIVERSITY

TORONTO, ONTARIO

July 2021

Abstract

This study examined the therapeutic outcomes of a tri-phasic approach to trauma therapy, Trauma Practice (TP), in a community setting. TP creates a technique toolbox for clinicians, combining empirically supported cognitive behavioural therapy (CBT)-based techniques to be used throughout the different phases of therapy (i.e., safety and stabilization, working through trauma, and reconnection). TP's theoretical framework utilizes reciprocal inhibition and cognitive restructuring techniques to address common areas of trauma impairment, including the body, thoughts, behaviour, and emotion/relationships. Clinicians for this study were recruited from the community. Clinical training in TP was provided through an online training model as well as in-person didactics. Model fidelity was ensured through regular supervision meetings. Participants were recruited through their clinicians and were asked to fill out questionnaires at four time points throughout the course of therapy, and again six-months after therapy termination. History of traumatic event exposure was also captured during baseline. Results of this study were the first to provide empirical support of the effectiveness of TP. Over the course of the intervention, significant decreases in PTSD symptoms, trauma-symptom distress, and workplace impairment were seen. These gains were demonstrated to be maintained at follow-up; however, follow-up sample sizes were small. In addition, high levels of therapeutic alliance were maintained throughout the course of treatment. Results support the clinical utility of the tri-phasic model and provide evidence of effective trauma therapy. Clinical implications are discussed.

Dedication

To my partner – Julian, whom without, I would not be writing this thesis.

Thank you for supporting my dreams and believing in me more than I do myself.

Acknowledgements

First, I would like to thank the participants involved in this study, who stepped outside of their comfort zone and met vulnerability with open arms. I am indebted to your willing to share your journey. Thank you.

To my supervisor, Dr. Robert Muller. I could not have imagined my graduate school journey in another lab. Thank you for your guidance, generosity, and patience. I value your feedback and am inspired by your ability to create a safe environment that fosters growth. You have instilled a sense of confidence and passion for research in me that I would not have otherwise known. I am incredible grateful to have you as a supervisor and mentor and I look forward to continuing our work together.

Dr. Anna Baranowsky: being trusted to represent your work and passion has been an honour. Thank you for inviting me into the team with such warmth. Your support throughout this project has made all the difference. I hope you feel as fulfilled by this project as I do. I also want to extend this thank you the staff at Trauma Practice for a Healthy Community, Bear Psychology, and the Traumatology institute. Tamara, Sandy, Usha, thank you for handling the administrative pieces and keeping me up to date with clinic and client ongoings. You are the backbone of our TP community and without you, we would crumble.

To all the clinicians involved in this study, thank you for your dedication and compassion. I cannot express the gratitude I have towards the generosity of your time, your passion for trauma work, for your quick responses to my incessant emails. Without you, this project would not be possible.

I would also like to thank my committee members for their time and investment in this thesis. Dr. Rob Cribbie, thank you for your statistical expertise and consultation. I have learned

so much through our meetings and appreciate your ability to make complex stats understandable. Dr. Yvonne Bohr, thank you for your ongoing feedback and support around various thesis drafts. Your expertise has been invaluable.

To the trauma and attachment lab, I cannot thank you enough. Sara Rependa, Kristina Corderio, and Laura Goldstein, this project would not exist without you. Thank you for your engagement in TP before I joined the lab, which set the foundation for this thesis, and your continual support. Your willingness to answer my questions has made for a seamless transition into graduate school. Thank you all for your contributions to the design of this project from the time of its conceptualization to now. To our RAs, both current and past, who were involved in data collection, data entry, and interviews, thank you. A special shout out to Lucas Norton and Chelsea Coyle, as you have been instrumental in pushing the project forward, and your insights are incredible.

I would also like to thank my cohort family. Alyssia, Christina, Flora, Sam, Ilana, Leila and Melissa, your friendship means the world. I feel so lucky to be going through grad school with each of you. Your insights and perspectives, while each unique, create such a holistic and positive learning environment. I am grateful for all your support.

Though not actively involved in this project, I would also like to thank Dr. Caryn Moulton and Dr. Daliah Chapnik. Watching and learning from you set the foundation for my success in graduate school. I owe my understanding of and passion for psychology to you both. Thank you for always having my back, reading my many statements of intent, and believing in me. I am proud to work along side of you.

Lastly, a shoutout to my friends and family. Though you might not all understand my strange desire to be in school for seven more years, you all encouraged and supported my

journey. To my parents, thank you for indulging my excitement of graphs and results, even if I was explaining them to you right before bed. I hope I make you proud. To Jeff and Morag Harmsen, thank you for your genuine curiosity about my research. I could never have imagined more supportive in-laws. Julian, while this is dedicated to you, I also want to thank and acknowledge you. Thank you for all the late-night draft reads, reminders to drink water when I haven't moved from the desk in hours, and your encouraging words. You are my rock, and I could not have wished for a better partner.

This thesis would not be possible without the collaboration from many truly amazing researchers, clinicians, and supervisors. I am honoured to be part of this project and am constantly inspired by the work ethic and generosity of those involved.

Table of Contents

Abstract ii
Dedication iii
Acknowledgements iv
Table of Contents vii
List of Tables ix
List of Figures x
Introduction 1
Physiological Processing of Trauma 1
The Mind-Body Connection Following Trauma 2
Tri-phasic Trauma Therapy 3
Cognitive Behavioural Therapy 4
The Trauma Practice Approach 5
The Current Study 8
Methods 10
Participants 11
Clinicians 11
Client Participants 13
Procedure 17
Measures 18
Trauma Exposure 18
Symptomology 19
Therapeutic Alliance 20
Attrition rates 22
Analyses 22
Results 24
Preliminary Analyses 24
Working Alliance (WAI-C-SR) 25
Presence of PTSD Symptoms (PCL-5) 27
Overall (T0-T4) Effect 27
Phase-based Effects 27
Trauma Symptom Distress (TSC-40) 31

Overall (T0-T4) Effects 31
Phase-based Effects 31
Workplace Impairment (WSAS) 37
Overall (T0-T4) Effect 37
Phase-based Effects 37
Discussion 41
Generalizability of Trauma Practice 43
TP Phase-based Implications of this study 44
Limitations 45
Future Directions 47
Conclusion 48
References 49

List of Tables

Table 1. TP by Phases and Areas of Focus ……..…. 6

Table 2. Clinician Breakdown ……. 12

Table 3. Participant Demographics …….. 16

Table 4. Internal Consistency (a) of each Measure Across Each Time Point ……..…… 21

Table 5. PCL-5 Model Values ……. 29

Table 6. PCL-5 Reliable Change Scores Across Time Points for Each Participant ……... 30

Table 7. TSC-40 Model Values ……... 35

Table 8. TSC-40 Reliable Change Scores Across Time Points ……... 36

Table 9. WSAS Model Values ……. 39

Table 10. WSAS Reliable Change Scores Across Time Points ……40

List of Figures

Figure 1. Specific Traumatic Events as Measured by the LEC-5 ……..…….... 14

Figure 2. Number of Traumatic Events Reported …… 15

Figure 3. General Research Procedure with Attrition Rates …… 23

Figure 4. Participant Reports on the WAI ……... 26

Figure 5. Reduction in PTSD Symptoms (PCL-5) Across TP ….……..….. 28

Figure 6. Reduction in Trauma Symptom Distress (TSC-40) Across TP …….. 33

Figure 7. Reduction in Trauma Symptom Distress (TSC-40) Subscales Across TP..…….…. 34

Figure 8. Reduction in Workplace Impairment (WSAS) Across TP …….. 38

Introduction

Trauma is described as an individual's response to an event, series of events, or set of circumstances, that is experienced as physically or emotionally harmful or life threatening (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). Between 39% to 89% of Canadian men and women experience a traumatic event (Ameringen et al., 2008), and roughly 8% of those individuals develop posttraumatic stress disorder (PTSD), which has debilitating effects on many areas of a person's life (Canadian Mental Health Association, 2013). Trauma related symptoms are often chronic, with impairments in physical, cognitive, behavioural, psychological, and social domains of function. This study aimed to investigate the effectiveness of a therapeutic approach, Trauma Practice, at reducing the impact of these impairments in a community sample.

Physiological Processing of Trauma

Exposure to a traumatic event activates a neurological pathway which relays sensory information to the amygdala. This initiates an automatic fear response, known as the fight-flight-freeze response (e.g., Bremner, 2006; Kozlowska et al., 2015; Ressler, 2010). The sensory information and fear response are then relayed to the hippocampus to be stored as a memory and labeled as important for survival. The link between the sensory memory and the automatic fear response remains salient, leaving a person vulnerable to future re-enactments of this survival response when exposed to similar sensory information (Koenigs & Grafman, 2009; Danese & Baldwin, 2017). The more an individual is exposed to cues related to the event (e.g., sounds, sights, smells, etc.), the stronger and more automatic the fear response becomes (Hebb, 1949).

In addition to activating the amygdala, exposure to trauma disrupts the typical information processing among a second pathway involving the pre-frontal cortex (PFC). This

pathway is responsible for regulating the response to a stressful situation. When exposed to a new, non-traumatic event, this pathway allows a person to determine that they are not in danger and, given the PFC's connection with the amygdala, can override the automatic fight-flight-freeze response (Russo & Nestler, 2013; van der Kolk, 1994). It also sends this contextual information to the hippocampus for future response memory. When exposed to a traumatic event; however, stress hormones are released which stop the activation of this second pathway (Sherin & Nemeroff, 2011; van der Kolk, 1994). This inhibition of the secondary pathway prevents further processing of the event, which leads to fragmented memories of the event (Arnsten, 2009). It also stops the regulation of the amygdala, causing an individual to be more likely to engage in survival mode when similar sensory information is presented, even if they are not in danger (Bergmann, 2008; Wei et al., 2017). For a more in-depth understanding of the neurobiology of stress and trauma, see Godoy et al., 2018.

The Mind-Body Connection Following Trauma

The salient link between the fight-flight-freeze response and external cues has long-lasting impacts on the individual. Cognitively, a trauma survivor may struggle with memory problems, low tolerance of uncertainty, difficulty finishing tasks, and sleep disturbances because of the interruption of event processing during trauma exposure (Bryant et al., 2011; Short, 2016). The hypersensitive amygdala and lack of inhibition from the secondary pathway also affects a person behaviourally. Trauma survivors are often described as being startled easily, being easily agitated and restless, or having feelings of numbness when overwhelmed (SAMHSA, 2014). This can cause emotional difficulties including an inability to self-soothe, fluctuating moods, intense and overwhelming feelings, suicidality and self-harm, low frustration tolerance and chronic anxiety (Chu & DePrince, 2006; DiMauro et al., 2016; McFarlane, 2010).

A person's ability to problem-solve and assess whether they are in imminent risk of physical pain is also disrupted (Etkin et al., 2006); therefore, a person develops a pattern of pre-emptive strategies to protect themselves from re-enactments of the fight-flight-freeze response (Proges, 2011). Many individuals actively avoid any situation that may remind them of the traumatic event, which can include people, places, smells, or objects (American Psychological Association [APA], 2013). This may interfere with their social functioning and lead to social difficulties such as poor interpersonal boundaries, difficulty with authority, impulsivity, inability to read social cues, and social withdrawal (Cloitre et al., 2016; Herman, 1997). Given the high occurrence of traumatic experiences in the Canadian population and the severity of impairments associated with trauma, understanding effective trauma specific interventions is essential.

Tri-phasic Trauma Therapy

Tri-phasic trauma therapy, as popularized by Judith Herman, frames trauma recovery into three distinct phases with unique phase-dependent goals (Herman, 1992). The first stage, Safety and Stabilization, is focused on increased understanding of the impact of trauma and self-regulation skills. This is done by first diagnosing the source of the trauma, then identifying and managing trauma-related hyperarousal and finally, learning to recognize and seek safe environments (Herman, 1992). The second stage, Remembrance and Mourning, addresses the emotional, cognitive, and psychological impacts of trauma through the process of retelling and mourning the trauma. The last phase, Reconnection, is focused on redefining oneself in the context of meaningful relationships in ordinary life (Herman 1992). This phase focuses heavily on repairing healthy and helpful relationships affected by trauma.

Herman's tri-phasic trauma therapy was adopted by the International Society for Trauma Stress Studies (ISTSS) as the standard of care for clinicians working PTSD in 2000 and has continued to be endorsed as an efficacious approach to trauma therapy (Cloitre et al., 2011).

Cognitive Behavioural Therapy

Trauma-focused Cognitive Behavioural Therapy (TF-CBT) is based on cognitive and behavioural models and argues that individuals with trauma hold excessively negative cognitions towards the traumatic event. It further suggests that these individuals engage in problematic behavioural and cognitive strategies that prevent them from changing these appraisals (Ehlers & Clark, 2000). The goal of TF-CBT is then to modify these appraisals and remove the problematic behavioural and cognitive strategies (Watkins et al., 2018). One of the most effective components of TF-CBT is exposure therapy, which helps an individual confront their negative appraisals through a series of procedures (e.g., imaging a fear-evoking situation) in a safe and low-risk environment (Lewis et al., 2020). TF-CBT adopts the phasic approach, breaking therapy into the phases of stabilization, trauma narration and processing, and integration and consolidation (Cohen et al., 2012).

TF-CBT is the most widely researched approach to addressing trauma and subsequent PTSD. TF-CBT has been shown to be more effective that a waitlist, supportive therapy, and self-help support (Cahill et al., 2009). A recent meta-analysis reported that the vast number of randomized-controlled trials investigating TF-CBT consistently demonstrate the robust efficacy of manualized trauma focused therapies with particularly strong effects of prolonged exposure and cognitive processing (Lewis et al., 2020). These findings support the American Psychological Association (APA, 2017) and the Veterans Health Administration and Department

of Defense (VA/DoD, 2017) practical guidelines for treating PTSD. As such, TF-CBT is considered a well-supported intervention for PTSD.

The Trauma Practice Approach

Like TF-CBT, Trauma Practice (TP) is a tri-phasic manualized approach to trauma therapy that recognizes the importance of relaxation, exposure, and cognitive reprocessing during recovery. Drawing from empirical evidence supporting cognitive based strategies, as well as emotion-focused and somatic therapies, TP creates a flexible technique toolbox for clinicians (Baranowsky & Gentry, 2015). TP identifies strategies that target various areas of functioning that are impacted by trauma (i.e., physical, cognitive, behavioural, psychological, and social domains) and categorizes these strategies into each therapeutic phase. Phase-I strategies typically focus on relaxation and limited exposure, whereas reciprocal inhibition and cognitive reprocessing tend to be more appropriate for phase-II and -III work. See Table 1 for a break down of TP with examples of specific techniques used. While most research has focused on TF-CBT as an efficient approach to trauma therapy, this study aimed to present the first empirical support for TP.

Phase-I of TP, consistent with Herman's model, focuses on safety and symptom stabilization. TP operationalizes safety and stabilization into five main goals. The first, resolution of impending environmental and physical danger, is based on the knowledge that processing traumatic experiences and memories cannot happen in active danger. The second goal, distinguishing between "am safe vs. feel safe," addresses the cognitive distortion that one is always steps away from danger. This goal helps a person identify external, environmental danger (which should be resolved in goal one) and internal danger, defined as fear from intrusive trauma symptoms. The third goal requires the therapists to teach self-soothe/self-rescue skills. With the

Table 1.
TP by Phases and Areas of Focus

		Phases		
		Phase-I: Safety and Stabilization	Phase-II: Working through Trauma	Phase-III: Reconnection
Areas of Focus	Body	• Creating a non-anxious Presence (Schultz, 2004; R-RE-CR) • Progressive Relaxation (Ehrenreich & McQuaide, 2001; R) • 5-4-3-2-1 Sensory Grounding and Containment (R)	• Biofeedback (R-RE-CR) • Titration: Breaking and Accelerating (RE)	• Centering (Hanh, 1990; CR)
	Cognition	• Safe-Place Visualization (R) • Positive Self-talk and thought replacement (CR) • Buddha's Trick (Baer, 2001; R-CR)	• Downward Arrow Technique (Burns, 1980; RE-CR) • Cognitive continuum (Baer, 2001; CR) • Cognitive Processing Therapy (RE-CR)	• Exploring your cognitive map (Schultz, 2005; CR) • Victim Mythology (Tinnin, 1994; CR) • Self-compassion reflection (Neff, 2011; RE-CR)
	Behaviour	• Identifying rituals (R-CR) • Safety Net Plan (R-CR) • Contract for self-care (C-CR)	• Behaviour Change Rehearsal (Ginder & Bandler (1981; RE-CR) • Stress Inoculation Training (Meichenbaum, 1994; RE-CR)	• Provide Self-help and self-development resources (CR) • Picture Positive (RE-C-CR)
	Emotion/ Relation	• Transitional Object (R) • Identifying support systems (R-CR) • Positive Home Box (R-RE-CR)	• Learning to be sad (Schultz, 2005; CR) • Assertiveness training (CR) • Thematic Map & Release (CR-RE-R)	• Memorials (CR) • Connection with others (RE-CR)

This table provides examples of CBT techniques that address specific target trauma related impairment areas that are suggested during each phase of TP. R = relaxation, RE = relaxation and exposure, CR = cognitive restructuring. For examples of worksheets associated with each technique, see Baranowsky & Gentry, 2015.

teaching of these skills, the client begins to rely on themselves for support when triggered. The fourth goal, to practice self-rescue, is met when a person can self-rescue from a flashback when retelling their trauma narrative. The last step for safety and stabilization is to provide a positive prognosis and contract with the client to address traumatic material.

Phase-II begins once goals of phase-I are met, and a client can rely on themselves for regulation. There is a heavy emphasis on the combination of relaxation, exposure, and cognitive reprocessing. This combination is understood as facilitating the natural process of forming new pathways; pathways that rewrite the anxious response to a traumatic event into a relaxed response. The relaxation skills from phase-I are key because they allow a client to explore their trauma memories without triggering the survival pathways that shut down processing and may potentially result in re-traumatization.

Phase-III occurs as the influence of emotional, behavioural, and social impairments are alleviated throughout phase-II. The client understands the impact that trauma has had and works towards re-engaging themselves in their daily lives. Termination of trauma therapy occurs when an individual has a well-developed ability to rely on themselves for safety and security, has resolved the distress associated with their trauma, and have re-engaged in their community.

Though similar, TF-CBT and TP differ in several ways. First, TP takes a more eclectic approach to strategies and includes non-CBT techniques including the use of Eye Movement Desensitization and Reprocessing (EMDR), emotion-focused strategies such as learning to be sad, and somatic exercise that disrupt the trauma-based physical responses, such as thematic map and release (see Baranowsky & Gentry, 2015 for a comprehensive explanation of these techniques). The inclusion of these strategies allows clinicians using TP to engage their client in more emotion processing, as participants engaged in CBT have been shown to be more detached

from their emotional experience than in other investigated psychotherapies (Watson & Bedard, 2006). This can be problematic as unaddressed emotionality of trauma may lead to symptom relapse post-therapy (Baranowsky & Gentry, 2015). TP also takes a more flexible approach to its manual. Rather than outlining session plans to be followed, the TP toolbox allows the clinician to use their therapeutic relationship to identify which techniques will be most helpful in each case.

The Current Study

While most research to date has focused on the efficacy of TF-CBT, there have been no formal investigations of therapeutic gains in TP. Investigations of trauma therapy gains are important because they provide clinical direction for safe and consistent interventions (Cook et al., 2017). For example, the recommendation of exposure therapy as one of the primary interventions in the APA and VA/DoD PTSD practical guidelines stems from years of evidence that, within the context of a safe therapeutic relationship, exposure therapy successfully facilitates the emotional processing necessary for the reduction of trauma-related emotional distress (Rothbaum & Schwartz, 2002). The more an intervention is investigated, the better direction a guideline will provide, and the more confident a clinician will be when working with a trauma survivor. This confidence also directly impacts the client. Individuals can become easily discouraged when faced with a therapist who is apprehensive about moving onto the trauma specific work (Muller, 2018). When a therapist is confident in the treatment plan, a client is more likely to feel contained and engage in trauma-specific work and see trauma-specific gains. Without research, clinicians may engage in interventions that are not as effective or engage in the recommended intervention in a non-optimal way. This could lead to the unnecessary use of resources for both client and clinician. Thus, this study followed a single arm, longitudinal, repeated measures design to provide the first empirical support for TP. It was

hypothesized that after completing TP, an overall reduction in trauma symptoms and trauma-related impairments would be demonstrated and that these gains would be maintained six-months post-therapy.

In addition to providing empirical evidence in support of TP, this study aimed to address the lack of trauma treatment research that reflects the complexities of trauma exposure seen in the community. Most trauma therapy findings come from randomized controlled trials or academic settings (Konanur et al., 2015). These studies, known as efficacy studies, are considered ideal, as they have high internal validity (Hunsley, 2007). Though strong in internal validity, these findings are limited in generalizability, as treatment gains are demonstrated within homogenous samples with rigid inclusion criteria (Marchand et al., 2011). In comparison, the focus of effectiveness studies is on external validity (i.e., using community samples that reflect the more typical nature of the therapeutic environment as it occurs outside research/academic settings), while still maintaining as much internal validity as possible (Hunsley, 2007). Few trauma intervention effectiveness studies have been done (see Foa et al., 2005, Gillespie et al., 2002, Konanur et al., 2015). However, the results of these studies are encouraging and show effects similar to those seen in efficacy studies. The lack of effectiveness studies and underrepresentation of complexities of individuals affected by trauma is problematic, particularly when the development of practical guidelines is reliant on available research (Ehring, 2013; Hunsley, 2007). When the research available is not representative of treatment conducted in the community, the evidence-based guidelines may not be applicable to the diverse range of trauma presentations. To remedy this, the present study assessed the effectiveness of Trauma Practice carried out in various community-based settings, with a diverse range of clinicians and participants.

This study also examined the working alliance between therapist and participant throughout trauma treatment. The relationship between therapist and client has been demonstrated to influence therapeutic outcomes in a variety of treatment modalities, including trauma-informed cognitive-behavioural approaches (Ellis et al., 2018; Zorzella, et al., 2015; Zorzella et al., 2017). In the current study, we aimed to examine the development of the therapeutic relationship over TP and how the relationship moderates therapeutic outcomes at each therapeutic phase. Based on previous research, it was predicted that the stronger the therapeutic alliance, the greater the therapeutic outcomes. Given the relational vulnerability often seen in trauma survivors (Herman, 1997; Muller, 2009, 2010, 2018), it was further hypothesized that therapeutic alliance would gradually increase over the course of TP.

Last, this study aimed to examine the phasic nature of TP. The phases of TP allow for an increased level of flexibility and individualization of treatment plans when compared to manualized CBT programs, while still providing a clear framework from which to work. It was hypothesized that clinically elevated baseline levels of trauma symptoms, symptom distress, and workplace impairment would decrease over each phase of TP independently. In addition, we explored at which phases the symptom reductions were largest, and the extent of phase-specific treatment responses over the course of therapy.

Methods

Data for this study were collected from May 2016 to February 2021. Data were collected by the Trauma and Attachment Lab at York University and the Traumatology Institute in Toronto. Data collection is ongoing and will continue well into 2022. Ethics approval was obtained for the study from York University's Ethics Review Board.

Participants

Clinicians

This study included 12 clinicians working at various outpatient clinics. For study eligibility, clinicians were required to hold a minimum of an MA degree in counselling, complete the online TP training through the Traumatology Institute, accept trauma clients on a regular basis, and agree to use Trauma Practice during their sessions with research participants. Education levels of research clinicians varied. Clinicians were recruited through the snowball technique. The co-creator of TP, Dr. Anna Baranowsky (Baranowsky et al., 2005), invited clinicians from the community and professional circles (i.e., listservs or personal connections) to engage in the online TP training offered through the Traumatology Institute. The online training consisted of multiple pre-recorded training modules (equivalent to 14 hours of CEU credits) and a supplementary student manual. Each module contained quizzes to test understanding along with case examples and practical suggestions. Following the modules, a final quiz is given and a score of 80% is needed to obtain a completion certificate. Once training was complete, specific clinicians were asked to participate in the study based on their interest and dedication to TP. Community clinicians received free TP supervision as an incentive to participate in the research. Student clinicians were recruited through online flier advertisements made available to students in the Psychology graduate program at York University. Students had to have previous clinical experience (i.e., completed at least one clinical practicum) and received clinical hours that could be used towards their program requirements for participating in the study. See Table 2.

Trauma Practice adherence by clinicians was monitored and controlled through an educative approach, where clinicians had unlimited access to the online training materials, had the opportunity to participate in didactic training (i.e., clinical TP workshops), and participated in

Table 2.

Clinician Breakdown

	ID	Education Level	Participants Recruited	% of sample
Greater Toronto Area				
	1	Ph.D.	6	18.7%
	2	M.A.	2	6.25%
	3	M.A.	1	3.1%
	4	M.A.	2	6.25%
	5	M.A.	1	3.1%
	6	M.A.	2	6.25%
	7	Ph.D. Student	6	18.7%
	8	Ph.D. Student	3	9.4%
	9	Ph.D. Student	4	12.5%
	10	Ph.D. Student	1	3.1%
Ottawa				
	11	M.A.	2	6.25%
Halifax				
	12	M.A.	2	6.25%

monthly supervision meetings with one of the founders of the modality, as well as bi-weekly check-ins with the research team.

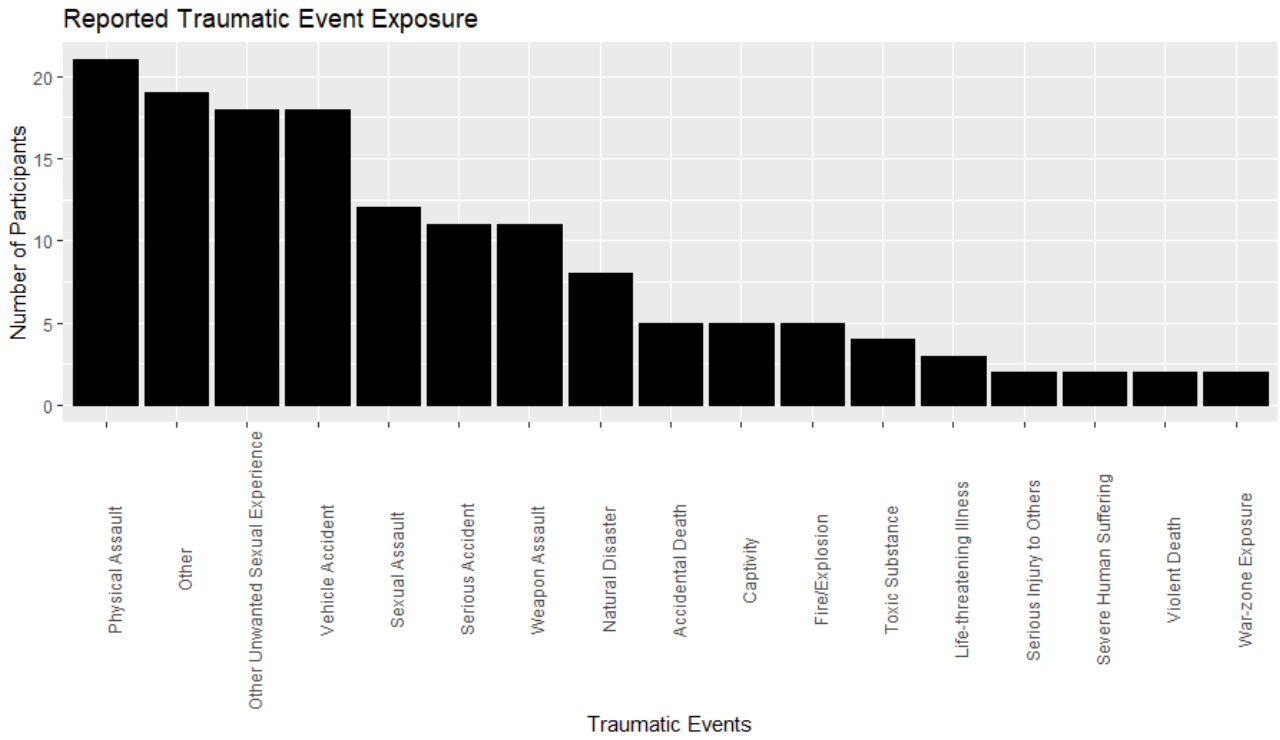
Client Participants

There were 32 client participants. Inclusion criteria required participants to be 18-years or older, conversant in English, and seeking therapy for trauma related symptoms. A diagnosis of PTSD was not required for this study; however, all participants reported a trauma history. See Figures 1 and 2 for visualizations of trauma exposure within the sample. Participants were excluded from the research if they were reporting active suicidality, had active substance abuse concerns, had recent changes to their medication that might account for symptom change, a diagnosed personality or developmental disorder, active psychosis, or if they had previously received therapy for that specific trauma.

Of the 32 participants engaged in the study, 66% identified as female, with a mean age of 36.7 years (SD = 12.4). A majority of the present sample was born in Canada (56%) and identified as Caucasian (53%), with an even distribution (3.1%) across other ethnicities including Black, First Nation, Hispanic, Middle Eastern, Pacific, South Asian and West Asian. Socio-economic Status was measured using combined household income and education level. The highest proportion of participants (31.25%) reported a combined household income of over $81,000 CAD, and nine individuals (28%) reported living below Canada's combined low-income line threshold ($42,101), indicating great income disparity between participants. Education levels of participants ranged from obtaining a high school diploma (9.4%), trade/technical/vocational school (6.3%), college/university (50%), and graduate school (15.6%). See Table 3 for full demographic information.

Figure 1.

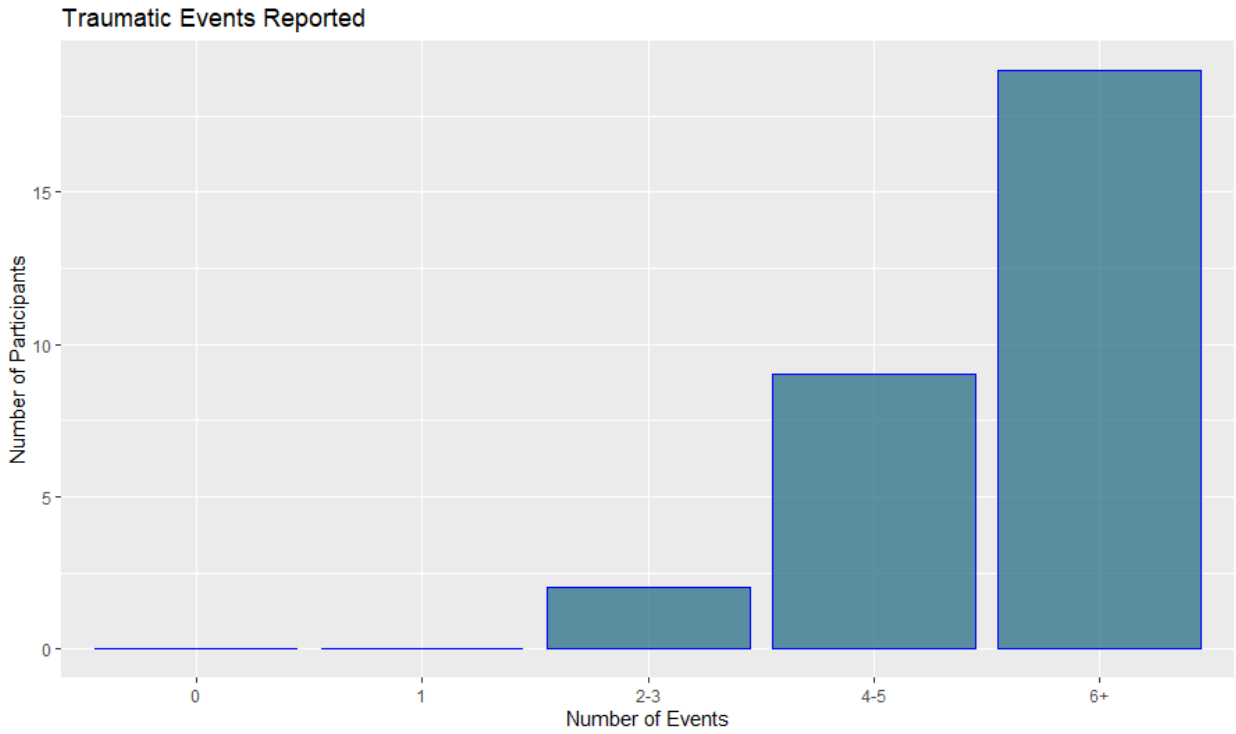
Specific Traumatic Events as Measured by the LEC-5.



This graph depicts the number of participants that endorsed being exposed to 16 common traumatic experiences (Blake et al. 1995). Participants could endorse exposure to multiple events; therefore, the frequency of all bars will be more than the number of unique participants. *Other* refers to events that were not listed, but that the participant felt were traumatic.

Figure 2.

Number of Traumatic Events Reported



This graph depicts the number of participants that endorsed one or multiple traumatic event exposures. The bars account for events that they had personally experienced or that they had witnessed. Two participants did not complete the LEC-5; therefore, this graph represents 30 of the 32 participants.

Table 3.

Participant Demographics

Demographic Data (N = 32)	%
Mean age in years (SD)	36.7 (12.4)
Gender	
Female	65.63
Male	34.38
Country of Origin	
Canada	56.25
Trinidad	6.25
Bermuda	3.13
Brazil	3.13
Columbia	3.13
Serbia	3.13
Syria	3.13
United Kingdom	3.13
Nonresponses	18.75
Ethnicity	
Caucasian	53.13
Other	6.25
Black	3.13
First Nation	3.13
Hispanic	3.13
Middle Eastern	3.13
Pacific	3.13
South Asian	3.13
West Asian	3.13
Nonresponses	18.75
Education Level	
High School	9.38
Trade/Technical/Vocational	6.25
College	50.00
Graduate School	15.63
Nonresponses	18.75
Household Income	
0 - 20,0000	12.5
21,000 - 40,000	15.6
41,000 - 60,000	9.3
61,000 - 80,000	3.1
81,000 +	31.3
Nonresponses	28.13
Marital Status	
Married / Common Law	25
Never Married	34.4
Separated / Divorced	18.8
Widowed	3.1
Nonresponses	18.75

Procedure

Data collection for this study occurred at five different points: baseline (within the first or second therapy session; T0), upon completion of phase-I, -II, and -III (T1, T2, T3, respectively) and a follow-up post-intervention (T4). In accordance with the flexibility of the tri-phasic model, there was no set number of sessions for each phase. On average, participants spent eight sessions in phase-I, eleven in phase-II, and five in phase-III, for a total of 27. These session numbers should be interpreted with caution; however, as they are based on a small subset of information. Though the follow-up was initially intended to be six-months post therapy, time frames for this follow-up ranged between six-months to 24-months, due to challenges in reaching some participants post-treatment. Two sets of follow-up data were collected at 6-months, one at 8-months, one at 12-months, one at 18-months, and one at 24-months. In addition to the use of quantitative measures for symptoms, symptom distress, and workplace impairment, qualitative interviews were also conducted as part of a larger study at two time points: at T2 and T4. The results of these interviews are reported elsewhere.

After completing TP training, clinicians were sent pre-made packages with all questionnaires for T0-T3 (with prepaid envelopes for returning the packages). Clinicians were then responsible for recruiting their own clients and collecting written informed consent and baseline data during their first or second therapy session. Given that study recruitment could occur during the first or second therapy session, working alliance was also measured at baseline. As participants completed each phase in therapy, the clinician provided the questionnaire package to be completed prior to their first session in the new phase. The questionnaires were to be completed by the participant independently in the waiting room prior to their session. Working alliance was always measured immediately after each session to obtain the most

accurate view of the therapeutic relationship. Once all questionnaires were completed, the clinician mailed the envelope to York University, where all data were imported into a password protected database. Follow up (T4) questionnaires were sent directly to the participant from the research team six-months post-intervention. In March 2020, data collection was transferred to a secure (and compliant with ethical guidelines) web-based database (REDCap), and interventions delivered via a secure videoconferencing platform because of the COVID-19 pandemic. For COVID-19 recruitment, participants were sent informed consent and baseline questionnaires via REDCap after expressing verbal consent to participate in the research. Subsequent questionnaires were sent electronically upon completion of each phase. Of the 32 participants, four were recruited during the COVID-19 pandemic. Similarly, six of the non-COVID recruited participants transitioned to online data collection and therapy. Of those six, two participants were in phase-I, three were in phase-II, and one was in phase III during the transition and thus completed partial questionnaires online. Four participants had completed the intervention prior to COVID-19 yet filled out their follow-up questionnaires through REDCap.

Measures

Trauma Exposure

Trauma exposure was assessed during T0 using a standardized questionnaire.

The Life Events Checklist for DSM-5 (LEC-5; Blake et al., 1995). The LEC-5 is a self-report measure designed to screen for potentially traumatic events in a respondent's lifetime. Participants are presented with 16 specific scenarios (e.g., Sudden, unexpected death of someone close to you) and asked to check one of the following options: 1) Happened to me; 2) Witnessed it; 3) Learned about it; 4) Not sure, and 5) Doesn’t apply. This scale is psychometrically sound,

with significant correlations between its measurement of psychological distress and PTSD symptoms (Gray et al., 2004).

Symptomology

In addition to lifetime exposure to traumatic events, several measures were used to assess for the presence of PTSD symptoms (PCL-5), the distress experienced because of trauma-exposure (TSC-40), and workplace impairment (WSAS) at all timepoints (T0-T4).

The PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2015). The PCL-5 was used to assess the presence of DSM-V PTSD symptoms at baseline (T0), after phase-I, -II, and -III (T1, T2, T3, respectively), and at six-months post-therapy. The PCL-5 was found to have strong internal consistency in the current sample across all study time points (a = 0.89-0.97). See table 4. Participants were presented with 20-items (e.g., In the past month, how much were you bothered by: "Repeated, disturbing, and unwanted memories of the stressful experience?") and asked to rate their answer on a 5-point Likert scale (0 = *not at all*, 4 = *extremely*). An overall score of 33 is presented as a cut-off point for clinical symptomology, such that a score over 33 was consistent with a preliminary diagnosis of PTSD. The clustering of the PCL-5 questions is also consistent with Criterion B (items 1-5), C (items 6-7), D (items 8-14), and E (items 15-20) of a DSM-5 PTSD diagnosis.

Trauma Symptom Checklist (TSC-40; Elliot & Briere, 1992). The TSC-40 was used to measure symptomatic distress in adults arising from childhood or adult traumatic experiences. Participants were presented with a 40-item self-report measure and asked to rate the frequency they experienced each trauma-related symptom (e.g., headaches) on a 4-point scale (0 = *never*, 3 = *often*). Higher scores indicated greater distress experienced from frequently experienced

symptoms. The TSC-40 demonstrated strong reliability within this study, with total score alphas ranging from 0.89-0.95 across all time points. See Table 4.

In addition to an overall score of symptom distress, the TSC-40's six subscales were used at all timepoints to assess distress associated with dissociation (6-items), anxiety (9-items), depression (9-items), sexual abuse trauma index (7-items), sleep disturbances (6-items), and sexual problems (8-items). Five of the presented symptoms were part of multiple subscales. Subscale reliability alphas differ between subscales. See Table 4.

The Work and Social Adjustment Scale (WSAS; Marks, 1986). The WSAS was used to measure perceived impairment to daily function resulting from a health problem. Participants were presented with five statements (e.g., Because of my mental health my ability to work is impaired) and asked to rate how true the statement is on a nine-point Likert scale (0 = *not at all*, 8 = *very severely*). The WSAS has been demonstrated to be an internally consistent measure in the current study (a = 0.75-0.91) and has previously been demonstrated to be sensitive to change and to severity of mental distress (Pedersen et al., 2017). See Table 4.

Therapeutic Alliance

Working Alliance Inventory-Client-Short Revised (WAI-C-SR, Tracey & Kokotowitc, 1989). The WAI-C-SR was used to assess the participants perspective of working alliance between client and clinician. This inventory measured three areas of alliance: agreement on therapeutic tasks, agreement on therapeutic goals, and the strength of the bond between client and therapist. Participants were presented with 12-items and asked to rate their level of agreement on a 7-point scale (1 = *never, 7 = always).* To maintain participant confidentiality, a separate confidential envelop was provided for the client to send this questionnaire directly to researchers, rather than have them return the questionnaire to the clinician. This questionnaire is

Table 4.

Internal Consistency (a) of Each Measure Across Each Time Point

Time	PCL	TSC_TOT	TSC_dep	TSC_anx[1]	TSC_diss[1]	TSC_sati	TSC_sleep[1]	TSC_sex[1]	WSAS	WAI_Task	WAI_Bond	WAI_Goal
T0	0.95	0.93	0.75	0.78	0.8	0.76	0.68	0.75	0.87	0.88	0.79	0.67
T1	0.94	0.93	0.8	0.69	0.78	0.73	0.77	0.74	0.91	0.82	0.66	0.61
T2	0.94	0.95	0.86	0.81	0.75	0.75	0.91	0.8	0.88	0.91	0.89	0.79
T3	0.89	0.95	0.86	0.67	0.75	0.8	0.93	0.85	0.88	0.92	0.57	0.63
T4	0.97	0.89	0.61	-0.14	-0.3	0.62	0.13	-0.11	0.75	0.88	0.79	0.67

[1] NOTE: at T4, several TSC-40 subscales have inadqueate internal consistency, due to small sample sizes (n=5). Maintenance models for these subscales should be interpreted with caution.

given at all time points. Baseline working alliance was measured after the first two sessions with the clinician. Though most questionnaires are completed prior to session, the WAI was completed after the session. Reliability coefficients for each subscale differ. See Table 4.

Attrition rates

Due to the ongoing data collection, the current study's analyses were conducted on data collected from May 2016 to February 2021. Each timepoint is representative of a unique sample size. Baseline (T0) data were collected for 32 participants. Phase-I (T1) involved 27 participants. Phase-II (T2) included 19 completed questionnaire packages. Phase-III (T3) data included ten completed questionnaires, and the follow-up time point (T4) involved six individuals. At the time of analysis, one participant was engaged in phase-I work, therefore, only completed T0 questionnaires, three were engaged in phase-II work (completed T0-T1 questionnaires), and seven were engaged in phase-III work (completed T0-T2 questionnaires). Over the course of TP therapy (T0-T3), 10 individuals had withdrawn from therapy due to personal or financial reasons, and one had withdrawn consent from the study. During the follow-up phase (T3-T4), one participant had not reached the six -month mark, and three were unresponsive to data collection attempts. See Figure 3.

Analyses

Each outcome measured in this thesis was fit with unique linear mixed-effects models to determine the overall effectiveness of Trauma Practice and the change that occurred during each phase of treatment. Mixed-effects models were used to allow for the correlation of observations across time points, as is common practice in longitudinal, repeated-measures designs (Nezlek, 2008) and to account for missing data at various timepoints (using the maximum likelihood estimations method). Multiple linear mixed-effects models were used rather than latent growth

Figure 3.

General Research Procedure with Attrition Rates

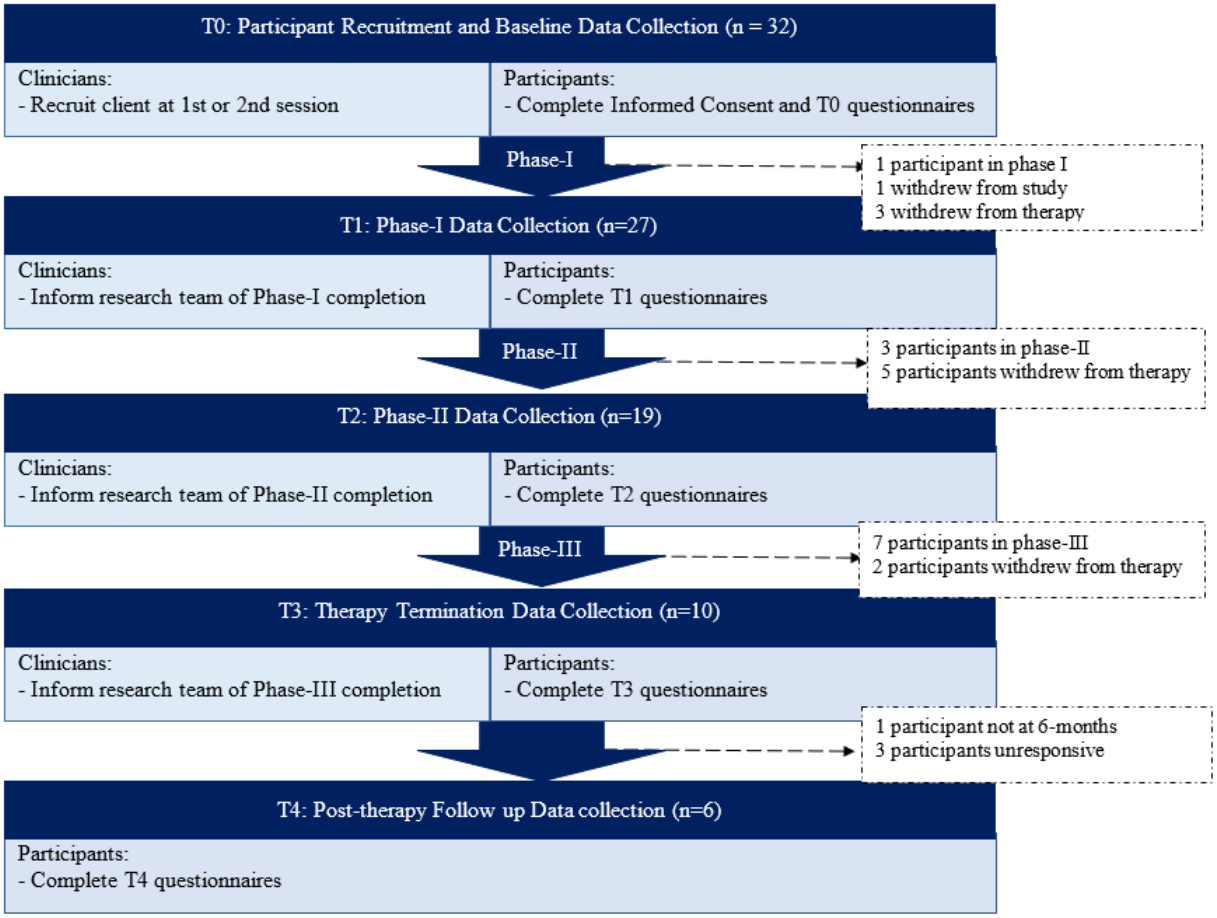


Figure 3 depicts the sample size at various time points throughout the study. The dashed boxes represent the number of people in each therapeutic phase at the time of analyses, followed by the number of individuals who either withdrew from the study, or from therapy prior to completing of phase 3.

curves as linear change across each phase was not expected, and maximum likelihood estimations are more appropriate for missing data. Effect sizes of overall effectiveness for each outcome are reported as unstandardized effect sizes (i.e., the slope of each model), which is consistent with current statistical guidelines (Wilkinson, 1999). The clinical relevance of each unstandardized effect size is thus described. All analyses were run as two-tailed tests, using a nominal Type I error rate of .05.

Results

To assess the effectiveness of TP, independent mixed-effects-models were used to measure the reduction of trauma symptoms (PCL-5), symptom distress (TSC-40), and workplace impairment (WSAS), from baseline (T0) to six-months post-therapy (T4). A second set of mixed-effects-models was fitted to each therapeutic phase (i.e., T0-T1, T1-T2, T2-T3) and the maintenance period independently (T3-T4) to assess where treatment gains occurred and whether they were maintained six-months post-therapy. Reliable change indices (RCI) were also calculated to assess the statistical significance of individual participant's gains at T1, T2, and T3.

Preliminary Analyses

During preliminary analyses, one outlier at T3 and one at T4 were found to significantly skew the data and were removed from further analyses. This resulted in T3 representing nine participants, and T4 representing five participants. It is important to note; however, that these outliers were clinically relevant (i.e., an extreme score that is a true reflection of clinically elevated symptoms in the sample). These two data points were collected during the COVID-19 pandemic and may indicated trauma-related symptom relapse during extreme external stress. The influence of COVID-19 on symptoms relapse should be investigated in future studies.

Underlying model assumptions of linearity, homoscedasticity of residuals, and normality of residuals across time points were then visually assessed and determined to be satisfactory.

Working Alliance (WAI-C-SR)

Preliminary analyses indicated a ceiling effect in the participants' perceptions of therapeutic alliance (Figure 4). The average working alliance rating across each subscale (i.e., agreement on therapeutic tasks, goals, and the level of emotional bond) was a six on the 7-point Likert scale which indicated high working alliance. This was seen across all time points and with all clinicians. As such, alliance was not included in subsequent outcome analyses.

Figure 4.

Participant Reports on the WAI

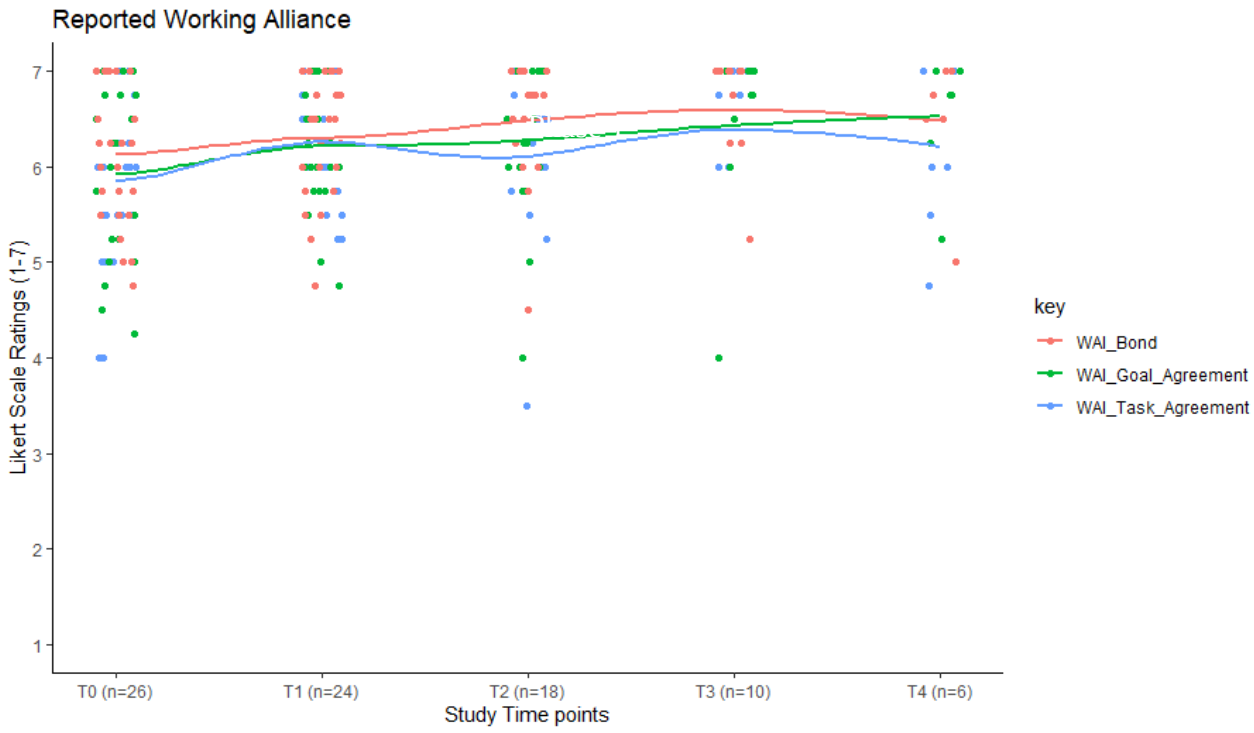


Figure 4 represents the average ratings on the WAI across all time points. The y-axis represents the Likert Scale, where 1 = Never, 4 = Sometimes, 7 = Always. The x-axis represents each study time point. T0 WAI measurement occurred after the first two sessions of therapy. The blue line represents the agreement on therapeutic tasks across each time point, the green represents agreement on therapeutic goals, and the red line represents the bond between participant and therapist.

Presence of PTSD Symptoms (PCL-5)

Overall (T0-T4) Effect

Significant overall reductions in PTSD symptoms were seen from T0 (M = 45.94, SD = 18.86) to T4 (M = 7.40, SD = 4.56), such that symptoms scores were reduced from clinically elevated symptoms to non-clinical levels (B = - 11.82, p <.001) six-months post-therapy. See Figure 5. In addition to a significant decrease in PTSD symptoms, individual reliable change analyses indicated that 100% of participants who had completed therapy demonstrated significant change from T0 to T3 (n= 9). See Tables 5 and 6 for model values and RCIs.

Phase-based Effects

Phase-I. From T0 (M = 45.94, SD = 18.86) to T1 (M = 33.31 SD = 16.53), participants' PTSD symptoms reduced by 12.63 points, representing a statistically significant reduction of trauma symptoms (B = -13.83, p <0.001). Of the 26 participants included in the analyses for T1, 53.8% reported reliable change from T0, though on average, T1 symptoms were reported above the PCL-5 PTSD clinical threshold.

Phase-II. At T2, participants reported a clinically and statistically significant reduction in PTSD symptoms from T1 (B = -13.30, p <0.001), with PTSD symptoms below the PCL-5 PTSD clinical threshold (M = 20.32, SD = 13.70). By T2, 89.5% of participants (N=19) reported reliable change from T0, and 63.2% reported reliable change from T1.

Phase-III. At T3, participants demonstrated a statistically significant decrease in PTSD symptoms from T2 (B=-6.08, p<0.05). Reported symptoms all remained below the PTSD clinical threshold. No participants (n=9) reported individual reliable change from T2-T3.

Maintenance. Non-clinical PTSD symptoms (i.e., scores below the PTSD clinical threshold) were maintained from T3-T4 (B=.72, p=.80).

Figure 5.

Reduction in PTSD Symptoms (PCL-5) Across TP

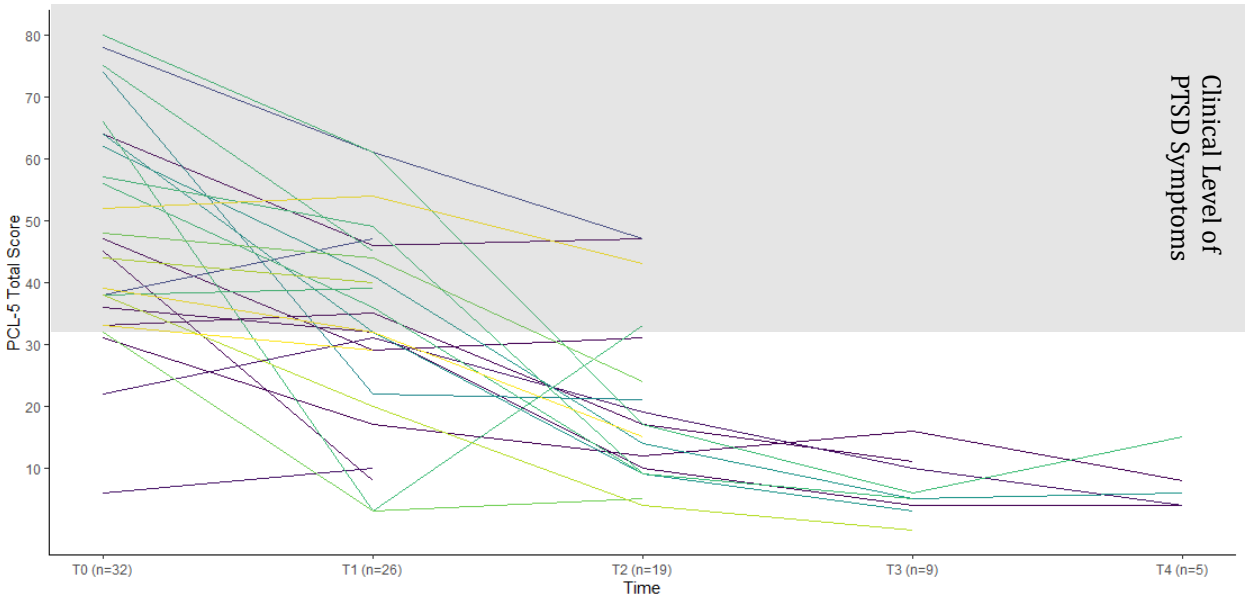


Figure 5 depicts the change in overall PTSD symptoms as measured by the PCL-5 across all 5 timepoints. Each line represented the change in PTSD symptoms across timepoints for each participant. The shaded background section indicates clinical levels of symptoms with a total score of 33 being the PTSD threshold.

Table 5.

PCL-5 Model Values

Time[1]	*B*	SE	DF	*p*
T0-T4	-11.82	1.21	58	<.001
T0-T1	-13.83	3.44	25	<.001
T1-T2	13.30	3.68	18	<.01
T2-T3	-6.08	1.45	8	<.05
T3-T4	0.72	2.64	4	.8

[1] Table 5 represents each model's statistical output. B refers to the model slope (average change per phase). SE refers to standard error of the residuals. Change score refers the mean change that occurs over each period and are calculated by subtracting the earlier time score mean from the later time score mean. Negative values indicate a reduction in symptoms. Positive values indicate an increase in symptoms. DF refers to the degrees of freedom for each model.

Table 6.

PCL-5 Reliable Change Scores Across Time Points for Each Participant

Participant	T0-T1 N=26	T0-T2 N=19	T0-T3 N=9	T1-T2 N=19	T1-T3 N=9	T2-T3 N=9
1	0.34	-2.35	-3.69	-2.68	-4.02	-1.34
2	-2.35	-3.19	-2.52	-0.84	-0.167	0.67
3	-6.20					
4	-0.67	-4.36	-5.37	-3.69	-4.70	-1.01
5	-3.02	-2.68		0.34		
6	-3.02	-2.85		0.18		
7	1.51	-0.50	-2.01	-2.01	-3.52	-1.51
8	0.67					
9	-2.85	-5.20		-2.35		
10	1.51					
11	-8.72	-8.89		-0.17		
12	-3.52	-8.05	-9.56	-4.53	-6.04	-1.51
13	-5.37	-9.22	-10.23	-3.86	-4.86	-1.01
14	-3.35	-7.88		-4.53		
15	-1.34	-8.05	-8.72	-6.71	-7.38	-0.67
16	-10.56	-5.53		5.03		
17	-5.03					
18	-3.19	-10.56	-12.41	-7.38	-9.22	-1.84
19	0.17					
20	-4.86	-4.53				
21	-0.67	-4.02		-3.35		
22	-0.67					
23	-3.02	-5.70	-6.37	-2.68	-3.35	-0.67
24	-1.17	-4.02		-2.85		
25	0.34	-1.51		-1.84		
26	-0.67					

Each cell represents a standardized reliability change index and is compared to a significant value of 1.9. Red cells indicate a significant decrease in PCL-5 scores between time points. Green cells indicate a significant increase in PCL-5 scores between time points. Significance is defined as $p < 0.05$. Table from Zahra, 2010.

Trauma Symptom Distress (TSC-40)

Overall (T0-T4) Effects

A significant reduction in overall trauma-related symptom distress (as measured by the total score of the TSC-40) from T0 (M = 49.72, SD = 19.82) to T4 (M = 9.80, SD = 7.92), was found (B = - 10.71, p <.001). Although the TSC-40 was developed as a research measure and does not have clinical cut-offs, findings at T0 and T4 are consistent with clinical population averages and non-clinical ranges, respectively (Whiffen et al., 1997). See Table 7 for statistical values and Figure 6 for visualization. Reliable change analyses indicate that by T3, eight of the nine participants (88.9%) reported individual significant change from T0. See Table 8 for individual change indices. In addition to the total score, significant overall reductions across all TSC-40 subscales were found from T0 to T4: anxiety (B = -2.14, p < .001), depression (B = -2.88, p < .001), dissociation (B = -2.02, p < .001), sleep disturbances (B = -2.39, p < .001), sexual disturbances (B = -1.09, p < .01), and the sexual abuse index (B = -1.75, p < .001).

Phase-based Effects

Phase-I. At T1 (M = 39.00, SD = 18.45), participants reported a significant decrease in overall symptoms distress from T0 (B = -12.05, p < .01). At T1, 38.5% of participants (n=26) demonstrated reliable change. Phased analyses were also calculated for each TSC-40 subscale. From T0 to T1, participants reported significant reductions in all six of the TSC-40 subscales: anxiety (B = -2.29, p < .01), depression (B = -3.50, p < .01), dissociation (B = -2.18, p < .025), sleep disturbances (B = -2.42, p < .01), sex disturbances (B = -1.71, p < 0.05), and the sexual abuse index (B = -2.16, p < .025).

Phase-II. Though trends suggest reductions in overall trauma-related symptom distress at T2 (M = 29.79, SD = 19.58), a non-statistically significant model was found (B = -9.49, p = .06).

Of the 19 participants included in the reliable change analyses at T2, 61.1% reported individual statistical change from T0, and 42.1% from T1. Across the TSC-40 subscales, trauma-related anxiety symptom distress (B = -2.60, p < .025) and dissociation (B = -1.89, p < .025) were reported to decrease significantly from T1 to T2. Depression (B = -2.54, p =.07), sleep disturbances (B = -1.98, p =.14), sex disturbances (B = -0.29, p = 0.80), and the sexual abuse index (B = -0.92, p = .39) were found to be non-significant from T2-T3.

Phase-III. At T3, participants demonstrated a statistically significant decrease in symptoms distress from T2 (B=-8.37, p<0.01). No participants (n=9) reported individual reliable change from T2-T3. Across the TSC-40 subscales, trauma-related depression distress (B = -2.33, p <.01), dissociation (B = -2.19, p < .001), sleep disturbances (B = -1.17, p < .01), and the sexual abuse index (B = -1.60, p < .025) were found to significantly decrease from T2 to T3. Anxiety (B = -1.16, p < .07) and sex disturbance subscales (B = -1.25, p = 0.12) were found to be non-significant from T2-T3.

Maintenance. From T3 to T4, non-significant changes to overall symptom distress (B = .70, p = .74), anxiety (B = -0.01, p =.99), depression (B = 0.53, p =.55), dissociation (B = -.05, p =.89), sleep disturbances (B = -0.99, p =.51), the sexual abuse index (B = -0.55, p =.34), and sexual disturbances (B = 1.04, p =.15), were found indicating that treatment gains are maintained six-months post-intervention.

Figure 6.

Reduction in Trauma Symptom Distress (TSC-40) Across TP

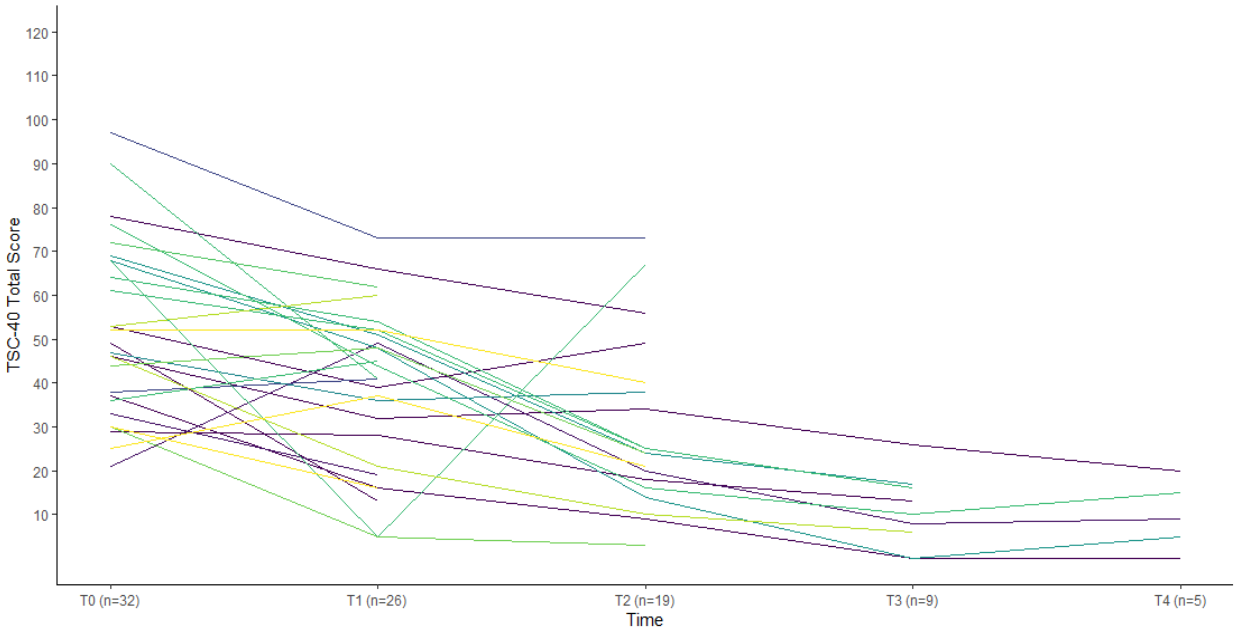


Figure 6 depicts the change in symptoms distress as measured by the TSC-40 across all 5 timepoints. Each coloured line represented an individual participants TSC-40 score across timepoints. The red line indicates a smoothed line of the means at each timepoint.

Figure 7.

Reduction in Trauma Symptom Distress (TSC-40) Subscales Across TP

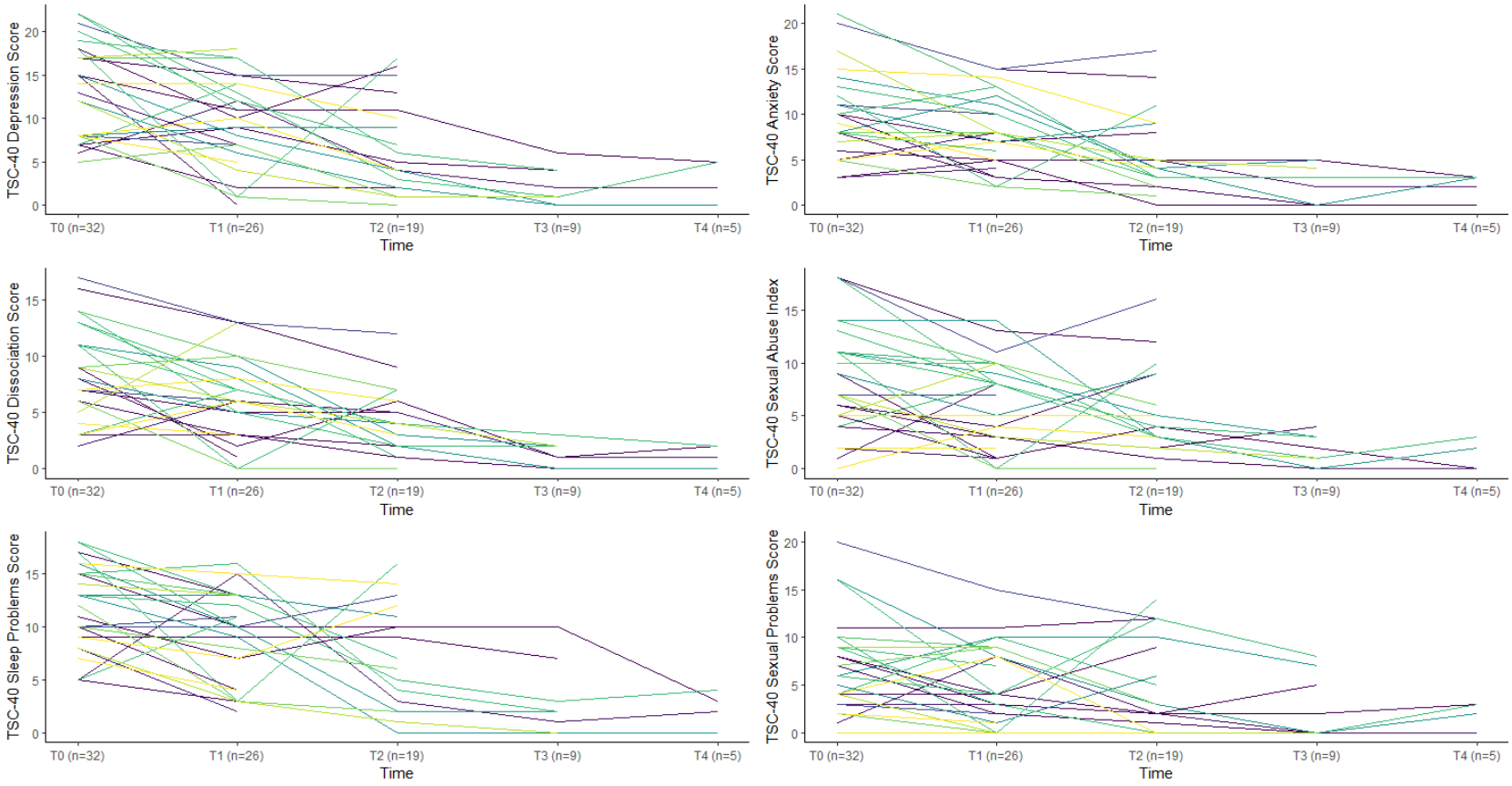


Figure 7 depicts the change in each TSC-40 subscale across all 5 timepoints. Each participant's change in subscale scores is represented by a unique line colour.

Table 7.

TSC Total Score Model Values

Time[1]	*B*	SE	DF	*p*
T0-T4	-10.71	1.26	58	<.001
T0-T1	-12.05	3.57	25	<.01
T1-T2	-9.49	4.71	18	.06
T2-T3	-8.37	1.08	8	<.001
T3-T4	.67	1.95	4	.74

[1] Table 7 represents each model's statistical output. B refers to the model slope (average change per phase). SE refers to standard error of the residuals. Change score refers the mean change that occurs over each period and are calculated by subtracting the earlier time score mean from the later time score mean. Negative values indicate a reduction in symptoms. Positive values indicate an increase in symptoms. DF refers to the degrees of freedom for each model.

Table 8.

TSC-40 Reliable Change Scores Across Time Points

Participant	T0-T1 N=26	T0-T2 N=19	T0-T3 N=9	T1-T2 N=19	T1-T3 N=9	T2-T3 N=9
1	-0.14	-1.48	-2.16	-1.35	-2.02	-0.67
2	-1.89	-1.62	-2.70	0.27	-0.81	-1.08
3	-4.85					
4	-2.83	-3.78	-5.00	-0.94	-2.16	-1.21
5	-1.89	-0.54		1.35		
6	-1.62	-2.97		-1.35		
7	3.78	-0.14	-1.75	-3.91	-5.53	-1.62
8	-1.89					
9	-3.24	-3.24		0.00		
10	0.41					
11	-1.48	-1.21		0.27		
12	-2.70	-7.28	-9.17	-4.59	-6.47	-1.89
13	-2.43	-6.07	-7.01	-3.64	-4.59	-0.94
14	-1.35	-5.26		-3.91		
15	-1.21	-4.85	-6.07	-3.64	-4.85	-1.21
16	-8.50	-0.14		8.36		
17	-6.61					
18	-4.32	-8.09	-8.90	-3.78	-4.59	-0.81
19	1.21					
20	-3.37	-3.64		-0.27		
21	0.534	-2.70		-3.24		
22	0.94					
23	-3.37	-4.85	-5.39	-1.48	-2.02	-0.54
24	1.62	-0.54		-2.16		
25	0.00	-1.62		-1.62		
26	-1.89					

Each cell represents a standardized reliability change index and is compared to a significant value of 1.9. Red cells indicate a significant decrease in TSC-40 scores between time points. Green cells indicate a significant increase in TSC-40 scores between time points. Significance is defined as $p < 0.05$.

Workplace Impairment (WSAS)

Overall (T0-T4) Effect

A significant overall reduction in workplace impairment was seen from T0 to T4 (B = -5.12, p <.001), such that participants' impairment scores reduced from the functional impairment range at T0 (M = 19.39, SD = 9.81) to subclinical impairment at T4 (M = 3.00, SD = 3.62). See Figure 7 for visualization. Reliable change analyses indicate that by T3, 77.8% of participants reported reliable change from T0. See Table 9 for statistical model values and Table 10 for individual reliable change scores.

Phase-based Effects

Phase-I. At T1 (M = 13.88, SD = 9.20) a significant reduction in workplace impairment from T0 was found (B = -5.90, p <0.01), though scores were still in the functional impairment range with 34.6% of participants (n=26) reporting reliable change from T0-T1.

Phase-II. At T2 (M = 8.42, SD = 8.12) participants report a significant reduction in workplace impairment from T1 (B = -5.77, p <0.01), with impairment below the clinical threshold. Reliable change analyses indicate that by T2 (n=19) 68.4% of participants indicated reliable change from T0, and 31.6% from T1.

Phase-III. At T3 (M = 3.10, SD = 3.90), a further significant reduction in workplace impairment was seen (B = -3.82, p < 0.05). Of the nine participants included in analyses at T3, 11% indicated reliable change from T2.

Maintenance. The decrease in workplace impairment reported in T3 was maintained at T4 (B = -.36, p = .76), such that workplace impairment was below the clinical threshold.

Figure 8.

Reduction in Workplace Impairment (WSAS) Across TP

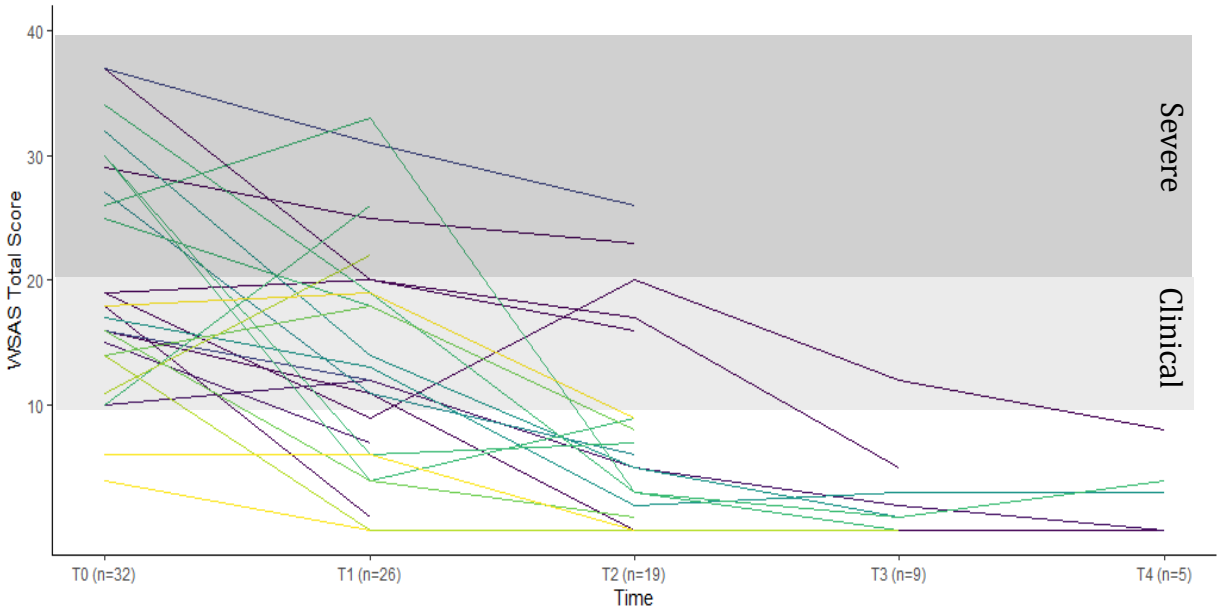


Figure 8 depicts the change in workplace impairment as measured by the WSAS across all 5 timepoints. Each participant is depicted by a uniquely coloured line. The darkest section indicates severe workplace impairment. The light grey section indicates functional impairment, but not severe.

Table 9.

WSAS Model Values

Time[1]	*B*	SE	DF	*p*
T0-T4	-5.12	0.64	58	<.001
T0-T1	-5.90	2.00	25	<.01
T1-T2	-5.77	1.90	18	<.01
T2-T3	-3.82	1.39	8	<.05
T3-T4	-.36	1.10	4	.76

[1] Table 9 represents each model's statistical output. B refers to the model slope (average change per phase). SE refers to standard error of the residuals. Change score refers the mean change that occurs over each period and are calculated by subtracting the earlier time score mean from the later time score mean. Negative values indicate a reduction in symptoms. Positive values indicate an increase in symptoms. DF refers to the degrees of freedom for each model.

Table 10.

WSAS reliable change scores across time points

Participant	T0-T1 N=26	T0-T2 N=19	T0-T3 N=9	T1-T2 N=19	T1-T3 N=9	T2-T3 N=9
1	0.00	-0.40	-2.80	-0.60	-3.00	-2.40
2	-2.00	0.20	-1.40	2.20	0.60	-1.60
3	-3.40					
4	-1.00	-3.20	-3.20	-2.20	-2.20	0.00
5	-0.80	-1.20		-0.40		
6	-1.40	-2.20		-0.80		
7	0.40	-1.00	-1.60	-1.40	-2.00	-0.60
8	-1.60					
9	-1.20	-2.20		-1.00		
10	-0.80					
11	-3.20	-4.20		-1.00		
12	-0.80	-3.00	-2.80	-2.20	-2.00	0.20
13	-3.60	-5.40	-6.20	-1.80	-2.60	-0.80
14	-4.80	-4.60		0.20		
15	1.40	-4.60	-5.20	-6.00	-6.60	-0.60
16	-5.20	-4.20		1.00		
17	-1.40					
18	-3.00	-6.20	-6.60	-3.20	-3.60	-0.40
19	3.20					
20	-2.40	-3.00		-0.60		
21	0.80	-1.20		-2.00		
22	2.20					
23	-2.80	-2.80	-2.80	0.00	0.00	0.00
24	0.00	-1.20		-1.20		
25	0.20	-3.60		-3.80		
26	-0.80					

Each cell represents a standardized reliability change index and is compared to a significant value of 1.9. Red cells indicate a significant decrease in WSAS scores between time points. Green cells indicate a significant increase in WSAS scores between time points. Significance is defined as $p < 0.05$.

Discussion

The main goal of trauma therapy is to reduce the distress and impairment associated with trauma exposure. The results of this study are the first demonstrate the robust effects of TP in achieving this goal in a community setting. Reductions in the presence of PTSD symptoms, trauma symptom distress, and workplace impairment were assessed from pre-therapy to six-months post therapy (T0-T4), and across phase-I (T0-T1), phase-II (T1-T2), phase-III (T2-T3), and at follow-up (T3-T4). Consistent with our hypotheses, significant decreases in both PTSD symptoms and trauma symptom distress were demonstrated from baseline (T0) to follow-up. At baseline, participants reported symptoms consistent with the clinical diagnosis of PTSD and high levels of symptom distress (also well above clinical ranges seen in validation studies with outpatients; Whiffen et al., 1997). By therapy termination (T3), 100% of participants reported symptoms well below the PTSD clinical threshold. This high proportion of therapeutic success is notable. Previous research in trauma therapy, including CBT and CPT, have reported successful recovery in roughly 60% of participants (Eftekhari et al., 2013; Reisman, 2016).

Workplace impairment also significantly decreased from baseline to TP termination. At baseline, participants reported functional impairment (defined as significant, but not severe, impairment in ability to adjust to the demands of the workplace). By the end of TP (T3), results indicated non-clinical levels of workplace impairment, with 100% of participants reporting non-clinical levels at follow up. The reduction of workplace impairment is a critical therapeutic target for trauma interventions. If an individual is not able to work effectively, they are at greater risk of unemployment which creates a financial burden on top of the stressors associated with trauma exposure. In fact, the Mental Health Commission of Canada suggests that a high portion of individuals (78%) miss work due to mental health concerns and that 30-70% of all disability

claims are attributed to mental health (Howatt, 2017). The reduction of workplace impairment seen in this study provides evidence to support the clinical use of TP beyond the reduction of symptoms and distress and highlights the strengths of the intervention.

Given that strong therapeutic relationships have been shown to predict positive treatment outcomes (Laska et al., 2013; Martin & Davis, 2000), effective intervention use and facilitate strong therapeutic alliances. This is particularly important for trauma interventions, as those clients who have been exposed to traumatic events are less likely to form trusting relationships (Keller et al., 2010; Muller, 2018). The high ratings of working alliance throughout this study, which started off strong and remained strong throughout, suggest consistently good therapeutic relationships throughout the treatment. This supports previous findings that trauma survivors can form strong therapeutic alliances (Ellis et al., 2018; Zorzella et al., 2017) and provides evidence of strong therapeutic alliance development within TP across a diverse range of clinicians, in addition to successfully reducing trauma symptoms and impairment.

The results of this study provide the first step in providing research evidence for TP as a viable practice in the treatment of the effects of trauma. Evidence-based interventions for the treatment of trauma-induced symptoms and distress are important for community practitioners as they provide validated methods to enhance health and well-being. Evidence-informed interventions provide practitioners with ethical and time/cost-effective choice when compared with treatment-as-usual that may have questionable effectiveness (Cook et al., 2017; Pope, 2003). Given this study's robust results, future research would benefit from continuing to investigate the clinical utility of TP.

Generalizability of Trauma Practice

In addition to demonstrating evidence of TP success for the first time, this study is one of the few studies of trauma therapy to report robust results based on heterogenous samples of both clinicians and participants (Fried et al., 2018; Institute of Medicine, 2007). Within a diverse group of clinicians (who varied in location, education background, and clinical experience), and across a complex set of participants (who differed in cultural backgrounds, trauma exposure, and trauma symptom presentation), clinically and statistically significant decreases were demonstrated on all measured outcomes. Furthermore, while a diagnosis of PTSD was not required for study inclusion, 78% of the sample met criteria for a provisional diagnosis of PTSD prior to starting TP. These baseline results, along with the 68.7% of participants who reported exposure to four or more traumatic experiences, speak to the clinical nature of the sample and suggests strong external validity within this study. Given the mix of clinicians and participants, these results are reflective of the benefits of TP in a community-based setting.

Trauma exposure has been associated with a high susceptibility to developing a wide range of mental health concerns (Lewis et al., 2019; McFarlane, 2010); however, most available trauma therapy research has focused on non-complex trauma presentations with few concurrent mental health concerns. This study is the first to investigate the effectiveness of TP at reducing not only overall trauma symptom distress, but also across various comorbid mental health concerns. Results demonstrate significant decreases on all TSC-40 distress subscales (i.e., anxiety, depression, dissociation, sleep disturbances, sexual disturbances, and sexual abuse index) from pre-therapy to follow-up. These results suggest clinical utility of TP with trauma survivors in the community who present with various mental health concerns in addition to trauma exposure.

TP Phase-based Implications of this study

In addition to providing strong overall support for TP therapeutic gains, this study also investigated the trajectory of change over the course of phase-I (T0-T1), -II (T1-T2), -III (T2-T3) and the six-month maintenance period (T3-T4). Our results indicated significantly large change across all three phases independently, with the largest change in all symptomology measures (PTSD symptoms, symptoms distress, and workplace impairment) occurring in phase-I. This suggests that the safety and stabilization and phase of TP appears to be effective at reducing trauma-related symptomology.

During phase-II, where participants engaged in exposure therapy and worked resolve their trauma, participants demonstrated significant reductions in PTSD symptoms, workplace impairment and trauma-related anxiety and dissociation distress, but not in overall symptom distress. Though not all decreases during phase-II were found to be statistically significant, change scores appeared to be comparable to changes made in phase-I, suggesting large decreases on par with those made in phase-I and that phase-II was effective at continuing to reduce clinical impairment and symptoms.

Interestingly, phase-III also demonstrated significant reductions in PTSD symptoms, overall trauma-symptom distress, most of the subscales except anxiety and sex problem distress, and workplace impairment. This suggests that even with the improvements made during phase-I and -II, the reconnection stage of TP, where participants reengaged in their communities and healthy relationships, continued to be effective at reducing trauma-related symptomology. Though significant, phase-III change was smallest in magnitude. This may be a result of small sample size, or a potential floor effect in symptomology change. Together, the results of each phase indicate the usefulness of the TP approach to trauma therapy.

Finally, results indicate that no significant decreases or increases to PTSD symptoms, symptom distress, or workplace impairment were seen at follow-up, indicating successful maintenance of therapeutic gains. However, maintenance of treatment gains must be interpreted with caution given the small sample size at this point in the process.

It is important to note that one outlying participant (who was removed from T3 and T4 analyses) did relapse into clinically elevated levels; however, this relapse coincided with extraneous circumstances (i.e., the COVID-19 pandemic). Given the additional stress that COVID-19 has placed on the population, it is understandable that existing mental health issues are likely to be exacerbated, putting individuals at greater risk of clinical relapse (Easterwood & Saeed, 2020). As this individual was removed from analyses given the ability to drastically skew the data, future studies should investigate the trajectories of those going through trauma therapy during the COVID-19 pandemic.

Overall, trauma symptoms, symptoms distress, and workplace impairment demonstrated a similar pattern, such that each phase represented a decrease from the previous phase, and that the gains met by phase-III were maintained. Not all decreases were found to be significant but change scores did appear to be relatively consistent across each phase, indicating a linear trajectory of improvement across all variables. Patterns of therapeutic gains emerged within the data; however, concrete conclusions about the effectiveness of each phase cannot be made because of the small sample sizes towards the end of therapy. Phasic results of this study, especially toward the end of treatment and at follow-up should be interpreted with caution.

Limitations

Though this study has a great strength in its external validity, it also has several limitations. First and foremost, this study does not include a waitlist control for comparison

purposes. Without a comparison group, conclusions cannot be made about whether the presented results differ from the potential gains people experience over time without intervention. In addition to the lack of control group, the results of this study are based on a modest sample size, with decreasing numbers of participants at end time points. This makes it challenging to examine various factors that may be contributing to the results, such as therapist factors, trauma types, or cultural differences. It is notable; however, that even with small sample sizes, overall robust effect sizes and reliable changes were still found.

Another consideration for this study is the involvement of clinicians in obtaining the data. Given the possibility that the questionnaires asking about symptomology may be triggering to some participants, having the participant fill out the questionnaire in proximity of their clinician for self-regulation was important. While balancing the anticipated needs of the participant, having clinicians involved in data collection may put results at risk of social desirability bias. This was addressed by having the participants complete their questionnaires independently in the waiting room prior to session (with the clinician available in case of significant distress) and providing envelopes for the questionnaires to be sealed in; however, this social desirability may still have been present. As such, results should be interpreted with caution. This was, however, addressed fully when data collection was transferred to REDCap, as completed questionnaires were sent directly to the research team. This eliminated the involvement of clinicians in data collection. In such cases, if a participant became dysregulated, their clinician would be available virtually to help provide stabilization while the participant completed the questionnaires independently. Once REDCap was used, the clinicians had no access to the participants responses.

Though in line with the flexible nature of tri-phasic therapy, the TP approach is not manualized with session-by-session breakdowns. The trainings and manuals provide suggestions and instruction on how to use various techniques, but do not provide a guide for each session, or an outline of which technique to use when; this is at the discretion of the clinician. This poses a challenge for inferring what about TP accounts for the effects demonstrated. Future research should investigate which techniques within each phase are used, and which are helpful from both the client and clinician perspectives.

It is also important to recognize the potential impact that the COVID-19 pandemic may have had on the results of this study and future studies using this sample. Methodologically, COVID-19 altered the way in which the data were collected. As discussed, in March 2020, all data collection was transferred to an online database. Given that there is some research to suggest that there may be a difference between completing questionnaires online versus in-person (Royle & Shellhammer, 2007; Saleh & Bista, 2017; Saloniki et al., 2019), future research should investigate if there is a different between responses pre- and post- COVID-19 social distance procedures within this sample. As more data are collected in this project, this question will indeed be examined.

Future Directions

Future studies may address these limitations. To address the small sample size, our team will continue to collect this data over the next two years, with a focus on retaining participants currently in phase-II and -III of the intervention, with the hope of increasing the sample size and statistical power at therapy termination and follow-up timepoints. In addition, increasing the overall sample size will allow for further splitting of data to address other research questions, such as the effectiveness across various clinical training levels and time spent in each phase.

Future research may consider investigating participant variables that predict success of TP. While all participants in this study benefited, it may be that specific presentations respond more effectively to TP than others. Future studies may benefit from examining the response rate between types of trauma or different cultures present in the sample. Understanding the relationship between variables and therapeutic success would also help to develop a deeper understanding of the mechanisms of change. This will also help explore the generalizable nature of the intervention.

Last, future research would benefit from investigating the impact of COVID-19 on the levels of distress experienced in participants within the sample. This study did not include this consideration into its current analyses due to the small subset of data collected during this time. Anecdotally, many clinicians report reverting to phase-I work, given privacy concerns within the home of the client, or due to the additional environmental stressors. It would be beneficial to investigate the difference in COVID-19 trauma symptoms and whether these individuals' specific change trajectories differed from those who completed therapy prior to COVID-19.

Conclusion

This study is a first step in providing support for the clinical use of the Trauma Practice approach for treating individuals who are experiencing trauma related symptoms and impairment. In this study, a TP approach appeared to successfully facilitate a decrease in PTSD symptoms, symptom distress and workplace impairment in a community sample. By the end of therapy, all participants had benefited significantly from their involvement in TP. Furthermore, gains were maintained at follow-up, although follow-up findings should be interpreted with caution. Despite decreasing sample sizes throughout the phases, effect sizes were significant and robust, suggesting good treatment response during this therapeutic intervention.

References

Arnsten, A. F. T. (2009). Stress signaling pathways that impair prefrontal cortex structure and function. *Nature Reviews Neuroscience, 10*, 410–422. doi: 10.1038/nrn2648

Ali, T., Dunmore, E., Clark, D., & Ehlers, A. (2002). The role of negative beliefs in posttraumatic stress disorder: A comparison of assault victims and nonvictims. *Behavioural and Cognitive Psychotherapy, 30*, 249-257. doi:http://dx.doi.org/10.1017/S1352465802003016

American Psychiatric Association. DSM-5 Task Force. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). Arlington, VA: American Psychiatric Association.

American Psychological Association (2017). *Clinical Practice Guideline for the Treatment of Posttraumatic Stress Disorder (PTSD) in Adults.* Washington, DC: American Psychological Association

Ameringen, M., Mancini. C., Patterson, B., & Boyle, M. H. (2008). Posttraumatic stress disorder in Canada. *CNS Neuroscience & Therapeutics*, 14, 171-181. doi: 10.1111/j.1755-5949.2008.00049.x.

Baer, L. (2001). *The imp of the mind: Exploring the silent epidemic of obsessive bad thoughts.* New York: Dutton.

Baranowsky, A. B., & Gentry, J. E. (2015). *Trauma practice: Tools for stabilization and recovery (3rd ed.)* Hogrefe Publishing, Boston, MA.

Baranowsky, A. B., Gentry, J. E., & Schultz, D. F. (2005). *Trauma practice: Tools for stabilization and recovery.* Hogrefe & Huber Publishers.

Berge, E. E., Hagen, R., & Øveraas Halvorsen, J. (2020). PTSD relapse in veterans of Iraq and Afghanistan: A systematic review. *Military Psychology*, *32*(4), 300–312. https://doi.org/10.1080/08995605.2020.1754123

Bergmann, U. (2008). The neurobiology of EMDR: Exploring the thalamus and neural integration. *Journal of EMDR Practice and Research*, *2*(4), 300-314.

Blake, D.D., Weathers, F.W., Nagy, L.M., Kaloupek, D.G., Gusman, F.D., Charney, D.S., & Keane, T.M. (1995). The development of a clinician-administered PTSD scale. *Journal of Traumatic Stress, 8*, 75–90. doi: 10.1007/bf02105408

Bremner J. D. (2006). Traumatic stress: effects on the brain. *Dialogues in clinical neuroscience*, *8*(4), 445–461. https://doi.org/10.31887/DCNS.2006.8.4/jbremner

Bryant, R. A., O'Donnell, M. L., Creamer, M., McFarlane, A. C., & Silove, D. (2011). Posttraumatic intrusive symptoms across psychiatric disorders. *Journal of Psychiatric Research, 45*, 842-847. doi:http://dx.doi.org/10.1016/j.jpsychires.2010.11.012

Burns, E. (1980). *Feeling good: The new mood therapy.* New York Morrow

Cahill, S. P., Rothbaum, B. O., Resick, P. A., & Follette, V. M. (2009). *Cognitive-behavioral therapy for adults.* In E. B. Foa, T. M. Keane, M. J. Friedman, & J. A. Cohen (Eds.), *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies* (p. 139–222). The Guilford Press.

Canadian Mental Health Association. (2013). Posttraumatic stress disorder. Retrieved April 28, 2021, from https://cmha.bc.ca/documents/post-traumatic-stress-disorder-2/

Cook, S. C., Schwartz, A. C., & Kaslow, N. J. (2017). Evidence-based psychotherapy: Advantages and challenges. *Neurotherapeutics: The journal of the American Society for*

Experimental Neurotherapeutics, *14*(3), 537–545. https://doi.org/10.1007/s13311-017-0549-4

Chu, A., & DePrince, A. P. (2006). Development of dissociation: Examining the relationship between parenting, maternal trauma and child dissociation. *Journal of Trauma & Dissociation, 7,* 75-89. doi:http://dx.doi.org/10.1300/J229v07n04_05

Cloitre, M., Courtois, C. A., Charuvastra, A., Carapezza, R., Stolbach, B. C., & Green, B. L. (2011). Treatment of complex PTSD: Results of the ISTSS expert clinician survey on best practices. *Journal of traumatic stress*, *24*(6), 615-627.

Cloitre, M., Courtois, C. A., Ford, J. D., Green, B. L., Alexander, P., Briere, J., & Van der Hart, O. (2012). The ISTSS expert consensus treatment guidelines for complex PTSD in adults.

Cloitre, M., Jackson, C., & Schmidt, J. A. (2016). Case reports: STAIR for strengthening social support and relationships among veterans with military sexual trauma and PTSD. *Military Medicine, 181,* 183-187. doi:http://dx.doi.org/10.7205/MILMED-D-15-00209

Cohen, J. A., Mannarino, A. P., Kliethermes, M., & Murray, L. A. (2012). Trauma-focused CBT for youth with complex trauma. *Child abuse & neglect*, *36*(6), 528-541.

Danese, A. & Baldwin, J. R. (2017). Hidden wounds? Inflammatory links between childhood trauma and psychopathology. *Annual Review of Psychology, 68,* 517–544. doi:10.1146/annurevpsych-010416-044208

DiMauro, J., Renshaw, K. D., & Kashdan, T. B. (2016). Beliefs in negative mood regulation and daily negative affect in PTSD. *Personality and Individual Differences, 95,* 34-36. doi:http://dx.doi.org/10.1016/j.paid.2016.02.030

Eftekhari, A., Ruzek, J. I., Crowley, J. J., Rosen, C. S., Greenbaum, M. A., & Karlin, B. E. (2013). Effectiveness of national implementation of prolonged exposure therapy in Veterans Affairs care. *JAMA psychiatry, 70*(9), 949-955.

Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour research and therapy*, *38*(4), 319-345.

Ehrenreich, J.H. & McQuaide, S. (2001) *Coping with disaster: A guidebook to psychosocial intervention.* Retrieved from: https://www.hhri.org/wp-content/uploads/2021/01/Coping-With-Disaster.pdf

Ehring, T. (2013, September 24). *Mind the gap: What can researchers do to improve the dissemination of evidence-based treatments for PTSD?* International Society for Traumatic Stress Studies (ISTSS). https://istss.org/public-resources/trauma-blog/2013-october/mind-the-gap-what-can-researchers-do-to-improve-th

Elliot, D. M. & Briere, J. (1992). Sexual abuse trauma among professional women: Validating the Trauma Symptom Checklist - 40 (TSC-40). *Child Abuse & Neglect, 16*, 391-398. doi: https://doi.org/10.1016/0145-2134(92)90048-V

Ellis, A. E., Simiola, V., Brown, L., Courtois, C., & Cook, J. M. (2018). The role of evidence-based therapy relationships on treatment outcome for adults with trauma: A systematic review. *Journal of Trauma & Dissociation*, *19*(2), 185-213.

Etkin, A., Egner, T., Peraza, D. M., Kandel, E. R., & Hirsch, J. (2006). Resolving emotional conflict: a role for the rostral anterior cingulate cortex in modulating activity in the amygdala. *Neuron*, *51*(6), 871–882. https://doi.org/10.1016/j.neuron.2006.07.029

Esterwood, E., & Saeed, S. A. (2020). Past epidemics, natural disasters, COVID19, and mental health: Learning from history as we deal with the present and prepare for the

future. *The Psychiatric quarterly*, *91*(4), 1121–1133. https://doi.org/10.1007/s11126-020-09808-4

Foa, E. B., Hembree, E. A., Cahill, S. P., Rauch, S. A., Riggs, D. S., Feeny, N. C. et al. (2005). Randomized trial of prolonged exposure for posttraumatic stress disorder with and without cognitive restructuring: Outcome at academic and community clinics. *Journal of Consulting and Clinical Psychology, 73*, 953-964. doi: 10.1037/0022-006X.73.5.953

Fried, E. I., Eidhof, M. B., Palic, S., Costantini, G., Huisman-van Dijk, H. M., Bockting, C., Engelhard, I., Armour, C., Nielsen, A., & Karstoft, K. I. (2018). Replicability and Generalizability of Posttraumatic Stress Disorder (PTSD) Networks: A cross-cultural multisite study of ptsd symptoms in four trauma patient samples. *Clinical psychological science: A journal of the Association for Psychological Science*, *6*(3), 335–351. https://doi.org/10.1177/2167702617745092

Galatzer-Levy, I. R., Nickerson, A., Litz, B. T., & Marmar, C. R. (2013). Patterns of lifetime PTSD comorbidity: A latent class analysis. *Depression and Anxiety, 30*(5), 489-496.

Gillespie, K., Duffy, M., Hackmann, A., & Clark, D. M. (2002). Community based cognitive therapy in the treatment of post-traumatic stress disorder following the Omagh bomb. *Behaviour Research and Therapy, 40*, 345-357. doi: 10.1016/S0005-7967(02)00004-9

Ginder, H., Bandler, R. (1981). *Trance-formations: Neuro-linguistic programming and the structure of hypnosis.* Moab, IT: Real People Press.

Godoy, L. D., Rossignoli, M. T., Delfino-Pereira, P., Garcia-Cairasco, N., & de Lima Umeoka, E. H. (2018). A comprehensive overview on stress neurobiology: Basic concepts and clinical implications. *Frontiers in Behavioral Neuroscience*, *12*, 127.

Gray, M., Litz, B., Hsu, J., & Lombardo, T. (2005). Psychometric Properties of the Life Events Checklist. *Assessment*. 11. 330-41. doi: 10.1177/1073191104269954.

Hanh, T.N. (1990) *The path of mindfulness in everyday life*. New York: Bantam

Hebb, D. O. (1949). The organization of behavior: A neuropsychological theory. New York: Wiley.

Herman, J. L. (1992). *Trauma and recovery*. New York, NY: Basic Books.

Herman, J. L. (1997). *Trauma and recovery: The aftermath of violence – from domestic abuse to political terror* (rev ed.). New York, NY: Basic Books

Hoge, C. W. (2011). Interventions for war-related posttraumatic stress disorder: Meeting veterans where they are. *JAMA, 306*(5), 549-551.

Howatt, W. (2017). *The mental health experience in Canada's workplaces: What is your experience?* Morneau Shepell

Hunsley, J. (2007). Addressing key challenges in evidence-based practice in psychology. *Professional Psychology: Research and Practice, 39*, 113–121.http://dx.doi.org/10.1037/0735-7028.38.2.113

Institute of Medicine. (2008). *Treatment of posttraumatic stress disorder: An assessment of the evidence*. Washington, DC: The National Academies Press. https://doi.org/10.17226/11955.

Keller, S. M., Zoellner, L. A., & Feeny, N. C. (2010). Understanding factors associated with early therapeutic alliance in PTSD treatment: adherence, childhood sexual abuse history, and social support. *Journal of consulting and clinical psychology, 78*(6), 974–979. https://doi.org/10.1037/a0020758

Kirmayer, L.J., Lemelson, R., & Barad, M. (2007). *Understanding trauma: Integrating biological, clinical, and cultural perspectives.* New York: Cambridge University Press. doi: 10.1017/CBO9780511500008

Koenigs, M., & Grafman, J. (2009). Posttraumatic stress disorder: the role of medial prefrontal cortex and amygdala. *The Neuroscientist*, *15*(5), 540-548.

Konanur, S., Muller, R. T., Cinamon, J. S., Thornback, K., & Zorzella, K. P. (2015). Effectiveness of trauma-focused cognitive behavioral therapy in a community-based program. *Child abuse & neglect*, *50*, 159-170.

Kozlowska, K., Walker, P., McLean, L., & Carrive, P. (2015). Fear and the Defense Cascade: Clinical Implications and Management. *Harvard Review of Psychiatry, 23*(4), 263–287. https://doi.org/10.1097/HRP.0000000000000065

Laska, K. M., Smith, T. L., Wislocki, A. P., Minami, T., & Wampold, B. E. (2013). Uniformity of evidence-based treatments in practice? Therapist effects in the delivery of cognitive processing therapy for PTSD. *Journal of counseling psychology*, *60*(1), 31–41. https://doi.org/10.1037/a0031294

Lewis, C., Roberts, N. P., Andrew, M., Starling, E., & Bisson, J. I. (2020). Psychological therapies for post-traumatic stress disorder in adults: systematic review and meta-analysis. *European journal of psychotraumatology*, *11*(1), 1729633. https://doi.org/10.1080/20008198.2020.1729633

Lewis, S. J., Arseneault, L., Caspi, A., Fisher, H. L., Matthews, T., Moffitt, T. E., Odgers, C. L., Stahl, D., Teng, J. Y., & Danese, A. (2019). The epidemiology of trauma and post-traumatic stress disorder in a representative cohort of young people in England and

Wales. *The Lancet Psychiatry, 6*(3), 247–256. https://doi.org/10.1016/S2215-0366(19)30031-8

Luecken, L. J., Dausch, B., Gulla, V., Hong, R., & Compas, B. E. (2004). Alterations in morning cortisol associated with PTSD in women with breast cancer. *Journal of Psychosomatic Research, 56*(1), 13-15.

Marchand, E., Stice, E., Rohde, P., & Becker, C. B. (2011). Moving from efficacy effectiveness trials in prevention research. *Behaviour Research and Therapy, 49,* 32–41. http://dx.doi.org/10.1016/j.brat.2010.10.008

Marks, I. (1986). *Behavioural Psychotherapy.* London, England: Institute of Psychiatry.

Martin, D. J., Garske, J. P., & Davis, M. K. (2000). Relation of the therapeutic alliance with outcome and other variables: a meta-analytic review. Journal of consulting and clinical psychology, 68(3), 438–450.

McFarlane, A. C. (2010). The long-term costs of traumatic stress: intertwined physical and psychological consequences. *World Psychiatry, 9*, 3–10. doi: 10.1002/j.2051-5545.2010.tb00254.x

Meichenbaum, D. (1994). *A clinical handbook/practical therapist manual: For assessing and treating adults with post-traumatic stress disorder (PTSD).* Waterloo, Canada: Institute Press.

Muller, R.T. (2009). Trauma and dismissing (avoidant) attachment: Intervention strategies in individual psychotherapy. *Psychotherapy: Theory, Research & Practice, 46,* 68-71. doi: http://dx.doi.org/10.1037/a0015135.

Muller, R.T. (2010). *Trauma and the avoidant client: Attachment-based strategies for healing.* New York: W.W. Norton & Company.

Muller, R.T. (2018). *Trauma and the struggle to open up: From avoidance to recovery and growth*. New York: W.W. Norton & Company.

Neff, K. (2011). *Self-compassion: The proven power of being kind of yourself.* New York: HarperCollins Publishers

Nezlek, J.B. (2008). An introduction to multilevel modeling for social and personality psychology. *Social and Personality Psychology Compass, 2*, 842-860

Pedersen, G., Kvarstein, E.H., & Wilberg, T. (2017). The Work and Social Adjustment Scale: Psychometric properties and validity among males and females, and outpatients with and without personality disorders. *Personal Mental Health. 11*, 215-228. doi: 10.1002/pmh.1382.

Peres, J. F., Newberg, A. B., Mercante, J. P., Simão, M., Albuquerque, V. E., Peres, M. J., & Nasello, A. G. (2007). Cerebral blood flow changes during retrieval of traumatic memories before and after psychotherapy: a SPECT study. *Psychological medicine*, *37*(10), 1481–1491.

Pope, C. (2003). Resisting evidence: the study of evidence-based medicine as a contemporary social movement. *Health, 7*(3), 267-282.

Porges, S. W. (2011). *The Norton series on interpersonal neurobiology. The polyvagal theory: Neurophysiological foundations of emotions, attachment, communication, and self-regulation.* W W Norton & Co.

Reisman M. (2016). PTSD treatment for veterans: What's working, what's new, and what's next. *P&T: a peer-reviewed journal for formulary management*, *41*(10), 623–634.

Rothbaum, B. O., & Schwartz, A. C. (2002). Exposure therapy for posttraumatic stress disorder. *American journal of psychotherapy*, *56*(1), 59–75. https://doi.org/10.1176/appi.psychotherapy.2002.56.1.59

Royle, M., & Shellhammer, D. (2007). Potential response bias in internet use for survey religious research. *Review of Religious Research*, *49*(1), 54-68. Retrieved May 2, 2021, from http://www.jstor.org/stable/20447472

Ressler K. J. (2010). Amygdala activity, fear, and anxiety: modulation by stress. *Biological Psychiatry*, *67*(12), 1117–1119. https://doi.org/10.1016/j.biopsych.2010.04.027

Russo, S. J., & Nestler, E. J. (2013). The brain reward circuitry in mood disorders. *Nature Reviews Neuroscience. 14*, 609–625. doi: 10.1038/nrn3381

Saleh, A., & Bista, K. (2017). Examining Factors Impacting Online Survey Response Rates in Educational Research: Perceptions of Graduate Students. *Online Submission*, *13*(2), 63-74.

Saloniki, E. C., Malley, J., Burge, P., Lu, H., Batchelder, L., Linnosmaa, I., Trukeschitz, B., & Forder, J. (2019). Comparing internet and face-to-face surveys as methods for eliciting preferences for social care-related quality of life: evidence from England using the ASCOT service user measure. *Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation*, *28*(8), 2207–2220. https://doi.org/10.1007/s11136-019-02172-2

Schultz, D.F. (2004). *A language of the heart: Therapy stories that heal.* Highland City, FL: Rainbow Books.

Schultz, D.F. (2005). *A language of the heart workbook.* Highland City. FL: Rainbow Books.

Sherin, J. E., & Nemeroff, C. B. (2011). Post-traumatic stress disorder: The neurobiological impact of psychological trauma. *Dialogues in clinical neuroscience*, *13*(3), 263–278. https://doi.org/10.31887/DCNS.2011.13.2/jsherin

Short, N. A. (2016). Sleep disturbances, emotion dysregulation, and posttraumatic stress: An ecological momentary assessment study. ProQuest Dissertations & Theses Global. (1873049597). Retrieved from http://purl.flvc.org/fsu/fd/FSU_FA2016_Short_fsu_0071N_13457

Substance Abuse and Mental Health Services Administration. (2014). *SAMHSA's Concept of Trauma and Guidance for a Trauma-Informed Approach*. HHS Publication No. (SMA) 14-4884. Rockville, MD.

Tinnin, L. (1994). *Time limited trauma therapy: A treatment manual.* Bruceton Mulls, WV: Gargoyle.

Tong, J., Simpson, K., Alvarez-Jimenez, M., & Bendall, S. (2017). Distress, Psychotic Symptom Exacerbation, and relief in reaction to talking about trauma in the context of beneficial trauma therapy: Perspectives from young people with post-traumatic stress disorder and first episode psychosis. *Behavioural and cognitive psychotherapy*, *45*(6), 561–576. https://doi.org/10.1017/S1352465817000236

Tracey, T. J., & Kokotovic, A. M. (1989). Factor structure of the Working Alliance Inventory. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, *1*(3), 207–210. https://doi.org/10.1037/1040-3590.1.3.207

Veterans Health Administration and Department of Defense (VA/DoD) Clinical Practice Guideline Working Group (2017). *VA/DoD Clinical Practice Guideline for the*

Management of Posttraumatic Stress Disorder and Acute Stress Disorder. Washington, DC: VA Office of Quality and Performance.

Van der Kolk, B. A. (1994). The body keeps the score: Memory and the evolving psychobiology of posttraumatic stress. *Harvard review of psychiatry*, *1*(5), 253-265.

Watkins, L. E., Sprang, K. R., & Rothbaum, B. O. (2018). Treating PTSD: a review of evidence-based psychotherapy interventions. *Frontiers in behavioral neuroscience*, *12*, 258. https://doi.org/10.3389/fnbeh.2018.00258

Weathers, F.W., Litz, B.T., Keane, T.M., Palmieri, P.A., Marx, B.P., & Schnurr, P.P. (2013). *The PTSD Checklist for DSM-5 (PCL-5)*. Scale available from the National Center for PTSD at www.ptsd.va.gov.

Wei, J., Zhong, P., Qin, L., Tan, T., & Yan, Z. (2017). Chemicogenetic restoration of the prefrontal cortex to amygdala pathway ameliorates stress-induced deficits. *Cerebral Cortex*, *28*, 1980–1990. doi: 10.1093/cercor/bhx104

Whiffen, V. E., Benazon, N. R., & Bradshaw, C. (1997). *Discriminant validity of the TSC-40 in an outpatient setting. Child Abuse & Neglect*, *21*(1), 107-115. doi: 10.1016/S0145-2134(96)00134-2

Wilkinson, L. (1999). Statistical methods in psychology journals: Guidelines and explanations. *American psychologist*, *54*(8), 594.

Wilson, S., Guliani, H., & Boichev, G. (2016). On the economics of post-traumatic stress disorder among first responders in Canada. *Journal of Community Safety and Well-Being*, *1*, 26. DOI: http://dx.doi.org/10.35502/jcswb.6

Xenakis, S. N. (2014). Posttraumatic stress disorder: Beyond best practices. *Psychoanalytic Psychology*, *31*(2), 236-244. doi: 10.1037/a0036244

Zahra, D. (2010). *RCI Calculator* [Online at: http://daniel-zahra.webs.com/publications.htm]"

Zoellner, L. A., Feeny, N. C., Bittinger, J. N., Bedard-Gilligan, M. A., Slagle, D. M., Post, L. M., & Chen, J. A. (2011). Teaching trauma-focused exposure therapy for PTSD: Critical clinical lessons for novice exposure therapists. Psychological Trauma: Theory, Research, Practice, and Policy, 3(3), 300.

Zorzella, K. P., Muller, R. T., & Cribbie, R. A. (2015). The relationships between therapeutic alliance and internalizing and externalizing symptoms in Trauma-Focused Cognitive Behavioral Therapy. *Child abuse & neglect, 50*, 171–181. https://doi.org/10.1016/j.chiabu.2015.08.002

Zorzella, K. P. M., Rependa, S. L., & Muller, R. T. (2017). Therapeutic alliance over the course of child trauma therapy from three different perspectives. *Child Abuse & Neglect, 67,* 147-156. doi: http://dx.doi.org/10.1016/j.chiabu.2017.02.032