

**Low-Intensity, High-Impact:
A Randomized Controlled Trial of Online Guided
Self-Help Cognitive Processing Therapy for PTSD**

By

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ABSTRACT

Using Cognitive Processing Therapy (CPT), this thesis examines approaches to addressing barriers to Posttraumatic Stress Disorder (PTSD) treatment, including cost, long waitlists, logistical difficulties, and stigma. It assesses the efficacy and practicability of adapting CPT into a guided self-help (GSH) format within a stepped care model to improve therapeutic efficiency and expand flexible treatment options. The main aims of this thesis were to assess the efficacy of stepped care and GSH in improving treatment outcomes, establish their non-inferiority to standard CPT, and evaluate the cost, acceptability, feasibility, and treatment moderators for GSH implementation.

Chapter 1 provided background context on PTSD, its broad impact, and outlined current treatment approaches and key implementation gaps. Two flexible models aimed at improving accessibility were introduced: the stepped care model, which matches the treatment intensity with the client's needs and level of severity, and the GSH model, which offers structured, evidence-based content with minimal clinician support. Chapter 2 expanded on these concepts by conducting a systematic review and meta-analysis of structurally adapted CPT formats. Both the meta-analysis of randomized controlled trials (RCTs) and the review of non-RCT studies found no significant differences between adapted and standard CPT, providing a foundation for the next component of my thesis.

Guided by evidence supporting the CPT adaptations in Chapter 2, and given the need for scalable, resource-efficient trauma-focused treatments, Chapter 3 detailed the methodology for a RCT examining a novel adaptation of CPT in a GSH format within a stepped care model. This pilot study recruited 92 adults across Australia with full or subthreshold PTSD according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) and randomized them into two conditions: the stepped care arm, where participants first enrolled in GSH and could be stepped up to standard CPT if needed, and the standard CPT arm, where participants directly received the standard CPT protocol via telehealth. The primary outcomes were PTSD, assessed

through diagnostic status and symptom severity using the *Clinician-Administered PTSD Scale* (CAPS-5) and the *PTSD Checklist (PCL-5)*; depressive symptoms, measured with the *Depression, Anxiety and Stress Scale (DASS-21)*; and quality of life, assessed using the *Assessment of Quality of Life 8-Dimensions (AQoL-8D)*. Outcome assessments for these measures were conducted at posttreatment, as well as at 3-month and 6-month follow-ups.

As summarized in Chapters 4 and 5, both approaches led to significant improvements in PTSD symptoms, depression, quality of life, and comorbid conditions. Non-inferiority to standard CPT was established for clinician-reported PTSD and depression measures. The GSH model was not only more cost-effective but also acceptable and feasible from both clinician and client perspectives. Moderator analysis revealed better outcomes for female participants and those with more clinician contact. Although age influenced treatment effects, it varied based on data treatment. In the GSH condition, participants improved regardless of baseline PTSD severity, with no major differences between those who completed GSH alone, stepped up to standard CPT, or dropped out.

In conclusion, my findings offer practical insight into how PTSD treatment can be delivered in a more scalable and accessible fashion through the GSH approach within a stepped care framework. By addressing current research and clinical gaps, and demonstrating that this approach is effective, cost-efficient, feasible, and acceptable, this study paves the way for further examination of GSH use in routine care. This study demonstrates that, although further research is needed to refine and expand these approaches, low-intensity, evidence-based models can deliver therapeutic benefits, increase reach, and reduce barriers to timely PTSD care.

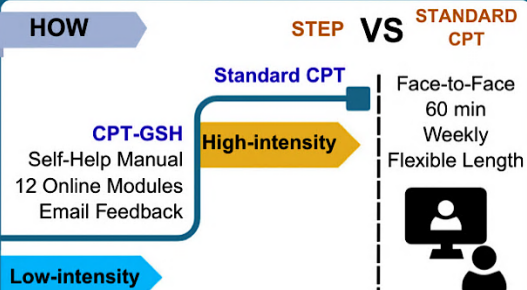
GRAPHICAL ABSTRACT

Low-Intensity, High-Impact: A Randomized Controlled Trial of Online Guided Self-Help Cognitive Processing Therapy (CPT-GSH) for PTSD

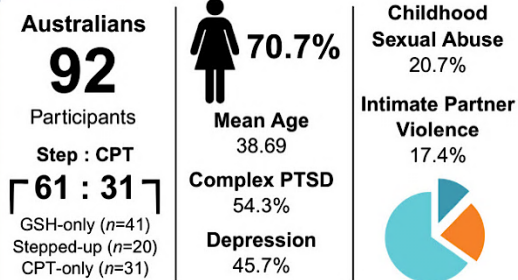
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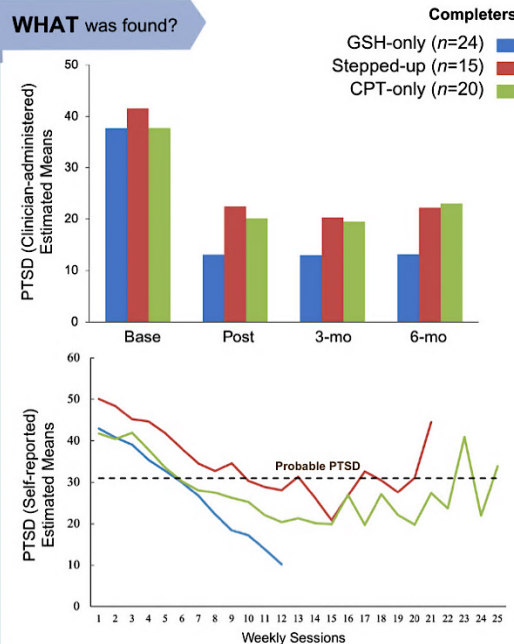
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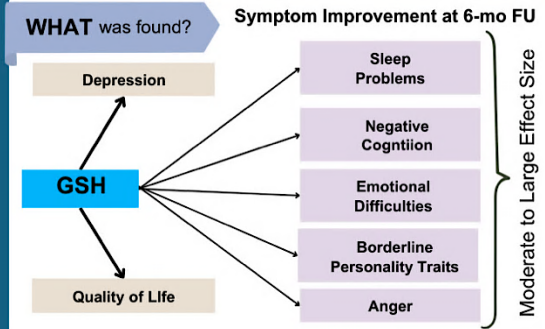
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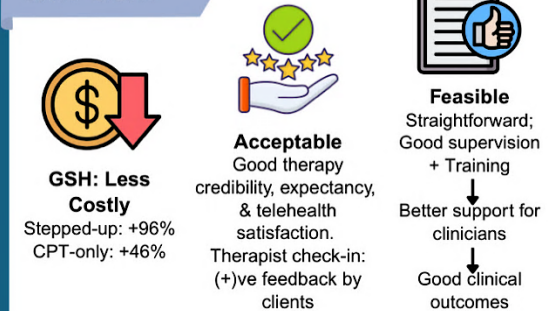
WHAT was found?



WHAT was found?



WHY GSH?



IS LESS MORE?



DECLARATION

I certify that this thesis:

1. does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university
2. and the research within will not be submitted for any other future degree or diploma without the permission of Flinders University; and
3. to the best of my knowledge and belief, does not contain any material previously published or written by another person except where due reference is made in the text.
4. has been completed without the use of generative artificial intelligence tools.

Signed: Priyadharshany Sandanapitchai

Date: 23/08/2025

**அம்மா, அப்பா,
இது உங்களுக்காக !**

“Mum, Dad, this is for you!”

ACKNOWLEDGEMENT OF COUNTRY

I would like to acknowledge the Kaurua people as the Traditional Custodians of the land on which this thesis was developed. I recognize and respect their continuing connection to land, water and community. I pay my respects to Elders past, present, and emerging, and extend that respect to all Aboriginal and Torres Strait Islander peoples.

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CHAPTER 1:

Introduction

Understanding Posttraumatic Stress Disorder

Diagnosis of PTSD

Posttraumatic Stress Disorder (PTSD) is a mental health condition that results from experiencing or witnessing events such as death, interpersonal violence, sexual assault, or severe injury. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), an individual must meet eight distinct criteria, including four symptom clusters to be diagnosed with PTSD. First, the individual must have directly experienced or witnessed a traumatic event, learned of such an event occurring to someone close to them, or been exposed to traumatic materials indirectly through their professional roles (Criterion A). In addition to this, the individual must exhibit symptoms across four other clusters: Reexperiencing the trauma (Criterion B); Avoidance of trauma-related stimuli (Criterion C); Negative alteration in cognition and mood (Criterion D); Heightened arousal and reactivity (Criterion E) (American Psychiatric Association [APA], 2013).

Reexperiencing symptoms are described as frequent, uncontrollable intrusive images of the event or distressing memories, nightmares, flashbacks or physical reactions. These symptoms can be triggered by stimuli that perceptually resemble cues associated with the traumatic event (Friedman, 2013). Avoidance symptoms involve efforts to stay away from internal reminders, such as trauma-related thoughts or feelings, as well as external reminders, such as specific people, places, or situations. Negative cognition and mood include negative views about oneself and others, a sense of detachment in interpersonal relationships, and feelings such as shame, guilt, and anger. These symptoms may also manifest as an inability to recall critical elements of the traumatic event or emotional numbing (Sripada et al., 2013). This cluster often co-occurs with difficulty in

experiencing positive emotions and engaging in enjoyable activities, mimicking depressive symptoms (Friedman, 2013). Arousal and reactivity symptoms are characterized by physiological responses, including irritability, sleep and concentration difficulties, hypervigilance, self-destructive behaviors, and a heightened startle response (Fossion et al., 2015). For a diagnosis of PTSD to be established, the specified symptoms must be present, persist for a duration more than a month (Criterion F), and result in significant impairments in the individual's functioning (Criterion G). Furthermore, these symptoms should not be attributable to changes in medication or the presence of other medical illnesses or substance use (Criterion H) (APA, 2013).

The DSM-5 also recognizes 'subthreshold PTSD', referring to cases where individuals exposed to a traumatic event may not meet the full diagnostic criteria for all PTSD symptom clusters but still experience significant distress and impairment. Although there is ongoing debate regarding the consensus definition of subthreshold PTSD (Brancu et al., 2016; Klein et al., 2024), this study adopts the definition for subthreshold PTSD as meeting three of four of the symptom clusters outlined in Criteria B–E, in addition to meeting Criteria A and F–H (Klein et al., 2024; McLaughlin et al., 2015). There is growing evidence suggesting that subthreshold PTSD, while not exerting the same level of impact as a full PTSD diagnosis, is nonetheless associated with significant disability, increased risk of suicide, comorbid psychiatric conditions, and psychosocial impairment (Bergman et al., 2015; Brancu et al., 2016).

Complex PTSD (CPTSD) is an additional trauma-related presentation warranting clinical attention. CPTSD encompasses the core PTSD symptoms (from Criterion A to H), along with persistent difficulties in emotion regulation, self-concept, and interpersonal functioning. Although the DSM-5 has not formally recognized CPTSD as an independent diagnosis, its inclusion in the World Health Organization's (WHO) International Classification of Diseases (ICD-11) reflects growing acceptance on the need to differentiate more complex trauma presentations (Maercker et al., 2022). Including CPTSD in diagnostic considerations is important, as it captures the broader and more severe

effects of prolonged or repeated trauma and informs the development of interventions that go beyond standard PTSD treatment (Nestgaard Rod & Schmidt, 2021).

Prevalence and Comorbidities

According to the WHO, at least once 70% of the global population experience a traumatic event in their lifetime (Benjet et al., 2016), and in Australia, statistic shows that more than half of the population (59%) reported experiencing at least one traumatic stressor in the past 12 months (Australian Bureau of Statistics [ABS], 2022). Furthermore, the ABS report indicated that approximately 5.6% of the Australian population meets the criteria for PTSD within any 12-month period, making it the second most prevalent mental health disorder after social anxiety (ABS, 2022). In terms of subthreshold PTSD, a meta-analytic review reported the pooled estimate of prevalence rate of 14.7% across studies, with slightly lower rates (12.6%) in more methodologically rigorous studies than in less-rigorous studies (15.6%) (Brancu et al., 2016).

Beyond its prevalence, PTSD is often accompanied by comorbid conditions, posing additional challenges for accurate diagnosis and effective treatment (van Minnen et al., 2015). Major depressive disorder (MDD) is among the most frequently co-occurring condition in individuals with PTSD, with prevalence estimates indicating that approximately 48–52% of those with PTSD also meet diagnostic criteria for comorbid MDD (Angelakis et al., 2020; Rytwinski et al., 2013). The high comorbidity can be explained by several mechanisms, such as shared cognitive and memory processes and genetic influences (Angelakis & Nixon, 2014). Although symptom overlap such as sleep difficulties, low mood, and problems with concentration has also been proposed as an explanation (Flory & Yehuda, 2015), this factor alone does not adequately account for the observed comorbidity rates (Afzali et al., 2017). Comorbidity with anxiety disorders is also highly prevalent, particularly within civilian populations. Notably, 51% of individuals with PTSD are diagnosed with generalized anxiety disorder (GAD), 44% with panic disorder, and 43% with social phobia (Zayfert et al., 2002).

Not surprisingly, comorbidity rates with PTSD tend to be higher in treatment seeking samples. Brady et al. (2004) suggests a significant overlap, with over one-third of treatment-seeking individuals for substance use disorders (SUD) meet the criteria for lifetime PTSD. Another prevalent comorbid condition is borderline personality disorder (BPD). Studies have shown that 33–79% of individuals with BPD concurrently experience PTSD in clinical settings, highlighting the intricate overlap between these two disorders (Sack et al., 2013). Overall, research indicates that 80–90% of individuals with PTSD report at least one additional condition, and nearly two-thirds report two or more co-occurring diagnoses. For example, it is not uncommon for individuals with PTSD to experience ‘triple’ comorbidity, where depression and anxiety co-occur alongside PTSD (Britvić et al., 2015; Ginzburg et al., 2010).

Frameworks for Understanding PTSD Onset and Maintenance

Although many individuals encounter traumatic events, not everyone develops PTSD. Most recover naturally without formal mental health support and are able to move forward, but some struggle to process their trauma and adopt maladaptive coping strategies that hinder recovery and may contribute to the development of PTSD (Voges & Romney, 2003).

Several theoretical frameworks have been proposed to account for the development and maintenance of PTSD over the years, spanning biological and genetic frameworks (Ryan et al., 2016), stress-diathesis models (McKeever & Huff, 2003), and socio-cognitive-behavioral perspectives. The present thesis focuses on the latter, which include the emotional processing theory (Foa et al., 1989), dual representation theory (Brewin et al., 1996; 2010), socio-cognitive model (Resick & Schnicke, 1992), and the cognitive model of PTSD (Ehlers & Clark, 2000). These models have been particularly influential in informing contemporary psychological interventions for PTSD and offer complementary perspectives on trauma-related pathology.

Foa's emotional processing theory posits that PTSD arises when individuals form a fear network in memory, connecting trauma-related stimuli, emotional responses, and meaning elements

(Foa & Kozak, 1986). This network becomes overgeneralized and easily activated by reminders, leading to intrusive symptoms. In response, individuals engage in avoidance behaviors to reduce distress, but this only prevents the trauma from being fully processed and integrated. According to Foa, PTSD is maintained because the individual avoids confronting these reminders, which prevents the modification of the fear network. For example, a person who has experienced a car accident may avoid driving or riding in cars altogether, which prevents them from learning that travel is generally safe. Hence, exposure to these stimuli in a safe environment can help modify the fear network, reduce the generalization of fear, and integrate the trauma into a more coherent memory.

In contrast, the updated version of Brewin's Dual Representation Theory (2010) proposes that trauma memories are encoded at the time of the event through two distinct systems: sensory-bound representations (S-reps) and contextual representations (C-reps). In typical memory processing, it is argued these systems remain closely linked, with S-reps drawing meaning and structure of experiences from the C-reps. In PTSD, however, this connection is thought to be disrupted. Applying the same example as above, a person involved in a car accident may retain vivid S-reps of the sound of screeching tires, shattering glass, and the surge of fear at impact, whereas the corresponding C-reps such as the location, sequence of events, or awareness of having survived, fail to consolidate at the time of the event. Weeks later, upon hearing a similar screeching sound, a physiological reaction may be triggered, such as racing heartbeat, accompanied by a sense of fear, without accessing the contextual information that would normally signal the individual was safe and in the present. Recovery from trauma, therefore, depends on the re-establishment of associations between these systems, allowing the traumatic memory to be reinterpreted within an appropriate contextual framework.

Resick's socio-cognitive model expands on the fear network proposed by Foa and Brewin, emphasizing that PTSD can elicit a broader range of emotional responses beyond fear, including sadness, anger, guilt, and shame (Resick & Schnicke, 1992). This model focuses on the content of

maladaptive cognitions and how these affect emotions and behaviors. It suggests that PTSD occurs when the trauma disrupts an individual's core beliefs about themselves and the world. This concept aligns with Foa's model, which emphasizes the need to integrate trauma-related information within the broader memory system. However, Foa's theory largely attributes the difficulty in processing trauma to the characteristics of the trauma memory itself, while Resick's model suggests that PTSD arises from a conflict between pre-existing beliefs and the reality of the traumatic experience. In this context, someone who survived a car crash who previously endorsed the belief "*I can control my safety*" may find this belief destabilized by the sudden, uncontrollable threat to life posed by the accident. In attempting to reconcile this discrepancy, the person may engage in **assimilation**, reinterpreting the event to fit existing beliefs, perhaps by assuming personal blame (e.g., "*It happened because I wasn't careful enough*"); **over-accommodation**, drastically altering beliefs in a maladaptive direction (e.g., "*The world is unsafe*"); or **accommodation**, adjusting beliefs in a realistic and balanced way (e.g., "*Even when I'm careful, some events are beyond my control*"). Within this framework, therapeutic recovery involves facilitating the process of accommodation, whereby individuals are supported to revise distorted appraisals without undermining their sense of agency or stability (Resick & Schnicke, 1992).

Ehlers and Clark's (2000) cognitive model, influenced by the work of Foa and Kozak (1986), shares conceptual overlap with Resick's framework, but places greater emphasis on the role of negative appraisals of what happened in the development of PTSD. According to Ehlers and Clark, PTSD develops when individuals process trauma in a way that reinforces a sense of ongoing threat. This occurs through three interrelated mechanisms: the formation of negative appraisals about the trauma, often perceiving themselves or the world as permanently unsafe; the encoding of trauma memories in a fragmented and poorly contextualized manner, disconnected from the broader autobiographical memory system; and the engagement in maladaptive coping strategies such as avoidance, rumination, or hypervigilance that inhibit cognitive integration and emotional resolution.

In the aftermath of a car accident, a person might recall only disjointed sensory fragments like screeching, flash, or the jolt of impact without a clear understanding of what happened. These fragmented intrusions occur outside of context, reinforcing the belief that danger is still present. When paired with appraisals like “*I’m not safe*” or “*I have no control*”, these sensations intensify the person’s sense of vulnerability and keep them in a state of hypervigilance. Recovery, according to this model, involves not only the reconstruction of the trauma memory into a coherent autobiographical account, but also the re-evaluation of maladaptive appraisals that drive the perception of threat, thereby enabling the trauma to be experienced as something that occurred in the past rather than something that continues to signal danger in the present.

Collectively, these theoretical models provide a nuanced understanding of the cognitive, emotional, and memory-related processes that underlie PTSD. They offer different explanations and emphases regarding the underlying processes, yet share common ground in underscoring the importance of integrating trauma-related information into a broader, coherent narrative.

The Role of Maladaptive Cognition and Empirical Evidence

The theoretical models discussed above offer important insights into why some individuals may be more vulnerable to developing PTSD than others. Of particular relevance to this thesis is the role of maladaptive cognition, which has been consistently linked to PTSD symptom severity across a range of trauma-exposed populations (Dunmore et al., 2001; Ouhmad et al., 2023; Van Buren & Weierich, 2015).

In one such study, Beierl et al. (2020) examined the cognitive pathway to PTSD symptoms in a prospective study of trauma survivors, who were recruited shortly after experiencing violent assaults or traffic collisions. Their findings revealed negative appraisals of the event ($\beta = 0.20, p = .001$) and fragmented trauma memories ($\beta = 0.21, p < .001$), assessed one month post trauma, significantly predicted the severity of PTSD symptoms six months later. These relationships were

both direct and indirect, with maladaptive cognitive and behavioral responses, such as avoidance, dissociation, and maladaptive reactions to intrusive thoughts, mediating the effects.

Similarly, Hansen et al. (2014) examined a national sample of Danish bank robbery survivors and found that negative beliefs about the self and the world, assessed one week after the trauma, significantly predicted both acute stress disorder symptoms ($\beta = .22, p < .001$) and subsequent PTSD symptoms ($\beta = .31, p < .001$). Importantly, the predictive value of negative self-cognition remained significant even after controlling for age, gender, and prior trauma history, highlighting the unique contribution of maladaptive cognition beyond demographic variables.

Similarly, emerging evidence also highlights maladaptive cognitions as a central mechanism of therapeutic change in PTSD treatment, operating both when targeted explicitly through cognitive interventions and when modified indirectly through exposure-based approaches. In a systematic review of 65 controlled and uncontrolled PTSD treatment studies, Brown et al. (2019) identified 15 studies that assessed the directionality between changes in negative appraisals and PTSD symptoms. Of these, 11 found that reductions in negative appraisals consistently preceded decreases in PTSD symptoms, suggesting a causal pathway. Furthermore, a study by Goldbeck et al. (2016) compared trauma-focused cognitive behavioral therapy (CBT) with a waitlist control and reported moderate effect sizes for reductions in negative cognitions ($d = 0.51$) and PTSD symptoms ($d = 0.44$). These findings are further supported by recent research involving 217 patients undergoing cognitive therapy for PTSD (CT-PTSD) in routine clinical settings. This study demonstrated that early reductions in trauma-related negative appraisals predicted subsequent decreases in PTSD symptom severity ($\beta = 0.52, p < .031$), reinforcing the temporal precedence of cognitive change in therapeutic outcomes (Wiedemann et al., 2023).

Kooistra et al. (2023) provided evidence for the indirect targeting of cognition through exposure-based treatment, showing that in patients with childhood abuse-related PTSD, early improvements in maladaptive appraisals during prolonged exposure (PE) therapy preceded

reductions in PTSD symptom severity. These findings are consistent with earlier PE studies, which similarly found that reductions in negative trauma-related cognitions predicted subsequent symptom improvement (Kumpula et al. 2017; Zalta et al., 2014).

These prospective and treatment studies increasingly demonstrate that maladaptive cognitions are associated with the severity of PTSD, predict its longitudinal course, and mediate treatment response across a range of therapeutic approaches. Recognizing the central role of these cognitive patterns is critical for understanding the mechanisms that maintain PTSD over time and for guiding the development of effective, targeted interventions. Building on this foundation, the following section examines the broader functional consequences of PTSD, with a focus on its impact beyond core symptomatology.

The Ripple Effects of PTSD

Beyond the hallmark symptoms of reexperiencing, avoidance, negative alterations in mood and cognition, and hyperarousal, PTSD has a profound impact on overall quality of life, affecting multiple areas of daily functioning. Individuals with PTSD frequently experience heightened emotional dysregulation, increased irritability, and aggressive behaviors, which can strain interpersonal relationships and undermine social connectedness (Forbes et al., 2019; Taft et al., 2017). Those who experience complex or prolonged trauma can be at risk of borderline personality disorder or might display traits of this (Ford & Courtois, 2021). Sleep disturbances are also common and further exacerbate functional impairment (Miller et al., 2020). PTSD is often accompanied by serious comorbidities, including suicidality (Akbar et al., 2023), self-harming behaviors (Andersson et al., 2022), substance use disorders (Jacobsen et al., 2001), and dissociative symptoms (Kratzer et al., 2022). These individual-level difficulties extend beyond the personal sphere, contributing to broader social and economic burdens. PTSD is associated with increased healthcare utilization, reduced occupational functioning, and diminished productivity, resulting in substantial costs at both community and national levels (Keane et al., 2008). Additionally, research

has established strong links between PTSD and chronic health conditions, including cardiovascular disease, gastrointestinal disorders, cancer, and chronic pain (Sommer et al., 2021). Individuals with PTSD consequently use medical services at significantly higher rates than those without the disorder (Pacella et al., 2013). For example, a study of Australian Vietnam veterans found that healthcare costs for individuals with PTSD were 60% higher than average, largely due to the added burden of treating comorbid physical and mental health conditions (Marshall et al., 2000).

The economic burden of PTSD extends beyond just healthcare utilization. In Australia, a report on the 2022 Southeast Queensland floods estimated the total social and mental health impacts alone amounted to AUD \$4.5 billion (Deloitte Access Economics, 2022). Similarly, an analysis of motor vehicle accidents in South Australia found that 29% of victims met the criteria for PTSD after nine months, with significantly higher healthcare costs among those diagnosed with PTSD compared to individuals with depression or anxiety. Notably, economic losses were greater for individuals with untreated PTSD than for those who received treatment ($p < .05$) (Chan et al., 2003). Similar findings have been reported globally, reinforcing the extensive economic strain PTSD places on healthcare systems (Ivanova et al., 2011; Lamoureux-Lamarche et al., 2016; Walker et al., 2003). In addition, PTSD has also been identified as a leading cause of partial disability (Bruffaerts et al., 2012), with affected individuals exhibiting higher service utilization rates than those with other psychiatric disorders (von der Warth et al., 2020).

While these examples highlight the growing demand to expand appropriate PTSD services and treatments, there is also research evidence supporting the long-term economic and social benefits of investing in prevention and recovery programs. A report examining the long-term impacts of childhood abuse among Australian adults estimated that timely, comprehensive interventions could have reduced the long-term impact on approximately 3.7 million adults. This could result in annual savings of AUD \$6.8 billion across state, federal, and territory budgets, primarily through lower healthcare costs and increased tax revenue from improved productivity

(Kezelman et al., 2015). Pazderka et al. (2022), for instance, conducted a Social Return on Investment (SROI) analysis of a Canadian specialized mental health service designed for survivors of childhood sexual abuse. Their analysis demonstrated that, over a five-year period, each dollar invested yielded an average return of C\$11.60 in cost savings, with sensitivity analyses indicating a range between C\$9.20 and C\$12.80. These findings provide robust support for the economic viability of targeted trauma interventions.

Given the widespread prevalence of PTSD and its profound impact on individuals, families, and communities, investing in prevention and recovery efforts is not only a moral responsibility but also an economic necessity. Addressing this burden requires timely access to treatments that are supported by strong empirical evidence and tailored to the complex and enduring consequences of trauma-related symptoms.

Evidence-based PTSD Treatment: Cognitive Processing Therapy

Over the years, numerous psychotherapeutic and pharmacological interventions have been developed to address PTSD (Charney et al., 2018; Yunitri et al., 2023). Among them, psychological therapies, in particular those with a trauma focus, have been demonstrated to be one of the most effective interventions for PTSD (Lewis et al., 2020). In relation to the current study and in alignment with international guidelines such as the American Psychological Association [APA], (2017), The International Society for Traumatic Stress Studies [ISTSS], (2020), National Institute for Health and Care Excellence [NICE], (2018), Veterans Health Administration & Department of Defense [VA DoD], (2017), the Australian Guidelines for the Prevention and Treatment of PTSD, one of the recommended therapies is Cognitive Processing Therapy (CPT; Resick et al., 2017, 2024), a specific form of trauma-focused Cognitive Behavioral Therapy (CBT).

CPT is a structured, manualized treatment developed to assist individuals in identifying and challenging maladaptive trauma-related beliefs, with the aim of facilitating cognitive and emotional recovery following trauma exposure. Typically, standard CPT consists of 60-minute sessions

delivered once a week over a period of approximately 12 weeks, although the number of sessions can vary depending on the client's progress. A more detailed overview of CPT is presented in **Chapter 3**. Although CPT was initially developed for survivors of sexual assault with chronic PTSD as a group intervention (Resick & Schnicke, 1992), research has demonstrated its effectiveness in significantly reducing PTSD symptoms, depression, and anxiety across a variety of populations affected by different types of trauma, including veterans (Chard et al., 2012; Raines et al., 2024), survivors of interpersonal violence (Resick et al., 2008), and refugees (Bernardi et al., 2019; Kaysen et al., 2020) (see also the 'state of the science' review of CPT by Resick et al., 2024, for a summary).

Although findings vary, CPT consistently demonstrates strong clinical efficacy for the treatment of PTSD, with effect sizes generally falling within the medium to large range ($g = 0.80$ – 1.24 , Asmundson et al., 2019; $g = 0.62$ – 1.79 , Lenz et al., 2014). The findings from the meta-analysis of Asmundson et al. (2019) also indicated that, on average, individuals treated with CPT performed better than 89% of those in inactive control groups immediately posttreatment, and 82% at follow-up. Similarly, another meta-analysis focusing specifically on military personnel and veterans found that CPT produced a moderate overall effect size ($g = 0.48$) in reducing PTSD symptoms compared to all comparator conditions, with a larger effect observed when compared specifically to non-trauma-focused active interventions ($g = 0.57$) (Raines et al., 2024).

Complementing these findings, another review reported that the proportion of participants who no longer met PTSD diagnostic criteria after CPT ranged widely from 30% to 97% (Watkins et al., 2018). Compared to control conditions such as waitlists, self-help books, or usual care, individuals receiving CPT were 51% more likely to achieve loss of diagnosis. Beyond its impact on PTSD outcomes, the effects of CPT on co-occurring depressive symptoms have also yielded a large treatment effect ($g = 1.68$) compared to waitlist controls, and a moderate effect size ($g = 0.46$) when compared to alternative active treatments (Lenz et al., 2014).

Despite the strong evidence supporting CPT's effectiveness in reducing PTSD and related symptoms, access to such treatment remains a significant challenge. Thus, the next section examines the key barriers that continue to limit the timely and sustained delivery of evidence-based PTSD interventions.

Barriers to Accessing the PTSD Treatments

In terms of national burden of disease, it has been estimated that mental disorders were responsible for 13% of the total burden of disease in Australia. At least 20% of Australians (7.3 million people) aged between 16–85 were documented to have a mental disorder, but the population treatment rate was only 35% (1.1 million people) suggesting that mental health services are underutilized (ABS, 2023). Although these were general rates, for PTSD specifically, reasons for underutilization of treatments are likely multi-faceted, including stigma and negative perceptions around mental health and treatment (Benfer et al., 2023; McLean et al., 2022; Spikol et al., 2024), difficulties accessing care due for logistical, transport (Andrews et al., 2022; Yamokoski et al., 2023) and/or economic reasons (Andrews et al., 2022; Jella et al., 2022), as well as long waitlists (Ferrell et al., 2021), or perceived lack of culturally competent services (Hernandez et al., 2024; McClendon et al., 2020).

Moreover, a common intrapersonal barrier is avoidance, particularly around trauma disclosure; many individuals fear re-traumatization and therefore refrain from sharing details of their trauma, which can delay help-seeking or limit engagement once treatment begins (Kazlauskas, 2017). In addition to this personal factor, organizational and systemic barriers also play an important role. For example, Australian government funding constraints such as the limit of only ten subsidized sessions despite the need for longer-term care restrict access to adequate treatment (de Boer et al., 2022). Further, when individuals do seek help, they may encounter professionals who are not trained in trauma-focused interventions, which can lead to unhelpful or even harmful responses and contribute to distrust in the healthcare system (Foa et al., 2013). Another commonly

reported barrier is the lack of social support. Survivors who do not receive adequate understanding or encouragement from family and friends may struggle to engage fully in treatment or maintain progress (Kazlauskas, 2017).

To better understand the extent of these barriers, it is useful to explore some specific examples that highlight their impact on access to mental health treatment. Since the onset of the COVID-19 pandemic, the impact of trauma has become one of the most frequently reported mental health concerns (Australian Psychological Society [APS], 2022). However, access to psychological support remains a significant challenge in Australia, with one in three psychologists unable to accept new clients due to rising demand and 73.5% of psychologists in metropolitan areas maintaining waitlists. Among these, 64% report that wait times are worsening, often ranging from three to six months (APS, 2022).

In addition, the financial burden of PTSD treatment further limits care for many individuals. The cost of PTSD therapy sessions ranges between \$200 and \$300 per session, with Medicare rebates leaving an out-of-pocket expense of \$130 to \$150 (Australian Institute of Health and Welfare [AIHW], 2025). For individuals with limited financial resources, these costs may still be prohibitively expensive, further limiting access to essential care (de Boer et al., 2022). This is further substantiated by a report from AIHW, which indicates that between 2022 and 2023, 10% of the Australian population (approximately 2.7 million individuals) accessed Medicare-subsidized mental health-specific services. Service utilization, however, was markedly lower among individuals residing in remote areas (44 per 1,000 population) compared to those in major cities (108 per 1,000).

A similar trend was observed across socioeconomic strata, with individuals experiencing greater disadvantages accessing services at a lower rate (81 per 1,000) than those in the least disadvantaged groups (130 per 1,000) (AIHW, 2024). This is relevant to CPT and other evidence-based psychological interventions, which typically require clients to attend weekly in-person

sessions over an average duration of 12 weeks, thus sharing these significant obstacles to accessing treatment. To address these challenges, it is essential to investigate and implement alternative delivery methods that expand access to effective PTSD treatments beyond traditional in-person settings.

Moderators of Treatment Outcomes

Removing barriers to accessing treatment represents a critical step forward, however, it is only part of the solution. Among individuals who access evidence-based treatment for PTSD, approximately 33% to 50% do not achieve full therapeutic benefit, with many continuing to experience clinically significant symptoms following the intervention (Semmlinger et al., 2024). This limited response has prompted a growing body of research focused on identifying the factors that moderate treatment outcomes in PTSD. It is also important to note that these figures must be interpreted cautiously because the definitions of treatment response, methodologies, outcome measures, and follow-up periods vary considerably across studies, making cross-study comparisons challenging.

Two recent systematic reviews and meta-analyses have synthesized the current evidence on predictors of treatment response and non-response, aiming to clarify which individuals may benefit most from current interventions. Keyan et al. (2024) conducted a meta-analysis that included 114 published studies dating from 2003 onward, covering 24 predictor domains. The review focused on baseline factors that predict positive response to trauma-focused psychotherapy for PTSD. In contrast, Semmlinger et al. (2024) undertook the first comprehensive meta-analysis of non-response rates following evidence-based psychological treatments. Drawing on 86 randomized controlled trials, the study examined predictors associated with failure to achieve clinically meaningful improvement. Despite their different analytic focus, both reviews identified several common moderators of treatment outcome, which are outlined below.

Comorbid psychiatric conditions emerged as a central factor, with depression, one of the most prevalent co-occurring disorders with PTSD, showing a robust association with attenuated treatment gains. In both reviews, higher baseline depressive symptoms significantly predicted poorer response or higher dropout rates in trauma-focused interventions. Demographic characteristics also played a role. Findings indicated that females were more likely to respond positively to PTSD treatment. This difference has been partly attributed to a greater tendency among women to engage in emotion-focused coping strategies, as well as having higher rates of internalizing symptoms, which may align more closely with the mechanisms targeted by trauma-focused therapies (Olf, 2017). In contrast, older age was associated with diminished outcomes, possibly due to reduced cognitive flexibility or cumulative exposure to stress (Böttche et al., 2012). With regards to trauma-related variables, elevated baseline PTSD severity was linked to reduced likelihood of responding to treatment and individuals with chronic or cumulative trauma histories thought to present with more complex symptom profiles that are less responsive to time-limited or current recommended treatments (Hoeboer et al., 2021; Hu et al., 2025). Both findings highlight several important moderators that can shape treatment trajectories; however, the authors caution that these interpretations must be considered in the context of substantial heterogeneity across studies, driven by differences in treatment approaches, sample characteristics, and outcome measures. This was underscored by the finding of both reviews that many potential variables did not show robust associations with outcomes. Together, the heterogeneity of PTSD, marked by a range of moderating factors such as comorbid conditions, coping style, trauma-related cognitions, symptom severity, type and chronicity of trauma, necessitates a flexible and tailored treatment approach.

Does One Size Fit All?

An intervention that is effective for one person may not provide the same benefits for another, highlighting the importance of tailoring treatment to individual needs (Cloitre, 2015). Such modification should not only increase the likelihood of positive outcomes but also address several

barriers often encountered in clinical settings discussed above, such as long waitlists, high treatment costs, and limited access to specialized care. This section of the thesis now explores the importance of adapting treatment strategies and highlights the potential benefits of approaches such as stepped care and guided self-help interventions. **Chapter 2** will also continue this focus through a systematic review and meta-analysis of various structural adaptations made to CPT and evaluate its effectiveness in treating PTSD.

The Stepped Care Approach

Stepped care is an evidence-based model of healthcare delivery that aims to provide treatment at the appropriate level of intensity based on the severity of the client's mental health concerns and individual needs. The model incorporates treatment of varying intensity, starting with a low-intensity intervention, which may include psychoeducation materials, self-help modules, or focused sessions, and stepping up to high-intensity interventions, such as conventional one-on-one therapy, if the client does not respond to the initial approach (Richards, 2012). Studies have shown that individuals with mild to moderate symptom severity can benefit from starting with low-intensity interventions that require minimal clinician involvement. If significant improvement is not achieved, clients have the option to be stepped up to higher-intensity treatments (Dawson & Rahman, 2018).

'Step-up' criteria in stepped care models vary across trauma studies and depend on the specific goals of the targeted treatment. For example, in Zatzick et al. (2015), participants were stepped up from an online self-guided intervention to standard CBT if they did not achieve at least a 50% reduction in self-reported baseline PTSD and/or depressive symptoms. In another study implementing a three-level stepped care model, patients were stepped up if they remained clinically symptomatic after 3–6 weeks, based on standardized assessments. Additional step-up criteria included patient requests for specialized services or the presence of high suicide or violence risk (Engel et al., 2016). This flexibility not only ensures that clients receive the appropriate level of

care while actively engaging with the service, but it also provides a cost-effective treatment pathway. That is, by initially utilizing lower-intensity treatments, healthcare systems can allocate resources more efficiently, reserving intensive therapies for those who truly need them, which can reduce overall treatment costs while still achieving positive outcomes.

A recent systematic review and meta-analysis by Roberts and Nixon (2023) examined the effectiveness of the stepped care approach within PTSD context. The review included eight studies on stepped care prevention and four studies on stepped care treatment. Interestingly, the findings did not show significant differences in outcomes between stepped care interventions and usual care, likely due to high heterogeneity across studies in sample characteristics, methodologies, and the inconsistent or absent use of evidence-based treatments. That said, stepped care prevention approaches were found to be as acceptable as usual care, with participants reporting similar or greater satisfaction and ease of engagement, and in some cases, rating them as more acceptable. These findings suggest that, although stepped care is feasible and acceptable, its effectiveness likely depends on the sample, as well as the quality, intensity, and fidelity of the interventions implemented.

Progressing this work, Roberts (2023) conducted a randomized controlled trial to evaluate a stepped care model for adults seeking treatment for PTSD. The stepped care used an online PTSD program (This Way Up, n.d.) as the low-intensity intervention and CPT as the high-intensity treatment. Outcomes were compared to standard CPT delivered via telehealth. The results showed significant improvements in PTSD symptoms, depression, and quality of life across all groups at posttreatment, 3-month, and 6-month follow-ups. However, superior outcomes were observed for those allocated directly to standard CPT relative to the stepped care condition across all timepoints. The study further provided evidence that stepped care was less costly than standard CPT (Roberts, 2023). In addition, studies have shown that stepped care can be cost-effective across different mental health conditions, including depression, and anxiety (See review by Ho et al., 2016). As

demonstrated by these findings, meaningful improvement in the stepped care condition, together with its cost-effectiveness, affirms its strong potential in low-resource settings. The next section outlines how the stepped care model could be further enhanced by incorporating other flexible approaches to meet the diverse needs of individuals.

Guided Self-help Interventions

In the context of psychological therapies, guided self-help (GSH) interventions offer a range of structured, evidence-based tools and resources that clients can access online and use independently, with minimal but strategic support from a therapist. As a low-intensity intervention, GSH can be offered as the first point of care within a stepped care framework. GSH interventions can empower clients by providing materials through self-help books or digital platforms that they can complete at their own pace, while maintaining limited contact with a clinician for support and engagement in therapy. This balance between self-guided work and professional input makes GSH more effective than purely self-help therapies (Lewis et al., 2013).

An early contribution to this evidence base was a meta-analysis of 12 RCTs examining internet-based CBT for anxiety and depression (Spek et al., 2007). It found that interventions with therapist support had large mean effect size ($d = 1.00$), compared to small mean effect size for unsupported interventions ($d = 0.24\text{--}0.26$), with consistent outcomes across all studies ($I^2 = 0$) (Spek et al., 2007). These findings have been replicated by subsequent studies, which have consistently shown that GSH interventions outperform unguided self-help interventions (See meta-analyses of Baumeister et al., 2014; Farrand & Woodford, 2013; Palmqvist et al., 2007). However, a limitation of this work is that many of these studies are now dated and focused primarily on depression and anxiety, not PTSD.

In light of this, there is growing interest in the effectiveness of GSH interventions for PTSD. Relevant to my thesis, Siddaway and colleagues (2022) conducted a meta-analysis to evaluate trauma-focused GSH interventions (TF-GSH) across 17 RCTs. The control conditions in these

studies included waitlist, treatment as usual, monitoring, general support or counselling. The samples across studies primarily consisted of adult participants, and the interventions employed a range of evidence-based components such as written exposure exercises, psychoeducation targeting PTSD symptoms, and mechanisms behind treatment strategies. The analysis revealed a moderate to large effect favoring TF-GSH for reducing PTSD symptoms ($g = -0.81$, 95% CI $[-1.24, -0.39]$), with moderate effects observed for depression ($g = -0.73$, 95% CI $[-1.16, -0.31]$) and anxiety symptoms ($g = -0.72$, 95% CI $[-1.18, -0.27]$) (Siddaway et al., 2022). These findings support the efficacy of TF-GSH, but variations in intervention design, duration, therapist qualification and involvement, and participant characteristics should be taken into account when interpreting the results.

The study by Lewis et al. (2017) is a useful exemplar of this meta-analysis, which tested an internet-based self-help program with up to 3 hours of therapist assistance against a delayed treatment condition. Adult participants with mild to moderate level of PTSD symptom severity were recruited via specialist secondary care services focused on traumatic stress. The online program consisted of eight structured modules, which included psychoeducation about PTSD, grounding and relaxation techniques, behavioral activation, imaginal exposure, cognitive therapy components, and relapse prevention strategies. Therapists offered ongoing support, providing monitoring, motivation, and assistance with problem-solving to facilitate engagement and treatment adherence. Results showed that PTSD symptoms, as assessed by independent clinicians, were significantly lower in the GSH group compared to the delayed treatment group at 1-month follow-up ($d = 1.86$). Additionally, similar improvements were observed for self-reported depression, anxiety and functional impairment (Lewis et al., 2017). These outcomes partly reflect the participant selection criteria in terms of symptom severity and limit the generalizability to individuals with high symptom severity or more complex cases.

GSH has been largely underexplored in the context of CPT. However, a recent pilot study by Wiltsey Stirman et al. (2021) was the first to examine the potential of message-based GSH interventions in treating PTSD using CPT (CPT-text). The study compared this intervention with messaging therapy as usual (TAU). Using Talkspace, an online mental health platform in the USA, the intervention was delivered to 28 adults with probable PTSD indicated by a score of 33 or above on the PTSD Checklist (Blevins et al., 2015). They received the intervention via asynchronous text messages, animated videos for psychoeducation, audio and video messages. The results showed that reductions in self-reported PTSD symptoms in the CPT-text group were twice as large as those in the TAU group (between group effect size: $d = 0.84$, 95% CI [0.23, 1.44]). Furthermore, significant improvements were observed in comorbid depressive symptoms within CPT-text group, with a large treatment effect ($d = -0.98$, 95% CI [-2.01, 0.08]) (Wiltsey Stirman et al., 2021). Despite promising outcomes, this pilot study was limited by a small sample size, the absence of long-term follow-up, and reliance on self-reported measures, underscoring the need for replication in larger and more diverse samples.

Although GSH interventions show promise, several challenges should be acknowledged. One commonly cited concern has been high dropout rates; however, recent studies have consistently shown that dropout rates in GSH are comparable to those in standard CPT (Bisson et al., 2022; Siddaway et al., 2022). Another potential drawback is the difficulty participants may experience in managing emotional distress, as self-paced trauma-focused worksheets can evoke intense emotions that participants must navigate independently, which may discourage engagement (Siddaway et al., 2022). Evidence for the effectiveness of GSH interventions in broader and more diverse populations remains limited (Stefanopoulou et al., 2020), and participants may be reluctant to report adverse events due to the self-directed nature of the intervention (Siddaway et al., 2022). Nevertheless, emerging strategies, such as structured guidance, regular check-ins and safety monitoring protocols,

have been developed to address these challenges (Bisson et al., 2022; Lewis et al., 2017; Wiltsey Stirman et al., 2021).

Flexible Treatment Approaches: Limitations and Next Steps

Flexible approaches, including stepped care models and GSH for PTSD, present promising avenues for intervention. The existing body of research, however, is characterized by several methodological and practical limitations that constrain the generalizability and applicability of findings in practice. One of the most significant challenges associated with GSH approaches is low participant engagement, which is often attributed to the self-directed nature of the modules and the limited availability of therapeutic support (Bennion et al., 2025). The absence of ongoing clinician involvement, coupled with the need for individuals to remain intrinsically motivated to complete the modules, has been linked to elevated dropout rates. Reported attrition rates in meta-analytic review range from as low as 0% to 65%, with an average dropout rate of approximately 36%, reflecting considerable variability in participant engagement across studies (Siddaway et al., 2022). However, it is also important to note that these dropout rates are broadly comparable to those observed in standard in-person trauma-focused therapies (Varker et al., 2021), suggesting that disengagement is not unique to GSH, but reflects a wider challenge in the treatment of PTSD.

Another limitation is the lack of long-term follow-up data, which limits our ability to determine whether treatment gains are sustained over time. Given the chronic and often relapsing course of PTSD, longitudinal assessments are essential to establish the enduring impact of such flexible approaches. Without follow-up data, it remains unclear whether initial symptom reductions reflect meaningful, lasting change, or merely short-term improvement (Weber et al., 2021). Moreover, from a methodological standpoint, many studies continue to rely exclusively on self-report measures to assess PTSD outcomes. Self-report instruments are cost-effective and easy to administer, but they are vulnerable to response biases and may lack diagnostic precision (Anvari et al., 2023). Consequently, best practice guidelines recommend incorporating clinician-administered

diagnostic interviews alongside self-report tools to enhance the accuracy and validity of outcome measurement (Cody et al., 2017).

Although many recent studies have begun to include depression as a secondary outcome, acknowledging its high comorbidity with PTSD, there is growing recognition of the importance of evaluating broader indicators of wellbeing, such as quality of life (Benfer & Litz, 2023). Mental health extends beyond the absence of psychopathology, encompassing optimal functioning, including the capacity to cope with stress, realize personal potential, and contribute meaningfully to society (WHO, 2004). Thus, assessing quality of life enables researchers and clinicians to capture the broader impact of treatment on individuals' day-to-day functioning, interpersonal relationships, coping capacity, and overall life satisfaction (Schnurr et al., 2009). Furthermore, as outlined earlier, PTSD is associated with a wide range of functional impairments, including poor sleep quality, cognitive and emotional difficulties, and behavioral problems such as impulsivity and aggression (Forbes et al., 2019; Ford & Courtois, 2021; Miller et al., 2020; Taft et al., 2017), all of which are closely linked to reduced quality of life. Failing to measure these domains may result in an incomplete understanding of intervention effectiveness.

In parallel with efforts to expand outcome domains, stepped care models have gained traction as a means to improve access to interventions. As outlined earlier, these models offer a scalable framework in which individuals can begin with low-intensity treatments, such as GSH, and progress to higher-intensity interventions based on their progress. Despite the potential benefits of this approach, there remains a striking absence of research integrating GSH interventions into stepped care pathways for PTSD. These gaps are particularly concerning given the pressing need for accessible, and cost-effective trauma-focused treatments.

Similarly, there is growing attention on developing and assessing the modifications of CPT (Wiltsey Stirman et al., 2019). These modifications include different delivery platforms (e.g., online or telehealth: Held et al., 2021; Peterson et al., 2022), adjustments to the number or intensity of

sessions (such as massed CPT: Galovski et al., 2022; Held et al., 2022; Resick et al., 2021), and alternative formats (e.g., group therapy: Lamp et al., 2019; Resick et al., 2017). These adaptations aim to improve accessibility and expand the reach of CPT across diverse populations and clinical settings. Rigorous evaluation is still needed to establish their efficacy and to ensure systematic documentation of any protocol changes to guide clinical implementation (Wiltsey Stirman et al., 2019).

Relatedly, the recent release of the CPT self-help manual (Resick et al., 2023) represents an effort to adapt a highly effective, evidence-based intervention into a low-intensity, self-guided format. However, to date, no empirical studies have evaluated the efficacy of this version of CPT. These concerns are partly grounded in prevailing clinical assumptions that individuals with mild to moderate PTSD symptoms are best suited for low-intensity interventions, whereas those with more severe symptoms require high-intensity care, an assumption likely shaped by earlier research in which self-help or low-intensity treatments demonstrated only modest or negligible therapeutic effects (Ehlers et al., 2003; Roberts & Nixon, 2023). Conversely, research indicates that GSH is well-accepted by clients, with no significant differences in treatment satisfaction observed between those completing GSH and those undergoing standard therapy (Simon et al., 2023).

Further complicating the symptom severity matching model is the observed variability in treatment response within standard PTSD interventions. Some individuals respond early and require fewer sessions, while others need longer-term support beyond the typical number of sessions in the original treatment protocol (Galovski et al., 2020). Yet, the factors underlying these individual differences in treatment trajectories remain unclear. Although some stepped care studies suggest that those with more severe symptoms are more likely to be stepped up to higher-intensity treatments, there is also evidence that a subset of individuals with high baseline severity can experience substantial improvement through low-intensity interventions alone (Nixon & Roberts, 2025). These issues and limitations highlight the need for methodologically rigorous, clinically

relevant research that evaluates the effectiveness, feasibility and acceptability of flexible delivery of evidence-based PTSD interventions.

Aims and Hypotheses

In summary, the existing literature underscores the importance of tailoring and adapting evidence-based interventions to address the unique needs of individuals with PTSD. Traditional trauma-focused treatments have proven effective in clinical settings, but their uptake and implementation can be limited by several factors, including accessibility, cost, long waitlist, and the need for highly trained therapists (Viana et al., 2025). These barriers can result in individuals either not seeking treatment or not completing therapy, which diminishes the overall impact of available interventions (Thornicroft et al., 2018). Furthermore, it is clear that the long-term costs of untreated PTSD far exceed the investment required for prevention and recovery interventions. With increasing recognition of the need for accessible, scalable interventions (Hitchcock & Fitzpatrick, 2025; Kaminer et al., 2024), it is more timely than ever to explore innovative ways to deliver PTSD treatments that are both adaptable and effective. In response to these limitations, adapting treatments like CPT into more accessible formats, such as GSH, presents a promising solution. This approach allows individuals to access effective treatment through less resource-intensive methods, such as online platforms and self-guided modules, which could help reduce the logistical, financial, and time-based barriers that often prevent access to care. In doing so, this study addresses not only the clinical gap of improving treatment efficacy but also key research gaps by targeting low participant engagement in self-help interventions, incorporating long-term follow-up assessment, and employing comprehensive outcome measures to capture a broader range of treatment effects.

Based on this rationale, my PhD examines the integration of CPT-GSH within a stepped care model to establish a more flexible and clinically responsible approach. The overarching aim of this thesis was to evaluate the clinical and practical utility of CPT-GSH in the stepped care model. This was addressed in two ways. First, I examined whether stepped care approach as a whole led to

meaningful improvements in clinical outcomes such as PTSD symptoms, depression, and quality of life, as well as key correlates of PTSD including sleep disturbance, emotional dysregulation, and other related symptoms. Second, I evaluated the standalone efficacy of CPT-GSH as a low-intensity intervention, given its novel application in trauma treatment. This dual focus allowed for a more comprehensive evaluation of both the stepped care approach and CPT-GSH, providing insight into their potential roles in future service delivery for PTSD. The study placed emphasis not only on symptom change but also on evaluating the cost, acceptability and feasibility of the intervention. An exploratory component also investigated potential predictors and moderators of treatment outcomes, with these findings intended to inform future clinical implementation. To test these aims, I conducted a randomized controlled trial comparing two groups. One group received stepped care, beginning with CPT-GSH and stepping up to standard CPT if needed. The other group received standard CPT delivered via telehealth. Outcomes were assessed at baseline, posttreatment, 3-month and 6-month follow-ups.

Based on these aims, the study tested the following hypotheses:

1. Efficacy of Stepped Care:

Participants receiving stepped care and CPT-GSH would show significant and clinically meaningful improvements in the primary outcomes such as PTSD symptoms, depression, and quality of life. For those only requiring CPT-GSH (i.e., not stepped-up), these improvements would not significantly differ from those observed in participants receiving standard CPT.

2. Improvements in Secondary Outcomes:

Both the stepped care and standard CPT groups would show significant reductions in other outcomes, such as sleep difficulties, symptoms of borderline personality disorder, negative posttraumatic cognitions, emotional dysregulation, substance and alcohol use, anger and aggression.

3. *Non-Inferiority of Stepped Care:*

The stepped care and CPT-GSH would be non-inferior to standard CPT in improving PTSD symptoms, depression and quality of life.

4. *Cost Analysis of Stepped Care:*

The stepped care approach and CPT-GSH would be a cost-effective modality for treating PTSD, resulting in comparable clinical outcomes at a lower cost compared to standard CPT alone.

5. *Acceptability and Feasibility of CPT-GSH:*

CPT-GSH would demonstrate high levels of acceptability (as reported by participants) and feasibility (as rated by clinicians), supporting its potential suitability for broader implementation within routine clinical services.

To explore these aims in depth, the thesis is organized into five more chapters, each contributing a distinct component to the overall investigation. **Chapter 2** presents a systematic review and meta-analysis examining how CPT has been structurally adapted in response to known barriers in treatment access and uptake. This review also highlights areas where further empirical work remains necessary, helping to position the current trial within the broader evidence base. **Chapter 3** details the design and implementation of my RCT, including the structure of the stepped care model, measurements, and statistical plan used to assess outcomes. **Chapter 4** presents the findings related to the first three hypotheses, focusing on treatment outcomes associated with the stepped care approach and CPT-GSH. **Chapter 5** addresses the final two hypotheses, examining cost and implementation outcomes, including acceptability and feasibility of CPT-GSH. It also presents exploratory analyses of potential treatment moderators and explores specific characteristics of CPT-GSH interventions in greater detail. **Chapter 6** draws together the main findings from the chapters to evaluate the broader implications of the study, offering critical insight, methodological limitations, potential directions for future research and clinical implications. These chapters aimed

to respond to ongoing challenges in the delivery and evaluation of PTSD treatments, particularly those related to efficacy, engagement, accessibility, and scalability, with the aim of building preliminary evidence to support the use of low-intensity, evidence-based interventions within stepped care models.

CHAPTER 2:

Exploring Structural Adaptations to Cognitive Processing Therapy: A Systematic Review and Meta-Analysis¹

Abstract: In the evolving field of psychological interventions for PTSD, CPT has emerged as a first-line treatment, backed by robust empirical evidence. Despite the proven efficacy of CPT in improving PTSD symptoms, individuals face significant barriers when seeking treatment. To overcome these challenges, CPT has undergone testing in diverse settings, accompanied by structural modifications deviating from its commonly delivered format of weekly face-to-face contact, including changes in delivery method, length or intensity of sessions, or format (e.g., group). A systematic search of four electronic databases, supplemented by manual reference screening, identified 846 articles, of which 15 RCTs were included in the meta-analysis and 12 non-RCTs in a narrative review to assess the effectiveness of structural adaptations within CPT for treating PTSD. The meta-analysis revealed significant improvements in PTSD and depression outcomes with structural adaptations of CPT. Generally, no significant differences were found when comparing these adaptations with standard CPT or non-CPT treatments although this is accompanied by the caveat of likely modest power for sub analyses involving different comparator types. Non-RCTs indicated variable effectiveness across formats, including massed and low-intensity text-based CPT, which show promising feasibility, completion rates, and flexibility in overcoming barriers. The findings suggest that adapting the delivery of CPT typically yields similar outcomes in PTSD symptom improvement as standard CPT and confirms its adaptability in expanding PTSD treatment access. Limitations and future directions are discussed.

¹ The content of this chapter has now been published in a peer review journal (Sandanapitchai & Nixon, 2024). Priyadharshany Sandanapitchai was involved in the design of the study, completed all data analysis, and wrote the first draft of the publication. Minor content changes or omissions have been made in the chapter to avoid replication from the preceding chapter and to accommodate its inclusion in a thesis format.

Introduction

Although initially developed and first evaluated in group format (Resick & Schnicke, 1992), for many subsequent years CPT was most commonly evaluated across multiple RCTs in an individually delivered format, with 60-minute sessions delivered once or twice a week over the course of 12 sessions (Asmundson et al., 2019; Nixon et al., 2016). Even though CPT has proven effective in addressing PTSD, as with other PTSD therapies, considerable barriers remain for those seeking treatment. As mentioned in **Chapter 1**, a range of factors contribute to this underutilization, including stigma and negative attitudes toward mental health care (Saechao et al., 2012), practical barriers such as transportation, financial constraints, and limited-service availability (Ruzek et al., 2014), as well as extended wait times (Bloch-Atefi et al., 2021). Over the years many studies have modified or adapted CPT, with a number of these explicitly seeking to improve accessibility and dissemination (Resick et al., 2024, Ruzek et al., 2014). In reviewing this literature, structurally adapted CPT condition refers to adaptations in the format (e.g., group), length of the intervention, or mode of delivery (e.g., telehealth) which nonetheless retain the core elements of the CPT protocol. Changes such as simplifying language to make the material more accessible, are also considered adaptations, as long as they did not compromise the delivery of the core therapeutic elements, did not result in deviation from the established CPT protocol nor added new components within the protocol. This approach aligns with the Framework for Reporting Adaptations and Modifications-Enhanced (FRAME) to interventions (Wiltsey Stirman et al., 2019), in particular, those changes related to contextual modifications.

This review focuses on key structural modifications. *Telemental health*, for example, such as video teleconferencing (Morland et al., 2015), as well as therapist contact via asynchronous text-messaging as part of guided self-help (GSH) delivery has been used to deliver CPT effectively (e.g., Murphy & Turgoose, 2020; Wiltsey Stirman et al., 2021). Indeed, some of these adaptations to CPT delivery were tested prior to the sudden increase in such studies during and after the COVID era

(Maieritsch et al., 2016; Morland et al., 2015). Variations in *session length* of the 12-session protocol have also been examined whether this was a fixed yet increased number (e.g., 17 sessions in Chard, 2005), or flexible length CPT where the number of sessions changes based on the client's progress (Galovski et al., 2012). A variant on this, *intensive or massed CPT*, has also been studied. Traditional CPT when delivered weekly usually takes about 3 months to complete its full course of therapy. However, in intensive formats, CPT has been delivered over 5 days (Galovski et al., 2022) or condensed into 1- or 2-week schedules (Held et al., 2023). Additionally, in recent years there has been greater evaluation of CPT in its group format (Lamp et al., 2019; Resick et al., 2017). Although this review does not directly examine access or completion rates, we believe these adaptations have the potential to make CPT more accessible to individuals residing in rural and remote areas and to help address barriers such as travel and time constraints, which are known to impact therapy completion rates.

Although prior research has individually tested these CPT adaptations, and a number of these studies have been included in broader reviews or meta-analyses of PTSD treatment, there have been to date no systematic review nor meta-analysis of the efficacy of CPT in treating PTSD when modifications have been made to its delivery relative to standard format (i.e., individually administered therapy sessions). There is also a lack of research examining the impact of these adaptations in clinical settings (Marques et al., 2019). Notably, this review provides a comprehensive and rigorous overview of the studies, and it is hoped that this data can enable clinicians to make informed decisions regarding the selection and implementation of the treatment, thereby elevating the standard of care delivered to trauma survivors.

We conducted a meta-analysis of RCTs that adapted CPT in clinic and community settings to evaluate its effectiveness in reducing PTSD symptoms compared with various control conditions. Given the heterogeneity of non-randomized evaluations, we provided an exploratory descriptive summary to identify patterns, strengths, limitations, and implications for practice. We also

examined depressive symptoms as a secondary outcome, given their frequent co-occurrence with PTSD (Post et al., 2016).

Method

The systematic review and the meta-analysis were conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline (Page et al., 2021). The study protocol was pre-registered with the International Prospective Register of Systematic Reviews (PROSPERO) [Reg No. CRD42023486295].

Search Strategy

A comprehensive search was conducted in PTSDpubs, PubMed, PsycINFO, and Cochrane Central Register of Controlled Trials (CENTRAL) from the publications since 2013, and the recent search was completed on May 30, 2024. Additionally, a manual search for reviews aimed to identify any published and unpublished studies, studies listed in international trial databases (e.g., Australian and New Zealand Clinical Trials Registry and ClinicalTrials.gov) and relevant resources accessible via Google Scholar. Journals published after 2013 were included to ensure that the most recent evidence in the field of PTSD was considered. Given that theoretical frameworks and methodologies have evolved considerably over the past few decades, limiting the review to studies published within the last ten years enhances the relevance and accuracy of the study's findings. The search terms included keywords associated with the specific therapy (*Cognitive processing therapy or CPT*), trauma (*PTSD or posttraumatic stress disorder*) and adaptations (*online, telehealth, modif*, adapt*, translat*, group, text or SMS*).

Eligibility Criteria

Inclusion criteria for the review were as follows: a) Randomized and non-randomized trials assessing the effectiveness of structurally adapted CPT as an intervention for PTSD; b) Participants

aged 18 and above; c) Participants meeting full or subthreshold² PTSD diagnosis based on standard diagnostic criteria (e.g., DSM-IV or DSM-5) or demonstrating clinically significant PTSD as assessed by a standardized instrument; d) Use of clinician-rated or self-reported measures of PTSD severity as the primary outcome at baseline and posttreatment/follow-ups; e) Publication date since 2013; f) Quantitative; g) Subjected to peer review.

Articles were excluded if they did not involve Criterion A trauma, were published in languages other than English, substantially modified the core elements of standard CPT or included extra components, offered additional substantial adjunctive treatments concurrently, or were qualitative, dissertations, published abstracts, commentaries, reviews, editorials, book chapters, or non-empirical studies.

Study Selection

Following the initial database search, the identified studies were imported into EndNote 20 to eliminate duplicate entries. Subsequently, the articles were uploaded to Covidence, an online systematic review software. Screening of all titles and abstracts was conducted by the first author and an independent reviewer to identify potentially relevant studies. Selected studies then underwent full-text screening by the first author using predefined inclusion criteria, followed by review from a second independent reviewer to reduce bias and enhance methodological rigor. Any discrepancies between the reviewers were addressed through group discussion (including the second author) and consensus.

Data Extraction

From the selected studies, the first author extracted data by conducting thorough checks for all required information. The data extraction was finalized after consulting with the second author.

² As noted in Chapter 1, subthreshold PTSD was defined following McLaughlin et al. (2015) as an individual meeting at least three of the four Criteria B–E, in addition to all of Criteria F–H, according to DSM-5.

The following information was collected from each study: the first author's name, year of publication, country of origin, participant characteristics (including participant type, sample size, gender distribution and mean age), intervention specifics (the treatment group with structural differences, and comparison group), and outcome measures (PTSD and depression scales). We primarily report data from intent-to-treat samples as this offers more comprehensive information regarding treatment efficacy. For continuous variables, mean and standard deviation of the outcome measures were extracted. In instances where the selected studies lacked the necessary statistics to calculate effect sizes, we contacted the first authors of the studies to obtain missing information. If no response was received, the data were treated as missing and excluded from quantitative analysis. Where studies had follow-up assessments, we included the data from baseline, posttreatment (immediately after therapy), and the final follow-up for the analysis.

Risk of Bias Assessment

The Cochrane Risk of Bias Tool for Randomized Trials (RoB 2) was used to assess the risk of bias for RCTs. This tool evaluates five domains that could pose a risk of bias: (D1) Randomization process; (D2) Deviation from the intended interventions; (D3) Missing outcome data; (D4) Measurement of the outcome; and (D5) Selection of the reported result. The overall bias of the studies was assessed as “Low risk”, “Some concerns” or “High risk”. For uncontrolled studies, the Risk of Bias in Non-Randomized Studies of Interventions (ROBINS-I) tool was utilized. This tool is similar to the ROB-2, but D1 is excluded. Additionally, the following domains were included: (D6) Confounding variables; (D7) Selection bias; and (D8) Bias in the classification of intervention. Studies were categorized as “Low risk”, “Moderate risk”, “Serious”, “Critical” or “No information”. The overall risk of bias is classified as “Low risk” only if the study is rated as low risk of bias across all domains. A study is classified as having “Moderate risk” if it has some concerns in at least one domain and as “High risk” if it has a high risk of bias in at least one domain or some concerns for multiple domains (Sterne et al., 2019).

Statistical Analyses

The study findings were analyzed using the software Revman Web (The Cochrane Collaboration, 2022). Between-group effect sizes for the CPT adaptation group versus the comparison group were calculated for PTSD and depression severity at posttreatment and last follow-up using Hedges' g . If more than one control group was available, the average of the means and standard deviations of the control groups was used. As is common in PTSD trials, PTSD was measured using both self-report and clinician-administered measures, thus were analyzed separately. Further subgroup analyses were conducted to compare the structurally adapted CPT condition with the standard CPT conditions and the non-CPT conditions to determine whether the type of group moderates its effectiveness. For Hedges' g , as per the NICE guideline (2018), an effect size of 0.5 was deemed to represent a clinically meaningful difference. A standardized mean difference was employed to account for the different psychometric scales used to measure the same outcome in different studies. For the meta-analysis, pooled effect sizes and their 95% confidence intervals were calculated using the inverse variance method and random effects model. This included the creation of a forest plot to illustrate the estimated common effect. Heterogeneity was calculated using I^2 , which indicates the percentage of variation between studies attributed to factors other than chance. A lower I^2 indicates that the differences in effect estimates are largely due to chance, while a higher I^2 suggests that factors beyond chance contribute more to the variation in effect estimates (Higgins et al., 2022).

Results

Selection of Studies

A comprehensive search across four databases yielded a total of 846 articles. After removing duplicates, 483 were selected for title and abstract screening. Of these, 418 articles were excluded as they did not meet our inclusion criteria, leaving 60 articles assessed for eligibility through full

screening. Of these, 15 RCTs were selected for meta-analysis, and 12 articles, including non- RCTs such as chart reviews and open trials, were included for exploratory narrative review (Figure 2.1).

Study Characteristics of RCTs

Table 2.1 presents the individual characteristics of the 15 RCTs used for the meta-analysis. These studies included a total of 3055 adult participants presenting with PTSD symptoms, comprising veterans, active-duty military personnel, and other interpersonal trauma survivors. The majority of the studies (13 out of 15 RCTs) were conducted in the US, the remaining two were from the Democratic Republic of Congo and Germany. The sample mean age was 41.8 years and consisted of approximately 40.9% female participants. Adaptations of CPT were characterized by flexible treatment length CPT ($k=4$) (Bohus et al., 2020; Galovski et al., 2012; Schnurr et al., 2022; Taylor et al., 2023), group CPT ($k=5$) (Kearney et al., 2021; Kelly et al., 2021; Maxwell et al., 2016; Resick et al., 2015, Resick et al., 2017), telehealth CPT ($k=5$) (Liu et al., 2020; Maieritsch et al., 2016; Morland et al., 2014; Morland et al., 2015; Peterson et al., 2022), and combined CPT (both individual and group CPT sessions) ($k=1$) (Bass et al., 2013)³. Comparison groups consisted of individual, weekly delivered CPT ($k=6$) or non-CPT treatments such as Dialectical Behavioral Therapy (DBT) ($k=1$), Symptom-Monitoring Delayed Treatment ($k=1$), Group Loving Kindness Meditation ($k=1$), Trauma Centered Trauma-Sensitive Yoga ($k=1$), Group Memory Specificity Training ($k=1$), Group Present-Centered Therapy ($k=1$), Prolonged Exposure (PE) ($k=1$), and Cognitive Behavioral Therapy for Insomnia ($k=1$).

Flexible length varied across studies, with some determining the treatment length based on the client's progress (Galovski et al., 2012; Schnurr et al., 2022; Taylor et al., 2023), while others matched the number of sessions to the comparison group (Bohus et al., 2020). It is important to note

³ Bass et al. (2013) made some cultural adaptations to the delivery of CPT however the primary changes were to simplify some of the materials to better accommodate illiterate participants and non-English speaking sample, while the core structure and elements of CPT were retained. Therefore, it was decided to include this study as part of the review.

that only Galovski et al. aimed to explicitly test variable-length treatment as a predictor of PTSD outcomes. Although the other studies did not focus on treatment length as a primary research question, their findings contribute to understanding how varying the number of sessions may impact PTSD outcomes. Including these studies allows us to expand the scope of our analysis and interpret the potential effects of flexible treatment lengths, even if that was not their main objective. Group CPT was primarily implemented as 90-minute weekly sessions for 12 weeks, except in two studies (Maxwell et al., 2016; Resick et al., 2015), which used biweekly sessions. Video conferencing (VTC) was the most commonly used mode of delivering CPT via telehealth. In Bass et al. (2013) study, the first session of CPT was delivered individually, while the subsequent sessions were conducted in a group format.

Figure 2.1

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Flow Diagram

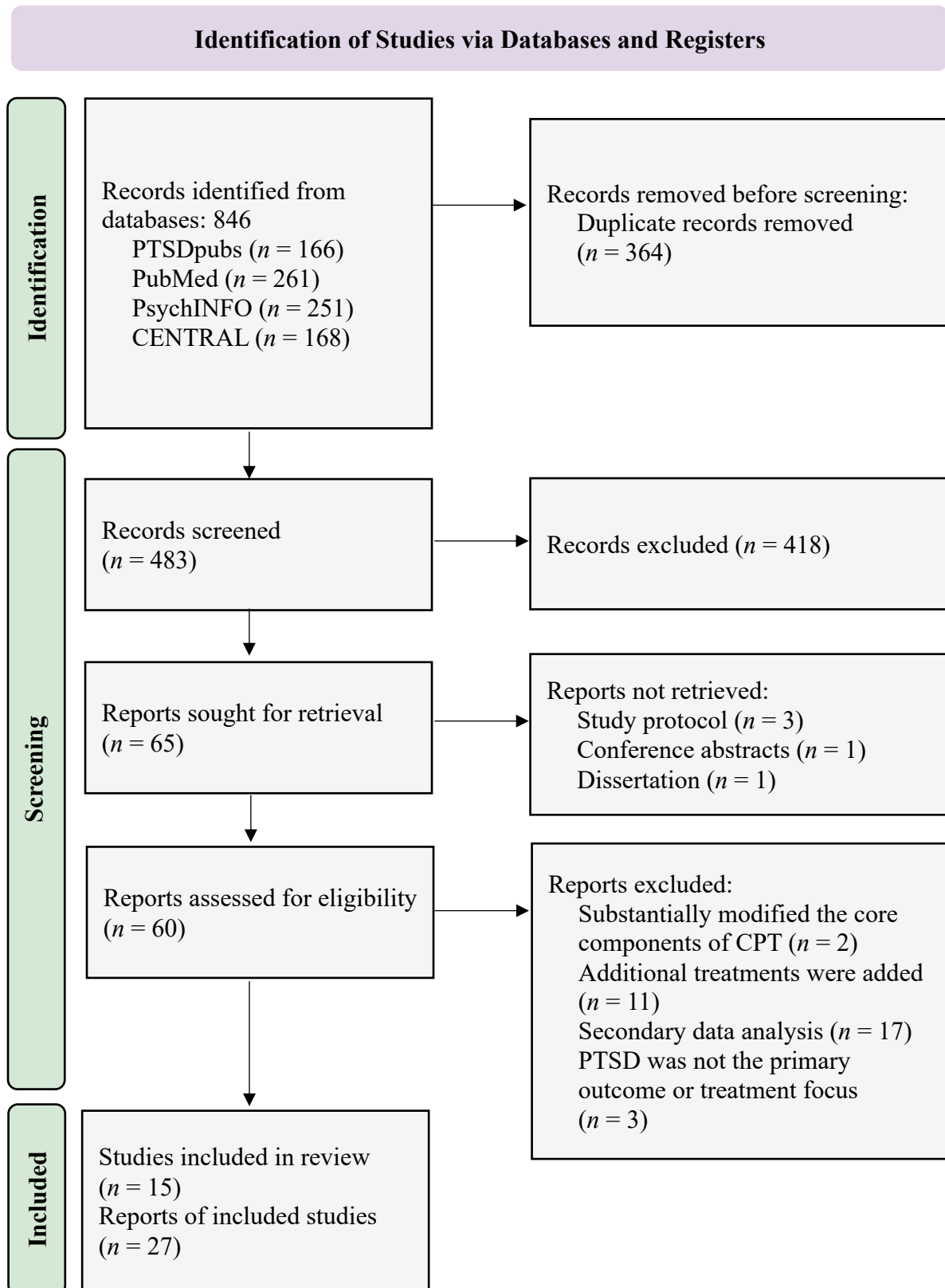


Table 2.1*Characteristics of Randomized Controlled Trials (RCTs)*

First Author, Year	Country	Sample	Sample (<i>n</i> Intervention, <i>n</i> Comparison)	Gender % Female	Mean Age <i>M</i> (<i>SD</i>)	Structural Adaptation of CPT	Comparison Group	PTSD Measure	Depression Measure	Assessment Timeline (in months)
Bass et al., 2013 ^a	DRC	Sexual violence survivors	405 (157, 248)	100	36.9 (13.4)	Combined (Ind + Group CPT)	Individual support	HTQ	-	Base, post, 6
Bohus et al., 2020	German	Childhood abuse survivors	193 (95, 98)	100	36.3 (11.1)	Flexible length (45 sessions)	DBT-PTSD	CAPS-5, PCL-5	BDI- II	Base, 3, 6, 9, 12, 15
Galovski et al., 2012	USA	Interpersonal trauma survivors	100 (53,47)	69	39.80 (11.74)	Flexible length (4-18 sessions)	SMDT	CAPS-IV, PDS-4	BDI- II	Base, post, 3
Kearney et al., 2021	USA	Veterans	184 (93,91)	16.8	57.1 (13.1)	Group (12 weekly, 90-min)	GLKM	CAPS-5	-	Base, post, 3, 6
Kelly et al., 2021	USA	Veterans	104 (46, 58)	100	48.38 (11.1)	Group (12 weekly, 90-min)	TCTSY	CAPS-5, PCL-5	-	Base, post, 3
Liu et al., 2020	USA	Veterans	207 (103, 104)	22.6	48.4 (14.1)	Telehealth	Standard CPT	CAPS-IV, PCL-S	PHQ-9	Base, post, 6
Maieritsch et al., 2016	USA	Veterans	90 (45, 45)	6.7	30.93 (6.05)	Telehealth	Standard CPT	CAPS-IV, PCL	BDI-II	Base, post
Maxwell et al., 2016	USA	Civilians	16 (8,8)	81	Not indicated	Group (12 biweekly, 90-min)	MeST	CAPS-5	BDI-II	Base, post, 3
Morland et al., 2014	USA	Veterans	125 (61, 64)	0	55.3 (12.5)	Telehealth	Standard CPT	CAPS-IV	-	Base, post, 3, 6

First Author, Year	Country	Sample	Sample Size (<i>n</i> Intervention, <i>n</i> Comparison)	Gender % Female	Mean Age <i>M</i> (<i>SD</i>)	Structural Adaptation of CPT	Comparison Group	PTSD Measure	Depression Measure	Assessment Timeline (in months)
Morland et al., 2015	USA	Veterans and civilians	126 (63, 63)	100	46.4 (11.9)	Telehealth	Standard CPT	CAPS-IV	-	Base, post, 3, 6
Peterson et al., 2022	USA	Active-duty military personnel and veterans	120 (44, comparisons 44, 32)	12	40.5 (10.5)	Telehealth	In-office CPT and In-home CPT	CAPS-5, PCL-5	BDI-II	Base, post, 3, 6
Resick et al., 2015	USA	Active-duty military personnel	108 (56,52)	7.4	31.8 (7.3)	Group (12, biweekly, 90-min sessions)	GPCT	PSS-I, PCL-S	BDI-II	Base, post, 6,12
Resick et al., 2017	USA	Active-duty military personnel	268 (133, 135)	9	33.2 (7.4)	Group (90-minute group sessions)	Standard CPT	PSS-I, PCL-S	BDI-II	Base, post, 6
Schnurr et al., 2022 ^b	USA	Veterans	916 (461, 455)	20.3	45.2 (21-80)	Flexible length (10-14 sessions)	Flexible length PE	CAPS-5, PDS-5, PCL-5	BDI-II	Base, post, 3, 6
Taylor et al., 2023	USA	Active-duty military personnel	93 (31,31,31)	26.9	36.20 (7.49)	Flexible length (Up to 18 sessions)	CBT- I&N	CAPS-5, PCL-5	-	Base, post, 3, 6

Note. HTQ= Harvard Trauma Questionnaire; CAPS = Clinician Administered PTSD Scale; PCL= Posttraumatic Stress Disorder Checklist; PHQ= Patient Health Questionnaire; BDI = Beck Depression Inventory; PSS= PTSD Symptom Scale Interview; PDS= Posttraumatic Stress Diagnostic Scale; DBT= Dialectical Behavioral Therapy; SMDT= Symptom-Monitoring Delayed Treatment; GLKM= Group Loving Kindness Meditation; TCTSY= Trauma Centered Trauma-Sensitive Yoga; MeST= Group Memory Specificity Training; GPCT= Group Present-Centered Therapy; CBT-I&N= Cognitive Behavioral Therapy For Insomnia And Nightmares.

^a Mean age for treatment group is included.

^b In Schnurr et al., 2022, the mean and range of the age group were reported. PCL-5 was only used within therapy sessions.

Of the 15 RCTs, 11 studies included both self-reported and clinician-administered measures to assess PTSD severity. The PTSD Checklist (PCL) was typically used as the self-reported PTSD measure, although some studies also utilized the Harvard Trauma Questionnaire (HTQ) and Posttraumatic Stress Diagnostic Scale (PDS-5). For clinician-administered PTSD assessments, the Clinician-Administered PTSD Scale (CAPS) was most commonly used, while PTSD Symptom Scale Interview (PSS-1) was also employed in some studies. All studies used the Beck Depression Inventory (BDI- II) to measure depression severity, except for one study (Liu et al., 2020) which used the Patient Health Questionnaire (PHQ).

Study Characteristics of Non-RCTs

Twelve non-RCTs were included for descriptive examination, as shown in Table 2.2. These studies comprised 2048 participants with a mean age of 43.5 years, of whom 28.7% were female. The sample predominantly consisted of veterans and military personnel, with two studies including community samples. The study designs varied and included chart reviews ($k=5$), multiple subject single-case design ($k=1$), open-trial ($k=2$), convenience sampling ($k=2$), and prospective non-RCT ($k=2$). In non-RCTs, CPT was adapted in different formats, including group format ($k=5$) (Baig et al., 2021; Jeffreys et al., 2014; Lamp et al., 2019; Williams et al., 2014; Williams et al., 2022), groups with flexible length ($k=1$) (Castillo et al., 2014), individual sessions with flexible length ($k=2$) (Peterson et al., 2020; Resick et al., 2021), massed CPT ($k=2$) (Galovski et al., 2022; Held et al., 2022), and telehealth ($k=2$) (Knowlton et al., 2021; Wiltsey Stirman et al., 2021). The control groups included Standard CPT ($k=3$), Treatment as usual ($k=2$), Seeking Safety Group ($k=1$), and PE ($k=2$). Massed CPT is an emerging delivery format of CPT where sessions are condensed within a short period of time (e.g., 2-3 sessions are conducted in a single day over the course of a week (Wachen et al., 2019).

Table 2.2*Characteristics of Non-Randomized Controlled Trials (Non-RCTs)*

First Author, Year	Study Design	Country	Sample	Sample Size n (n Intervention, n Comparison)	Gender % Female	Mean Age M(SD)	Adapted CPT vs Comparison Group	PTSD Measure	Depression Measure	Assessment Timeline (in months)
Baig et al., 2021	Retrospective chart review	USA	Veterans	160 (94, 66)	15	49.71(14)	Group CPT vs Seeking Safety (SS)	PCL-4	-	Base, post
Castillo et al., 2014	Archival record review	USA	Veterans	271 (117, 17,38)	100	45.0 (10.2)	Group + Flexible length	CAPS-IV, PCL-4	-	Base, post
Galovski et al., 2022	Multiple subject, single case design	USA	Intimate partner violence survivors	12 (6,6)	100	34.5 (7.4)	Massed CPT vs Standard CPT	CAPS-IV, PCL-5	PHQ-9	Base, 1, 3
Held et al., 2022	Single-arm open-label design	USA	Community sample	24	70.8	38.4 (12.20)	Massed CPT via telehealth	CAPS-IV, PCL-5	PHQ-9	Base, post, 3
Jeffreys et al., 2014	Retrospective chart review	USA	Veterans	263 (178, 85)	6	51.0 (13.92)	Group CPT, Combined vs Standard CPT, PE	CAPS, PCL		Base, post
Knowlton et al., 2021	Retrospective cohort design	USA	Veterans	581	20.8	47.14 (13.81)	Telehealth vs Standard CPT, PE	PCL-5	BDI-II	Base, post
Lamp et al., 2019	Multisite archival data analysis	USA	Veterans	465 (146, 319)	8.6	51.51 (14.49)	Group CPT vs Standard CPT	PCL-4	BDI-II	Base, post

First Author, Year	Study Design	Country	Sample	Sample Size n (n Intervention, n Comparison)	Gender % Female	Mean Age <i>M(SD)</i>	Adapted CPT vs Comparison Group	PTSD Measure	Depression Measure	Assessment Timeline (in months)
Peterson et al., 2020	Prospective, nonrandomized trial	USA	Active-duty military personnel	12 (6,6)	17	28.5 (4.3)	Flexible length vs PE	PCL-M	BDI-II	Base, post
Resick et al., 2021	Prospective	USA	Active-duty military personnel	127	14	37.1 (7.0)	Flexible length	PCL-5, CAPS-5	PHQ-9	Base, post
Williams et al., 2014	Convenience sampling	USA	Combat veterans	21 (10, C: 6, 5)	0	61.9 (1.8)	Group CPT vs Long-term process group, TAU	PCL-M		Base, post
Williams et al., 2022	Convenience sampling	USA	Combat veterans	61 (38,23)	18	33.9 (6.35)	Group CPT vs TAU	CAPS-IV, PCL-M	BDI-II	Base, post
Wiltsey Stirman et al., 2021 ^a	Open trial	USA	Community	51 (28,23)	84	Not indicated	Telehealth (Text + VTC) vs TAU	PCL-5	PHQ-8	Base, post

Note. CAPS = Clinician Administered PTSD Scale; PCL= Posttraumatic Stress Disorder Checklist; PHQ= Patient Health Questionnaire; BDI = Beck Depression Inventory; PE= Prolonged Exposure; TAU= Treatment as usual; VTC= Video teleconference.

^a Telehealth was delivered via text and video teleconference.

Risk of Bias

For the 15 RCTs, eight studies were deemed as low risk, whereas seven studies had some concerns based on ROB-2 tool (Figure 2.2). Almost all studies included analysis to address missing data. Most of the concerns were around bias due to the randomization process (where the method was not explicitly indicated) and the measurement of the outcome (assessors were not blinded to the group allocation) (See Table 2.3). All the non-RCTs had moderate ($k=7$), or serious ($k=5$) risk of bias based on ROBINS-I. Some of the common concerns were around missing data (e.g., methods for addressing missing data were not specified), as well as a lack of information regarding confounding variables related to incorporating concurrent interventions (See Table 2.4).

Figure 2.2

Risk of Bias Outcomes as a Percentage for Randomized Controlled Trials Using the Cochrane Risk of Bias Tool for Randomized Trials (RoB 2)

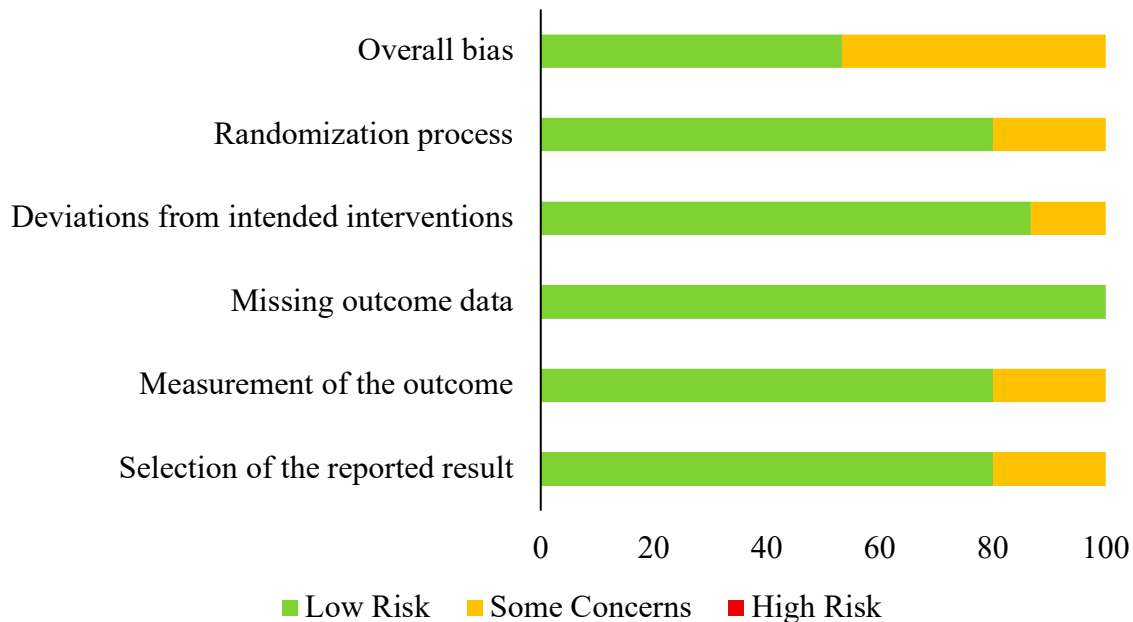


Table 2.3*Risk of Bias for RCTs using ROB-2*

Study	CPT Adaptations	D1	D2	D3	D4	D5	Overall
Bass et al., 2013	Ind + Group	!	+	+	+	+	!
Bohus et al., 2000	Flexible length	+	+	+	+	+	+
Galvoski et al., 2012	Modified	+	+	+	+	+	+
Kearney et al., 2021	Group	+	+	+	+	+	+
Kelly et al., 2021	Group	+	+	+	!	+	!
Liu et al., 2020	Telehealth	!	+	+	+	+	!
Maieritsch et al., 2016	Telehealth	+	!	+	!	!	!
Maxwell et al., 2016	Group CPT	+	+	+	+	!	!
Morland et al., 2014	Telehealth+ Group	+	+	+	+	+	+
Morland et al., 2015	Telehealth	!	+	+	!	+	!
Peterson et al., 2022	Telehealth	+	+	+	+	+	+
Resick et al., 2015	Group	+	+	+	+	+	+
Resick et al., 2016	Group	+	+	+	+	+	+
Schnurr et al., 2022	Flexible length	+	+	+	+	+	+
Taylor et al., 2023	Flexible length	+	!	+	+	!	!

Low Risk

Some Concerns

High Risk

Note. D1= Randomization process; D2=Deviations from the intended interventions; D3 = Missing outcome data; D4 = Measurement of the outcome; D5 = Selection of the reported result

Table 2.4*Risk of Bias for Non-RCTs using ROBINS-I*

Study	CPT Adaptations	D2	D3	D4	D5	D6	D7	D8	Overall Bias	
Baig et al., 2021	Group CPT	--	X	+	+	--	--	+	X	+
Castillo et al., 2014	Group + Flexible length	+	+	+	+	--	+	+	--	Low Risk
Galovski et al., 2022	Massed CPT	+	+	--	+	+	+	+	--	--
Held et al., 2022	Massed CPT	+	X	+	+	+	+	+	X	Moderate Risk
Jeffreys et al., 2014	Group CPT	--	X	+	+	+	--	+	X	X Serious Risk
Knowlton et al., 2021	Telehealth	--	X	+	+	--	+	+	X	
Lamp et al., 2019	Group CPT	--	X	+	+	+	--	+	X	
Resick et al., 2021	Flexible length	+	+	+	+	--	+	+	--	! Critical
Peterson et al., 2020	Flexible length	--	+	+	+	+	--	+	--	
Williams et al., 2014	Group CPT	--	+	--	+	--	--	+	--	
Williams et al., 2022	Group CPT	--	+	+	+	--	--	+	--	
Wiltsey Stirman et al., 2021	Telehealth	+	+	--	+	--	--	+	--	

Note. D2=Deviations from the intended interventions D3= Missing outcome data; D4= Measurement of the outcome; D5=Selection of the reported result; D6= Confounding; D7= Selection bias; D8= Bias in the classification of intervention.

Meta-Analyses

Between-group Differences of PTSD Severity

Descriptive statistics including means and standard deviations for baseline, posttreatment and final follow-up are provided for both self-reported and clinician-administered PTSD scales in Table S1 of Supplementary Analyses. Hedges' g effect sizes were computed to assess PTSD outcomes between the structurally adapted CPT conditions and the control groups at posttreatment and final follow-up. Findings revealed that there were no significant differences in self-reported PTSD measures between the structurally adapted CPT format and the control group at posttreatment (SMD= -0.06, 95% CI [-0.43 to 0.30], $p = .73$) and final follow-up (SMD= -0.15, 95% CI [-0.64 to 0.35], $p = .56$) (See Figure 2.3)⁴. Similarly, there were no statistically significant differences for clinician-administered measures at posttreatment (SMD= -0.01, 95% CI [-0.22 to 0.19], $p = .91$) and final follow-up (SMD= 0.11, 95% CI [-0.03 to 0.24], $p = .12$) (See Figure 2.4).

Although the estimated standard deviation of underlying effects across studies was low to moderate, the I^2 statistics indicated high heterogeneity in effect size variability (Self-reported PTSD measure: Tau = 0.33, $I^2 = 93\%$; Clinician administered measure: Tau= 0.10, $I^2 = 80\%$). There were also no significant differences observed when structurally adapted CPT groups were compared against non-CPT treatments (SMD= 0.02, 95% CI [-0.41 to 0.44], $p = .93$).

⁴ As highlighted by a reviewer, we had combined standard CPT and non-CPT studies in the control comparator. Accordingly, we also conducted separate analyses taking into account comparator type (standard CPT or non-CPT control groups) at posttreatment and final follow-up. The findings were consistent with the original analyses (PTSD and depression outcomes), showing no statistically significant moderating effect of comparator type on the overall outcomes. The final follow-up analysis for self-reported PTSD and depression measures could not be performed due to the limited number of studies available.

Figure 2.3

Effect of Structurally Adapted CPT Condition Vs Control Group on PTSD Severity Assessed by Self-Reported Measure at Posttreatment and Final Follow-up

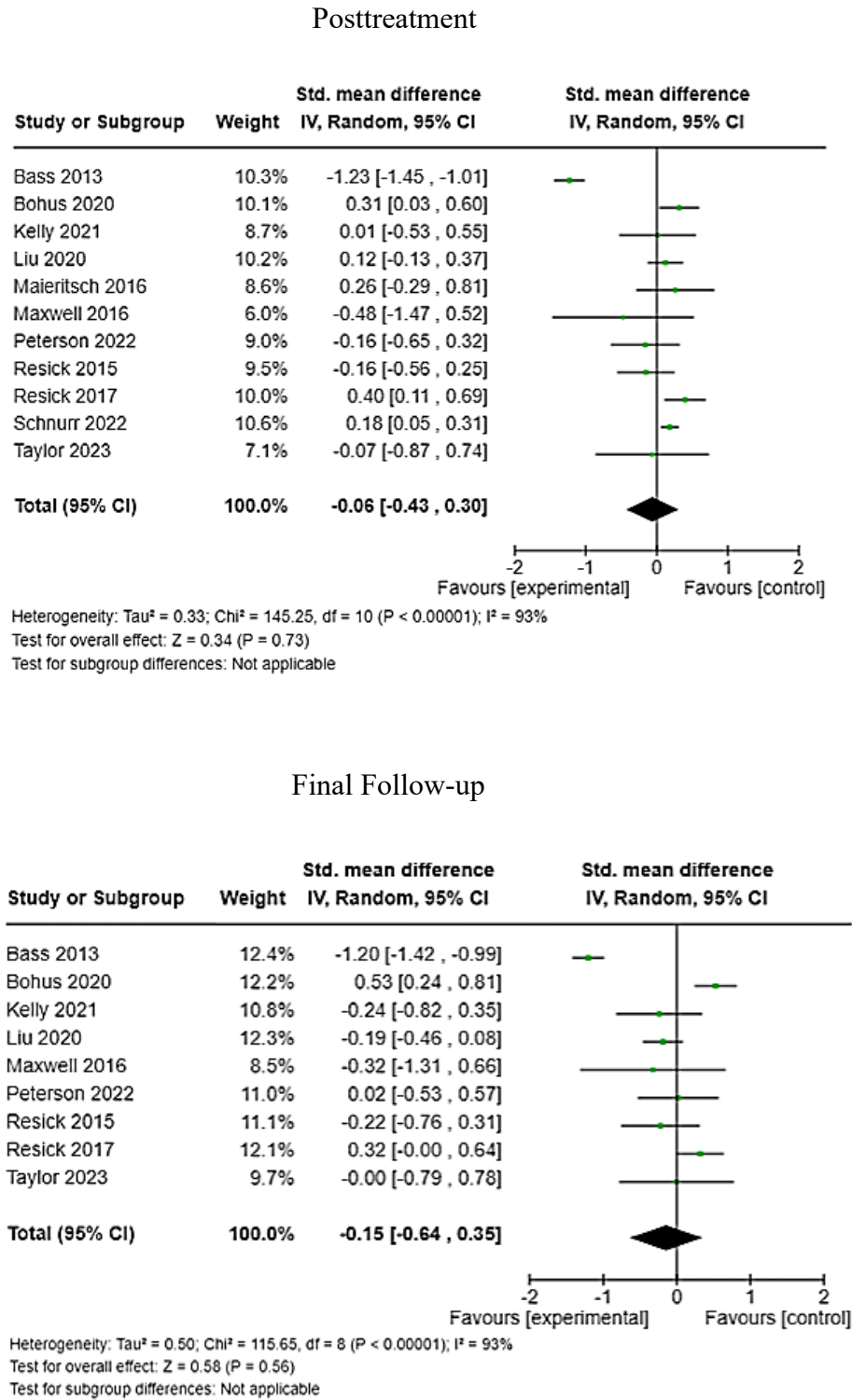
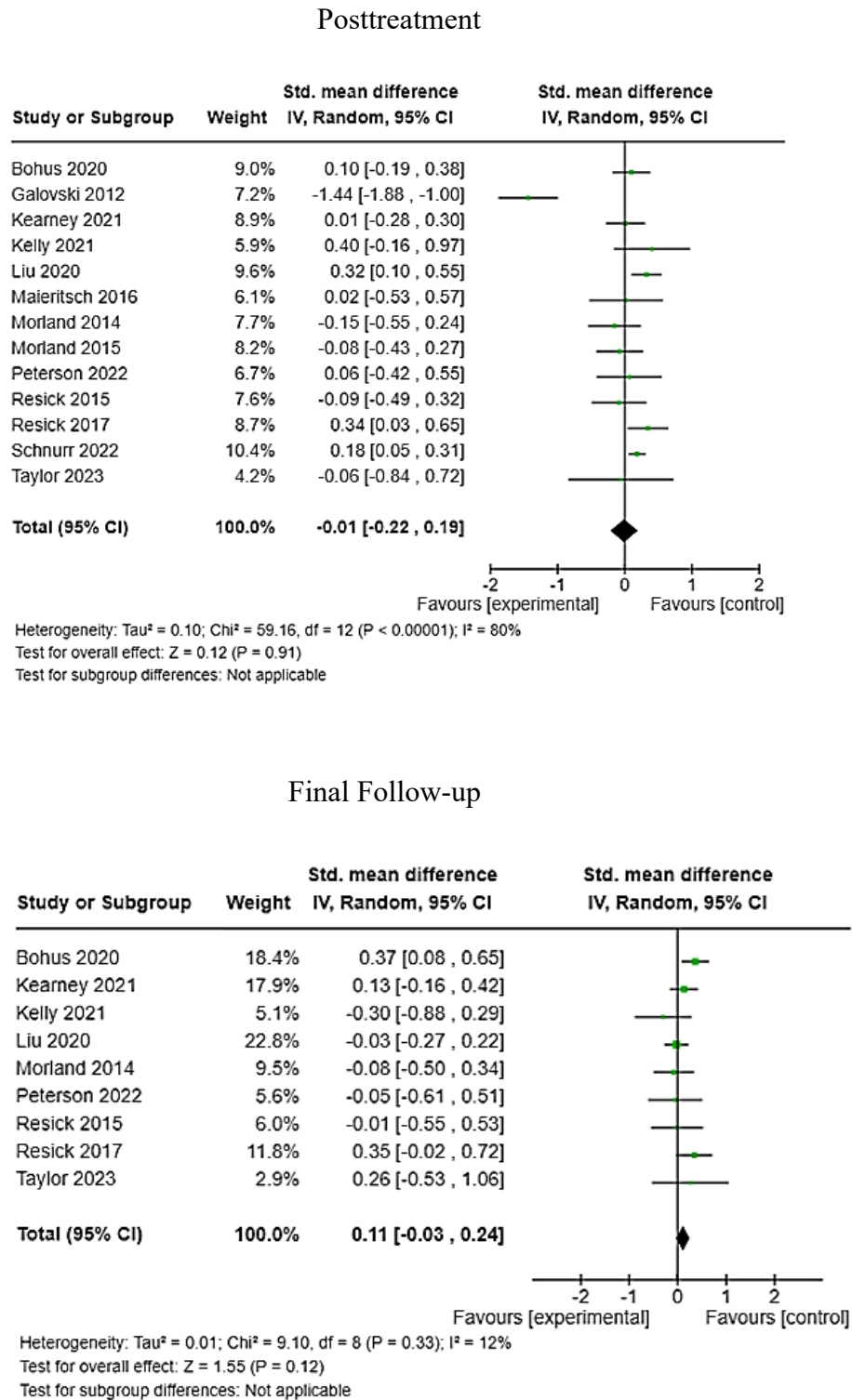


Figure 2.4

Effect of Structurally Adapted CPT Condition Vs Control Group on PTSD Severity Assessed by Clinician-Administered PTSD Scale at Posttreatment and Final Follow-up

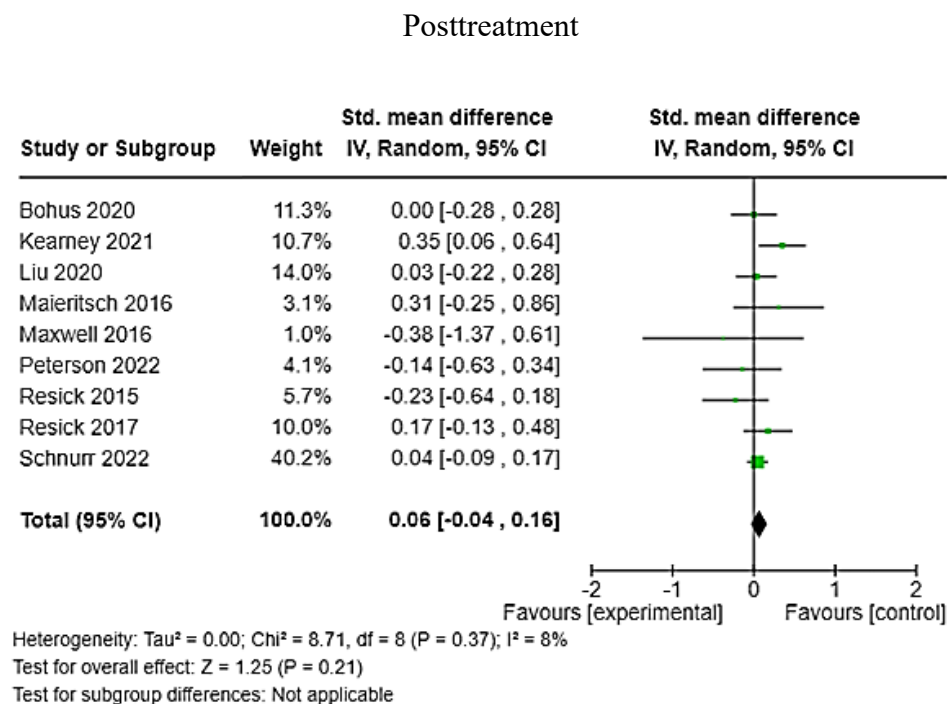


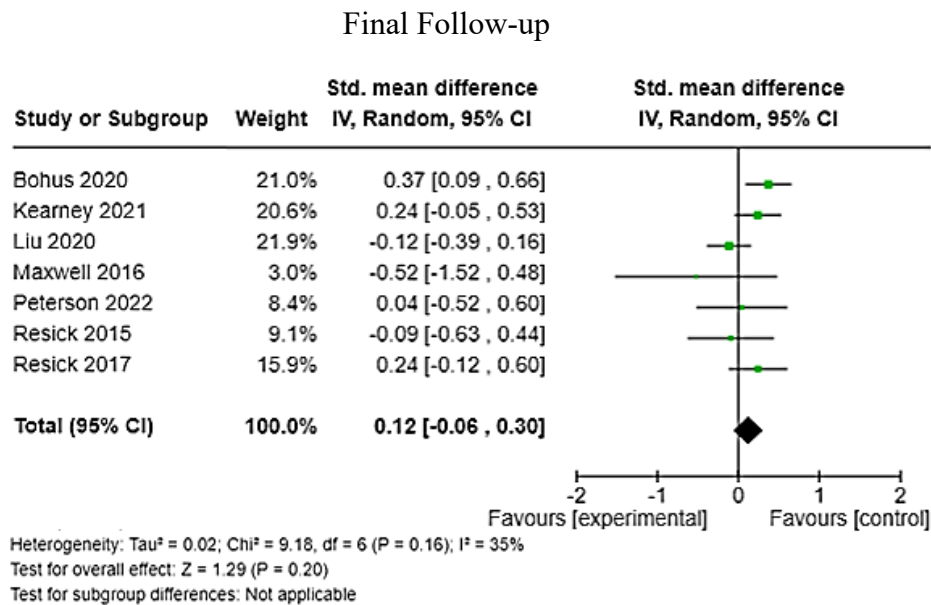
Between-group Differences of Depression Severity

Nine studies also assessed depression severity alongside PTSD outcomes. Table S2 of Supplementary Analyses shows the means and standard deviations at baseline, posttreatment and final follow-up. Similar to the findings of PTSD outcomes, there were no significant differences between the structurally adapted CPT conditions and control groups in terms of depression severity at posttreatment (SMD= 0.06, 95% CI [-0.04 to 0.16], $p = .21$) and follow-up (SMD= 0.12, 95% CI [-0.06 to 0.30], $p = .20$). In contrast, the heterogeneity was low at both posttreatment ($I^2 = 8\%$) and final follow-up ($I^2 = 35\%$) as compared to that observed in PTSD outcomes (Figure 2.5).

Figure 2.5

Effect of Structurally Adapted CPT Condition Vs Control Group on Depression Severity at Posttreatment and Final Follow-up





Findings from Non-RCTs

Chart reviews were primarily conducted using health records from Veterans specialty PTSD clinics. Four chart reviews assessed the effectiveness of group CPT in outpatient clinical settings. Baig et al. (2021) found that group CPT achieved significant PTSD reductions compared to non-CPT treatment. In another study, although PTSD symptoms reduced significantly after treatment, there were no differences observed between CPT groups of varying lengths (i.e., 8, 10, or 12 sessions) (Castillo et al., 2014). Jeffreys (2014) and Lamp (2019) found that individual CPT performed significantly better than group CPT. Regardless of the treatment delivery modality, in-person or telehealth, significant reductions in PTSD and depression were observed among veterans in the study by Knowlton (2021).

Examining a different format delivery, Galovski et al. (2022) and Held et al. (2022) investigated massed CPT, conducting therapy over 5 days in a community sample. Specifically Held et al. (2022) used a single-arm open-label design administered via telehealth. Both studies demonstrated significant reductions in PTSD symptoms, which were maintained at follow-up assessments. Peterson (2020) investigated a modified version (flexible length) of CPT tailored to active-duty military personnel based on their deployment requirements, comparing it to PE. While

modified CPT did not show a significant difference compared to PE, participants in both groups exhibited clinically meaningful improvements in PTSD symptoms. Resick et al. (2021) compared treatment outcomes based on varying lengths of CPT protocols for active-duty military personnel: early (<12 sessions), standard (12 sessions), late (13–24 sessions), non-responders (those who did not reach good end-state functioning (GES): PCL score <19 at the end of therapy) and dropouts. They also made comparisons with outcomes for a previously completed, fixed 12-session trial (Resick et al., 2017). They found that allowing variability in the number of sessions led to better PTSD outcomes, with improved GES for participants in that protocol. Factors such as PTSD severity, depressive symptoms, willingness to change, and race were predictors of these outcomes.

The Wiltsey Stirman et al. (2021) study was novel relative to other structurally adapted studies given its delivery through an asynchronous messaging format (conducted within a community sample). The CPT content was delivered as 12 modules that clients read in their own time, and after each module clients uploaded their worksheets for review to an online platform. The clients were also provided access to the online content of the manual, including whiteboard videos. Therapists were available to review the work twice daily, five days a week. Unlike face-to-face sessions, Socratic questioning and therapist feedback was done through single messages, allowing clients to respond at their convenience. This pilot study showed significant improvements in both PTSD and depression compared to treatment as usual (Wiltsey Stirman et al., 2021).

Discussion

The primary aim of this paper was to compare the effectiveness of CPT that had been modified in its structure or delivery format (without altering the core components), relative to CPT consisting of one-hour weekly session over 12 weeks and/or non-CPT treatments. Meta-analyses were conducted on 15 RCTs and a narrative summary of the main outcomes of 12 non-RCTs was provided. This review shows that key structural differences in the alternative formats of CPT included group format, delivery via telehealth, flexible length, massed CPT, and combined group +

individual CPT. Except for two studies, all the research included in this review was conducted in the US, primarily focusing on veteran and military personnel.

Structurally adapted CPT conditions showed significant improvements not only in PTSD symptoms but also in depressive symptoms. This aligns with numerous clinical trials that have consistently demonstrated that standard CPT leads to concurrent improvements in symptoms of PTSD and depression (Galovski et al., 2016). At the posttreatment and final follow-up (most of which were at least 6 months), no significant differences were found between the CPT adaptation format and the control group for PTSD and depression outcomes. Furthermore, our analysis revealed high heterogeneity among studies for PTSD symptoms, but not for depressive symptoms. This heterogeneity was particularly pronounced in self-reported measures of PTSD relative to clinician-administered PTSD assessments.

Despite previous research indicating that CPT often outperforms active treatments with small to moderate effect sizes (Asmundson et al., 2019; Lenz et al., 2014), the findings of this study did not demonstrate this pattern. This is somewhat unsurprising given previous approaches in CPT reviews and meta-analyses generally aggregated CPT studies regardless of format and then compared them with non-CPT therapies (Asmundson et al., 2019). In contrast, our review compared structurally adapted CPT directly with various treatments, some of which were CPT delivered in routine individual face-to-face format. Therefore, given CPT in this format is generally highly effective, this could have obscured the significance of structurally adapted CPT when compared to less potent treatments in these comparisons. However, when further analysis was conducted taking into account comparator type, the subgroup comparison analysis was nonsignificant. Informal inspection of effect sizes against standard CPT showed only small effect size differences on average ($ES < .24$). That said, it is important to view these results as exploratory and hypothesis-generating for future studies, due to the smaller number of studies included in these analyses and accompanying statistical caveats in relation to power. These and the broader findings indicate the need for further investigation into the specific factors influencing treatment outcomes in different

settings. Unfortunately, subgroup analysis based on varying treatment delivery methods (e.g., group vs. telehealth vs. flexible length) was also not feasible due to a paucity of studies with similar structural adaptations. This limitation underscores the need for more standardized research protocols and outcome measures in future studies of CPT adaptations.

Examination of non-RCTs revealed varying degrees of effectiveness across different CPT delivery formats. Typically, with regular attendance, an individual undertaking CPT is committed to at least 3-4 months of treatment. This extended duration might hinder people from engaging with therapy or lead to dropout. A recent meta-analysis showed that the average dropout rate for CPT is 29% (Kline et al., 2018). One of the key strengths of massed CPT is its accelerated format, which can address barriers to treatment without compromising the therapy protocol and is associated with high completion rate (Galovski et al., 2022; Ragsdale et al., 2020). Massed CPT has primarily been implemented in residential settings alongside other adjunct services, but recent research has also begun testing its effectiveness as a standalone intervention (Wachen et al., 2024). Although it has yet to be tested in a randomized trial, initial uncontrolled designs have shown promising outcomes, demonstrating high feasibility and strong efficacy to date (Bryan et al., 2018; Galovski et al., 2022; Held et al., 2022).

Text-based CPT was the first of its kind to adapt the CPT protocol for delivery through a messaging format (Wiltsey Stirman et al., 2021). This novel study has demonstrated that CPT remains effective even in a low-intensity format that does not require direct face-to-face contact with a therapist. This is especially encouraging, considering that self-help or low-intensity approaches frequently struggle with engagement, resulting in high dropout rates or attenuated responses (Allen et al., 2022; Siddaway et al., 2022). With respect to CPT duration, interestingly no significant differences were found among groups receiving different lengths of CPT in Castillo et al. (2014) study, although PTSD symptoms improved across all groups. Similar findings in other areas of psychotherapy have shown that treatment duration does not always correlate with outcomes (Stulz et al., 2013). Finally, retrospective chart reviews provided additional insights regarding

adapted CPT treatment outcomes in routine care settings, which is an important consideration for fully understanding how such interventions perform beyond clinically controlled research settings.

Limitations and Future Directions

Several limitations should be considered when interpreting the findings from this review. First, most of the studies were conducted predominantly in the US with the focus on veteran and military populations, which limits the generalizability of the results to other trauma groups. Given the increasing evidence that CPT is effective in other trauma-exposed populations, including refugees and assault survivors (Bernardi et al., 2019; Schulz et al., 2006), it is imperative to broaden the scope of research studies. Hence, future research should expand their focus of adaptations and modifications of CPT to treat PTSD in diverse populations to improve the external validity and generalizability of the current results.

Second, we combined the different adaptation studies in the meta-analyses. However, this approach may mask nuances in our findings, including differential effects of varying adaptations. Therefore, as further studies are conducted, replications examining the specific adaptation type will be warranted. In addition, more studies are needed to enable examination of potential differences when compared against standard CPT and non-CPT conditions which will provide a more comprehensive analysis of how structurally adapted CPT performs against a range of comparators. Third, most of the RCTs relied on self-reported measures to assess PTSD outcomes. Although the PCL is an easy to administer and inexpensive tool, it can yield higher reports of symptom severity relative to a parallel, clinician-administered measure, the CAPS-5 (Kramer et al., 2023), thus it is ideal to use both measures, in conjunction.

Fourth, the review did not assess studies that applied substantial cultural modifications to CPT for non-Western cultural groups, which could have broadened the scope of how CPT is adapted for more diverse cultural or geographical contexts. Cultural modifications often involve altering the protocol or adding components to fit the cultural background. Since this was not the

focus of the review, it was deemed inappropriate to combine these studies with trials that maintained the core components of CPT. Finally, our review did not include CPT conducted in residential treatment settings where additional services, such as yoga or substance use programs, were provided. Although PTSD outcomes were measured in these studies, attributing changes in symptoms solely to CPT would not have been possible.

Despite these limitations, the review also highlighted several exciting future directions for further research. Massed CPT is gaining considerable research attention and has significant promise as it addresses barriers such as time constraints and logistical difficulties that prevent trauma survivors from seeking treatment. Several randomized trials of massed CPT are underway at this time, which will in time provide additional data to be included in future reviews. Novel study designs, such as the Wiltsey Stirman and colleague's (2021) text-based study, are also ready to be studied in randomized designs to provide evidence on its replicability and efficacy. There is also exciting new work being conducted with CPT that incorporates machine learning models to assess the fidelity of CPT delivery and improve engagement (Lenton-Brym et al., 2025). This innovative approach has the potential to enhance treatment quality and outcomes by providing real-time feedback to clinicians and personalizing the therapeutic process (Resick et al., 2024). There is a need to explore how different formats and delivery methods of therapies can benefit individuals with PTSD, including stepped care (Roberts & Nixon, 2023; see also Carey & Damarell, 2018). Such work is critical to expanding the reach of PTSD treatments while maintaining their quality to achieve optimal treatment outcomes.

Summary

The rationale for investigating the effectiveness of structurally adapted CPT is rooted in the growing demand for flexible and accessible PTSD treatments. Traditionally delivered approaches (individual, face-to-face), while effective, may not be feasible for all patients due to logistical constraints such as cost, time, transportation, and mental health stigma. Therefore, it is crucial to enhance the accessibility of evidence-based PTSD treatments to overcome these obstacles. Structural adaptation is one approach through which CPT has been modified to better suit the needs of trauma survivors. This review yielded key findings regarding the effectiveness of structural adaptations of CPT compared to standard CPT and non-CPT treatments. While CPT adaptations show promise in treating PTSD when compared with typically administered individual, face-to-face CPT and non-CPT treatments, our findings indicate that further research should focus on identifying specific moderators affecting treatment effectiveness, such as the delivery format, treatment intensity (low vs. high), and client factors. To address this gap, the next chapter outlines the methodology used to develop a low-intensity version of CPT within a stepped care model, aimed at optimizing delivery to a broader population and improving outcomes for individuals with PTSD.

CHAPTER 3:

Method

Participants

The study recruited 92 participants from across Australia who self-referred to the Flinders Posttraumatic Stress Clinic. Recruitment strategies included distributing study flyers via the Flinders email listserv and posting them on university noticeboards. Additionally, the trial was listed on the Australian New Zealand Clinical Trials Registry (Trial ID: ACTRN12622001099718), which allowed potential participants to find the study through internet searches. Referrals were also received from private clinicians and mental health organizations, further broadening the recruitment scope. This study was approved by Southern Adelaide Clinical Human Research Ethics Committee (2022/HRE00159) and all participants gave informed written consent.

Eligibility criteria required participants to be at least 18 years old and to have experienced a Criterion A trauma as defined by the DSM-5 (APA, 2022). Participants were required to meet either the full diagnostic criteria for PTSD or subthreshold PTSD on the Clinician-Administered PTSD Scale (CAPS-5; Weathers et al., 2018). For the purpose of this study, subthreshold PTSD was defined in line with McLaughlin et al. (2015), as meeting at least three of the four Criteria B-E (B: Intrusive symptoms; C: Avoidance; D: Negative alterations in cognition and mood; E: Arousal and reactivity) in addition to all of Criteria F-H (F: Duration > 1 month; G: Significant distress or impairment; H: Symptoms not attributable to physiological effects).

Participants also needed to demonstrate good English proficiency to ensure they could fully engage with the study materials. As the study was conducted entirely online, participants were required to have access to a phone or computer equipped with a webcam and a stable internet connection or data plan to facilitate online therapy sessions. Additional requirements included stability in psychotropic medication use, if applicable. Participants were eligible if their medication regimen had been stable for at least one month before the pretreatment assessment. Participants who

had incidental or occasional contact (e.g., every two to three months) with clinicians for unrelated trauma problems were also eligible to participate. That is, participants who were not in regular therapy but had brief, sporadic clinical interactions were included.

Participants were excluded if they did not meet at least subthreshold PTSD criteria on the CAPS-5. Individuals at high risk of imminent harm, including those with active suicidal plans or in significant family violence circumstances, those with significant cognitive impairment, or poorly controlled serious mental illness (e.g., psychosis, bipolar) were also excluded from the study. Participants with personality disorders or those with alcohol or other substance use issues were only excluded if this was associated with imminent or significant risk of harm (e.g., substance disorder requiring detoxification). If participants disclosed a previously established diagnosis, clinicians received consent to contact the participant's psychiatrist or general practitioner to confirm the diagnosis and assess the participant's ability to engage in therapy. In addition, the study utilized the DIAMOND screener, including its severity scale, which served as an additional indicator of clinical status. Participants who were engaged in concurrent or regular therapy for posttraumatic stress were excluded to avoid confounding effects.

Power

The sample size calculation was informed by previous research conducted within the clinic, which evaluated an Australian-developed GSH PTSD program, *This Way Up* (This Way Up, n.d.), in a stepped care model alongside standard CPT (Roberts, 2023). The results showed that within-group effect sizes were generally large for both groups ($ds > 0.80$). In earlier work on low-intensity treatments and full CPT, supervised by Prof. Reg Nixon in the clinic and with similar samples, pre-post treatment effects were observed to exceed a d of 2.0 (e.g., Elizabeth, 2020). Using G*Power (Faul et al., 2007), a sample size of 90 was determined to provide 90% power to detect an effect size of $f = 0.16$ in a repeated-measures, within-between interaction model that included the three study time points (pre, post, and follow-up). An effect size of 0.16 falls between a small (0.10) and medium (0.25) effect.

Design

In this randomized controlled trial (RCT), eligible participants were randomly assigned to either the stepped care or standard CPT conditions in a 2:1 ratio. Given the extensive evidence supporting the efficacy of standard CPT, this allocation strategy was used to ensure a sufficient sample size within the stepped care group. This was particularly important to account for the likelihood that a portion of participants would be stepped up to standard CPT, potentially reducing the number of participants completing the GSH component alone. This RCT employed a 2 (treatment group: stepped care vs. standard CPT) $\times$ 4 (time point: baseline, posttreatment, 3-month, and 6-month follow-ups) mixed design. To further examine the effects of the GSH intervention specifically, a 3 (treatment group: GSH-only, stepped-up, and CPT-only) $\times$ 4 (time point: baseline, posttreatment, 3-month, and 6-month follow-ups) mixed design was used where appropriate. Those in the stepped care group first received the GSH intervention. If they did not respond to this treatment, they were then stepped up to standard CPT (discussed in more detail later).

The primary outcome variable was PTSD symptom severity (both clinician-rated and self-reported), depressive symptom severity, and quality of life. Secondary outcome variables included the impact on comorbid conditions such as sleep difficulties, borderline personality traits, negative posttraumatic cognitions, emotion dysregulation, alcohol and substance use, and anger-related behaviors. Given that at the time of initiation, this was the first study to evaluate the effectiveness of the CPT-GSH, this research also examined its cost implication, acceptability and feasibility.

Measures⁵

Interviews and self-report measures were administered at baseline, posttreatment, 3-month and 6-month follow-ups (see Table 3.1 for summary). Some measures were also administered during weekly therapy sessions to monitor participants' progress as noted below.

⁵ Few measures were administered as part of a separate study and are not reported in the current thesis.

Measures Used at Baseline Only

Diagnostic Interview for Anxiety, Mood, and Obsessive Compulsive and Related Neuropsychiatric Disorders (DIAMOND; Tolin et al., 2018). The DIAMOND is a semi-structured clinical interview designed to assess DSM-5 psychiatric disorders, with a particular emphasis on common PTSD comorbidities such as anxiety, mood, obsessive-compulsive, and related disorders. Its interrater reliability and test-retest reliability are reported to range from good to excellent ($\kappa = .62$ to 1.00) and ($\kappa = .59$ to 1.00), respectively, across diagnoses (Tolin et al., 2018). The DIAMOND was used to determine whether participants met the DSM-5 criteria for any common comorbid disorders that co-occur with PTSD for descriptive purposes. The measure was also used to examine whether the number of comorbidities influenced participants' PTSD severity and response to therapy.

Trauma Interview. (Nixon et al., 2016; Nixon & Bralo, 2019). This interview is a semi-structured interview which consists of 30 items designed to collect information on demographics, trauma characteristics, medication history, and social support. It was administered to obtain details about the participant's traumatic experiences and gather relevant psychosocial and background information (Appendix A).

Life Events Checklist (LEC; Weathers, 2013a). The LEC is a tool to measure potentially traumatic events experienced in an individual's lifetime. It assesses whether participants have encountered any of 16 specific types of trauma, with an additional item to capture other traumatic experiences not listed. For each event, participants are asked to indicate the context of their exposure by selecting one of the following options: (1) *Happened to me*; (2) *Witnessed it*; (3) *Learned about it*; (4) *Part of my job*; (5) *Not sure if it fits*; or (6) *Doesn't apply*. The LEC was used to provide an overview of the traumatic events participants had experienced, which informed the clinician's understanding of trauma history.

Adverse Childhood Experience Scale. (ACE; Felitti et al., 1998). The ACE was used to provide further assessment of traumatic experiences. The scale is a 10-item tool that assesses

childhood experiences that covers domains such as physical, verbal and sexual abuse, physical and emotional neglect. The remaining items relate to other negative events, including household dysfunction. A total score is derived through summation of the number of events endorsed. The scale has shown strong internal consistency ($\alpha = .84$ to $.85$) across diverse samples and exhibits convergent validity ($r = .27$) with the Childhood Trauma Questionnaire (Karatekin & Hill, 2019).

Measures Used at Major Assessment Points

Clinician-Administered PTSD Scale for DSM-5 (CAPS-5; Weathers et al., 2018). The CAPS-5 is a 30-item structured interview designed to assess the onset, duration, and impact of PTSD symptoms on functioning, in accordance with DSM-5 criteria. It is widely considered the gold standard for assessing PTSD. CAPS-5 is available in three versions, which evaluate symptom severity over the past week, the past month, or the worst month. For diagnosing current PTSD in the study, the past month version was used. Each item is rated on a 5-point scale, from 0 (*Absent*) to 4 (*Extreme/incapacitating*). It can be used to diagnose PTSD as a dichotomous outcome and to provide a severity score ranging from 0-80 as a continuous measure. The CAPS-5 diagnosis shows strong interrater reliability (κ ranging from $.78$ to 1.00) and test-retest reliability ($\kappa = .83$). Its total severity score demonstrates high internal consistency ($\alpha = .88$), with excellent interrater reliability (ICC = $.91$) and good test-retest reliability (ICC = $.78$). Additionally, it shows good convergent validity, correlating well with the total severity score on the CAPS-IV ($r = .83$) and the PTSD Checklist for DSM-5 ($r = .66$) (Weathers et al., 2018). In this trial, Cronbach's α for the CAPS-5 at pretreatment was $.69$.

Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5; Weathers et al., 2013b). The PCL-5 is a self-report measure of PTSD symptom severity corresponding to the DSM-5 criteria. It consists of 20 items rated on a 5-point Likert scale, ranging from 0 (*Not at all*) to 4 (*Extremely*), with a total symptom severity score of up to 80. A probable PTSD is indicated by a cut-off score of 31 or above (Blevins et al., 2015; Weathers et al., 2013b) and a score below 19 reflects good end-

state functioning (GES) (Schnurr et al., 2015; Wachen et al., 2019). The PCL-5 demonstrates high internal consistency ($\alpha = .94$), good test-retest reliability ($r = .82$), strong convergent validity ($r = .74$ to $.85$), and adequate discriminant validity (Blevins et al., 2015). In this trial, Cronbach's α for the PCL-5 at pretreatment was $.85$.

Complex PTSD Scale in the International Trauma Questionnaire (ITQ-CPTSD; Cloitre et al., 2018). The ITQ-CPTSD is an 18-item measure based on the International Classification of Diseases, 11th Revision (ICD-11) criteria, designed to assess both PTSD and complex PTSD. It integrates the standard PCL-5 with five supplementary items specifically constructed to capture core features of complex PTSD, such as emotional dysregulation, negative self-concept, and interpersonal difficulties, to construct the complex PTSD scale (Cloitre et al., 2018). This combined instrument was administered at each assessment point to enable comprehensive tracking of client symptomatology over time (See Appendix B). The ITQ has demonstrated excellent internal reliability, with composite reliabilities of $.96$ for the PTSD subscale and $.97$ for the DSO subscale, and cluster-level reliabilities ranging from $.86$ to $.96$. This scale also shows good concurrent and convergent validity (Cloitre et al., 2018). In this trial, Cronbach's α for the ITQ-CPTSD at pretreatment was $.82$.

Depression Anxiety and Stress Scale- Depression Subscale (DASS-D; Henry & Crawford, 2005). DASS-21 is a condensed form of the original DASS-42 (Lovibond & Lovibond, 1995), a self-administered tool to measure depression, anxiety and stress, conditions frequently comorbid with PTSD. It is scored on a 4-point continuous scale, ranging from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much or most of the time*). A maximum score of 42 on DASS-21, with higher scores on each subscale reflecting a greater severity of anxiety, depression, or stress. Cronbach's alpha for the total scale is $.93$ (Henry & Crawford, 2005) and it has good construct validity with measures such as Hospital Anxiety and Depression Scale (Osman et al., 2012). Depressive symptoms were one of the primary outcomes of interest in the study; therefore, the total score from the depression subscale (7 -items) of the DASS-21 was used in the study (referred to as

the DASS-D). A score between 6-10 is considered *Moderate*, 11-13 reflects *Severe* depression, and scores above 13 indicate *Extremely Severe* depression. Similar to the PCL-5, the DASS-D was administered at major assessment points as well as during weekly sessions. In this trial, Cronbach's α at pretreatment was .92 for the DASS-21 total score and .90 for the depression subscale.

Assessment of Quality of Life (AQoL-8D; Richardson et al., 2014). The AQoL-8D is a multidimensional tool comprising 35 items that assess overall quality of life across various physical and psychosocial domains, including independent living, relationships, mental health, coping, pain, senses, happiness, and self-worth. The AQoL has demonstrated high test-retest reliability and shows strong correlations with subjective well-being (SWB) measures, as well as the psychosocial dimensions of the Short Form Health Survey (SF-36) (Richardson et al., 2014). For the purpose of this study, AQoL utility subscale was specifically used, given its established use in economic evaluations to quantify health-related quality of life. This measure was selected to capture the broader impact of PTSD on individuals' overall life satisfaction and daily functioning, representing one of the study's primary outcomes. Its inclusion aligns with growing recommendations to adopt broader outcome measures in PTSD research to reflect meaningful changes beyond symptom reduction (Varker et al., 2020). In this trial, Cronbach's α for the AQoL-8D at pretreatment was .93.

Insomnia Severity Index (ISI; Bastien et al., 2001). Individuals with PTSD frequently suffer significant sleep disturbances, with insomnia recognized as one of the most prevalent comorbid conditions (Ahmadi et al., 2022). ISI measures the severity, characteristics, and functional impact of sleep-related problems. For the purpose of this study, the self-administered version of the ISI was used. This brief 7-item scale is scored on a 5-point Likert scale ranging from 0 (*No problem*) to 4 (*Very severe problem*), producing a total score with a maximum of 28. A total score of 7 or below reflects "*no clinically significant insomnia*". The ISI has demonstrated good internal consistency ($\alpha = .74$) and exhibits good concurrent validity, as evidenced by moderate correlations with sleep diary measures (r ranging from .32 to .55) and robust content validity (Bastien et al., 2001). In this trial, Cronbach's α for the ISI at pretreatment was .86.

Borderline Personality Module - Structured Clinical Interview for DSM-5 Personality

Disorders (SCID-BPD; First et al., 2016). For this study, 15 items related to borderline personality disorder (BPD), based on DSM-5 criteria, were selected from the SCID-5 screening for personality questionnaire. Each item is rated with a 'yes' or 'no' response, where higher scores indicate the higher likelihood of the presence of borderline personality disorder symptoms. The SCID-5 for personality disorder screening has demonstrated strong internal consistency ($\alpha = .91$), good specificity (79%) and sensitivity (77%) (Fowler et al., 2019). SCID-BPD also shows good test-retest reliability and predictive validity (Shankman et al., 2018). This measure was used to examine the impact of therapy on symptoms that commonly co-occur following trauma, particularly complex trauma. In this trial, Cronbach's α for the SCID-BPD at pretreatment was .79.

Posttraumatic Cognitions Inventory (PTCI; Foa et al., 1999). The PTCI is a 36-item measure that assesses unhelpful beliefs related to trauma across three subscales: negative cognitions about the self, negative cognitions about the world and self-blame. Scores on the 7-point Likert scale range from 1 (*Totally disagree*) to 7 (*Totally agree*). Higher scores indicate stronger endorsement of negative posttraumatic thoughts. PTCI has demonstrated a stronger internal consistency of .97 and test-retest reliability of .74 for the total score. The internal consistency of subscales on negative cognition about self, world and self-blame were .97, .88 and .86 respectively. It also showed high correlation with the Personal Beliefs and Reactions Scale (PBRs; $r = .85$) and the Self-Worth scale of the World Assumptions Scale ($r = .60$) (Foa et al., 1999). Use of the PTCI enabled analysis of changes on a variable that is argued to be a key variable responsible for the development and maintenance of PTSD (Gómez de La Cuesta et al., 2019). It is also of interest to see the degree to which a low intensity approach such as CPT-GSH can influence such cognitions which are typically addressed through more substantial cognitive therapy seen in routine therapy. In this trial, Cronbach's α for the PTCI total score at pretreatment was .93.

Difficulties in Emotion Regulation Scale (DERS-18; Victor & Klonsky, 2016). The DERS-18 is a measure adapted from the original DERS-36 scale (Gratz and Roemer, 2004) that assesses

emotion dysregulation. This 18-item shorter version retains six subscales: emotional awareness and clarity, goals, nonacceptance, impulse control, and emotion regulation strategies. Items are scored on a 5-point scale, (1= *Almost never (0-10% of the time)* to 5 = *Almost always (91-100% of the time)*). Higher score indicates greater difficulty in emotional regulation. DERS-18 demonstrates high internal consistency for the overall score ($\alpha = .91$), strong concurrent validity ($r = .98$), and good convergent validity with BPD symptoms (Victor & Klonsky, 2016). This measure was included in the study to assess emotional difficulties, which are commonly observed in trauma survivors and may contribute to the severity of PTSD symptoms, and influence treatment outcomes (McLean & Foa, 2017). In this trial, Cronbach's α for the DERS-18 at pretreatment was .91.

The University of Rhode Island Change Assessment- Trauma (URICA-T; Hunt et al., 2006). The URICA-T measures participants' readiness to change symptoms related to PTSD. This 32-item self-reported measure uses a 5-point continuous scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). The internal reliability of each subscale has been documented to range from $\alpha = .61$ to .81, with the overall score was $\alpha = .70$ (Hunt et al., 2006). The measure is primarily being used as a predictor of outcomes, particularly to help identify factors that differentiate those who respond to CPT-GSH from those who do not. In this trial, Cronbach's α for the URICA-T total score at pretreatment was .73.

Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993). The AUDIT is designed to assess alcohol consumption, including the quantity and frequency of drinking, alcohol dependence, and problems associated with alcohol use. Participants report the frequency and severity of their drinking behaviors. It is a 10-item self-administered screening tool. The total AUDIT score ranges from 0 to 40, with scores below 7 indicating low risk, scores between 16 and 19 suggesting harmful drinking with significant risk, and scores of 20 or higher classified as high risk, requiring immediate intervention. Both clinician-administered and self-reported versions of the AUDIT demonstrate comparable discriminant validity in identifying harmful drinking behaviors. The AUDIT demonstrates acceptable test-retest reliability and convergent validity in relation to

measures of alcohol consumption (Paulus et al., 2023). In this trial, Cronbach's α for the AUDIT at pretreatment was .91.

Cannabis Use Disorders Identification Test- Revised (CUDIT-R; Adamson et al., 2010).

The CUDIT-R, a direct modification of the AUDIT, is an 8-item measure, adapted from the original CUDIT (Adamson & Sellman, 2003). It evaluates key domains, including consumption patterns, cannabis use behaviors, dependence symptoms, and associated psychological components.

Participants score on a 5-point Likert scale from 0 (*Never*) to 4 (*Daily*), with a maximum total score of 32. The CUDIT-R has demonstrated psychometric properties equivalent to those of the original version, with high sensitivity (91%) and specificity (90%) (Adamson et al., 2010). Cannabis is currently among the most widely used illicit substances (Degenhardt & Hall, 2012), making it crucial to investigate the impact of treatment on this frequently used drug, particularly given the well-documented comorbidities between PTSD and substance use (Jacobsen et al., 2001). In this trial, Cronbach's α for the CUDIT-R at pretreatment was .84.

Dimensions of Anger Reactions (DAR-5; Forbes et al., 2014). Anger is a common emotional

response following traumatic events, often intertwined with PTSD symptoms (Wells et al., 2024).

The DAR-5 consists of five items that assess anger over the past four weeks, focusing on its frequency, intensity, duration, aggression levels, and impact on social functioning. It is a 5-point Likert scale ranging from 1 (*None of the time*) to 5 (*All of the time*), with total scores ranging from 5 to 25. Higher scores indicate greater symptom severity. The DAR-5 demonstrates high internal consistency ($\alpha = .88$ to $.90$) and good discriminant validity when compared to depression scale (Forbes et al., 2014). Reductions in anger represent an important functional outcome of therapy and have been shown to predict treatment outcomes (Lloyd et al., 2014), hence the inclusion of the DAR-5 as a measure of interest. In this trial, Cronbach's α for the DAR-5 at pretreatment was .85.

Measures Used During Weekly Sessions⁶

Daily Inventory of Stressful Events (DISE; Almeida et al., 2002). The DISE involves a series of ‘stem’ questions about daily stressors, such as arguments, interpersonal conflicts, or health-related problems, experienced within the past 24 hours. If a stressor was reported, follow-up questions were used to assess its severity. This measure demonstrates strong internal consistency ($\alpha = .82$) (Almeida et al., 2002). This interview-based questionnaire was adapted into a self-reported online format for use in this study and the copy is attached in the Appendix C.

Brief Revised Working Alliance Inventory (BR-WAI; Mallinckrodt & Tekie, 2016). The BR-WAI is a 16-item measure designed to assess the quality of the therapeutic relationship across three key dimensions such as emotional connectedness (bond subscale), agreement on therapeutic tasks (task subscale), and alignment on treatment goals (goal subscale). It uses a 5-point Likert scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*), with higher scores reflecting a stronger therapeutic alliance. The original WAI scale has demonstrated excellent test-retest reliability ($\alpha = .93$) and exhibits good convergent and concurrent validity (Horvath & Greenberg, 1989). The measure was administered at sessions 2, 6, 10, and 12 to evaluate changes in therapeutic alliance over time and for potential analysis in relation to determining factors that influenced response to treatment.

Session Rating Scale (SRS; Duncan et al., 2003). The SRS is a visual analogue tool designed to assess key aspects of the therapeutic relationship, including the clinician-client bond, agreement on treatment goals and tasks, and overall session satisfaction. The total score on this 4-item measure ranges from 0 to 40, with scores below 36 indicating potential concerns from a client perspective, which should prompt discussion about the client’s responses. It is similar to the BR-WAI in capturing the therapeutic alliance, but its brevity allowed administration at every therapy session for clinical monitoring. The SRS demonstrates good internal consistency ($\alpha = .88$) and adequate

⁶ PCL and DASS-D measures were also used during the weekly sessions, with participants rating their symptoms over the past week.

concurrent validity when compared with the Helping Alliance Questionnaire II (HAQ II) ($r = .48$) (Duncan et al., 2003). Given that the CPT-GSH condition did not involve one-on-one clinician sessions, the SRS was slightly modified to match how CPT-GSH was delivered. For example, the item concerning the goals and topics of therapy, “*We worked on and talked about what I wanted to work on*”, was changed to “*The check-in focused on the topics I wanted to work on or discuss*” (See attached Appendix D). In the standard CPT condition, the SRS was administered at the end of each therapy session, while in the CPT-GSH format, it was sent via email alongside the module feedback. This adaptation ensured the measure remained relevant across both formats.

Outcome Rating Scale (ORS; Miller et al., 2003). This brief measure, derived from the Outcome Questionnaire 45.2 (Lambert et al., 1996), comprises four items designed to assess clients' functioning across individual, interpersonal, social, and overall domains over the past week. Each item is assessed using a 10 cm slider, where a mark toward the left indicates greater difficulties and a mark toward the right reflects fewer difficulties, yielding a maximum total score of 40. This measure was employed to track participants' weekly progress, representing a generic (non-PTSD specific) outcome measure that typically correlates with weekly PCL scores (Roberts, 2023). A score below 25 reflects a higher level of psychological distress. The measure demonstrates excellent internal consistency, with an overall Cronbach's α of .93 and test-retest reliability of .84 (Miller et al., 2003). In the standard CPT condition, ORS was administered weekly prior to each therapy session. In contrast, within the CPT-GSH condition, it was sent via email along with relevant module and worksheets.

Credibility/Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000). The CEQ has two subscales, credibility and outcome expectancy, designed to assess the client's perceptions of treatment credibility and expectations for improvement. The CEQ items 1, 2, 3, and 5 were rated on a 9-point Likert scale, while items 4 and 6 used a scale ranging from 0% to 100%. Following the procedure outlined by Smeets et al. (2008), the scores for items 4 and 6 were converted to align with a scale of 1 to 9. The total CEQ score ranged from 6 to 54, with each subscale having a

maximum score of 27. The CEQ demonstrates high internal consistency (α ranging from .84 to .85). Test-retest reliability is also strong, with coefficients of .75 for credibility and .82 for expectancy. This measure was administered during the first session of both GSH and standard CPT conditions, as well as at posttreatment assessment. It was primarily used to assess the acceptability of the treatment.

Homework Review Questionnaire (HR). The HR Questionnaire is a 4-item scale adapted from the Homework Review form originally developed by Wiltsey Stirman et al. (2018). It was designed to assess the relationship between homework completion and symptom reduction. For this study, selected items were used to assess how many worksheets participants completed (e.g., 0 = *None*, 4 = *More than 7 sheets*), how often they engaged with them (0 = *None*, 4 = *More than 10 times*), how they applied the skills in practice (0 = *Did not use them*, 4 = *Used at least every day*), and how helpful they found the worksheets between sessions (0 = *Not helpful at all*, 4 = *Extremely helpful*) (See Appendix E for reference). This measure was incorporated to capture treatment engagement between session attendance.

Measures Used at Posttreatment Assessment Only

Telehealth Satisfaction Survey (TSS) (Frueh et al., 2005; Pellegrin et al., 2001). The Telemedicine Satisfaction and Acceptance Scale (TSS) assesses satisfaction with telemedicine services (Frueh et al., 2005), and the Charleston Psychiatric Outpatient Satisfaction Scale (CPOSS) evaluates patient satisfaction with outpatient services (Pellegrin et al., 2001). For the purpose of this study, items from both the TSAS and CPOSS were selected to create a scale that ensured a comprehensive evaluation of the telehealth services used in the context of this study (Appendix F). Since both treatment conditions involved therapy delivered online (standard therapy via VTC [Teams] and GSH via email), this 13-item measure provided an important assessment of participants' perspectives on these modes of delivery.

Acceptability. Although the CEQ and TSS were the primary measures used to assess the acceptability of the CPT-GSH format (and standard CPT), qualitative feedback was also documented. This was gathered from an additional item on the SRS and from feedback shared during sessions or via email and was incorporated to provide a broader perspective on the use of the GSH format.

Feasibility. For the purpose of this study, feasibility was considered primarily from the clinician's perspective, focusing on the practicality of delivering CPT in a GSH format within routine care. Although no formal procedure was in place to record these data, anecdotal observations were documented from clinicians' comments during weekly clinical supervision sessions. Feasibility was also assessed indirectly based on the time the clinician spent sending modules and providing written feedback to participants.

Cost Analysis. The total time spent by clinicians in sessions, along with the costs associated with training and supervision, were indexed to estimate the cost involved in delivering the treatment conditions. The hourly rates for the clinicians (provisional psychologists) and supervisors were based on the rates established by the Government of South Australia for allied health practitioners.

Table 3.1*Study Measures*

Measures	Assessment Timeline					
	Baseline	Prior to each session	At the end of each session	Posttreatment Assessment	3-month Follow-up	6-month Follow-up
Diagnostic Interview for Anxiety, Mood, and Obsessive Compulsive and Related Neuropsychiatric Disorders (DIAMOND)	✓					
Trauma Interview	✓					
Life Events Checklist (LEC)	✓					
Adverse Childhood Experience Scale (ACE Scale)	✓					
Clinician-Administered PTSD Scale for DSM-5 (CAPS-5)	✓			✓	✓	✓
Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5)	✓	✓		✓	✓	✓
Complex PTSD Scale in the International Trauma Questionnaire (ITQ-CPTSD)	✓	✓		✓	✓	✓
Depression Anxiety and Stress Scale- Depression Subscale (DASS-D)	✓	✓		✓	✓	✓
Assessment of Quality of Life (AQoL-8D)	✓			✓	✓	✓
Insomnia Severity Index (ISI)	✓					
Borderline Personality Module - Structured Clinical Interview for DSM-5 Personality Disorders (SCID-BPD)	✓			✓	✓	✓
Posttraumatic Cognitions Inventory (PTCI)	✓			✓	✓	✓

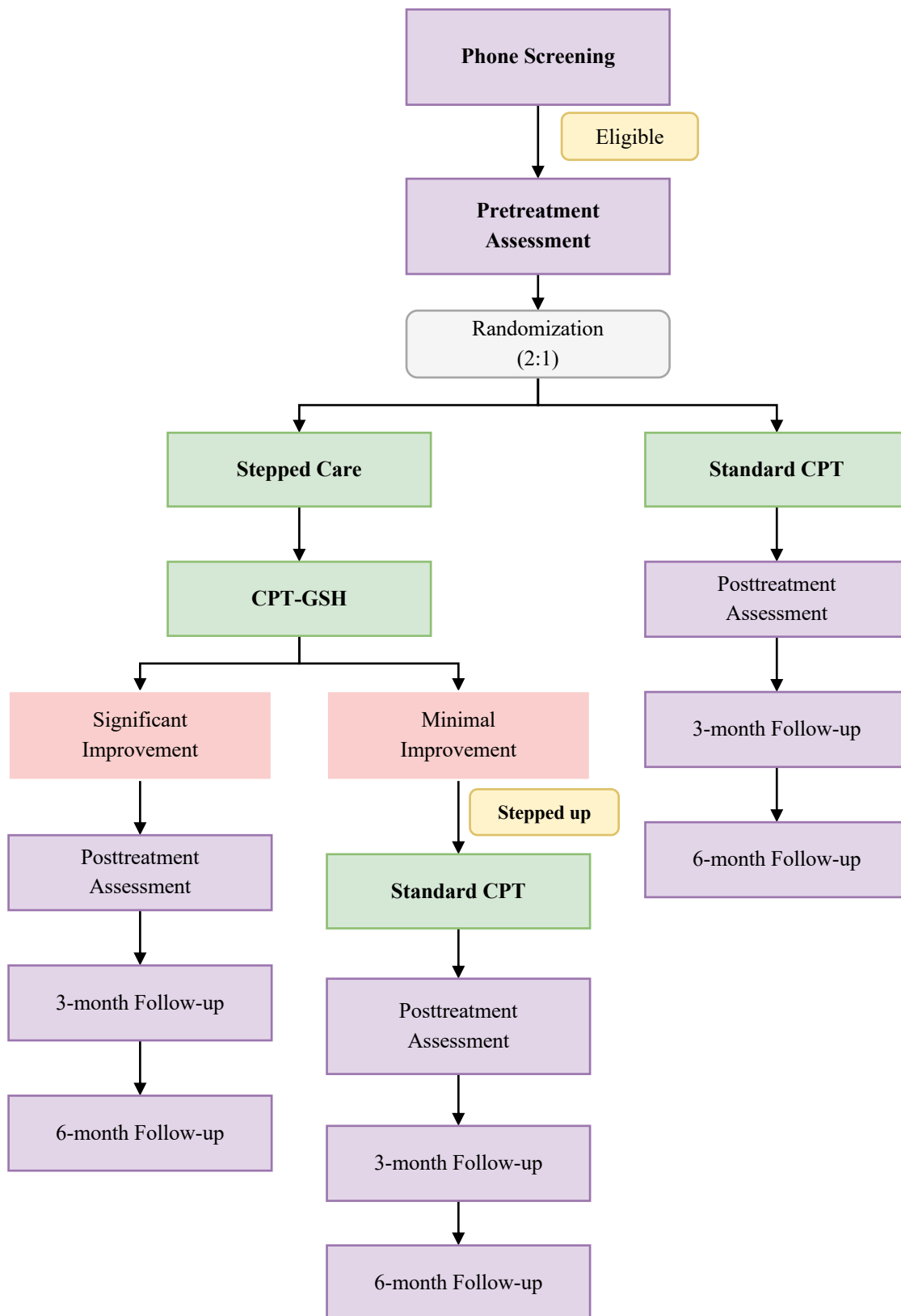
Measures	Assessment Timeline					
	Baseline	Prior to each session	At the end of each session	Posttreatment Assessment	3-month Follow-up	6-month Follow-up
Difficulties in Emotion Regulation Scale (DERS-18)	✓			✓	✓	✓
The University of Rhode Island Change Assessment-Trauma (URICA-T)	✓			✓	✓	✓
Alcohol Use Disorders Identification Test (AUDIT)	✓			✓	✓	✓
Cannabis Use Disorders Identification Test- Revised (CUDIT-R)	✓			✓	✓	✓
Dimensions of Anger Reactions (DAR-5)	✓			✓	✓	✓
Daily Inventory of Stressful Events (DISE)	✓			✓	✓	✓
Brief Revised Working Alliance Inventory (BR-WAI)			✓			
Session Rating Scale (SRS)			✓			
Homework Review Questionnaire (HR)		✓				
Outcome Rating Scale (ORS)		✓				
Credibility/Expectancy Questionnaire (CEQ)			✓	✓		
Telehealth Satisfaction Survey (TSS)				✓		

Procedures⁷

Figure 3.1 illustrates the overall study design. Participants were recruited through the Flinders PTSD Clinic. Recruitment occurred via self-referral (e.g., individuals who found the study through Google or clinical registries) or professional referral by healthcare providers, including general practitioners, psychiatrists, and social workers from community mental health services. Interested individuals were contacted via phone for a brief screening, and those deemed eligible were provided with participant information sheet and a link to an online consent form in Qualtrics, which also included the DIAMOND screener. All intake procedures and assessment sessions were conducted by provisional psychologists in the clinic. The capacity of participants to provide informed consent was assessed based on the clinical judgment of the clinician during the phone screen. Although standardized questions regarding cognitive capacity were not utilized, clinicians explained the study and subsequently asked participants questions about their understanding of the study, its commitments and their role, to ensure comprehension. In some cases, participants involved a trusted individual (i.e. family member, social worker) during the screening to discuss these matters, offering additional insights into their capacity to consent.

Upon submission of the online consent form, each participant was assigned a clinician who conducted clinical and diagnostic interviews (pretreatment assessment) via video call, following informed consent procedures. In most cases, the clinician who conducted the pretreatment assessment was assigned as the participant's clinician, as the initial interaction had already established some rapport. Participants who met the diagnostic criteria for PTSD or subthreshold PTSD, as determined by the CAPS-5, were eligible for the study and were sent pretreatment questionnaires.

⁷ I personally handled aspects of every significant component of the study, including administrative tasks, study setup, therapy, data analysis, writing, and publication. My supervisor provided clinical supervision. Other provisional psychologists were responsible for delivering therapy and conducting assessments.

Figure 3.1*Participant Flow Chart*

Note. CPT-GSH = Guided Self-Help Cognitive Processing Therapy.

After completing the pretreatment questionnaire, participants were randomly allocated to either the stepped care or standard CPT condition in a 2:1 ratio. Covariate-adaptive randomization was employed to ensure balanced participant characteristics between groups, essentially stratifying PTSD severity, trauma type, gender, and number of comorbid symptoms (Hu et al., 2014). Randomization was conducted by a researcher independent of the study.

In the stepped care condition, participants initially engaged with the CPT-GSH, which consisted of 12 weekly modules. Those who successfully completed all modules and showed significant improvement in PTSD symptoms were subsequently assessed at posttreatment (within two weeks), as well as at 3-month and 6-month follow ups. However, participants who met criteria for the stepped-up protocol transitioned to standard CPT to complete the remaining sessions before proceeding to follow-up assessments. In contrast, participants in the standard CPT format received weekly 60-minute therapy sessions delivered via video call, with session length adjusted based on client progress. A detailed description of the treatments provided are outlined below.

Posttreatment and follow-up assessments were conducted by independent assessors, who were also provisional psychologists, and to minimize bias, they were unaware of the participants' treatment group, their clinician, and the number of sessions attended. The assessors completed the 4hr CAPS-5 clinician training developed by the U.S. Department of Veteran Affairs through VHA train website (See <https://www.train.org/vha/course/1068095/details>) and additional supervision and feedback provided by CPT accredited supervisor (Prof. Reg Nixon). The CAPS interviews were conducted via video call using Microsoft Teams, while the self-reported measures used in the follow-ups were completed online (using the Qualtrics platform). All video sessions (including therapy and assessments) were recorded with clients' consent for supervision purposes.

Stepping-Up Protocol

Participants were considered for being stepped up from GSH to standard CPT based on the following criteria informed by prior work in the Clinic, advice from subject matter experts, and research (Roberts, 2023; Roberts & Nixon, 2023):

- a. Lack of engagement: Defined by delayed initiation or minimal interaction with the program such as not beginning the first set of modules promptly, taking more than two weeks to complete at least two consecutive modules, or unexplained delayed response to the clinician emails (i.e. > 3 days).
- b. Minimal improvement: Identified when participants' PCL scores remained above 50 or failed to show a reliable reduction (i.e., ~10 points) after six sessions, and/or remained above the clinical cut-off on the PCL-5 at the end of GSH (Weathers et al., 2013).
- c. Risk of dropout or difficulties with understanding the content: Indicated when participants communicated thoughts of disengagement. Drop out risk could also be indicated through significant difficulty completing or comprehending the self-paced worksheets, requiring additional support from the clinician or indicated a higher level of clinical engagement was required.
- d. Significant symptom escalation: Characterized by participants reporting increased psychological distress or elevated risk concerns that were not transient (i.e., did not resolve within two sessions), signaling the need for more intensive clinical support.

The study did not set a fixed number of sessions to determine when a client should be stepped up if they met criteria (a), (c), or (d). Instead, flexibility allowed participants sufficient time to engage with and benefit from the GSH therapy or transition to a higher-intensity treatment as needed. For example, if a participant disclosed that they were finding the GSH program difficult, they could be stepped up as early as after three sessions. These considerations were carefully discussed during the weekly group clinical supervision to ensure each client received care tailored to their needs within the stepped care framework.

Fast-tracking Protocol

In this study, we implemented a ‘fast-tracking’ protocol that allowed participants to progress through the GSH, or standard CPT interventions based on their symptom improvement. Participants were expected to complete the full content of the 12 CPT sessions. However, for those showing significant progress (i.e., early responders), some modules or sessions were combined and delivered within a single session to optimize efficiency without compromising the therapeutic protocol and dose. If the PCL-5 score remained below 31 for at least two consecutive sessions, participants could complete the remaining sessions at an accelerated pace. Participants were eligible for fast-tracking after completing the first six sessions. This threshold aligns with clinical observations and research indicating that clinically meaningful improvement often appears by session 6 (LoSavio et al., 2024; Nixon et al., 2021).

Treatments

Seven provisional psychologists, including myself, enrolled in postgraduate clinical psychology programs, delivered both GSH and standard CPT. Training for CPT included completion of the Medical University of South Carolina's online CPTWeb 2.0 program (<https://cpt2.musc.edu/>) and 6-hours of in person training on PTSD assessment and CPT by Prof. Reg Nixon, an accredited CPT trainer. For the CPT-GSH, I provided an orientation to the clinicians, emphasizing the differences between GSH and standard CPT, the structure of the program, as well as reviewing the administrative aspects (e.g., sending questionnaires and documenting feedback). All provisional psychologists participated in weekly group supervision via Zoom/Teams, typically lasting 90 minutes, led by Prof. Reg Nixon, and also received individual supervision as required. Therapy sessions were conducted via Microsoft Teams, and with the clients' consent, these sessions were recorded and stored securely on a protected internal university server for supervision purposes.

Cognitive Processing Therapy (CPT)

CPT is a manualized treatment for PTSD designed to help individuals reconceptualize trauma-related thoughts and emotions by fostering balanced, realistic beliefs about themselves, others, and the world, focusing on five core themes: safety, trust, power/control, esteem, and intimacy (Resick et al., 2017, 2024). CPT targets two particular types of unhelpful cognitions related to traumatic events, thought to maintain PTSD. The first type is the *assimilation* of new trauma-related information into pre-existing, distorted, or inaccurate schemas, which can lead to self-blame. The second type involves the *over-accommodation* of existing beliefs, which can alter an individual's perception, resulting in rigid and extreme thinking patterns. Thus, the primary goal of CPT is to identify and address such 'stuck points', beliefs that perpetuate symptoms by contributing to negative emotions and maladaptive behaviors post-trauma (Resick & Schnicke, 1992). In this process, the clinician collaborates with the client to challenge maladaptive thoughts, along with the distressing emotions that accompany such beliefs (Resick et al., 2017, 2024).

CPT typically consists of twelve 60-minute sessions, though the number of sessions can be adjusted depending on the client's progress. The therapy begins with psychoeducation about PTSD, helping clients understand how PTSD symptoms are interconnected, while also providing a brief summary of basic physiological mechanisms and common cognitive biases that may influence their perceptions and responses to the trauma. In the first session, participants are asked to write an impact statement about the traumatic event to be of focus in therapy, referred to as the 'index trauma'. This impact statement aims to capture the client's understanding of why the traumatic event occurred and examine how it has shaped their beliefs about themselves, others, and the world across five core themes. Clients are also given the choice to undertake a trauma account as part of CPT. This can be particularly helpful if a client demonstrates high levels of avoidance or disconnection from their trauma memory. The task involves writing a detailed narrative of the traumatic event as a practice assignment and subsequently reading it aloud in the following session (Only two participants in the study wrote trauma accounts).

In subsequent sessions, clients are taught to identify ‘stuck points’ related to their index trauma. One of the goals of therapy is to challenge these stuck points throughout the course of treatment. If the self-blame is a significant issue, the first few sessions focus on addressing the stuck points related to self-blame through Socratic questioning. Clients work through various worksheets to challenge these beliefs gradually, which involves identifying the associated emotions, problematic thinking patterns, and considering alternative, more helpful thoughts with the clinician’s support. The final sessions focus on five core areas such as safety, trust, power or control, esteem, and intimacy, all of which are often impacted for trauma survivors. In the last session, clients are asked to rewrite their impact statement and compare it to the original, allowing them to reflect on how their beliefs have shifted. Additionally, clinicians discuss strategies for relapse prevention to help clients maintain their progress after the conclusion of therapy.

As mentioned above, the number of sessions was kept flexible to ensure that all clients had the opportunity to make meaningful progress. For participants who were stepped up from the GSH condition, the standard CPT sessions began with the module that the participant had most recently completed and continued from that point onward.

Guided Self-help CPT (CPT-GSH)

CPT-GSH is an adapted and modified version of the self-help manual based on the standard CPT protocol developed by Resick and colleagues (Resick et al., 2023). Although originally designed for independent use by clients, this study incorporated clinician guidance alongside the manual to enhance treatment engagement and outcomes. This is the first study to evaluate the effectiveness of CPT-GSH independently of the creators of the self-help manual, and additionally the first to apply it within a stepped care model. CPT-GSH maintains the core content of standard CPT, as previously described, but with reduced clinician input as described next.

Once participants were assigned to the stepped care condition, clinicians scheduled a 30-minute video call to orient them to the study. During this session, clinicians provided an overview of the CPT-GSH, explained in general terms how to complete the worksheets, outlined the process

for communicating with the clinician, and addressed any concerns or questions raised by the participants before sending the first module. The program consists of 12 structured modules, delivered in PDF format, each corresponding to the core content typically addressed in a standard CPT session. Each module includes guided questions and spaces for participants to complete independently, facilitating active engagement with the material. Additionally, the end of each module features a troubleshooting section that addresses common questions and concerns that trauma survivors may encounter during the course of treatment. Appendix G presents sample pages from the workbook for reference.

Clinicians sent these modules along with associated practice assignments via email. Clients were expected to read the module and complete the associated worksheets and tasks within a week, then return them via email to the clinician. Clients could either edit the PDF directly and submit it, or complete the worksheets on paper, take a clear picture, and send it to the clinician via email. In turn, the clinician provided feedback via email before sending the next module. Clinicians were instructed to spend about 15-20 minutes on support and feedback emails for each module. Additionally, clients had access to whiteboard videos to help them understand key concepts and skills related to CPT (available from <https://cptforptsd.com/cpt-resources/>). In certain cases, clinicians were allowed to conduct a phone check-in if risk-related issues were identified in the worksheets or in email correspondence, or to discuss the process of stepping up to standard CPT. Completion of all twelve modules was required for participants to be considered as having fully completed the GSH protocol.

Statistical Analyses

Prior to conducting the main analyses, the dataset was examined for missing values, outliers, and normality of distribution in accordance with Tabachnick and Fidell's (2013) guidelines. Most of the analyses were conducted using IBM SPSS Statistics (Version 29.0.2.0). Unless otherwise specified, all analyses were performed on the intent-to-treat sample. Analyses were carried out in two stages. The primary focus of the thesis was to evaluate the effectiveness of a stepped care

approach compared to standard CPT. However, given that the CPT-GSH intervention was being tested in a RCT for the first time, additional analyses were conducted to compare outcomes across three subgroups: (1) participants who completed GSH only, (2) those who stepped up from GSH to CPT (GSH + CPT), and (3) those who completed CPT only. These results are reported to provide further context regarding the performance of each treatment group.

Linear mixed modeling (LMM) was used to examine treatment effects across four timepoints: baseline, posttreatment, and 3-month and 6-month follow-ups. This approach accommodates missing data and accounts for within-subject correlations over time. The study used the Last Observation Carried Forward (LOCF) method to address missing data on the PCL and DASS-D at posttreatment for participants who discontinued the study. Although LOCF is usually regarded as an overly conservative imputation approach and typically not recommended, in this context, it does not involve carrying forward a baseline score collected several weeks prior to replacing missing data. Instead, weekly assessments of PCL and DASS-D were conducted throughout the treatment period. Therefore, the most recent available score, reflecting the participant's current symptom severity immediately prior to dropout, was used, providing a more accurate and reliable estimate. Dichotomous outcomes were analyzed using Chi-square tests or Fisher's Exact Tests, where applicable. Independent samples *t*-tests were used to compare group differences in non-repeated measures, including treatment credibility, and other related outcomes. Logistic regression was used to test whether baseline characteristics predicted the likelihood of binary outcomes (e.g., treatment completed vs not completed).

A statistical significance threshold of $p < .05$ was applied throughout all analyses. Effect sizes were reported using Hedges' *g*, accompanied by 95% confidence intervals. Interpretation of effect sizes followed Cohen's (2013) conventions: small (0.2), medium (0.5), and large (0.8). While statistical significance indicates a reliable effect, it does not necessarily convey clinical relevance, particularly when effect sizes are small. Based on Funder and Ozer's (2019) recommendations,

effect sizes were considered potentially clinically meaningful if $g > 0.40$, representing at least a moderate effect.

As part of this clinical trial, symptom improvement was also evaluated using the Reliable Change Index (RCI), a statistical method developed by Jacobson and Truax (1991) to determine whether changes in a participant's scores over time are statistically meaningful and exceed the threshold of measurement error. The RCI is calculated by dividing the difference between an individual's pretreatment (X_{pre}) and posttreatment (X_{post}) scores by the standard error of the difference (S_{diff}). This standard error is derived using the baseline standard deviation (SD) of the outcome measure and its test-retest reliability coefficient (r), which is typically drawn from relevant psychometric research.

$$S_{diff} = SD \times \sqrt{2(1 - r)}$$

$$RCI = \frac{X_{post} - X_{pre}}{S_{diff}}$$

$$RCI \text{ threshold} = 1.96 \times S_{diff}$$

For this thesis, test-retest reliability values used were $r = .78$ for CAPS-5 (Weathers et al., 2018), $r = .91$ for the PCL-5 (Krüger-Gottschalk et al., 2017), and $r = .84$ for DASS-D (Roberts, 2023). An RCI value greater than 1.96 indicates a statistically significant change ($p < .05$), representing a shift of approximately 2 SDs beyond measurement error. Based on this approach, two clinical benchmarks were used to assess outcomes. *Treatment Response* was defined as achieving a reliable change (i.e., an RCI above 1.96) accompanied by a posttreatment score below the clinical cut-off of 31 for the PCL-5. *Good End-State Functioning (GES)*, which might be considered as *remission* (e.g., Varker et al., 2020) required both a reliable change and a posttreatment score below 19 on the PCL-5 (Schnurr et al., 2015; Wachen et al., 2019). Diagnostic remission, treatment response, and GES were calculated only for participants who met the full PTSD criteria and/or those over the clinical cut-off on the PCL-5.

To assess the non-inferiority of the stepped care model (and GSH-only condition) in terms of symptom improvement on primary outcome measures, the *TOSTER* package in R was employed (RStudio Team, 2013). Non-inferiority (NI) margins were derived using the RCI threshold, based on the *SD* of the current sample and the test-retest reliability values as reported above. Accordingly, the relevant NI margins were calculated as follows: 9.41 for the CAPS-5, 9.70 for the PCL-5, 12.32 for the DASS-21, and 0.13 for the AQoL utility score.

CHAPTER 4:

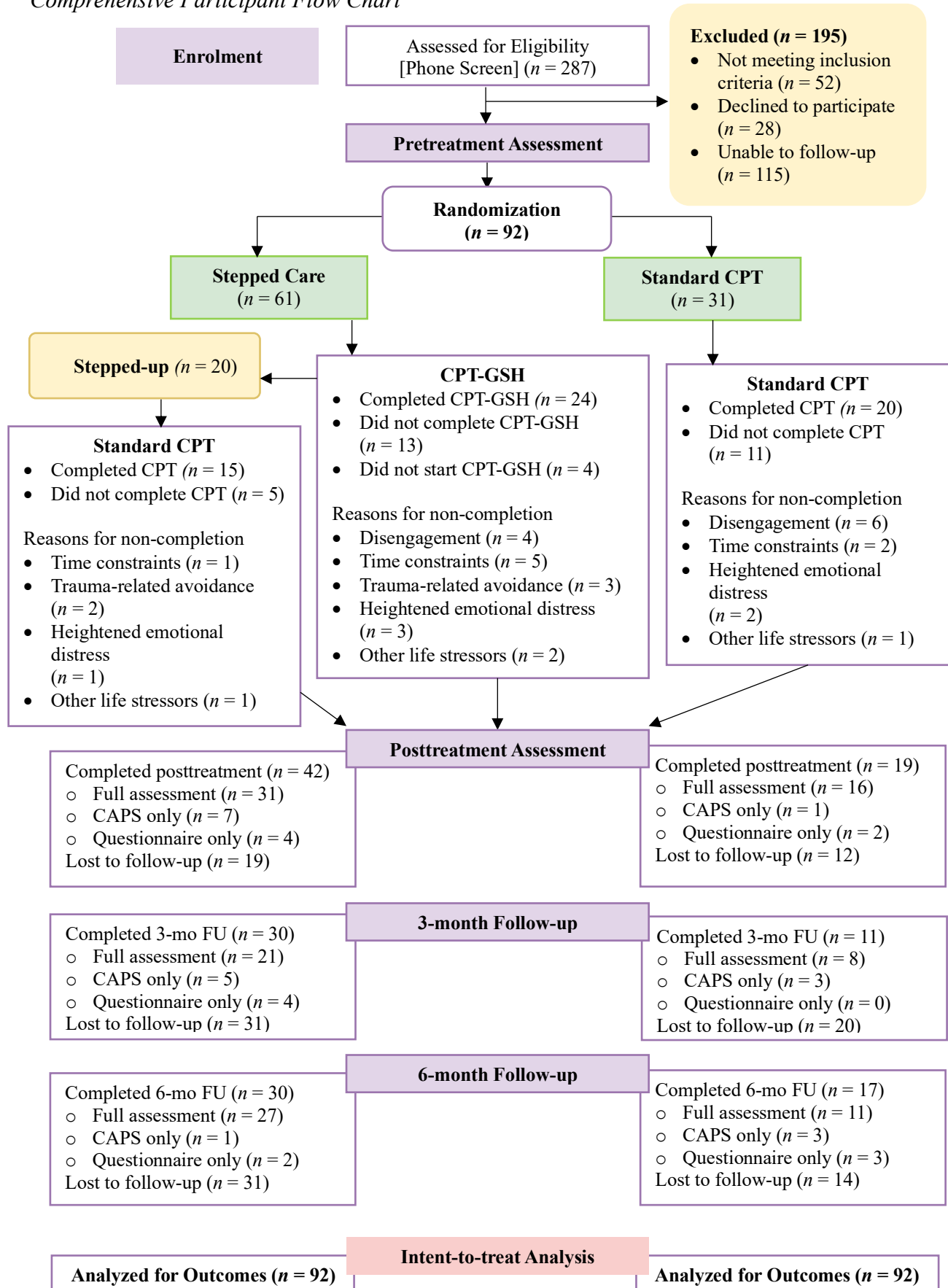
Comparative Outcomes Across GSH-only, Stepped-up, and CPT-only Conditions

Chapter Overview

This chapter presents the main outcomes between the stepped care model and standard CPT, with the primary analyses addressing my key hypotheses: that GSH within a stepped care model would improve primary and secondary outcomes, and that the stepped care and GSH intervention would be non-inferior to standard CPT in symptom improvement. Where applicable, mixed model analysis was conducted with the two-condition design to examine the overall efficacy of stepped care compared to standard CPT, and three-condition models (i.e., GSH-only, Stepped-up, and CPT-only) were employed to further explore the specific contribution of the GSH intervention within the stepped care framework.

Recruitment

Participants were recruited through Flinders posttraumatic stress clinic between August 2022 and December 2024. Figure 4.1 summarizes the participant flow in the study. A total of 287 individuals contacted the Clinic via phone or email. During follow-up phone screening, 115 did not respond to further contact attempts (a minimum of two contacts via call and text were made), 28 indicated they were not interested in participating, and 52 did not meet Criterion A trauma or report full or subthreshold PTSD symptoms. The intent-to-treat sample comprised all 92 participants who met the inclusion criteria at the pretreatment assessment and were subsequently randomized to either the stepped care or standard CPT conditions. Of the 92 participants, 61 were randomly allocated to the stepped care condition and 31 to the standard CPT condition, using a 2:1 randomization ratio. Table 4.1 presents the demographic characteristics of the study participants. Summarizing this information, participants were predominantly female and White, with a mean age of 38.7 years ($SD = 13.65$). The most frequently reported index traumas were childhood sexual abuse and intimate partner violence.

Figure 4.1*Comprehensive Participant Flow Chart*

Note. CPT-GSH = Guided Self-help Cognitive Processing Therapy.

Baseline Demographic and Clinical Characteristics

Significantly, 98.9% of participants reported exposure to more than one traumatic event over their lifetime and average number of trauma types experienced by participants was 8.87 ($SD = 4.15$). This level of trauma exposure is consistent with previous PTSD research. For example, Elizabeth (2020) reported a mean of 7.66 trauma types ($SD = 3.5$), and Roberts (2023) found a mean of 7.73 different trauma types ($SD = 3.02$) in their clinical samples. There were no significant demographic or trauma characteristic differences between the stepped care and standard CPT conditions in the intent-to-treat sample. At the pretreatment assessment, most participants met diagnostic criteria for full-threshold PTSD (96%) and the remaining individuals meeting subthreshold-PTSD criteria on the CAPS-5. Participants who met the full criteria had PCL-5 scores exceeding the clinical cut-off of 31, indicating a level of symptom severity consistent with the threshold for clinical significance.

Analyses conducted with treatment completers showed a similar pattern of findings, with the exception of age ($p = .038$), years of education ($p = .024$), and PTSD diagnostic status (full and subthreshold) ($p = .045$), where statistically significant differences were observed. That is, individuals in the stepped care condition were older and more likely to meet criteria for full PTSD compared to those in the standard CPT group, whereas years of education were marginally higher in the standard CPT group. However, the differences in age ($g = 0.54$) and education ($g = 0.65$) were moderate and likely to be clinically meaningful, with the difference in PTSD diagnostic status ($g = -0.26$) more modest, potentially suggesting a limited impact despite statistical significance (See Supplementary Table S3).

Table 4.1*Baseline Demographic Characteristics (Intent-to-Treat Sample)*

Characteristics	Total (<i>n</i> = 92) <i>M (SD) or n (%)</i>	Stepped Care (<i>n</i> = 61) <i>M (SD) or n (%)</i>	Standard CPT (<i>n</i> = 31) <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Age (Years)	38.70 (13.65)	40.31 (13.64)	35.52 (13.32)	$t(90) = 1.61$	.112	0.35 [-0.08, 0.78]
Gender						
Female	65 (70.7%)	42 (68.9%)	23 (74.2%)	$\chi^2(3) = 0.70$	.873	0.09
Male	23 (25.0%)	16 (26.2%)	7 (22.6%)			
Non-binary	3 (3.3%)	2 (3.3%)	1 (3.2%)			
Other	1 (1.1%)	1 (1.6%)	0 (0%)			
Ethnicity						
White	50 (54.3%)	31 (50.8%)	19 (61.3%)	$\chi^2(8) = 10.42$	.237	0.34
Indigenous Australian	2 (2.2%)	1 (1.6%)	1 (3.2%)			
European	22 (23.9%)	17 (27.9%)	5 (16.1%)			
Asian	4 (4.3%)	1 (1.6%)	3 (9.7%)			
Middle Eastern	2 (2.2%)	2 (3.3%)	0 (0%)			
New Zealander Maori	3 (3.3%)	3 (4.9%)	0 (0%)			
Pacific Islander	1 (1.1%)	0 (0%)	1 (3.2%)			
Multiethnic	2 (2.2%)	2 (3.3%)	0 (0%)			
Other	6 (6.5%)	4 (6.6%)	2 (6.5%)			
Education (Years)	15.05 (2.97)	15.15 (2.71)	14.87 (3.48)	$t(90) = 0.42$	.676	0.09 [-0.34, 0.52]
Currently Employed	76 (82.6%)	50 (81.6%)	26 (83.8%)	$\chi^2(1) = 0.05$	.82	0.02

Characteristics	Total (<i>n</i> = 92) <i>M (SD) or n (%)</i>	Stepped Care (<i>n</i> = 61) <i>M (SD) or n (%)</i>	Standard CPT (<i>n</i> = 31) <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Income						
< \$20,000	22 (23.9%)	12 (19.7%)	10 (32.3%)	$\chi^2(5) = 5.96$	.310	0.25
\$20,000 – 50,000	17 (18.5%)	10 (16.4%)	7 (22.6%)			
\$50,001– 80,000	18 (19.6%)	12 (19.7%)	6 (19.4%)			
\$80,001 – 110,000	13 (14.1%)	12 (19.7%)	1 (3.2%)			
\$110,001 – 140,000	11 (12.0%)	7 (11.5%)	4 (12.9%)			
> \$140,0000	11 (12.0%)	8 (13.1%)	3 (9.7%)			
Marital Status						
Single	23 (25.0%)	14 (23.0%)	9 (29.0%)	$\chi^2(5) = 12.35$	.030	0.37
In a relationship but not living together	10 (10.9%)	5 (8.2%)	5 (16.1%)			
In a relationship and living together	15 (16.3%)	6 (9.8%)	9 (20%)			
Married	30 (32.6%)	24 (39.3%)	6 (19.4%)			
Separated/ divorced	12 (13.0%)	11 (18.0%)	1 (3.2%)			
Widow/ widower	2 (2.2%)	1 (1.6%)	1 (3.2%)			
Full PTSD Diagnosis	88 (95.7%)	59 (96.7%)	29 (93.5%)	$\chi^2(1) = 0.49$	.481	0.07
Subthreshold PTSD Diagnosis	4 (4.3%)	2 (3.28%)	2 (6.45%)	$\chi^2(1) = 0.49$	.481	0.07
PTSD Duration (Months)	174.33 (180.94)	178.76 (169.29)	165.48 (205.16)	$t(85) = 0.32$	.749	0.07 [-0.37, 0.51]

Note. CPT = Cognitive Processing Therapy.

In line with International Classification of Diseases (ICD-11) diagnostic criteria, 54.3% participants met the threshold for probable complex PTSD (ITQ-CPTSD). Comorbidity was highly prevalent within the sample, with approximately two-thirds of participants meeting criteria for at least one additional mental health condition as assessed by the DIAMOND. Major depressive disorder (45.7%) emerged as the most common comorbid diagnosis, followed by social anxiety disorder (41.3%), generalized anxiety disorder (35.9%) and panic disorder (20.7%). Additionally, the DIAMOND includes a brief risk assessment at the end of the interview, where 12% of participants reported current suicidal thoughts, although none had active plans. These are categorized and summarized in Table 4.2. Baseline scores for primary and secondary measures are presented in Table 4.3, with no significant differences observed between the stepped care and standard CPT groups. Similarly, no baseline differences emerged on clinical characteristics, or on symptom severity within the completer sample (Supplementary Tables S4 and S5).

Table 4.2*Trauma History and Symptom Profiles (Intent-to-Treat Sample)*

Characteristics	Total (<i>n</i> = 92) <i>M (SD) or n (%)</i>	Stepped Care (<i>n</i> = 61) <i>M (SD) or n (%)</i>	Standard CPT (<i>n</i> = 31) <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Index Trauma						
Child sexual abuse	19 (20.7%)	12 (19.7%)	7 (22.6%)	$\chi^2(11) = 12.04$	.361	0.36
Child physical abuse	11 (12.0%)	8 (13.1%)	3 (9.7%)			
Adult sexual assault	13 (14.1%)	10 (16.4%)	3 (9.7%)			
Adult physical assault	5 (5.4%)	4 (6.6%)	1 (3.2%)			
Motor vehicle accident	4 (4.3%)	3 (4.9%)	1 (3.2%)			
Witnessed trauma	5 (5.4%)	4 (6.6%)	1 (3.2%)			
Threatened death	3 (3.3%)	1 (1.6%)	2 (6.5%)			
Intimate partner violence	16 (17.4%)	9 (14.8%)	7 (22.6%)			
Life-threatening illness/ injury	5 (5.4%)	3 (4.9%)	2 (6.5%)			
War	2 (2.2%)	2 (3.3%)	0 (0%)			
Professional duties	4 (4.3%)	4 (6.6%)	0 (0%)			
Learned about a traumatic event	5 (5.4%)	1 (1.6%)	4 (12.9%)			
Adverse Childhood Experiences (ACE)^a	5.01 (2.67)	4.97 (2.66)	5.1 (2.73)	$t(89) = -2.22$	.676	-0.05 [-0.49, 0.39]
Current Comorbid Diagnoses						
Anxiety disorder	60 (65.2%)	37 (60.6%)	23 (74.2%)	$\chi^2(1) = 1.66$	.198	0.13
Mood disorder	48 (52.2%)	33 (54.1%)	15 (48.4%)	$\chi^2(1) = 0.27$	.604	-0.05
Eating disorder	13 (14.1%)	8 (13.8%)	5 (16.7%)	$\chi^2(1) = 0.13$	.719	0.04
Substance use disorder	7 (7.6%)	5 (8.6%)	2 (6.7%)	$\chi^2(1) = 0.10$	.748	-0.03
Current suicide risk	11 (12%)	5 (8.2%)	6 (19.3%)	$\chi^2(1) = 2.43$	.119	0.16

Note. CPT = Cognitive Processing Therapy.

^a The ACE score was calculated as the total number of adverse childhood experience types reported by each participant (ranges from 0-10).

Table 4.3*Baseline Scores on Primary and Secondary Measures (Intent-to-Treat Sample)*

Measures	Total (<i>n</i> = 92) <i>M</i> (<i>SD</i>)	Stepped Care (<i>n</i> = 61) <i>M</i> (<i>SD</i>)	Standard CPT (<i>n</i> = 31) <i>M</i> (<i>SD</i>)	Test	<i>p</i>	<i>g</i> [95% CI]
Primary Measures						
CAPS-5	38.55 (7.24)	38.95 (7.11)	37.77 (7.55)	<i>t</i> (90) = 0.74	.464	0.16 [-0.27, 0.59]
PCL-5	49.09 (11.66)	49.13 (11.73)	49.00 (11.72)	<i>t</i> (90) = 0.05	.960	0.01 [-0.42, 0.44]
ITQ-CPTSD	30.71 (7.99)	31.03 (7.72)	30.09 (8.58)	<i>t</i> (90) = 0.53	.598	0.12 [-0.31, 0.54]
DASS-D	21.05 (11.11)	21.13 (11.36)	20.89 (10.73)	<i>t</i> (85) = 0.09	.925	0.02 [-0.43, 0.48]
AQoL- 8D						
Psychometric	55.07 (13.05)	55.38 (12.07)	54.47 (15.06)	<i>t</i> (89) = 0.31	.757	0.07 [-0.37, 0.51]
Utility	0.42 (0.16)	0.41 (0.15)	0.420 (0.19)	<i>t</i> (89) = -0.17	.869	-0.04 [-0.47, 0.40]
Secondary Measures						
ISI	15.35 (6.44)	15.16 (6.22)	15.73 (6.97)	<i>t</i> (89) = -0.39	.694	-0.09 [-0.52, 0.35]
SCID-BPD	6.44 (3.49)	6.17 (3.44)	7.00 (3.59)	<i>t</i> (88) = -1.07	.289	-0.24 [-0.67, 0.20]
PTCI	154.69 (33.22)	154.95 (34.13)	154.14 (31.78)	<i>t</i> (86) = 0.11	.916	0.02 [-0.42, 0.47]
DERS-18	48.11 (13.40)	47.02 (12.76)	50.38 (14.62)	<i>t</i> (87) = -1.11	.270	-0.25 [-0.69, 0.19]
AUDIT	5.79 (6.42)	6.05 (6.58)	5.27 (6.18)	<i>t</i> (89) = 0.54	.588	0.12 [-0.31, 0.56]
CUDIT-R	2.78 (6.22)	3.18 (6.34)	1.97 (5.99)	<i>t</i> (89) = 0.87	.385	0.19 [-0.24, 0.63]
DAR-5	10.52 (4.43)	10.36 (4.52)	10.87 (4.30)	<i>t</i> (89) = -0.51	.611	-0.11 [-0.55, 0.32]

Note. CPT = Cognitive Processing Therapy for DSM-5; CAPS-5 = Clinician-Administered PTSD Scale; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ-CPTSD- Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale-Depression Subscale; AQoL- 8D= Assessment of Quality of Life; ISI = Insomnia Severity Index; SCID-BPD = Structured Clinical Interview for DSM 5- Borderline Personality Disorders; PTCI = Posttraumatic Cognitions Inventory; DERS = Difficulties in Emotional Regulation Scale; AUDIT = Alcohol Use Disorders Identification Test; CUDIT-R = Cannabis Use Disorders Identification Test- Revised; DAR-5= Dimensions of Anger Reaction.

Treatment Completion

A total of 59 participants completed the full treatment protocol to which they were assigned, with 39 completing in the stepped care group and 20 in the standard CPT group. Of those in stepped care condition, 24 completed GSH alone, whereas 15 completed the treatment after stepping up to CPT. Completion rates were similar between the stepped care and standard CPT conditions, $\chi^2(1) = 0.003, p = .956, \phi = .006$. In the intent-to-treat sample, the mean number of sessions did not significantly differ between the stepped care ($M = 9.24, SD = 5.36$) and standard CPT groups ($M = 10.16, SD = 5.37$), $t(90) = -0.773, p = .676$. Among treatment completers, participants in the stepped care condition attended an average of 12.74 sessions ($SD = 2.62$), compared to 13.25 sessions ($SD = 3.81$) in the standard CPT group. Those who were stepped up completed an average of 3.95 GSH sessions ($SD = 2.65$) prior to transition, followed by an additional 8.05 sessions ($SD = 4.17$) during the CPT phase.

As part of the pretreatment assessment, participants were asked to indicate their treatment preference for data collection purposes. Although just over half of the participants (53.3%) reported no preference for the treatment group, 14.1% indicated a preference for GSH and 32.6% favored standard CPT. Only 25% were ultimately allocated to their preferred condition, but this was not associated with treatment completion, $\chi^2(92) = 0.39, p = .530$.

Participants were stepped up based on predefined criteria (as defined in Chapter 3, p. 74). Ten participants were stepped up due to limited engagement, indicated by delayed worksheet submissions and non-responsiveness to email contact. Four were transitioned after demonstrating difficulty comprehending the self-guided modules and worksheets without therapist support. An additional four met criteria for stepping up due to persistent symptom severity, as measured by the PCL. Two participants were allocated to standard CPT in response to heightened emotional distress and/or emerging risk factors that warranted more intensive monitoring and therapeutic intervention.

In terms of non-protocol sessions, four participants required a total of six non-protocol sessions due to severe distress linked to external stressors in their personal lives and elevated risk-

related concerns, including increased suicidal ideation. Although not deemed to be attributable to the therapy itself, these issues interfered with participants' ability to fully engage in the treatment process. These concerns were raised by clinicians during supervision, where it was agreed that providing non-protocol sessions was clinically appropriate. As a result, some sessions were redirected to address these concerns before returning to the treatment protocol. Moreover, nine participants were 'fast-tracked' (4 in GSH-only; 2 in GSH+CPT; 3 in CPT-only conditions) within the program by completing two modules in a single session, based on strong response to therapy and achieving PCL-5 scores below the clinical cut-off for at least two consecutive sessions. This is consistent with flexible length CPT which is now considered standard delivery (Galovski et al., 2012; Galovski et al., 2024).

Attrition

Participants were classified as dropouts if they failed to initiate therapy post randomization or did not complete the full 12-session CPT protocol. The overall dropout rate within the intent-to-treat sample was 36%, comprising 22 in the stepped care group (36.1%) and 11 in the standard CPT group (35.5%), with no significant difference between the two conditions ($\chi^2(1) = 0.003, p = .956, \phi = .006$). Wiltsey Stirman et al. (2021) found similar dropout rate (35.7%) for their open trial of GSH intervention examining message-based delivery of CPT. In the stepped care condition, four participants disengaged prior to commencing Session 1 (0.04%), while another five discontinued after being stepped up to standard CPT (0.05%). Reported reasons for non-completion included poor engagement (e.g., failure to complete modules or attend scheduled appointments), limited time availability, heightened emotional distress, trauma-related avoidance, and competing life stressors. These reasons were documented by clinicians in case notes and supervision sheets, based on participants' self-reports or, at times, inferred from their behaviors during sessions. The mean number of sessions completed prior to dropout was 3.05 ($SD = 2.6$) in the stepped care group and 4.54 ($SD = 2.3$) in the standard CPT group, implying that most participants discontinued during the early phase of treatment. For those who indicated they were going to disengage from GSH,

clinicians offered the option to step up to standard CPT, except in cases where participants ceased contact. Despite this offer, the majority declined to continue with therapy.

Missing Data

In the intent-to-treat sample, 17% of participants completed all follow-up assessments (posttreatment, 3-month, and 6-month follow-ups). An additional 41 participants completed at least one follow-up assessment, whereas 22 did not complete any assessments beyond baseline (all of the latter were non-completers in the study). The occurrence of missing data did not differ significantly between the stepped care and standard CPT conditions, $\chi^2(1) = 0.04, p = .520$. In the completer sample, missing data was minimal, with 97.4% of participants in the stepped care and 95% in the standard CPT groups completing all assessments. There were no significant group differences, $\chi^2(1) = 0.24, p = .567$. Data from six participants at the 3-month and 12 at the 6-month follow-up were treated as missing due to incomplete data capture at the time of analysis (due to constraints of ensuring an on-time thesis submission).

Efficacy of Stepped Care

In line with my first hypothesis, I anticipated that participants receiving the CPT-GSH intervention within the stepped care model would demonstrate clinically significant improvements in PTSD severity, depression, and quality of life, compared with those receiving standard CPT across all time points. To examine these questions, I conducted two separate analyses. First, I used a mixed analysis to examine the stepped care approach with standard CPT in a 2 (group: stepped care, standard CPT) $\times$ 4 (time: baseline, posttreatment, 3-month, and 6-month follow-ups) design. Second, I conducted another mixed analysis to further examine the specific effects of GSH within stepped care model using a 3-group design (GSH-only, GSH + CPT, CPT-only) over the same assessment points to examine symptom trajectories over time.

Linear mixed model analysis comparing the stepped care and standard CPT groups showed significant time effects across all four primary outcome measures (all $ps < .001$), associated with

substantial symptom reduction from baseline to the 6-month follow-up in the overall sample.

However, there were no significant group effects or group $\times$ time interaction effects on any of the primary outcome measures (See Table 4.4). Participants in both groups experienced substantial within-group symptom improvements across outcomes (Table 4.5). The stepped care condition was associated with large and statistically significant reductions in PTSD symptom severity, as indicated by CAPS-5 effect sizes ranging from $g = 2.05$ to 2.12 . This group also showed consistently higher effect sizes on complex PTSD symptoms and quality of life measures. In contrast, the standard CPT group demonstrated slightly greater improvements in PCL and depression scores at posttreatment, but these differences narrowed over time, with the stepped care group reporting lower symptom scores by the 3-month and 6-month follow-ups. Despite these patterns, as shown in Table 4.6, none of the between-group differences in treatment outcomes reached statistical significance across timepoints, suggesting that neither condition showed clear advantage over the other. Given the overlapping confidence intervals across most measures, these group differences should be interpreted cautiously, particularly as the study may have been underpowered to detect small meaningful differences.

The mixed model analysis comparing the three treatment groups produced similar findings to the two-group comparison, with significant time effects observed across all primary outcome measures (Table 4.7). However, among the primary measures, a significant main effect of treatment group was observed for the CAPS-5 ($p = .007$). Pairwise comparisons showed that participants in the GSH-only group reported significantly lower PTSD scores overall compared to those in the stepped-up ($p = .006$) and CPT-only ($p = .013$) groups. However, no significant differences were found between the stepped-up and CPT-only conditions ($p = .590$). Figures 4.2 to 4.6 illustrate the improvement in primary outcome measures over time. Additional analyses conducted within the treatment completer sample with 3-group design yielded results consistent with those observed in the intent-to-treat sample, except for PTSD outcome measured with the PCL. A significant group $\times$ time interaction was found on the PCL measure ($p = .011$), with participants in the GSH-only

condition experiencing greater reductions in symptom severity at posttreatment ($p = .003$) compared to the stepped-up group (See Supplementary Table S6). Direct comparisons between GSH and standard CPT conditions will be discussed in Chapter 5.

Table 4.4

Estimated Marginal Means and Fixed Effects for Stepped Care and Standard CPT from Baseline to 6-month Follow-Up (Intent-to-Treat Sample)

[illegible]

Measures	Time	Model Estimates		Fixed Effects					
		Stepped Care	Standard CPT	Group		Time		Group*Time	
		<i>M (SE)</i>	<i>M (SE)</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
AQoL-8D Psychometric	Base	55.38 (1.96)	54.47 (2.80)	0.60 (1, 113.04)	.440	8.80 (3, 138.42)	<.001	1.41 (3, 138.42)	.242
	Post	65.55 (2.30)	58.59 (3.22)						
	3-mo	64.69 (2.66)	62.37 (4.50)						
	6-mo	65.24 (2.55)	65.54 (3.93)						
AQoL-8D Utility	Base	0.41 (0.02)	0.42 (0.04)	0.34 (1, 112.02)	.560	19.81 (3, 137.67)	<.001	0.54 (3, 137.67)	.658
	Post	0.58 (0.03)	0.54 (0.04)						
	3-mo	0.56 (0.03)	0.53 (0.05)						
	6-mo	0.58 (0.03)	0.55 (0.05)						

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ-CPTSD- Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale - Depression Subscale; AQoL- 8D= Assessment of Quality of Life.

Table 4.5*Within-group Effect Size for Stepped Care and Standard CPT Conditions (Intent-to-Treat Sample)*

Measures	Time	Stepped Care <i>M (SE)</i>	<i>g</i> [95%CI]	Standard CPT <i>M (SE)</i>	<i>g</i> [95%CI]
CAPS-5	Base	38.95 (1.41)		37.77 (1.98)	
	Post	16.04 (1.64)	2.07 [1.59, 2.54]	20.12 (2.41)	1.58 [1.04, 2.12]
	3-mo	15.49 (1.93)	2.12 [1.61, 2.62]	19.48 (2.88)	1.64 [1.19, 2.09]
	6-mo	16.18 (1.99)	2.05 [1.60, 2.50]	22.98 (2.80)	1.32 [0.86, 1.79]
PCL-5	Base	49.13 (2.09)		49.00 (2.94)	
	Post	24.86 (2.14)	1.48 [0.98, 1.97]	23.16 (2.94)	1.56 [1.05, 2.07]
	3-mo	22.28 (2.83)	1.63 [1.09, 2.18]	24.31 (4.69)	1.49 [0.96, 2.02]
	6-mo	20.86 (2.89)	1.72 [1.23, 2.22]	24.55 (4.26)	1.14 [0.65, 1.63]
ITQ-CPTSD	Base	31.03(1.26)		30.09 (1.77)	
	Post	11.79 (1.49)	1.94 [1.44, 2.45]	12.91 (2.08)	1.72 [1.12, 2.32]
	3-mo	12.10 (1.72)	1.91 [1.37, 2.46]	14.43 (2.82)	1.57 [1.14, 1.99]
	6-mo	11.30 (1.74)	1.99 [1.50, 2.49]	14.52 (2.55)	1.56 [1.10, 2.02]
DASS-D	Base	21.03 (1.52)		21.74 (2.20)	
	Post	13.17 (1.55)	0.66 [0.47, 0.84]	10.16 (2.12)	0.93 [0.45, 1.42]
	3-mo	13.69 (1.96)	0.61 [0.31, 0.92]	15.67 (3.18)	0.49 [0.09, 0.88]
	6-mo	11.63 (2.05)	0.79 [0.49, 1.08]	12.35 (2.97)	0.76 [0.47, 1.04]
AQoL-8D Psychometric	Base	55.38 (1.96)		54.47 (2.80)	
	Post	65.55 (2.30)	-0.66 [-0.89, -0.43]	58.59 (3.22)	-0.26 [-0.61, 0.09]
	3-mo	64.69 (2.66)	-0.60 [-0.88, -0.33]	62.37 (4.49)	-0.50 [-0.80, -0.21]
	6-mo	65.24 (2.55)	-0.64 [-1.05, -0.23]	65.54 (3.93)	-0.70 [-1.28, -0.12]
AQoL-8D Utility	Base	0.41 (0.02)		0.42 (0.04)	
	Post	0.58 (0.03)	-1.51 [-1.93, -1.09]	0.54 (0.04)	-0.53 [-0.84, -0.22]
	3-mo	0.56 (0.03)	-1.33 [-1.79, -0.87]	0.53 (0.05)	-0.49 [-0.82, -0.15]
	6-mo	0.58 (0.03)	-1.51 [-2.27, -0.74]	0.55 (0.04)	-0.58 [-1.15, 0.00]

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ-CPTSD- Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale- Depression Subscale; AQoL- 8D= Assessment of Quality of Life.

Table 4.6*Between-group Effect Size for Stepped Care and Standard CPT Conditions (Intent-to-Treat Sample)*

Measures	Time	Stepped Care <i>M (SE)</i>	Standard CPT <i>M (SE)</i>	<i>g</i> [95%CI]
CAPS-5	Base	38.95 (1.41)	37.77 (1.98)	0.11 [-0.33, 0.54]
	Post	16.04 (1.64)	20.12 (2.41)	-0.31 [-0.75, 0.13]
	3-mo	15.49 (1.93)	19.48 (2.88)	-0.26 [-0.70, 0.18]
	6-mo	16.18 (1.99)	22.98 (2.80)	-0.43 [-0.88, 0.01]
PCL-5	Base	49.13 (2.09)	49.00 (2.94)	0.01 [-0.43, 0.45]
	Post	24.86 (2.14)	23.16 (2.94)	0.10 [-0.34, 0.54]
	3-mo	22.28 (2.83)	24.31 (4.69)	-0.09 [-0.52, 0.35]
	6-mo	20.86 (2.89)	24.55 (4.26)	-0.16 [-0.60, 0.28]
ITQ-CPTSD	Base	31.03(1.26)	30.09 (1.77)	0.08 [-0.35, 0.52]
	Post	11.79 (1.49)	12.91 (2.08)	-0.09 [-0.52, 0.35]
	3-mo	12.10 (1.72)	14.43 (2.82)	-0.16 [-0.60, 0.28]
	6-mo	11.30 (1.74)	14.52 (2.55)	-0.25 [-0.69, 0.19]
DASS-D	Base	21.03 (1.52)	21.74 (2.20)	-0.06 [-0.50, 0.38]
	Post	13.17 (1.55)	10.16 (2.12)	0.21 [-0.23, 0.65]
	3-mo	13.69 (1.96)	15.67 (3.18)	-0.12 [-0.56, 0.32]
	6-mo	11.63 (2.05)	12.35 (2.97)	-0.05 [-0.48, 0.39]
AQoL-8D Psychometric	Base	55.38 (1.96)	54.47 (2.80)	0.05 [-0.39, 0.49]
	Post	65.55 (2.30)	58.59 (3.22)	0.35 [-0.09, 0.79]
	3-mo	64.69 (2.66)	62.37 (4.49)	0.11 [-0.33, 0.54]
	6-mo	65.24 (2.55)	65.54 (3.93)	-0.01 [-0.45, 0.42]
AQoL-8D Utility	Base	0.41 (0.02)	0.42 (0.04)	-0.04 [-0.48, 0.40]
	Post	0.58 (0.03)	0.54 (0.04)	0.17 [-0.27, 0.61]
	3-mo	0.56 (0.03)	0.53 (0.05)	0.12 [-0.32, 0.56]
	6-mo	0.58 (0.03)	0.55 (0.04)	0.00 [-0.44, 0.44]

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ-CPTSD- Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale - Depression Subscale; AQoL-8D= Assessment of Quality of Life.

Table 4.7

Estimated Marginal Means and Fixed Effects for GSH-only, Stepped-Up, and CPT-only Conditions from Baseline to 6-month Follow-Up (Intent-to-Treat Sample)

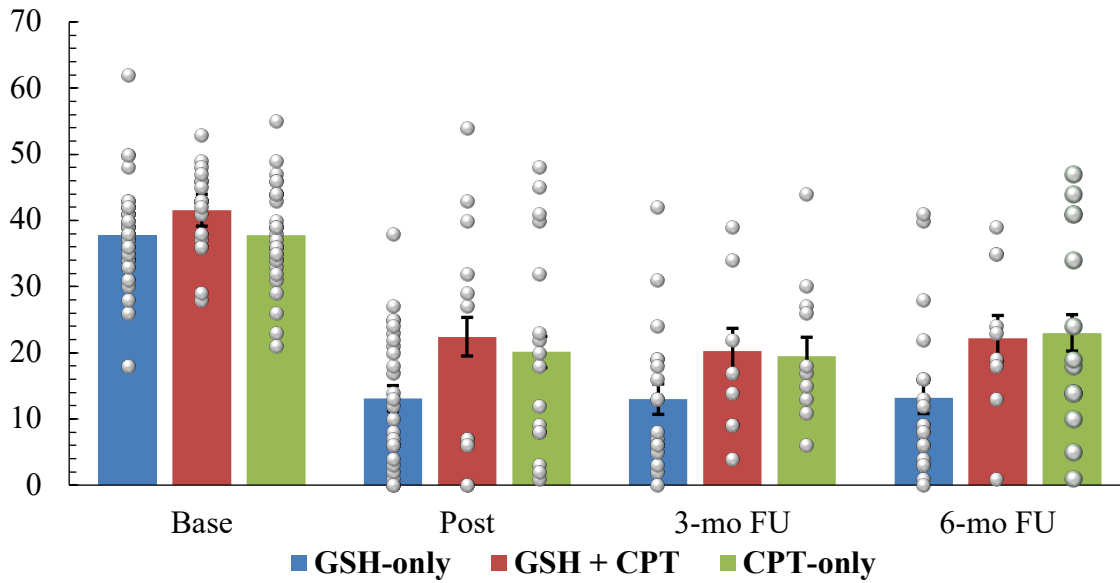
Measures	Time	Model Estimates			Fixed Effects					
		GSH-only	GSH + CPT	CPT-only	Group		Time		Group*Time	
		<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
CAPS-5	Base	37.68 (1.68)	41.55 (2.41)	37.77 (1.93)	5.19 (2, 111.79)	.007	93.17 (3, 152.25)	<.001	1.55 (6, 151.76)	.165
	Post	13.10 (1.94)	22.43 (2.92)	20.12 (2.37)						
	3-mo	12.99 (2.30)	20.28 (3.41)	19.49 (2.85)						
	6-mo	13.18 (2.37)	22.18 (3.45)	23.01 (2.75)						
PCL-5	Base	49.32 (2.54)	48.75 (3.63)	49.00 (2.92)	1.50 (2, 102.59)	.227	81.85 (3, 164.09)	<.001	1.18 (6, 163.67)	.322
	Post	21.83 (2.62)	30.45 (3.63)	23.16 (2.92)						
	3-mo	18.60 (3.49)	29.07 (4.74)	24.30 (4.66)						
	6-mo	18.27 (3.54)	25.80 (4.90)	24.54 (4.23)						
ITQ-CPTSD	Base	31.09 (1.53)	30.90 (2.19)	30.09 (1.76)	1.89 (2, 104.19)	.155	95.75 (3, 134.19)	<.001	1.39 (6, 133.60)	.224
	Post	9.76 (1.79)	16.16 (2.61)	12.91 (2.07)						
	3-mo	9.63 (2.11)	16.91 (2.89)	14.44 (2.79)						
	6-mo	9.81 (2.12)	14.19 (2.95)	14.52 (2.53)						
DASS-D	Base	20.54 (1.86)	22.00 (2.65)	21.74 (2.21)	0.20 (2, 95.08)	.816	26.75 (3, 151.52)	<.001	1.04 (6, 151.12)	.405
	Post	13.14 (1.90)	13.26 (2.68)	10.16 (2.12)						
	3-mo	12.22 (2.44)	16.34 (3.34)	15.66 (3.20)						
	6-mo	11.10 (2.55)	12.77 (3.49)	12.35 (2.98)						
AQoL-8D Psychometric	Base	55.98 (2.38)	54.15 (3.41)	54.47 (2.79)	2.07 (2, 106.99)	.132	9.09 (3, 131.62)	<.001	1.59 (6, 131.27)	.156
	Post	67.89 (2.79)	60.60 (4.01)	58.59 (3.19)						
	3-mo	69.72 (2.32)	55.94 (4.39)	62.37 (4.47)						
	6-mo	67.08 (3.12)	61.37 (4.34)	65.54 (3.91)						

Measures	Time	Model Estimates			Fixed Effects					
		GSH-only	GSH + CPT	CPT-only	Group		Time		Group*Time	
		<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
AQoL-8D	Base	0.43 (0.03)	0.39 (0.04)	0.42 (0.03)	1.83 (2, 107.32)	.165	21.55 (3, 130.66)	<.001	1.17 (6, 129.55)	.324
Utility	Post	0.60 (0.03)	0.53 (0.05)	0.54 (0.04)						
	3-mo	0.62 (0.04)	0.45 (0.05)	0.53 (0.05)						
	6-mo	0.60 (0.04)	0.53 (0.05)	0.55 (0.05)						

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ-CPTSD-Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale - Depression Subscale; AQoL- 8D= Assessment of Quality of Life.

Figure 4.2

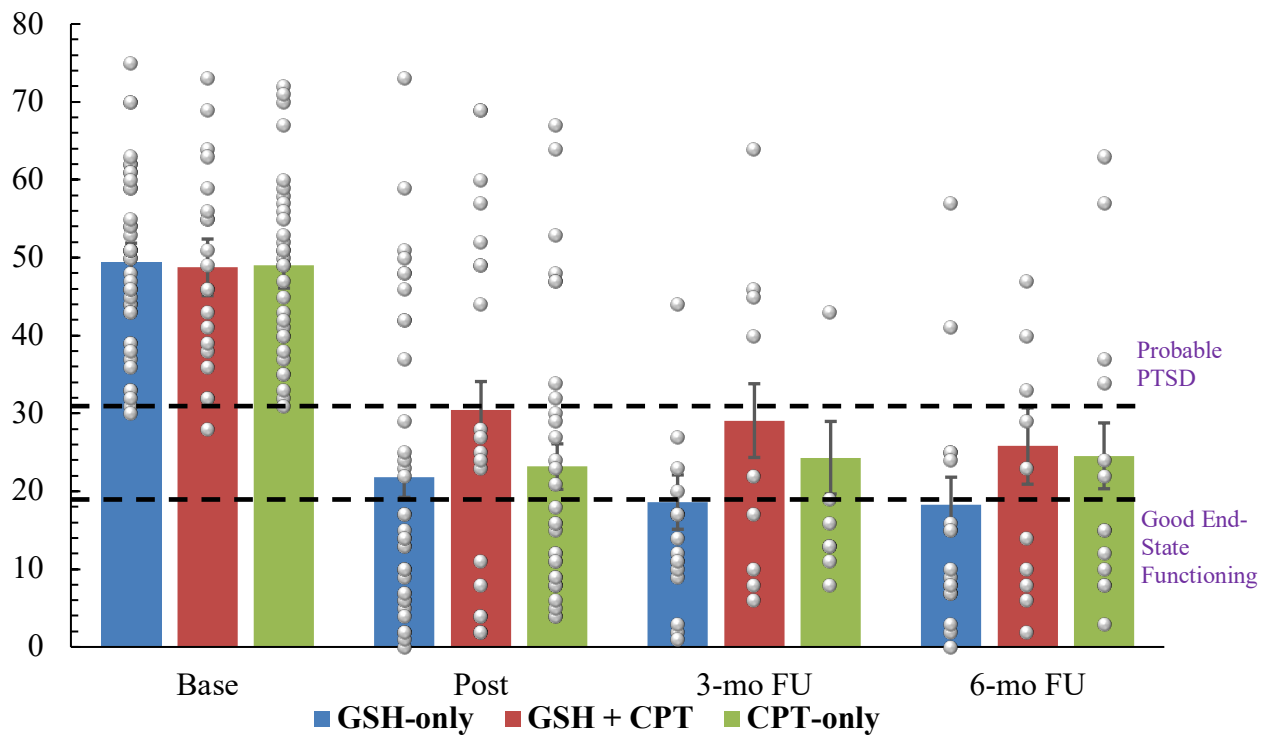
Estimated Marginal Means and Individual Data Points for CAPS-5 Across 3 Treatment Conditions



Note. The error bars represent ± 1 standard error (SE) of the estimated means.

Figure 4.3

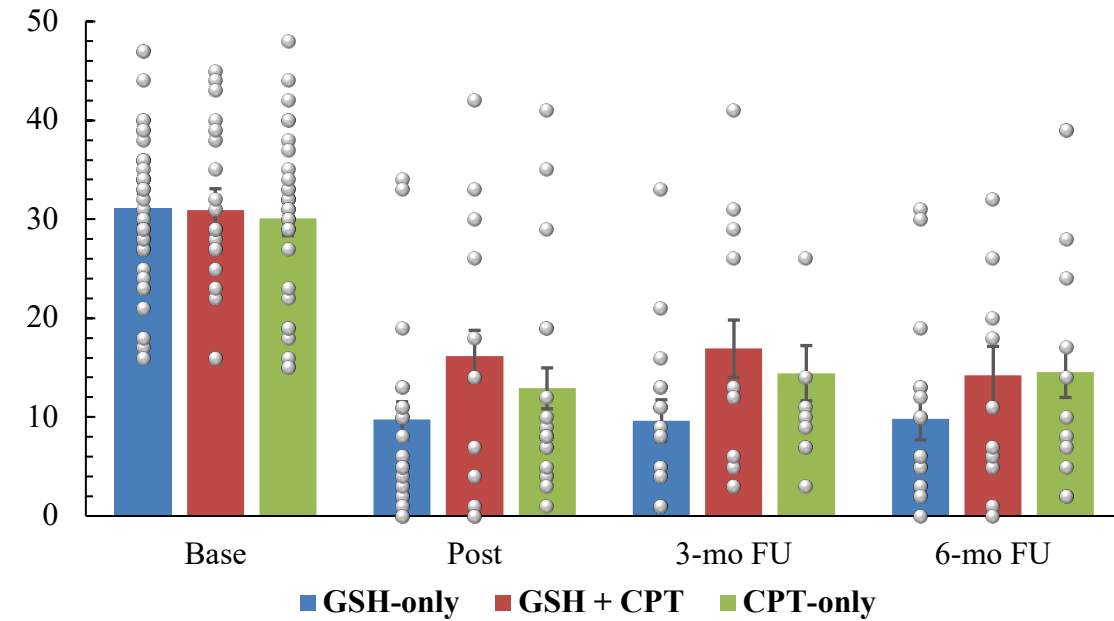
Estimated Marginal Means and Individual Data Points for PCL-5 Across 3 Treatment Conditions



Note. The error bars represent ± 1 SE of the estimated means.

Figure 4.4

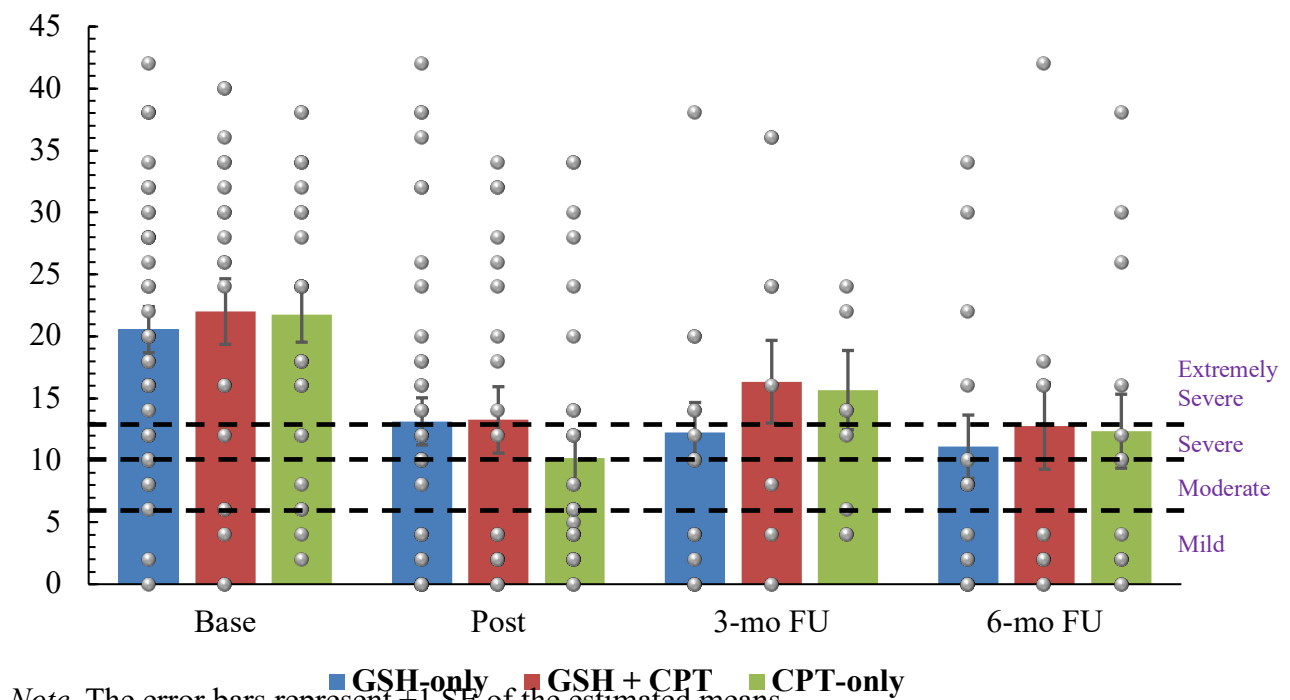
Estimated Marginal Means and Individual Data Points for ITQ-CPTSD Across 3 Treatment Conditions



Note. The error bars represent ± 1 SE of the estimated means.

Figure 4.5

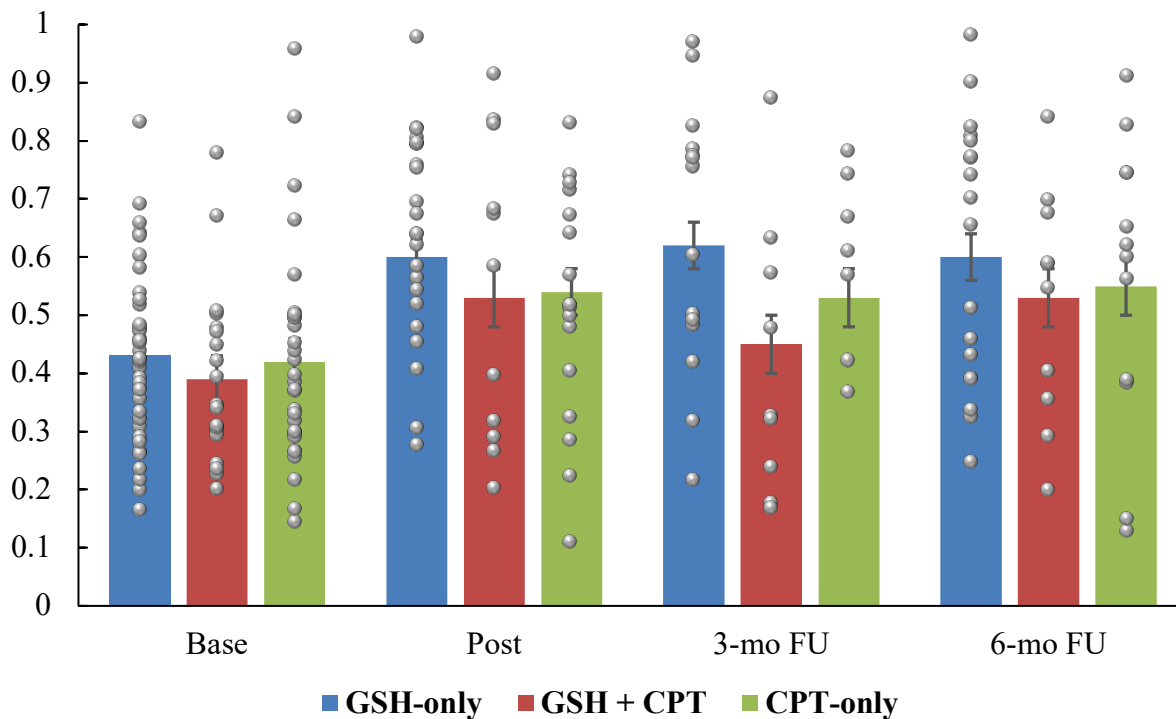
Estimated Marginal Means and Individual Data Points for DASS-D Across 3 Treatment Conditions



Note. The error bars represent ± 1 SE of the estimated means.

Figure 4.6

Estimated Marginal Means and Individual Data Points for AQoL Utility Measure Across 3 Treatment Conditions



Note. The error bars represent ± 1 SE of the estimated means.

Diagnostic Remission, Treatment Response and Good End-State Functioning

Diagnostic remission was evaluated using the CAPS-5, with remission defined as no longer meeting the DSM-5 criteria for PTSD. The treatment response was characterized by a reliable change in symptom severity, indicated by a ≥ 9.70 -point decrease on the PCL-5 and a score below the clinical cut-off (< 31). Good end-state functioning (GES) required both a reliable reduction in symptoms and a PCL-5 score below 19 (Schnurr et al., 2015; Wachen et al., 2019). Table 4.8 presents the proportion of participants who met criteria for diagnostic remission, treatment response, and GES at follow-up assessments. As shown, no statistically significant differences were observed between the stepped care and standard CPT groups in rates of diagnostic remission, treatment response, or GES (all $ps > .15$). These findings should be interpreted in light of the small sample sizes, particularly at the 3-month and 6-month follow-up points, which likely limited statistical power to detect meaningful group differences.

Table 4.8*Diagnostic Remission, Treatment Response, and Good End-State Functioning*

Time	Stepped Care	Standard CPT	ϕ	χ^2	p
Diagnostic Remission ^a					
Post	27/38 (71.1%)	11/16 (68.8%)	0.02	0.03	.866
3-mo FU	22/26 (84.6%)	6/10 (60%)	0.27	2.53	.112
6-mo FU	20/28 (71.4%)	6/12 (50%)	0.21	1.69	.193
Treatment Response ^b					
Post	37/55 (67.3%)	22/31 (70.9%)	0.04	0.13	.723
3-mo FU	19/47 (40.4%)	7/21 (33.3%)	-0.07	0.31	.578
6-mo FU	23/29 (79.3%)	7/11 (63.6%)	-0.16	1.05	.307
Good End-State Functioning (GES) ^c					
Post	27/55 (49.1%)	17/31 (54.8%)	0.06	0.26	.609
3-mo FU	15/24 (62.5%)	7/8 (87.5%)	0.23	1.75	.186
6-mo FU	17/27 (62.9%)	7/13 (53.8%)	-0.09	0.30	.581

Note. Analyses were conducted only on those participants who met the full diagnostic criteria for PTSD on the Clinician Administered PTSD scale (CAPS-5) at pretreatment assessment.

^aDiagnostic remission = No longer meeting PTSD diagnostic criteria on the CAPS-5.

^bTreatment response = A reduction of 9.7 points or more on the PCL-5 *and* a PCL score of 31 or below.

^cGES = A reduction of 9.7 points or more on the PCL-5 *and* a PCL score of 19 or below.

Weekly Session Outcomes

As is standard in CPT (and part of the trial), session-by-session PTSD and depression symptoms (PCL-5, DASS-D) were measured allowing examination of change over the course of treatment. To evaluate participant satisfaction and therapeutic engagement, the Session Rating Scale (SRS) and Outcome Rating Scale (ORS) were also administered at each session. Therapeutic alliance was measured using the Brief Revised Working Alliance Inventory (BR-WAI) at sessions 2, 4, 10, and 12. In addition, participants' engagement with homework was assessed using the Homework Review (HR) questionnaire (see Appendix E). Linear mixed effects modelling was used to assess these data, summarized in Tables 4.9 and 4.10. Estimated marginal means (EMM) and standard error (SE) for weekly PCL-5, DASS-D, SRS, ORS, BR-WAI and HR scores are also reported in Supplementary Tables S7 to S12.

Across both the two-group and three-group analyses, significant time effects were observed on all measures except the SRS. There was also a significant group $\times$ time interaction for the WAI bond subscale (which assesses the degree of trust and the mutual understanding between the client and clinician) in the two-group analysis. This effect was primarily driven by increases in bond scores within each group at different time points. In the stepped care condition, pairwise comparisons indicated a significant increase was observed between sessions 2 and 6 ($p < .001$), after which scores plateaued with no further significant change. In contrast, in the standard CPT condition, the significant increase occurred later, between sessions 10 and 12 ($p < .001$), following an initial gradual trajectory before reaching a peak at the end of treatment. By the final session, scores were comparable between conditions ($p = .213$).

Significant main effects of group were observed for the PCL-5 and ORS in the three-treatment condition analysis only. For the PCL-5, pairwise comparisons revealed that the group main effect was driven by participants who only needed GSH and who reported significantly lower PTSD symptoms than those who were stepped-up to standard CPT ($p = .029$). However, no significant difference was found between the GSH and standard CPT groups ($p = .636$), as shown in Figure 4.7. Given that the majority of participants completed treatment by Session 12 ($n = 75$), the means for sessions beyond this point were based on a limited number of observations. As a result, the later session averages values appear to fluctuate between sessions more than in earlier sessions, likely reflecting the influence of a small subset of individuals at these timepoints (See Figure 4.8 for reference). Furthermore, ORS scores showed a significant main effect of group, primarily driven by GSH with a significant difference compared to the stepped-up group ($p = .014$), while no significant difference was observed with the CPT-only group ($p = .208$).

SRS scores did not significantly differ between treatment conditions; however, descriptively, participants in the CPT consistently scored around the ‘satisfactory’ threshold (score of 36 or greater) from the first session, whereas those in the stepped care condition showed a gradual increase, reaching similar levels only after session six. This observation should be interpreted with

caution, given no statistical differences were found and the SRS items were modified to reflect feedback provided via email communication rather than traditional face-to-face interactions (for reference, see the SRS questionnaire in Appendix D). Figures 4.9 to 4.13 present the session-by-session trajectories for DASS-D, SRS, ORS, BR-WAI and HR scores, comparing participants across two treatment groups (stepped care vs. standard CPT) and three subgroups (GSH-only, GSH+CPT, and CPT-only).

Table 4.9

Linear Mixed Model Fixed Effects for Outcome Measures Across Sessions by Treatment Conditions (Stepped Care vs Standard CPT)

Measure	Fixed Effects					
	Group		Time		Group*Time	
	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
PCL-5	0.02 (1, 170.37)	.963	4.88 (24, 704.07)	<.001	.76 (20, 709.17)	.760
DASS-D	0.73 (1, 132.62)	.395	2.00 (24, 660.29)	.003	1.10 (20, 667.84)	.344
SRS	0.12 (1, 163.04)	.726	0.79 (24, 493.40)	.756	0.54 (20, 506.34)	.952
ORS	5.29 (1, 184.68)	.942	2.81 (24, 682.95)	<.001	0.98 (20, 688.42)	.371
BR-WAI						
Total	0.01 (1, 91.34)	.915	18.18 (3, 144.15)	<.001	1.94 (3, 144.15)	.127
Tasks	0.04 (1, 93.62)	.844	12.82 (3, 153.46)	<.001	1.29 (3, 153.46)	.281
Bond	0.00 (1, 87.97)	.986	17.08 (3, 141.75)	<.001	3.06 (3, 141.75)	.030
HR	0.25 (1, 181.91)	.616	3.98 (24, 587.26)	<.001	1.49 (19, 581.08)	.082

Note. PCL-5 = Posttraumatic Stress Disorder Checklist; DASS-D = Depression Anxiety and Stress Scale- Depression Subscale; SRS = Session Rating Scale; ORS= Outcome Rating Scale; BR-WAI= Brief Revised Working Alliance Inventory; HR= Homework Review.

Table 4.10

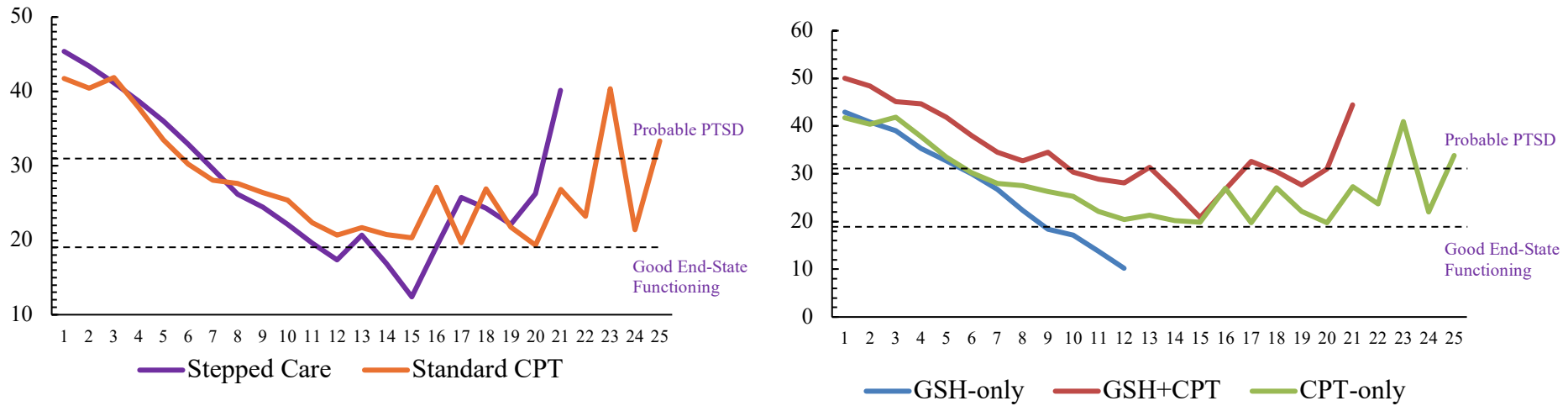
Linear Mixed Model Fixed Effects for Outcome Measures Across Sessions by Treatment Conditions (GSH-only, Stepped-up and CPT-only)

Measure	Fixed Effects					
	Group		Time		Group*Time	
	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
PCL-5	4.49 (2, 123.03)	.013	5.14 (24, 691.82)	<.001	.83 (32, 691.52)	.742
DASS-D	2.50 (2, 132.62)	.086	2.11 (24, 660.29)	.002	.94 (32, 667.84)	.572
SRS	0.39 (2, 123.45)	.676	1.12 (24, 477.99)	.320	.59 (31, 471.98)	.959
ORS	5.29 (2, 142.77)	.006	2.81 (24, 652.83)	<.001	.98 (32, 666.51)	.509
BR-WAI						
Total	0.26 (2, 89.78)	.769	17.79 (3, 141.73)	<.001	1.29 (6, 141.70)	.263
Tasks	0.30 (2, 92.15)	.742	12.77 (3, 151.31)	<.001	0.89 (6, 151.04)	.499
Bond	0.31 (2, 86.17)	.735	16.66 (3, 139.21)	<.001	1.77 (6, 139.18)	.110
HR	2.91 (2, 177.87)	.057	3.37 (24, 541.11)	<.001	1.36 (29, 547.03)	.103

Note. PCL-5 = Posttraumatic Stress Disorder Checklist; DASS-D = Depression Anxiety and Stress Scale-Depression Subscale; SRS = Session Rating Scale; ORS= Outcome Rating Scale; BR-WAI= Brief Revised Working Alliance Inventory; HR= Homework Review.

Figure 4.7

Estimated Mean PCL-5 Scores Comparing Stepped Care vs. Standard CPT and GSH-only vs. Stepped-Up vs. CPT-only Groups

**Figure 4.8**

Estimated Mean PCL-5 Scores Comparing Participants who Completed CPT by Session 12 and those who Continued Beyond Session 12

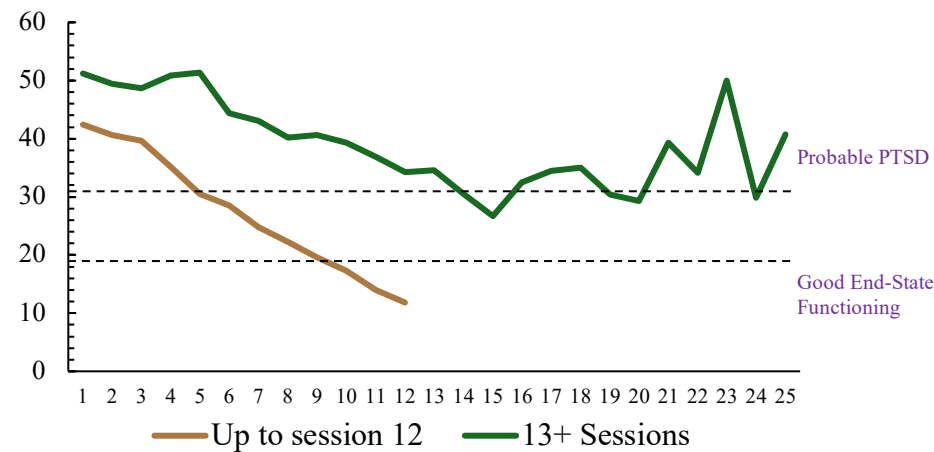


Figure 4.9

Estimated Mean DASS-D Scores Comparing Stepped Care vs. Standard CPT and GSH-only vs. Stepped-Up vs. CPT-only Groups

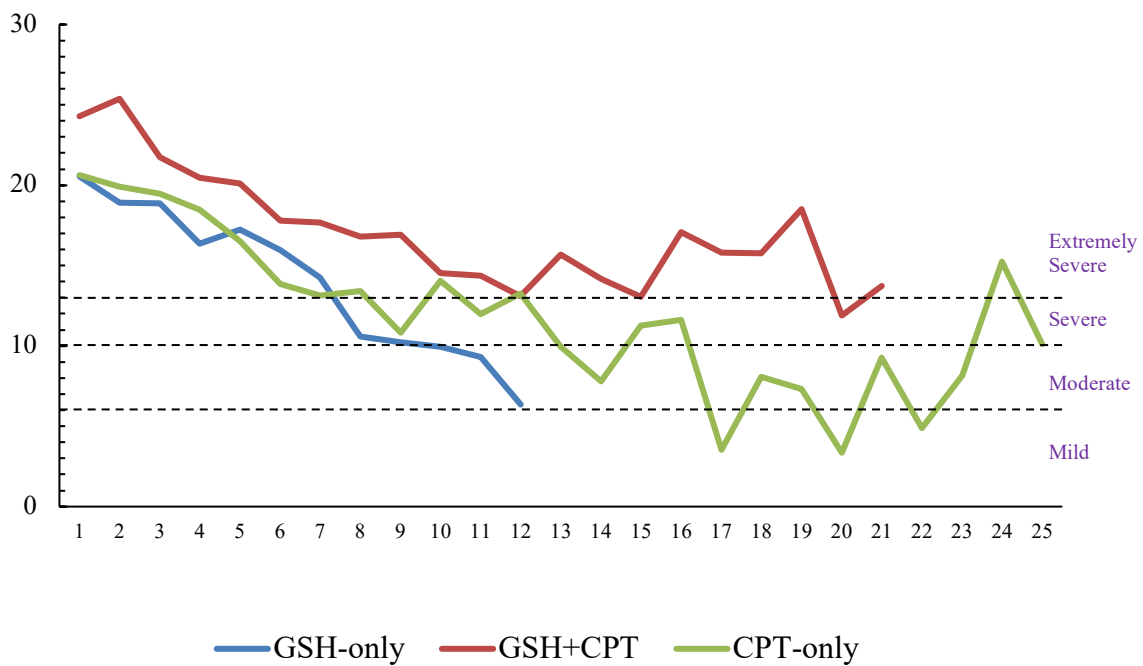
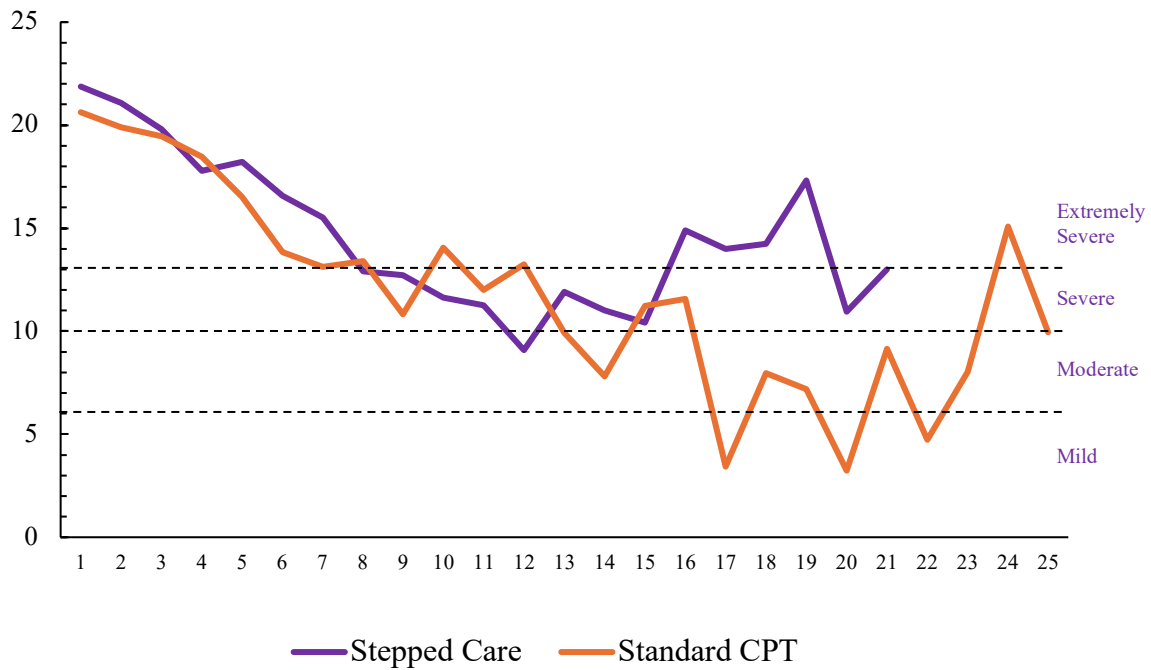
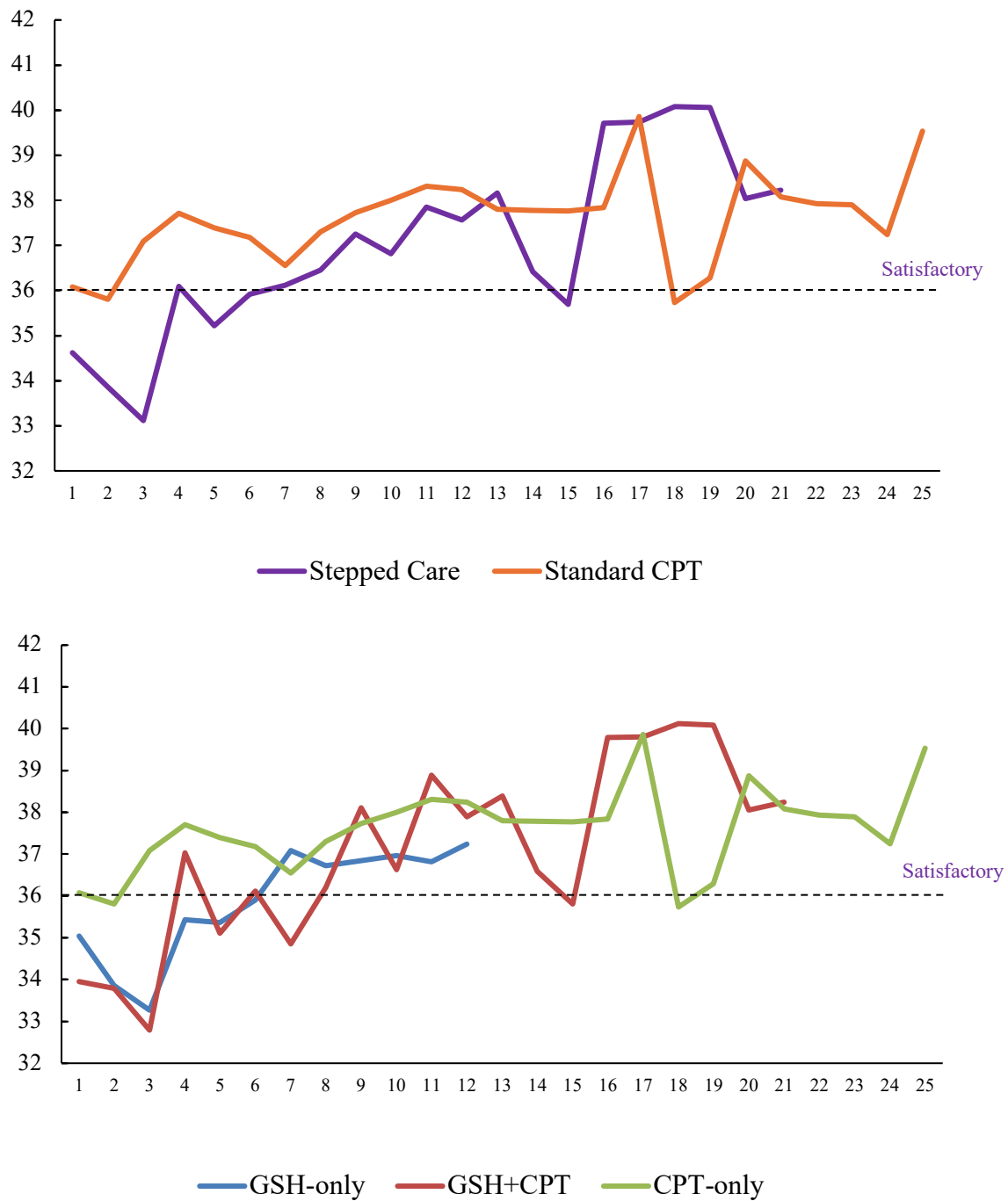


Figure 4.10

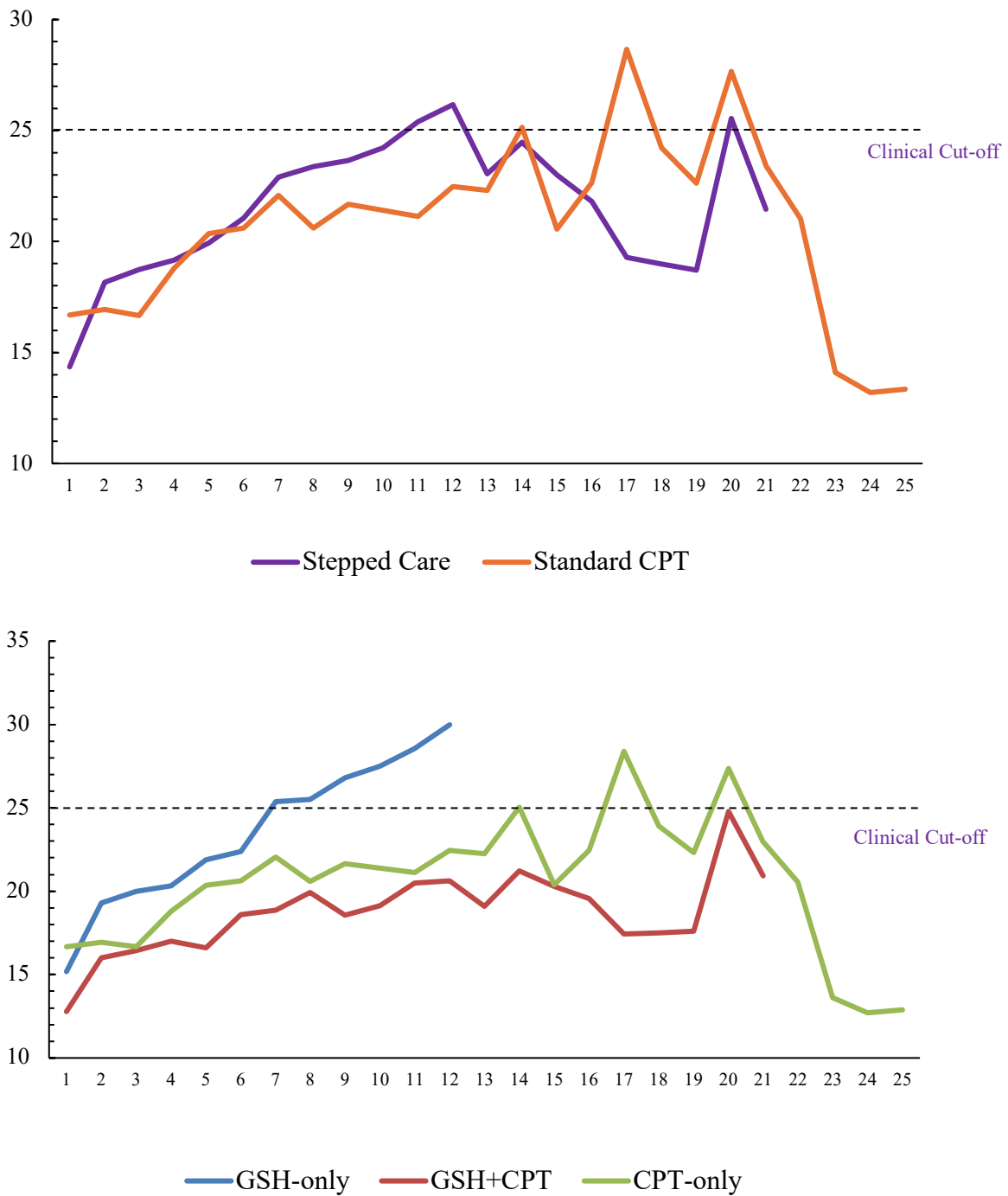
Estimated Mean SRS Scores Comparing Stepped Care vs. Standard CPT and GSH-only vs. Stepped-Up vs. CPT-only Groups



Note. A score above 36 is indicative of a satisfactory level of the client's perception of therapeutic relationship and session effectiveness.

Figure 4.11

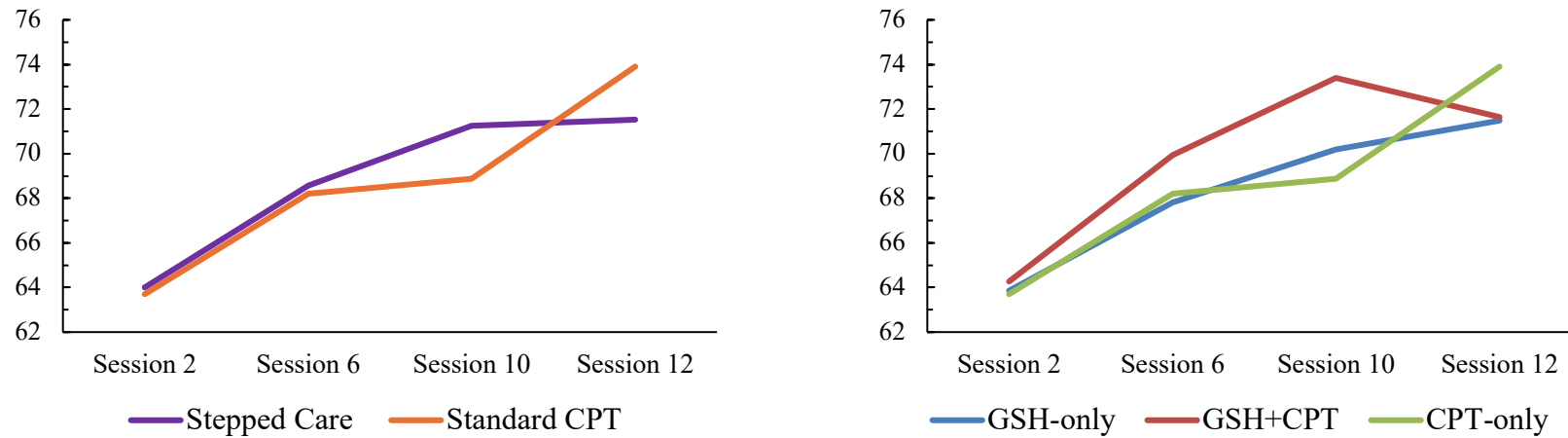
Estimated Mean ORS Scores Comparing Stepped Care vs. Standard CPT and GSH-only vs. Stepped-Up vs. CPT-only Groups



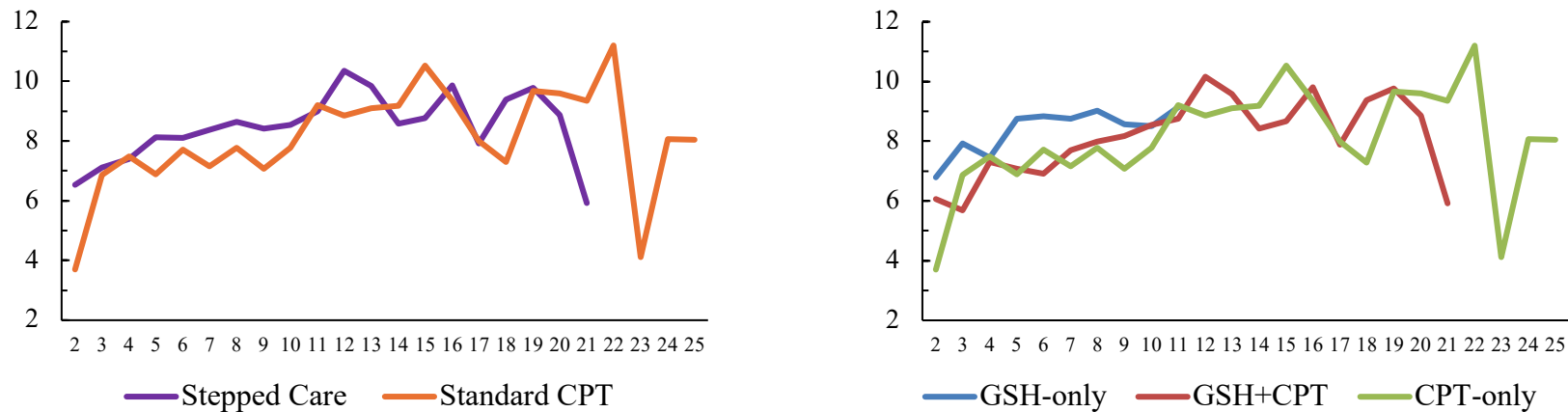
Note. A score below ≤ 25 indicates psychological distress.

Figure 4.12

Estimated Mean WAI Total Scores Comparing Stepped Care vs. Standard CPT and GSH-only vs. Stepped-Up vs. CPT-only Groups

**Figure 4.13**

Estimated Mean Homework Review (HR) Scores Comparing Stepped Care vs. Standard CPT and GSH-only vs. Stepped-Up vs. CPT-only Groups



Note. The Homework Review Questionnaire assesses how often clients use worksheets between sessions and how helpful they find them, with total scores ranging from 0 to 16.

Improvements in Secondary Outcomes

Consistent with the pattern observed for primary outcomes, in my second hypothesis, I hypothesized that participants in both treatment conditions would also demonstrate significant clinical improvements across a range of other outcomes. As predicted, linear mixed model analysis for two-group design showed a consistent pattern of improvement across all secondary outcomes over time, with the exception of the cannabis use (measured by CUDIT-R) (Table 4.11). Nevertheless, no significant interaction of group or group $\times$ time were observed for any measures. Within-group analysis revealed that the stepped care condition demonstrated significant improvement over time with moderate to large within-group effect sizes ($g = 0.67$ to 1.38) for sleep difficulties (ISI), negative cognition (PTCI), emotional dysregulation (DERS) and anger-related behaviors (DAR), which were generally larger than those observed in the standard CPT condition. In contrast, the alcohol and substance use showed small effect sizes across both groups (Table 4.12). Between-group effect sizes also indicated small to moderate effects favoring stepped care across several outcomes (Table 4.13).

In contrast, linear mixed model analysis with a three-group design showed significant differences between treatment conditions for sleep difficulties, borderline personality traits (SCID-BPD), negative cognition and emotional dysregulation, in addition to the significant effect of time (Table 4.14). Only sleep problems demonstrated a significant group $\times$ time interaction ($p = .041$). Pairwise comparisons indicated that the GSH-only group differed significantly from the other groups at posttreatment and follow-up, and this interaction effect appears to be driven by a more substantial reduction in ISI scores in the GSH-only group from baseline to follow-up ($F(3, 117.46) = 12.99, p < .001$). This trend was observed in the completer sample as well (Table S13 of Supplementary Analyses).

Measures	Time	Model Estimates		Fixed Effects					
		Stepped Care	Standard CPT	Group		Time		Group*Time	
		<i>M (SE)</i>	<i>M (SE)</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
CUDIT- R	Base	3.18 (0.75)	1.97 (1.07)	0.99 (1, 91.60)	.323	1.57 (3, 115.81)	.201	0.04 (3, 115.81)	.989
	Post	2.34 (0.80)	1.24 (1.13)						
	3-mo	2.47 (0.87)	1.15 (1.34)						
	6-mo	2.48 (0.90)	0.98 (1.29)						
DAR-5	Base	10.36 (0.49)	10.87 (0.70)	1.56 (1, 91.89)	.215	13.27 (3, 123.07)	<.001	0.15 (3, 123.07)	.929
	Post	7.45 (0.59)	8.39 (0.82)						
	3-mo	7.45 (0.68)	8.68 (1.17)						
	6-mo	7.29 (0.69)	8.57 (1.00)						

Note. ISI = Insomnia Severity Index; SCID-BPD = Structured Clinical Interview for DSM 5- Borderline Personality Disorders; PTCI = Posttraumatic Cognitions Inventory; DERS = Difficulties in Emotional Regulation Scale; AUDIT = Alcohol Use Disorders Identification Test; CUDIT-R = Cannabis Use Disorders Identification Test- Revised; DAR-5= Dimensions of Anger.

Table 4.12*Within-group Effect Size for Stepped Care and Standard CPT Conditions (Intent-to-Treat Sample)*

Measure	Time	Stepped Care <i>M (SE)</i>	<i>g</i> [95%CI]	Standard CPT <i>M (SE)</i>	<i>g</i> [95%CI]
ISI	Base	15.16 (0.83)		15.73 (1.18)	
	Post	10.55 (0.96)	0.99 [0.56, 1.41]	14.29 (1.37)	0.22 [-0.07, 0.51]
	3-mo	11.44 (1.11)	0.79 [0.32, 1.27]	12.94 (1.77)	0.42 [0.06, 0.78]
	6-mo	11.47 (1.13)	0.79 [0.37, 1.21]	13.09 (1.64)	0.40 [0.17, 0.62]
SCID-BPD	Base	6.14 (0.44)		7.00 (0.63)	
	Post	4.31 (0.50)	0.53 [0.26, 0.80]	6.08 (0.70)	0.26 [0.07, 0.45]
	3-mo	3.83 (0.57)	0.67 [0.38, 0.96]	5.22 (0.94)	0.50 [0.37, 0.63]
	6-mo	4.42 (0.59)	0.50 [0.24, 0.76]	5.39 (0.87)	0.45 [0.26, 0.64]
PTCI	Base	154.95 (5.28)		156.47 (7.69)	
	Post	96.88 (6.39)	1.40 [0.93, 1.87]	112.56 (8.91)	1.01 [0.55, 1.48]
	3-mo	101.37 (7.36)	1.29 [0.78, 1.80]	126.35 (12.21)	0.69 [0.29, 1.10]
	6-mo	97.89 (7.42)	1.38 [0.84, 1.91]	118.94 (10.81)	0.87 [0.53, 1.20]
DERS	Base	46.82 (1.73)		50.38 (2.50)	
	Post	36.98 (1.99)	0.72 [0.49, 0.96]	43.26 (2.79)	0.51 [0.19, 0.82]
	3-mo	37.69 (2.27)	0.67 [0.38, 0.96]	39.88 (3.82)	0.74 [0.40, 1.09]
	6-mo	36.56 (2.33)	0.75 [0.52, 0.99]	45.71 (3.49)	0.33 [0.03, 0.63]
AUDIT	Base	6.05 (0.79)		5.27 (1.12)	
	Post	4.71 (0.84)	0.22 [0.06, 0.37]	3.13 (1.19)	0.34 [-0.07, 0.74]
	3-mo	4.26 (0.91)	0.29 [0.13, 0.44]	4.68 (1.41)	0.09 [-0.49, 0.68]
	6-mo	3.96 (0.95)	0.34 [0.15, 0.53]	3.42 (1.36)	0.29 [0.12, 0.47]
CUDIT-R	Base	3.18 (0.75)		1.97 (1.07)	
	Post	2.34 (0.80)	0.14 [-0.01, 0.30]	1.24 (1.13)	0.12 [0.00, 0.25]
	3-mo	2.47 (0.87)	0.12 [-0.01, 0.25]	1.15 (1.34)	0.14 [0.09, 0.19]
	6-mo	2.48 (0.90)	0.12 [0.08, 0.15]	0.98 (1.29)	0.16 [0.08, 0.25]
DAR-5	Base	10.36 (0.49)		10.87 (0.70)	
	Post	7.45 (0.59)	0.76 [0.51, 1.00]	8.39 (0.82)	0.64 [0.21, 1.07]
	3-mo	7.45 (0.68)	0.76 [0.44, 1.08]	8.68 (1.17)	0.56 [-0.02, 1.15]
	6-mo	7.29 (0.69)	0.80 [0.50, 1.09]	8.57 (1.00)	0.59 [0.08, 1.10]

Note. ISI = Insomnia Severity Index; SCID-BPD = Structured Clinical Interview for DSM 5-Borderline Personality Disorders; PTCI = Posttraumatic Cognitions Inventory; DERS = Difficulties in Emotional Regulation Scale; AUDIT = Alcohol Use Disorders Identification Test; CUDIT-R = Cannabis Use Disorders Identification Test- Revised; DAR-5= Dimensions of Anger.

Table 4.13*Between-group Effect Size for Stepped Care and Standard CPT Conditions (Intent-to-Treat Sample)*

Measure	Time	Stepped Care <i>M (SE)</i>	Standard CPT <i>M (SE)</i>	<i>g</i> [95%CI]
ISI	Base	15.16 (0.83)	15.73 (1.18)	-0.09 [-0.53, 0.35]
	Post	10.55 (0.96)	14.29 (1.37)	-0.49 [-0.94, -0.05]
	3-mo	11.44 (1.11)	12.94 (1.77)	-0.16 [-0.60, 0.28]
	6-mo	11.47 (1.13)	13.09 (1.64)	-0.18 [-0.62, 0.26]
SCID-BPD	Base	6.14 (0.44)	7.00 (0.63)	-0.25 [-0.69, 0.19]
	Post	4.31 (0.50)	6.08 (0.70)	-0.45 [-0.90, -0.01]
	3-mo	3.83 (0.57)	5.22 (0.94)	-0.29 [-0.73, 0.15]
	6-mo	4.42 (0.59)	5.39 (0.87)	-0.21 [-0.64, 0.23]
PTCI	Base	154.95 (5.28)	156.47 (7.69)	-0.04 [-0.47, 0.40]
	Post	96.88 (6.39)	112.56 (8.91)	-0.31 [-0.75, 0.13]
	3-mo	101.37 (7.36)	126.35 (12.21)	-0.40 [-0.85, 0.04]
	6-mo	97.89 (7.42)	118.94 (10.81)	-0.36 [-0.80, 0.09]
DERS	Base	46.82 (1.73)	50.38 (2.50)	-0.26 [-0.70, 0.18]
	Post	36.98 (1.99)	43.26 (2.79)	-0.40 [-0.84, 0.04]
	3-mo	37.69 (2.27)	39.88 (3.82)	-0.11 [-0.55, 0.32]
	6-mo	36.56 (2.33)	45.71 (3.49)	-0.49 [-0.93, -0.04]
AUDIT	Base	6.05 (0.79)	5.27 (1.12)	0.12 [-0.31, 0.56]
	Post	4.71 (0.84)	3.13 (1.19)	0.24 [-0.20, 0.68]
	3-mo	4.26 (0.91)	4.68 (1.41)	-0.06 [-0.49, 0.38]
	6-mo	3.96 (0.95)	3.42 (1.36)	0.07 [-0.37, 0.51]
CUDIT-R	Base	3.18 (0.75)	1.97 (1.07)	0.12 [-0.31, 0.56]
	Post	2.34 (0.80)	1.24 (1.13)	0.24 [-0.20, 0.68]
	3-mo	2.47 (0.87)	1.15 (1.34)	-0.06 [-0.49, 0.38]
	6-mo	2.48 (0.90)	0.98 (1.29)	0.07 [-0.37, 0.51]
DAR-5	Base	10.36 (0.49)	10.87 (0.70)	0.20 [-0.24, 0.64]
	Post	7.45 (0.59)	8.39 (0.82)	0.18 [-0.26, 0.61]
	3-mo	7.45 (0.68)	8.68 (1.17)	0.19 [-0.25, 0.63]
	6-mo	7.29 (0.69)	8.57 (1.00)	0.21 [-0.23, 0.65]

Note. ISI = Insomnia Severity Index; SCID-BPD = Structured Clinical Interview for DSM 5- Borderline Personality Disorders; PTCI = Posttraumatic Cognitions Inventory; DERS = Difficulties in Emotional Regulation Scale; AUDIT = Alcohol Use Disorders Identification Test; CUDIT-R = Cannabis Use Disorders Identification Test- Revised; DAR-5= Dimensions of Anger.

Table 4.14

Estimated Marginal Means and Fixed Effects for GSH-only, Stepped-Up, and CPT-only Conditions from Baseline to 6-Month Follow-Up (Intent-to-Treat Sample)

[illegible]

Measure	Time	Model Estimates			Fixed Effects					
		GSH-only	GSH + CPT	CPT-only	Group		Time		Group*Time	
		<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
CUDIT-R	Base	3.44 (0.92)	2.65 (1.32)	1.97 (1.08)	0.48 (2, 90.34)	.621	1.66 (3, 112.06)	.180	0.48 (6, 111.72)	.826
	Post	2.62 (0.98)	1.77 (1.41)	1.24 (1.14)						
	3-mo	2.11 (1.08)	3.01 (1.49)	1.15 (1.34)						
	6-mo	2.42 (1.12)	2.62 (1.55)	0.98 (1.30)						
DAR	Base	10.32 (0.60)	10.45 (0.86)	10.87 (0.70)	0.80 (2, 86.73)	.451	13.42 (3, 115.19)	<.001	0.85(6, 114.20)	.536
	Post	6.87 (0.72)	8.72 (1.03)	8.39 (0.82)						
	3-mo	7.24 (0.86)	7.89 (1.14)	8.70 (1.17)						
	6-mo	7.72 (0.86)	6.56 (1.16)	8.57 (1.00)						

Note. ISI = Insomnia Severity Index; SCID-BPD = Structured Clinical Interview for DSM 5- Borderline Personality Disorders; PTCI = Posttraumatic Cognitions Inventory; DERS = Difficulties in Emotional Regulation Scale; AUDIT = Alcohol Use Disorders Identification Test; CUDIT-R = Cannabis Use Disorders Identification Test- Revised; DAR-5= Dimensions of Anger.

Non-Inferiority of Stepped Care

Hypothesis 3 predicted that the stepped care and GSH would be non-inferior to standard CPT in achieving symptom improvement at posttreatment, 3-month and 6-month follow-ups. Non-inferiority analyses showed that the stepped care condition was indeed non-inferior to standard CPT based on the CAPS-5 at posttreatment and 3-month follow ups, and also in terms of DASS-D scores across all timepoints (all $ps < .05$) (Table 4.15). In contrast, for the PCL-5 and AQoL utility measures, equivalence tests were not statistically significant, indicating insufficient evidence to conclude the non-inferiority (See Figure 4.14).

Additional analyses were conducted to examine whether non-inferiority findings were replicated when comparing the GSH condition directly to standard CPT. Table 4.16 summarizes the findings for GSH and CPT conditions. Non-inferiority of the GSH condition could not be established at any time point for the PCL-5 or the AQoL utility measure. In contrast, the DASS-D demonstrated non-inferiority across all time points. For the CAPS-5, non-inferiority was observed at posttreatment but not at subsequent assessments (See Figure 4.15).

Table 4.15*Non-Inferiority Analyses Comparing Stepped Care to Standard CPT Condition*

Measure	Timepoint	Raw Mean Difference ^a (Step - CPT)	95% CI	NI Bounds	Equivalence Test	<i>p</i>	Non-inferior
CAPS-5	Post	0.18	[-6.63, 6.98]	±9.41	<i>t</i> (53) = -2.27	.014	Yes
	3-mo	-2.78	[-9.33, 3.77]	±9.41	<i>t</i> (35) = 1.71	.048	Yes
	6-mo	3.07	[-4.16, 10.3]	±9.41	<i>t</i> (40) = -1.48	.074	No
PCL-5	Post	5.10	[-2.41, 12.61]	±9.70	<i>t</i> (86) = -1.02	.156	No
	3-mo	3.65	[-5.44, 12.74]	±9.70	<i>t</i> (31) = -1.13	.134	No
	6-mo	5.03	[-3.10, 13.16]	±9.70	<i>t</i> (40) = -0.97	.17	No
DASS-D	Post	5.26	[0.85, 9.66]	±12.32	<i>t</i> (85) = -2.67	<.001	Yes
	3-mo	3.25	[-3.02, 9.51]	±12.32	<i>t</i> (31) = -2.45	.01	Yes
	6-mo	4.17	[-1.03, 9.37]	±12.32	<i>t</i> (39) = -2.64	<.001	Yes
AQoL utility	Post	-0.03	[-0.19, 0.13]	±0.13	<i>t</i> (49) = 1.00	.161	No
	3-mo	-0.10	[-0.32, 0.12]	±0.13	<i>t</i> (28) = 0.25	.401	No
	6-mo	-0.08	[-0.27, 0.10]	±0.13	<i>t</i> (42) = 0.41	.341	No

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; DASS-D = Depression Anxiety and Stress Scale - Depression Subscale; AQoL- 8D= Assessment of Quality of Life.

^a For the CAPS-5, PCL-5, and DASS-D, higher scores indicate greater symptom severity; therefore, a positive mean difference on these measures suggests that the standard CPT condition yielded better outcomes compared to stepped care. In contrast, higher AQoL scores reflect improved quality of life, so a positive mean difference on this measure indicates superior outcomes in the stepped care condition.

Figure 4.14

Mean Differences and Non-Inferiority Margins for CAPS-5, PCL-5, DASS-D and AQoL Utility Scores Comparing Stepped Care and Standard CPT Condition

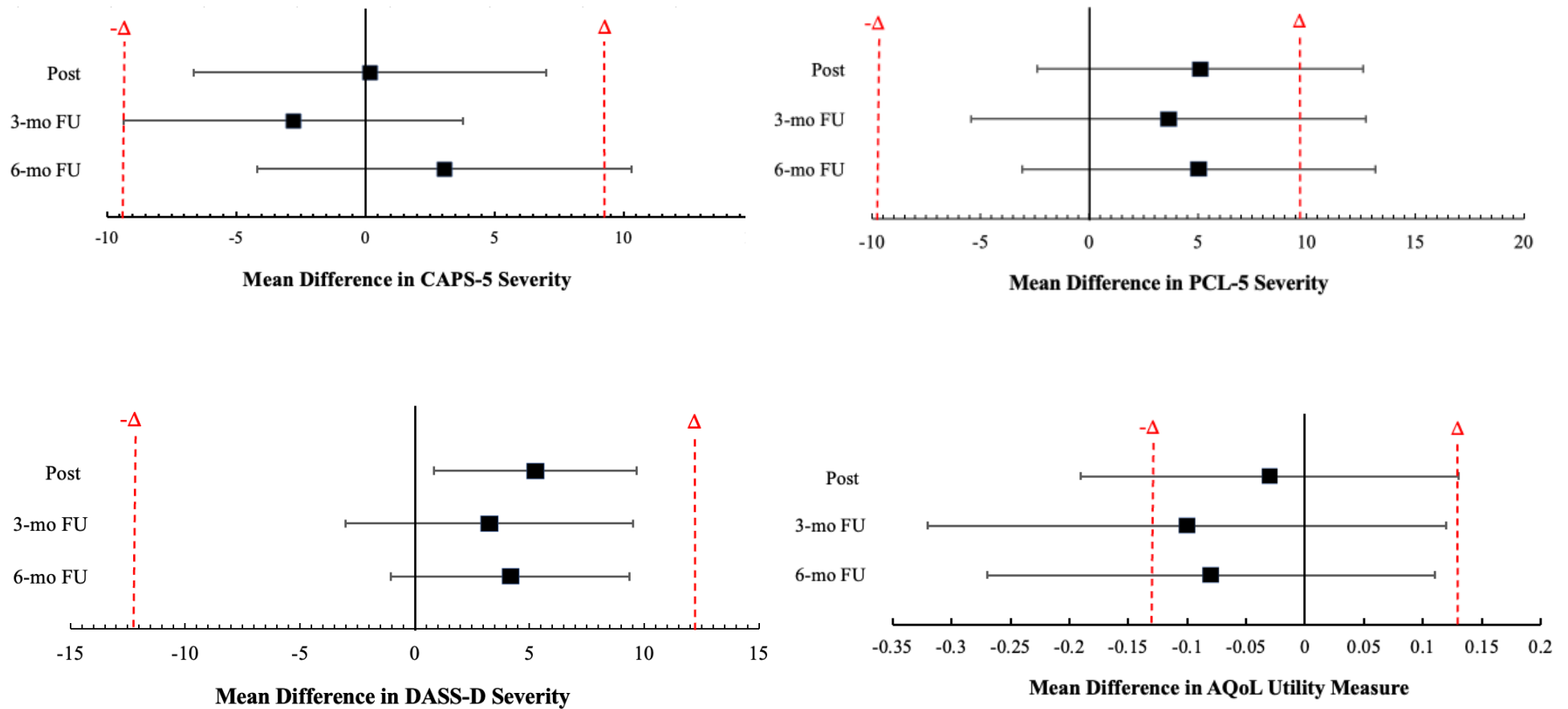


Table 4.16*Non-Inferiority Analyses Comparing GSH-only to Standard CPT Condition*

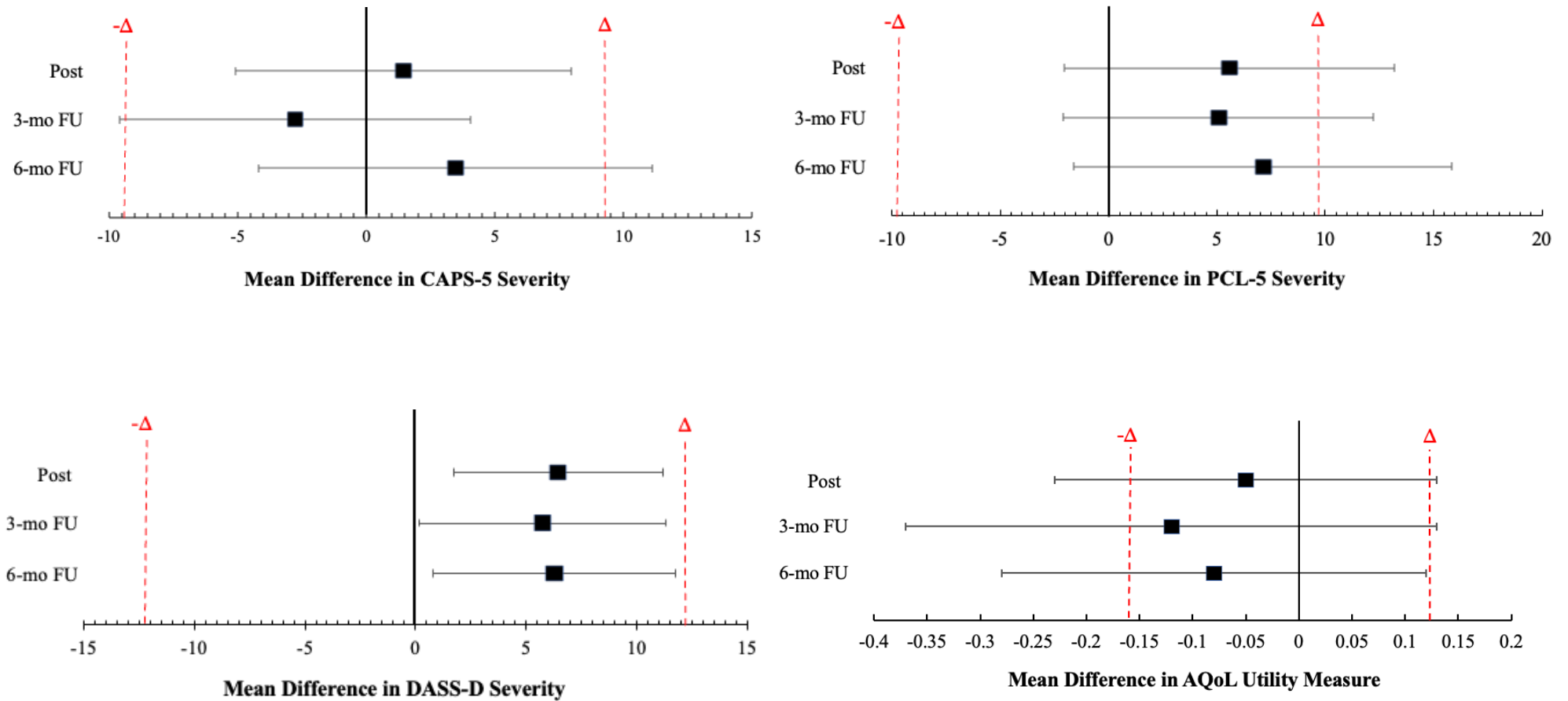
Measure	Timepoint	Raw Mean Difference (GSH-CPT) ^a	95% CI	NI Bounds	Equivalence Test	<i>p</i>	Non-inferior
CAPS-5	Post	1.43	[-5.08, 7.94]	±9.41	$t(42) = -2.01$	.023	Yes
	3-mo	-2.77	[-9.58, 4.05]	±9.41	$t(27) = 1.66$	.054	No
	6-mo	3.46	[-4.17, 11.09]	±9.41	$t(31) = -1.32$	.098	No
PCL-5	Post	5.56	[-2.06, 13.17]	±9.70	$t(66) = -0.91$	.184	No
	3-mo	5.07	[-2.10, 12.24]	±9.70	$t(22) = -1.11$	.14	No
	6-mo	7.12	[-1.61, 15.84]	±9.70	$t(30) = -0.50$	.31	No
DASS-D	Post	6.44	[1.71, 11.17]	±12.32	$t(66) = -2.71$	.021	Yes
	3-mo	5.75	[0.17, 11.33]	±12.32	$t(22) = -2.02$	.028	Yes
	6-mo	6.27	[0.79, 11.74]	±12.32	$t(29) = -1.88$	.035	Yes
AQoL utility	Post	-0.05	[-0.23, 0.12]	±0.13	$t(38) = 0.73$	.234	No
	3-mo	-0.12	[-0.37, 0.13]	±0.13	$t(19) = 0.07$	.473	No
	6-mo	-0.08	[-0.28, 0.13]	±0.13	$t(31) = 0.44$	.333	No

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ CPTSD- Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale - Depression Subscale; AQoL- 8D= Assessment of Quality of Life.

^a As noted in the previous table, for the CAPS-5, PCL-5, and DASS-D, higher scores indicate greater symptom severity; therefore, a positive mean difference on these measures suggests that the standard CPT condition yielded better outcomes compared to stepped care. In contrast, higher AQoL scores reflect improved quality of life, so a positive mean difference on this measure indicates superior outcomes in the stepped care condition.

Figure 4.15

Mean Differences and Non-Inferiority Margins for CAPS-5, PCL-5, DASS-D and AQoL Utility Scores Comparing GSH and Standard CPT Condition



Adverse Events

Although no formal definition was pre-specified in a trial protocol document, life-threatening situations during therapy, as well as active suicidal thoughts or attempts, were considered adverse events. These were identified during sessions, with study-relatedness determined through clinician judgement. In addition, potential events were discussed and reviewed during group supervision to support consistent decision-making. No study-related adverse events were reported over the course of the trial. One participant voluntarily admitted themselves to the hospital due to suicidal ideation related to interpersonal and financial stressors, however, they resumed treatment following discharge and completed the treatment, demonstrating good end-state functioning. Another participant admitted themselves to a rehabilitation program for their alcohol use and elected to discontinue therapy in order to prioritize their recovery around substance use. Neither hospital admission was deemed by the participant or clinician as related to their CPT work.

Chapter Summary

This chapter examined the efficacy of the stepped care condition, with a specific focus on GSH, in improving both primary and secondary outcomes, and assessed non-inferiority compared to standard CPT. Overall, both stepped care and GSH demonstrated significant improvements over time across all outcome measures. Non-inferiority was established for PTSD and depression severity (measured with the CAPS and DASS-D) when comparing both stepped care and GSH to the CPT condition. The next chapter will address the remaining two hypotheses by reporting analysis of the cost of delivering stepped care and GSH, as well as evaluating the acceptability and feasibility of GSH implementation. It will also examine moderators of treatment outcomes and includes exploratory analyses specific to understanding whom might benefit from the GSH approach.

CHAPTER 5:

Implementation Outcomes and Exploratory Analyses of CPT-GSH

Chapter Overview

This chapter addresses the final two hypotheses, focusing specifically on the GSH condition. As the first RCT to evaluate the CPT-GSH, it is essential to examine not only its clinical effectiveness, but also its cost, client experiences, and clinician perspectives on implementation. This reporting is then followed by the examination of potential moderators of treatment outcomes with respect to all the treatment conditions, while continuing to specifically study how these factors may influence outcomes within the GSH condition. Given the novel nature of this intervention, the chapter also details the patterns of treatment engagement and dropout. These insights are essential for understanding the potential practical value of GSH in routine care and identifying facilitating factors and possible barriers that could inform future implementation and practice.

Cost Analysis

Hypothesis 4 proposed that the stepped care model and GSH intervention would be more cost-effective compared to standard CPT. To explore this, the total cost per participant was calculated by considering several key components, including initial set-up cost, clinician time and supervision. This analysis was conducted by comparing the stepped care model with standard CPT, as well as across the three conditions (GSH-only, Stepped-up, and CPT-only), to provide a more comprehensive understanding of the relative cost associated with each treatment group.

Although all therapists involved in the trial were provisional psychologists (equivalent to a level 1 Allied Health Professional [AHP1] in the South Australian government health sector) and received supervision from an accredited CPT supervisor, additional cost estimates were generated to reflect scenarios involving different levels of AHP clinicians and supervisors, as might be expected in real-world setting. Based on publicly available data for allied health professionals in South Australia (Department of Education of Government of South Australia, 2024), average hourly

rates for psychologists at different AHP levels were obtained to inform cost estimates. All clinicians received an average of 1.5 hours of supervision per week over a 127-week period and completed an initial orientation session focused on the structure and delivery of the GSH intervention. On average, each clinician worked with at least 11 clients over the duration of the trial.

Supporting hypothesis 4, the total cost per participant was lowest in the stepped care condition, with costs 43% lower than standard CPT across both supervision types (see Table 5.1 for summary). However, when costs were examined for the three treatment groups, a different pattern emerged. Specifically, the stepped-up group incurred the highest average cost per participant, 40% higher than the CPT-only group and nearly double that of the GSH-only group. The GSH-only condition remained the least costly, with costs 30-32% lower than the CPT-only group. Several important considerations should be taken into account when interpreting these cost differences. The standard CPT condition and stepped-up condition had a smaller number of participants relative to the other groups, potentially inflating its per-participant cost estimate. Additionally, because all clinicians delivered treatment across all three conditions, the initial investment costs were incurred only once at the outset. If there were different clinicians delivering different interventions, costs could be potentially higher. Hence, the true per-condition cost may be lower than reported. Moreover, participants in the stepped-up group completed an average of 3.95 GSH sessions and 8.05 CPT sessions (as reported in Chapter 3), with the greater number of CPT sessions likely contributing to the higher overall cost associated with this group.

Table 5.1*Treatment Cost Per Participant*

	Stepped Care (<i>n</i> = 61)			CPT-only (<i>n</i> = 31)	Mean Difference ^a [Step (Total)- CPT-only]
	Total (<i>n</i> = 61)	GSH-only (<i>n</i> = 41)	GSH + CPT (<i>n</i> = 20)		
Initial Investment Cost^b					
CPT Workshop (15hrs)	\$88.93	\$132.32	\$271.25	\$175.00	-86.07
AHP1	\$9.46	\$14.08	\$28.86	\$18.62	-9.16
AHP2	\$12.05	\$17.92	\$36.74	\$23.70	-11.65
AHP3	\$13.63	\$20.28	\$41.57	\$26.82	-13.19
CPT Manual	\$11.73	\$17.46	\$35.79	\$23.09	-11.36
CPTWeb 2.0 Subscription Cost	\$6.98	\$10.39	\$21.29	\$13.74	-6.76
CPTWeb 2.0 Training (15hrs)					
AHP1	\$57.40	\$85.41	\$175.08	\$112.96	-55.56
AHP2	\$73.08	\$108.73	\$222.90	\$143.81	-70.73
AHP3	\$82.69	\$123.03	\$252.21	\$162.71	-80.02
GSH Orientation (1hr)					
AHP1	\$4.42	\$6.57	\$13.47	-	\$4.42
AHP2	\$5.62	\$8.36	\$17.15	-	\$5.62
AHP3	\$6.36	\$9.46	\$19.40	-	\$6.36
<i>Total Investment Cost</i>					
AHP1	\$178.93	\$266.21	\$545.74	\$343.40	-164.47
AHP2	\$198.40	\$295.18	\$605.12	\$379.34	-180.94
AHP3	\$210.33	\$312.93	\$641.51	\$401.36	-191.03
Session Cost					
Average Time Spent (in hours)	11.44 (6.38)	9.26 (4.85)	15.9 (6.89)	17.16 (8.51)	-5.72
AHP1	\$440.21	\$356.32	\$611.83	\$660.32	-220.11
AHP2	\$560.45	\$453.65	\$778.94	\$840.67	-280.22
AHP3	\$634.12	\$513.28	\$881.34	\$951.18	-317.06

	Stepped Care (<i>n</i> = 61)			CPT-only (<i>n</i> = 31)	Mean Difference ^a [Step (Total)- CPT-only]
	Total (<i>n</i> = 61)	GSH-only (<i>n</i> = 41)	GSH + CPT (<i>n</i> = 20)		
Supervision Cost^c					
AHP3 Supervisor	\$173.11	\$257.55	\$527.97	\$340.63	-167.52
Accredited CPT Supervisor	\$780.74	\$1,161.59	\$2,381.25	\$1,536.29	-755.55
Clinician Supervision Time					
AHP1	\$300.43	\$446.98	\$916.31	\$591.16	-290.73
AHP2	\$382.48	\$569.06	\$1,166.57	\$752.63	-370.15
AHP3	\$432.76	\$643.87	\$1,319.93	\$851.57	-418.81
<i>Total Cost Per Participant^d</i>					
With AHP3 Supervisor					
AHP1	\$1,092.68	\$1,327.06	\$2,601.85	\$1,935.51	-\$842.83
AHP2	\$1,314.43	\$1,575.44	\$3,078.61	\$2,313.26	-\$998.83
AHP3	\$1,450.32	\$1,727.63	\$3,370.74	\$2,544.73	-\$1,094.41
With Accredited CPT Supervisor					
AHP1	\$1,700.31	\$2,231.10	\$4,455.13	\$3,131.17	-\$1,430.86
AHP2	\$1,922.07	\$2,479.47	\$4,931.89	\$3,508.93	-\$1,586.86
AHP3	\$2,057.95	\$2,631.66	\$5,224.02	\$3,740.39	-\$1,682.44

Note. All costs are presented in Australian dollars. The average hourly rates of clinicians were as follows: AHP1 = \$38.48, AHP2 = \$48.99, and AHP3 = \$55.43. The average hourly rate for an accredited CPT supervisor = \$250. The cost of the CPT manual was approximately \$102.20, and access to the CPT Web 2.0 training was approximately \$60.83. The two-day CPT workshop costs approximately \$775 per person.

^a The mean difference reflects the cost difference between stepped care and standard CPT, with negative values indicating lower costs for stepped care.

^b The initial investment cost was calculated based on seven clinicians who delivered therapy during the trial.

^c Weekly group supervision was conducted for 1.5 hours per week over a period of 127-weeks, with an average of 2.5 clinicians attending each session.

^d The total cost per participant was calculated by summing the initial investment cost, session delivery, and supervision costs for each AHP level clinician, with separate calculations for AHP3 and the accredited CPT supervisors.

Treatment Acceptability

Treatment acceptability refers to the degree to which the intervention was perceived as appropriate, engaging, and easy to complete. In this trial, acceptability was assessed using multiple methods, including the Credibility/Expectancy Questionnaire (CEQ), the Telehealth Satisfaction Survey (TSS), qualitative feedback from the Session Rating Scale (SRS), and informal feedback shared by participants during sessions via email in the GSH condition.

Table 5.2

Credibility, Expectancy, and Telehealth Satisfaction Outcomes Across Three Treatment Conditions (Intent-to-Treat Sample)

Measure	GSH-only <i>M (SD)</i>	GSH + CPT <i>M (SD)</i>	CPT-only <i>M (SD)</i>	Test	<i>p</i>
CEQ at session 1					
Total	36.73 (8.42)	31.88 (9.13)	38.38 (8.17)	$F(2,59) = 2.81$	.068
Credibility	21.73 (3.93)	18.47 (5.30)	22.48 (3.87)	$F(2,59) = 4.35$	.017
Expectancy	15.00 (5.27)	13.41 (4.79)	15.91 (5.05)	$F(2,59) = 1.13$	.329
CEQ at posttreatment					
Total	44.70 (10.39)	38.98 (12.69)	37.14 (12.72)	$F(2,48) = 2.22$	.120
Credibility	23.81 (4.41)	22.23 (4.35)	21.12 (6.35)	$F(2,48) = 1.36$	.267
Expectancy	22.69 (7.92)	20.49 (11.37)	21.77 (15.81)	$F(2,48) = 0.13$	.882
TSS					
Total	57.76 (6.98)	56.82 (8.57)	54.41 (13.96)	$F(2,46) = .515$	.601
Therapist	18.23 (2.09)	18.36 (3.04)	18.33 (6.39)	$F(2,48) = 0.01$	.995
Treatment	25.64 (4.40)	25.73 (3.44)	27.28 (7.55)	$F(2,47) = 0.48$	.622
Communication Quality	14.19 (1.60)	12.73 (2.80)	15.03 (10.56)	$F(2,47) = 0.42$	.659

Note. CEQ= Credibility/Expectancy Questionnaire; TSS= Telehealth Satisfaction Survey. Higher scores on the CEQ indicate greater treatment credibility and expectancy, with total scores ranging from 6 to 54 and each subscale ranging from 3 to 27. Similarly, higher scores on the TSS reflect greater satisfaction with telehealth delivery, with total scores ranging from 13 to 65, comprising therapist (up to 20), treatment (up to 30), and communication (up to 15) subscales.

As shown in Table 5.2, no significant differences were observed between groups on the credibility/expectancy scale, nor on the overall TSS scale score, indicating that participants across all three groups reported similar levels of expectancy and satisfaction with the telehealth delivery format. This supports Hypothesis 5, suggesting that participants anticipated benefits from the GSH intervention and considered it a logical and suitable treatment. Participants in the stepped care group also completed a questionnaire to provide feedback on the GSH format specifically, which

had a maximum possible score of 40 (copy located in Appendix H). For example, items included questions on whether the content of the module was comprehensible and whether participants were able to understand the instructions in the worksheets. The overall mean score was 31.95 ($SD = 5.36$, range 20.35 – 39.40), with the mean score reflecting items were generally endorsed at the ‘satisfactory’ level.

Qualitative Feedback

A descriptive summary of participant feedback was compiled to capture overall perceptions of the GSH intervention. It was beyond the scope of this thesis to formally analyze these qualitative data, however, descriptively, several key themes and frequently reported terms emerged, reflecting both positive experiences and noted challenges. These insights offer a valuable perspective on the acceptability of the GSH format from the participants’ viewpoint.

The feedback (as shown in Table 5.3) suggests that the GSH intervention was broadly acceptable. While some participants found reading the content independently of a clinician to be overwhelming, many reported that it helped them understand CPT concepts in greater detail due to the examples in the modules and that it allowed them more time to digest these details at their own pace. There was mixed feedback regarding the content of the varying modules. Some participants found the material easy to understand, whereas others reported difficulty comprehending the content or completing the worksheets without support. Few participants also described experiencing avoidance when completing worksheets, due to both the emotional demands of engaging with the material independently and the general tendency to avoid trauma-related memories. Although therapists primarily communicated via email, therapeutic rapport emerged as a key factor supporting engagement. Participants described the feedback as kind, validating, and indicative of being heard. Some usability issues were reported, particularly difficulties editing worksheets in PDF format, which was highlighted as an area for improvement. Overall, despite some challenges in accessing or reading the longer modules at the beginning of treatment, most feedback provided by clients was positive.

Table 5.3*Themes, Key Words and Examples from SRS and Email Feedback⁸*

Themes	Key Words	Feedback from Participants
Heightened Emotional Distress	“Triggering”, “struggling”, “difficult”	• “This module brought up more repressed memories.” • “Going back to my early childhood, I am remembering more events but also having more flashbacks.” • “It was very difficult and triggering.” • “I was really scared to start this module...” • “I am struggling with the online aspect, and I believe that is negatively impacting my ability to progress my understanding of my CPTSD and how to learn to live with it, and hopefully begin to have a sense that I will one day feel that I am alive again”
Avoidance	“Avoid”, “procrastination”, “shut down”, “motivation”	• “This was a hard week because I focused on my stuck points... I was unknowingly avoiding my feelings.” • “I found this module very hard to stay focused on” • “I struggled last week with managing my time and motivation.” • “It took short sessions over a few days to complete it, with lots of procrastination.” • “Writing the stuck point log wasn’t as hard because I found I shut down my emotion to complete it.”
Module Content and Delivery	“Confusing”, “straightforward”	• “I found this module confusing and had to reread it many times.” • “The modules are very easy to read and follow and the extra support of videos help if I need clarity” • “The module was really straightforward for people with English as a first language.” • “I was a bit worried being put in the self-guided group however it has been great and I’ve gotten into a routine of completing readings and modules daily” • “I did struggle with understanding the ABC charts we did earlier however once we touched base and I had feedback, I understood. I always like to try the modules on my own and then feedback helps me moving forward.”

⁸ Feedback was collected using the Session Rating Scale (SRS), where participants in the stepped care group had the opportunity to provide written feedback at the end of the questionnaire. In addition, clinicians recorded feedback shared by participants during email communication.

Themes	Key Words	Feedback from Participants
		• <i>“The program itself was pretty easy to follow and straight forward, I did find that some of the early content was a bit much and that the participant really had to have the initiative to complete it.”</i> • <i>“In some of the earlier modules the instructions of how to complete the modules and in which order was tricky to understand, unsure if that was just my understanding but I did find some of the instructions within modules were not super clear.”</i> • <i>“I felt that the program was very accessible with clear language and concepts. The initial 3 modules were longer and more emotionally intense compared with later ones. This was briefly mentioned to me during intake, but I think I would have had a better time if this was really pushed onto me.”</i>
Usability Issue	“PDF”, “printing”, “reading”	• <i>“I would’ve preferred to not have to figure out printing pages... a physical workbook would be easier for me.”</i> • <i>“It would help to have a one-page resource that explains the types of problematic thinking.”</i> • <i>“The feedback was very helpful, but the block of text was a bit overwhelming.”</i> • <i>“The introduction and the first module were quite a big chunk of reading.”</i> • <i>“PDF files make it very difficult to write.”</i> • <i>“I would have preferred to have a document I could edit in Word.”</i> • <i>“Sometimes the lack of space in tables (week 6) is a bit restrictive but in other sections the restriction is good. The examples given are so useful too.”</i> • <i>“If there was a “Simple English” version - or if the video links within the course material were placed higher - I think people would benefit.”</i>
Progress	“Learning”, “understanding”, “progress”	• <i>“I had some good ‘aha’ moments while working through this week’s module despite having a very difficult week personally.”</i> • <i>“This week’s module has been really eye-opening... my PTSD breakthroughs seem to be happening alongside the modules.”</i> • <i>“I’m so involved in the module it’s the best I have learned so much about myself and how I have been thinking I use to think it’s something wrong with I’m not normal, but this module explains to me why in one stage I thought this has been done just for me because everything takes about me how I think react judge all the other problematic thinking it’s me”</i> • <i>“I’m getting to the point in the modules where I’m seeing improvement in my everyday life.”</i>

Themes	Key Words	Feedback from Participants
Therapist Support	“Insightful”, “support”, “kind”, “heard”, “reassuring”	• <i>“I felt extremely understood and heard”</i> • <i>“I wouldn't be able to achieve all this without the help and encouragement... your feedback makes me happy and puts a big smile on my face.”</i> • <i>“It is the first time in my life that I have been heard, accepted and believed.”</i> • <i>“Therapist's feedback is as kind and helpful as ever.”</i> • <i>“Very grateful for the feedback; it made me feel supported.”</i> • <i>“The feedback was very actionable, and I feel more at peace.”</i> • <i>“The feedback was constructive, relevant, positive and empowering.”</i> • <i>“Ability to communicate neutrally has been really useful in terms of helping me to redirect thoughts/emotions and my avoidance to my stuck points; I feel fully supported by my therapist and feel as though the ability for one on one would further benefit the treatment, but as an external therapist all areas are covered more than satisfactorily and I feel supported.”</i> • <i>“I find the weekly check in's great! I like how you refer specifically back to comments I've made in the modules as it shows me that you read into all my work. I like being challenged on my thoughts and helping me think of things from different perspectives and I appreciate this in your feedback”</i>
Suggestions	“Breakdown”, “examples”	• <i>“Face-to-face check-ins (even online) would be nice occasionally.”</i> • <i>“Maybe in future, break down instructions more clearly for those who are not native English speakers or have dyslexia.”</i> • <i>“More examples of the sheet filled out would be helpful.”</i> • <i>“Breaking feedback into headings would make it more approachable.”</i>

Treatment Feasibility

Treatment feasibility refers to the practicality of delivering the GSH intervention. For the purpose of this trial, feasibility was assessed primarily from the clinicians' perspective. Of the seven clinicians involved in the trial, five delivered the GSH intervention. Although no formal quantitative data or analysis was conducted, discussions of the GSH process during weekly group supervision sessions were noted and key elements reported as follows.

Because the self-help manual used in the GSH condition followed the standard CPT protocol, clinicians reported that adhering to the content was relatively straightforward as they have already received CPT training. In the initial stages, clinicians spent considerable time preparing and delivering feedback to participants, particularly for their first few cases. The overall average time spent per session during GSH delivery was approximately 47 minutes, with a wide range from 22 to 168 minutes. It is important to interpret these carefully. The intended time for feedback delivery was expected to be approximately 15-20 minutes per session, but time spent on feedback for initial participants sometimes extended to 30-40 minutes as clinicians familiarized themselves with the delivery structure and documentation procedures. Typically, the 15-20min time preparation was achieved for subsequent participants. However, two clinicians delivered GSH to only three clients each. Consequently, their average time spent per session was inflated due to longer durations associated with their small caseload. Therefore, individual clinician averages may not reliably represent typical session duration, especially among clinicians with minimal GSH delivery experience.

Furthermore, for clients who had difficulty understanding or completing worksheets, the feedback process took longer, as clinicians needed to offer more detailed guidance and tailored suggestions. Over time, as clinicians developed competency with the GSH format, the use of structured templates and pooled resources improved efficiency, particularly when working with clients sharing similar presentations. Weekly group supervision was consistently described as beneficial for discussing complex cases and supporting shared decision-making regarding the

stepping-up process. Clinicians reported that supervision played a key role in enhancing confidence, maintaining consistency of therapy delivery, and ensuring appropriate clinical escalation when needed. Consistent with Hypothesis 5, the GSH intervention, despite challenges typical of a pilot study, was relatively easy to implement, particularly when adequate support was available.

Moderators of Treatment Outcomes

Following the examination of implementation outcomes such as cost, acceptability and feasibility, this section investigates whether individual characteristics are associated with variability in treatment response, providing further context on the applicability of GSH across different client populations. Moreover, given that this represents the first evaluation of a CPT-GSH within a stepped care framework, and that limited research exists on moderators in such models, exploring these factors is a valuable initial step. These analyses can help identify the characteristics that influence who is more likely to benefit from low- versus high-intensity interventions, providing important insights for future research and clinical implementation. The goal was to identify individual or contextual characteristics that may have influenced the treatment effectiveness, with a particular focus on PTSD symptom outcomes. Key moderators identified from the PTSD treatment literature (or commonly argued to be important, see previous discussion in Chapter 1) were selected a priori and tested to assess their potential influence on differential treatment response. These included demographic, symptom and therapy process measures, which were examined for the GSH-only, CPT+GSH and CPT-only conditions.

As reported in Table 5.4, only age, gender and clinician contact appeared to moderate group differences over time, although a number of the proposed moderating variables influenced overall group and time effects. For age as the moderator for the CAPS measure, pairwise comparisons indicated that the overall group effect was primarily driven by lower PTSD severity in the GSH-only condition after adjusting for age. To dissect this interaction and aid interpretation, age was also categorized into three groups based on the principles of Aiken & West (1991): ‘younger age’ was

defined as 1 *SD* below the mean age (<25.05 years), ‘older age’ as 1 *SD* above the mean (>52.35 years), and ‘average age’ as the range between these values (25.05 – 52.35 years). When analyzed in categories, the Group $\times$ Time $\times$ Age interaction was not significant ($p = .368$). This is likely due to the reduced statistical power from converting a continuous variable into categories, which removes within-group variation and was compounded by the uneven distribution of participants across age categories and treatment conditions. As shown in Figure 5.1, although younger and middle-aged participants performed similarly across conditions and achieved slightly better outcomes than older participants, these differences did not reach statistical significance.

For the complex PTSD severity outcome, a significant interaction was observed when accounting for gender and clinician time. For the gender analysis, participants who identified with genders other than male or female were excluded due to the small sample size ($n = 4$). Overall, female participants performed better than male participants at posttreatment ($p < .001$) and at the 3-month follow-up ($p = .003$). This effect was primarily driven by females reporting lower CPTSD severity in the GSH-only condition at posttreatment ($p = .011$) and in the stepped-up condition at both posttreatment ($p < .001$) and the 3-month follow-up ($p = .003$). No significant gender differences were observed at other follow-up assessments within GSH-only or stepped-up groups, and no significant gender differences were found in the CPT-only condition at any timepoint (See Figure 5.2 for reference).

Furthermore, session time moderated treatment outcomes, such that greater time spent with a clinician was associated with greater CPTSD symptom reduction, especially for those in the stepped-up group ($p = .015$). This suggests that participants who stepped up to additional sessions benefited more from extended contact time, while the impact of session length was less pronounced in GSH-only and CPT-only groups. Similar to the age analysis, clinician time spent per participants was also categorized based on the sample mean and standard deviation: ‘less time’ was defined as 1 *SD* below the mean (< 5.8 hours), ‘more time’ as 1 *SD* above the mean (> 21 hours), and ‘average time’ as between 5.8 and 21 hours. No significant interaction was observed for these categories,

again likely due to unequal group sizes and reduced statistical power. The rate of change by time spent is shown in Figure 5.3.

These findings indicate that both clinical and demographic variables were associated with overall symptom severity on the CAPS-5, PCL-5, and ITQ-CPTSD, although not consistently across all outcomes. Only age, gender and clinician time demonstrated significant interactions at the group, time, and group $\times$ time levels for both clinician-rated and self-reported PTSD severity, although the small sample size limited the ability to determine what was driving these effects in detail. Beyond these variables, the absence of significant group $\times$ time interactions for other baseline characteristics suggests that the trajectory of symptom change across treatment conditions was not moderated uniformly by these factors.

Table 5.4

Linear Mixed Model Findings Including Interactions with Moderators on Primary PTSD Measures across GSH-only, Stepped-Up and CPT-only Conditions (Intent-to-Treat Sample)

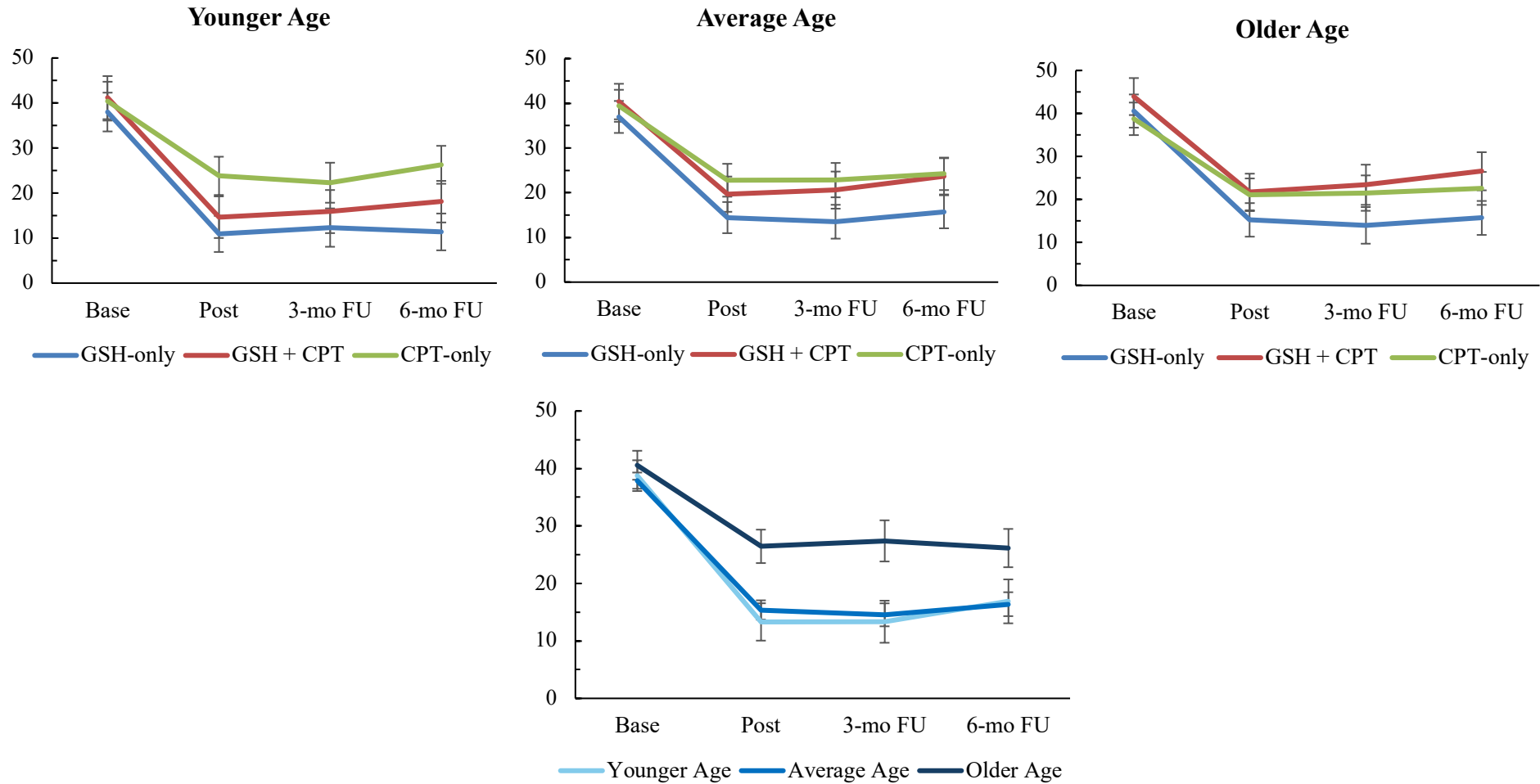
Moderators and Outcome	Fixed Effects of Interaction of Moderators							
	Main Effect		Group		Time		Group*Time	
	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
<i>CAPS-5 Outcome</i>								
Age	15.17 (1, 100.72)	<.001	11.26 (2, 99.51)	<.001	5.49 (3, 141.32)	.001	2.64 (6, 140.10)	.019
Gender	2.98 (1, 109.93)	.034	0.99 (2, 119.98)	.402	1.06 (3, 141.85)	.390	1.52 (6, 137.71)	.177
Trauma type	1.51 (1, 61.14)	.150	2.83 (2, 69.61)	.002	0.98 (3, 84.86)	.510	0.94 (6, 87.35)	.557
Number of comorbidities	9.22 (1, 97.59)	.003	0.19 (2, 98.86)	.824	2.41 (3, 134.96)	.070	0.28 (6, 134.88)	.947
Baseline depression severity	10.99 (1, 98.70)	.001	1.04 (2, 98.54)	.357	0.42 (3, 139.70)	.741	1.45 (6, 139.39)	.201
Baseline PTSD severity	24.41 (1, 119.05)	<.001	2.18 (2, 115.71)	.118	0.90 (3, 153.57)	.442	1.73 (6, 152.75)	.118
Baseline expectancy of therapy	4.42 (1, 64.31)	.039	1.61 (2, 63.87)	.208	0.63 (3, 93.94)	.595	0.32 (6, 93.69)	.925
Baseline credibility of therapy	7.82 (1, 69.68)	.007	3.78 (2, 69.39)	.028	1.93 (3, 95.29)	.130	0.70 (6, 94.87)	.650
URICA-T (Readiness to change)	0.78 (1, 172.95)	.380	0.00 (2, 174.51)	.997	0.83 (3, 127.28)	.480	0.23 (6, 129.25)	.968
Clinician contact time	6.35 (1, 125.22)	.013	2.78 (2, 125.57)	.066	1.87 (3, 146.35)	.138	2.02 (6, 146.25)	.067
Initial therapeutic alliance	3.29 (1, 93.59)	.073	1.69 (2, 92.43)	.189	3.04 (3, 128.21)	.031	.40 (6, 127.65)	.876
<i>PCL-5 Outcome</i>								
Age	3.39 (1, 103.64)	.068	3.55 (2, 98.58)	.032	2.43 (3, 161.98)	.067	1.11 (6, 153.40)	.357
Gender	3.28 (1, 94.92)	.024	1.88 (2, 99.55)	.138	1.65 (3, 151.43)	.125	1.82 (6, 147.83)	.088
Trauma type	0.96 (1, 59.84)	.493	1.65 (2, 61.99)	.087	0.87 (3, 93.98)	.667	1.07 (6, 93.61)	.392
Number of comorbidities	12.77 (1, 89.29)	<.001	0.11 (2, 94.07)	.896	0.24 (3, 146.97)	.868	0.79 (6, 146.41)	.583
Baseline depression severity	24.20 (1, 96.13)	<.001	0.40 (2, 95.30)	.671	0.08 (3, 152.27)	.969	0.63 (6, 151.02)	.706
Baseline PTSD severity	45.10 (1, 123.83)	<.001	1.34 (2, 119.24)	.266	2.01 (3, 168.79)	.114	0.56 (6, 166.71)	.759
Baseline expectancy of therapy	0.81 (1, 67.97)	.372	0.95 (2, 68.15)	.394	3.22 (3, 111.72)	.026	0.40 (6, 109.72)	.875
Baseline credibility of therapy	4.69 (1, 77.39)	.033	3.55 (2, 74.50)	.034	6.45 (3, 110.45)	<.001	0.85 (6, 108.83)	.537
URICA-T (Readiness to change)	2.44 (1, 186.00)	.120	0.47 (2, 186.83)	.627	0.99 (3, 123.26)	.398	0.71 (6, 120.84)	.645
Clinician contact time	0.39 (1, 128.52)	.529	0.88 (2, 128.77)	.418	0.77 (3, 156.02)	.514	0.96 (6, 156.08)	.457
Initial therapeutic alliance	3.51 (1, 97.43)	.064	3.61 (2, 94.58)	.031	3.38 (3, 146.03)	.020	0.96 (6, 143.13)	.454

Moderators and Outcome	Fixed Effects of Interaction of Moderators							
	Main Effect		Group		Time		Group*Time	
	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
<i>ITQ-CPTSD Outcome</i>								
Age	11.21 (1, 99.53)	.001	4.76 (2, 95.52)	.011	5.30 (3, 127.23)	.002	1.80 (6, 120.83)	.104
Gender	4.96 (1, 100.69)	.003	2.10 (2, 108.92)	.104	3.44 (3, 122.17)	.002	2.56 (6, 118.15)	.023
Trauma type	1.43 (1, 51.67)	.189	2.46 (2, 59.37)	.007	0.84 (3, 59.47)	.699	1.11 (6, 62.32)	.363
Number of comorbidities	16.42 (1, 88.61)	<.001	0.43 (2, 92.24)	.652	0.18 (3, 118.71)	.913	0.60 (6, 118.28)	.728
Baseline depression severity	22.81 (1, 95.84)	<.001	0.25 (2, 95.14)	.776	0.93 (3, 127.15)	.430	0.74 (6, 126.23)	.617
Baseline PTSD severity	23.45 (1, 125.46)	<.001	0.99 (2, 122.00)	.375	4.17 (3, 142.38)	.007	0.21 (6, 140.25)	.974
Baseline expectancy of therapy	3.88 (1, 66.75)	.053	0.80 (2, 66.77)	.455	2.97 (3, 88.93)	.036	0.26 (6, 87.10)	.956
Baseline credibility of therapy	11.58 (1, 74.77)	.001	3.03 (2, 72.38)	.054	7.44 (3, 88.70)	<.001	0.55 (6, 87.70)	.772
URICA-T (Readiness to change)	1.85 (1, 187.01)	.175	0.39 (2, 185.78)	.674	0.68 (3, 121.54)	.564	0.53 (6, 118.93)	.785
Clinician contact time	3.55 (1, 127.68)	.062	6.37 (2, 127.37)	.002	5.03 (3, 128.51)	.003	3.21 (6, 128.12)	.006
Initial therapeutic alliance	4.74 (1, 96.47)	.032	2.89 (2, 93.41)	.060	2.9 (3, 120.06)	.036	0.85 (6, 117.19)	.536

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ-CPTSD-Complex PTSD criteria based on ICD-11; URICA-T- University of Rhode Island Change Assessment- Trauma Version. Expectancy and credibility were assessed using the Credibility/Expectancy Questionnaire (CEQ) at session 1. Clinician contact time was defined as the total time clinicians spent providing feedback or delivering standard CPT sessions. Initial therapeutic alliance was measured using the Brief Revised Working Alliance Inventory (BR-WAI) at session 2.

Figure 5.1

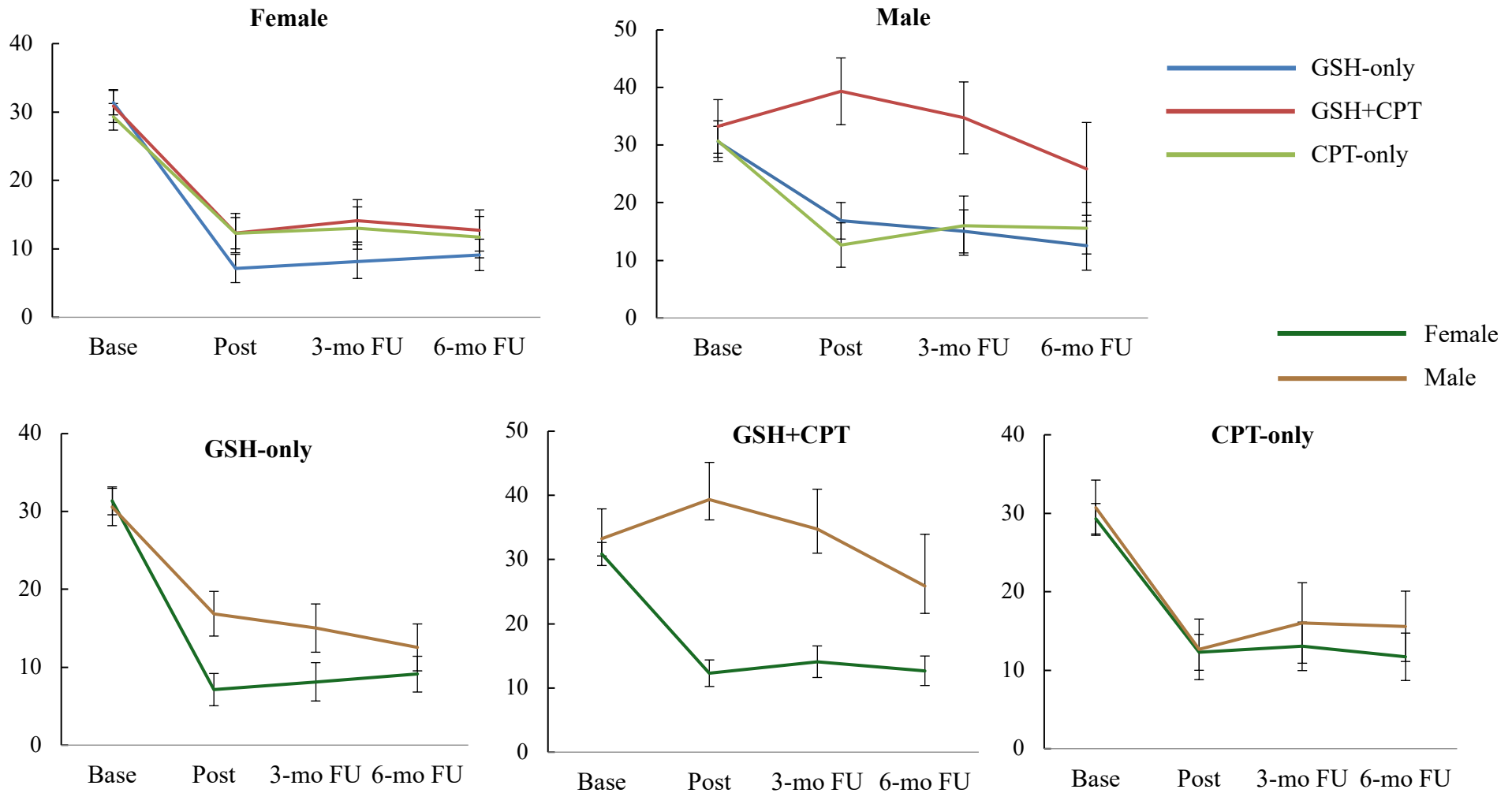
Interaction of Age, Group, and Time on CAPS-5 Outcome with Estimate Means and Standard Errors (Age $\times$ Time in Bottom Panel)



Note. The error bars represent ± 1 SE of the estimated means.

Figure 5.2

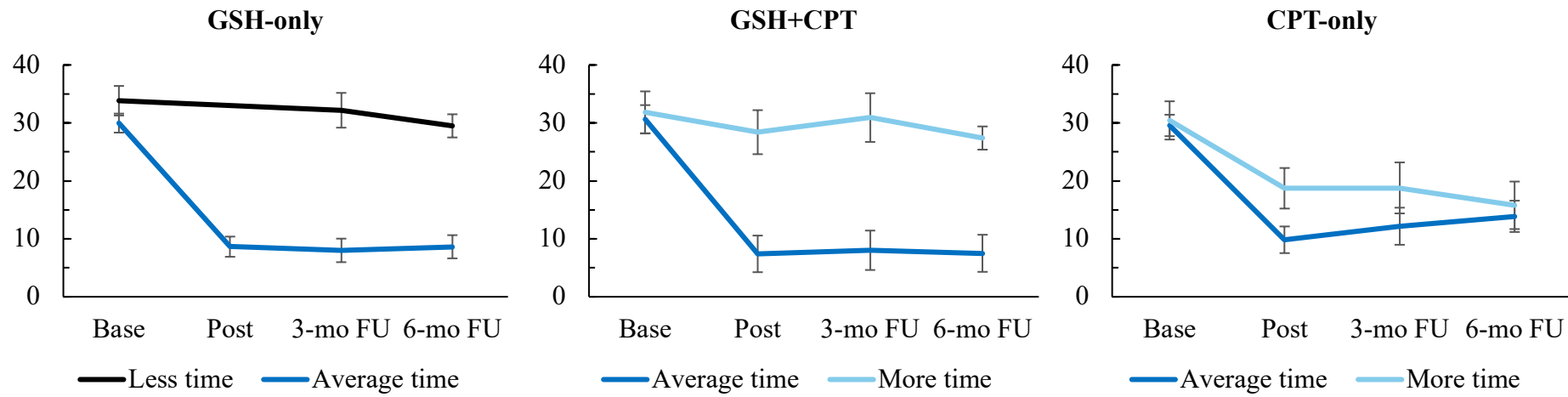
Interaction of Gender, Group, and Time on ITQ-CPTSD Outcome with Estimate Means and Standard Errors



Note. The error bars represent ± 1 SE of the estimated means.

Figure 5.3

Interaction of Clinician Contact, Group, and Time on ITQ-CPTSD Outcome with Estimate Means and Standard Errors



Note. The error bars represent ± 1 SE of the estimated means.

Exploratory Analyses of the CPT-GSH Condition

Who Completed and Benefited from the GSH Intervention?

In the stepped care condition, 24 participants completed the GSH intervention without requiring step up. As shown in Table 5.5, in the GSH-only condition, moderate to large within-group effect sizes were observed across all primary and secondary measures across timepoints. These were of similar magnitude to those observed in the stepped care condition for primary outcomes (6-month follow up: PTSD measures, $g_s = 1.72$ to 2.05 ; Depression, $g = 0.79$; Quality of life, $g = -1.51$) and secondary measures ($g_s = 0.12$ to 1.38), as detailed in Chapter 4, indicating clinically meaningful symptom reductions and improvements in quality of life. The between-group effect sizes for GSH-only compared to standard CPT were generally small in magnitude, with confidence intervals crossing zero in most cases, suggesting no statistically meaningful difference between conditions despite some point estimates favoring GSH. The same pattern was observed when comparing the stepped care with standard CPT (See Chapter 4). Figures 5.4 and 5.5 illustrate symptom trajectories across timepoints for the GSH completers.

Table 5.5

Within-group and Between-group Effect Size for GSH-only Condition (n=41) and Standard CPT (n= 31) Conditions (Intent-to-treat Sample)

Measures	Time	GSH-only <i>M (SE)</i>	Within-group Effect Size <i>g</i> [95%CI]	Standard CPT <i>M (SE)</i>	Between-group Effect Size <i>g</i> [95%CI]
<i>Primary Measures</i>					
CAPS-5	Base	37.68 (1.68)		37.77 (1.98)	-0.01 [-0.55, 0.54]
	Post	13.10 (1.94)	2.94 [1.90, 3.97]	20.12 (2.41)	-0.58 [-1.14, -0.03]
	3-mo	12.99 (2.30)	2.95 [1.88, 4.02]	19.48 (2.88)	-0.45 [-1.00, 0.10]
	6-mo	13.18 (2.37)	2.93 [1.95, 3.90]	22.98 (2.80)	-0.69 [-1.25, -0.13]
PCL-5	Base	49.32 (2.54)		49.00 (2.94)	0.02 [-0.52, 0.57]
	Post	21.83 (2.62)	2.17 [1.13, 3.22]	23.16 (2.94)	-0.09 [-0.63, 0.46]
	3-mo	18.60 (3.49)	2.43 [1.24, 3.61]	24.31 (4.69)	-0.25 [-0.80, 0.30]
	6-mo	18.27 (3.54)	2.45 [1.41, 3.50]	24.55 (4.26)	-0.29 [-0.84, 0.26]
ITQ-CPTSD	Base	31.09 (1.53)		30.09 (1.77)	0.10 [-0.44, 0.65]
	Post	9.76 (1.79)	2.80 [1.70, 3.90]	12.91 (2.08)	-0.28 [-0.83, 0.27]
	3-mo	9.63 (2.11)	2.82 [1.62, 4.01]	14.43 (2.82)	-0.35 [-0.90, 0.20]
	6-mo	9.81 (2.12)	2.79 [1.74, 3.84]	14.52 (2.55)	-0.38 [-0.93, 0.17]
DASS-D	Base	20.54 (1.86)		21.74 (2.20)	-0.11 [-0.65, 0.44]
	Post	13.14 (1.90)	0.80 [0.48, 1.12]	10.16 (2.12)	0.25 [-0.30, 0.79]
	3-mo	12.22 (2.44)	0.90 [0.35, 1.44]	15.67 (3.18)	-0.22 [-0.76, 0.33]
	6-mo	11.10 (2.55)	1.02 [0.50, 1.54]	12.35 (2.97)	-0.08 [-0.63, 0.46]
AQoL-8D Psychometric	Base	55.98 (2.38)		54.47 (2.80)	0.10 [-0.45, 0.65]
	Post	67.89 (2.79)	-1.00 [-1.43, -0.58]	58.59 (3.22)	0.59 [0.04, 1.15]
	3-mo	69.72 (2.32)	-1.16 [-1.70, -0.62]	62.37 (4.49)	0.34 [-0.21, 0.89]
	6-mo	67.08 (3.12)	-0.94 [-1.67, -0.20]	65.54 (3.93)	0.08 [-0.47, 0.62]

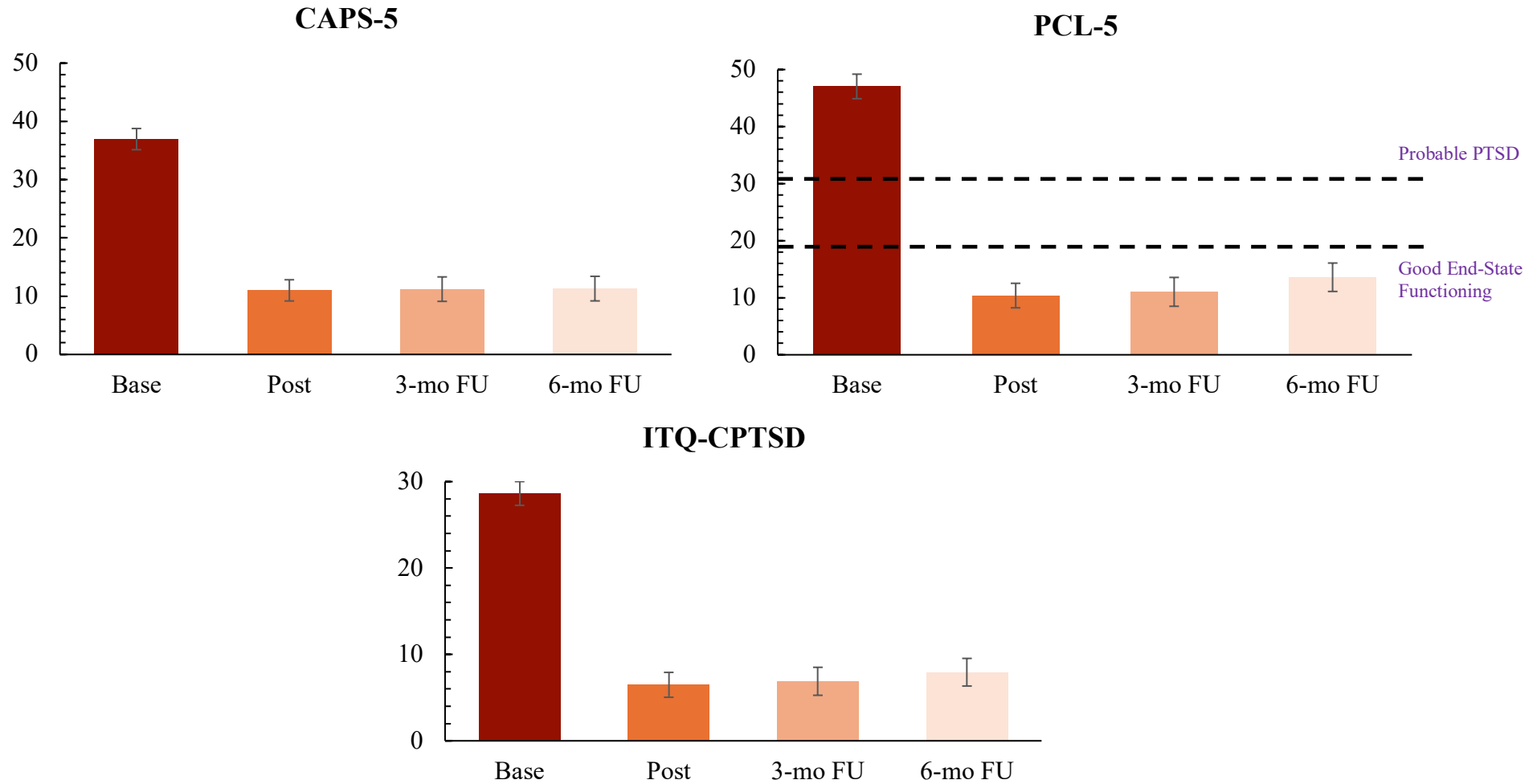
Measures	Time	GSH-only <i>M (SE)</i>	Within-group Effect Size <i>g</i> [95%CI]	Standard CPT <i>M (SE)</i>	Between-group Effect Size <i>g</i> [95%CI]
AQoL-8D Utility	Base	0.43 (0.03)		0.42 (0.04)	0.05 [-0.49, 0.60]
	Post	0.60 (0.03)	-1.14 [-1.57, -0.70]	0.54 (0.04)	0.28 [-0.27, 0.83]
	3-mo	0.62 (0.04)	-1.27 [-1.80, -0.74]	0.53 (0.05)	0.36 [-0.19, 0.91]
	6-mo	0.60 (0.04)	-1.14 [-1.93, -0.35]	0.55 (0.04)	0.00 [-0.54, 0.55]
<i>Secondary Measures</i>					
ISI	Base	15.17 (1.00)		15.73 (1.17)	-0.09 [-0.64, 0.45]
	Post	9.42 (1.16)	1.15 [0.63, 1.68]	14.29 (1.35)	-0.70 [-1.26, -0.14]
	3-mo	9.76 (1.36)	1.09 [0.47, 1.70]	12.94 (1.74)	-0.36 [-0.91, 0.19]
	6-mo	9.29 (1.38)	1.18 [0.62, 1.75]	13.09 (1.62)	-0.46 [-1.01, 0.09]
SCID-BPD	Base	5.88 (0.54)		7.00 (0.63)	-0.35 [-0.90, 0.20]
	Post	3.65 (0.61)	0.83 [0.35, 1.31]	6.08 (0.70)	-0.68 [-1.25, -0.12]
	3-mo	2.81 (0.70)	1.14 [0.58, 1.70]	5.22 (0.94)	-0.52 [-1.08, 0.03]
	6-mo	2.81 (0.70)	1.14 [0.62, 1.66]	5.39 (0.87)	-0.59 [-1.15, -0.04]
PTCI	Base	152.98 (6.42)		156.43 (7.63)	-0.09 [-0.64, 0.46]
	Post	89.10 (7.76)	2.00 [1.04, 2.95]	112.58 (8.87)	-0.51 [-1.07, 0.04]
	3-mo	91.08 (9.11)	1.94 [0.87, 3.00]	126.18 (12.20)	-0.59 [-1.15, -0.03]
	6-mo	89.98 (9.17)	1.97 [0.89, 3.06]	118.98 (10.75)	-0.53 [-1.08, 0.03]
DERS	Base	44.94 (2.08)		50.38 (2.46)	-0.43 [-0.98, 0.12]
	Post	34.05 (2.39)	1.05 [0.62, 1.49]	43.24 (2.76)	-0.65 [-1.21, -0.09]
	3-mo	33.80 (2.81)	1.08 [0.53, 1.62]	39.83 (3.80)	-0.33 [-0.87, 0.22]
	6-mo	33.78 (2.86)	1.08 [0.65, 1.50]	45.72 (3.46)	-0.68 [-1.24, -0.12]
AUDIT	Base	5.27 (0.96)		5.27 (1.12)	0.00 [-0.55, 0.55]
	Post	4.05 (1.02)	0.26 [0.00, 0.51]	3.13 (1.18)	0.15 [-0.39, 0.70]
	3-mo	3.31 (1.12)	0.41 [0.15, 0.67]	4.67 (1.41)	-0.19 [-0.74, 0.35]
	6-mo	3.67 (1.17)	0.33 [0.02, 0.65]	3.42 (1.36)	0.04 [-0.51, 0.58]

Measures	Time	GSH <i>M (SE)</i>	Within-group Effect Size <i>g</i> [95%CI]	Standard CPT <i>M (SE)</i>	Between-group Effect Size <i>g</i> [95%CI]
CUDIT-R	Base	3.44 (0.92)		1.97 (1.08)	0.00 [-0.55, 0.55]
	Post	2.62 (0.98)	0.18 [-0.08, 0.44]	1.24 (1.14)	0.15 [-0.39, 0.70]
	3-mo	2.11 (1.08)	0.29 [0.07, 0.51]	1.15 (1.34)	-0.19 [-0.74, 0.35]
	6-mo	2.42 (1.12)	0.22 [0.16, 0.28]	0.98 (1.30)	0.04 [-0.51, 0.58]
DAR	Base	10.32 (0.60)		10.87 (0.70)	0.27 [-0.28, 0.82]
	Post	6.87 (0.72)	1.15 [0.69, 1.62]	8.39 (0.82)	0.24 [-0.31, 0.79]
	3-mo	7.24 (0.86)	1.03 [0.45, 1.61]	8.70 (1.17)	0.14 [-0.40, 0.69]
	6-mo	7.72 (0.86)	0.87 [0.37, 1.37]	8.57 (1.00)	0.22 [-0.33, 0.77]

Note. CAPS-5 = Clinician-Administered PTSD Scale-DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ-CPTSD- Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale -Depression Subscale; AQoL-8D= Assessment of Quality of life; ISI = Insomnia Severity Index; SCID-BPD = Structured Clinical Interview for DSM 5-Borderline Personality Disorders; PTCI = Posttraumatic Cognitions Inventory; DERS = Difficulties in Emotional Regulation Scale; AUDIT = Alcohol Use Disorders Identification Test; CUDIT-R = Cannabis Use Disorders Identification Test- Revised; DAR-5= Dimensions of Anger.

Figure 5.4

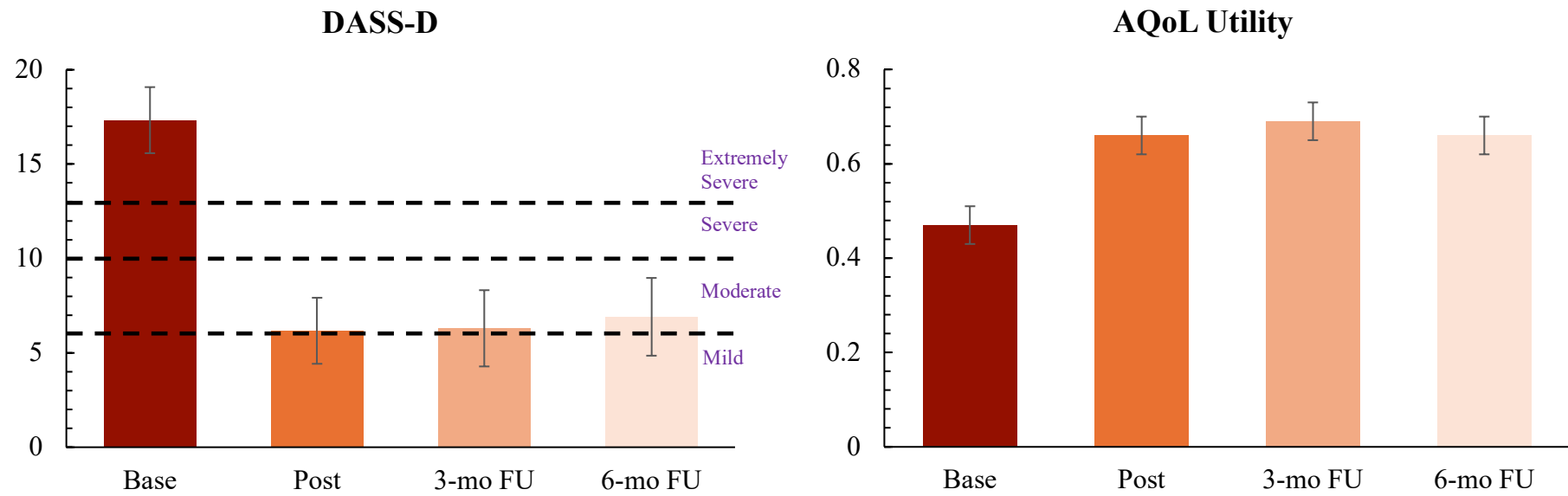
Estimated Marginal Means of PTSD Symptom Severity from Baseline to 6-month Follow-up (GSH Completers)



Note. The error bars represent ± 1 SE of the estimated means.

Figure 5.5

Estimated Marginal Means of Depression Severity and Quality of Life Measure from Baseline to 6-month Follow-up (GSH Completers)



Note. The error bars represent ± 1 SE of the estimated means. Higher AQoL utility scores indicate better overall quality of life.

One critical clinical question concerning low-intensity interventions is whether individuals presenting with *severe* PTSD symptoms can experience good therapeutic benefits given that initial symptom severity is not always a reliable predictor of outcome, yet many such clients are assumed not to be suitable for a low-intensity approach. Due to the absence of established clinical cut-off scores for different levels of symptom severity on the PCL-5, the current analysis applied the approach recommended by Aiken and West (1991) to derive severity categories based on the sample distribution. The mean PCL-5 score in this sample at baseline was 47.07 ($SD = 11.41$), with severity categories thus defined as follows: ‘low severity’ as scores below 35.7 (1 SD below the mean), ‘high severity’ as scores above 58.5 (1 SD above the mean), and ‘average severity’ as scores between 35.7 and 58.5.

Analysis indicated that all participants demonstrated significant symptom improvement over time for all primary measures, irrespective of initial severity levels (Table 5.6). Across all baseline severity levels, there were significant reductions from baseline to posttreatment (all $ps < .001$). However, a significant Group $\times$ Time interaction was found for both PCL-5 and complex PTSD symptom scores. For the low and average severity groups, treatment gains were maintained at both 3-month and 6-month follow-ups, with no significant changes observed after posttreatment as shown in Figure 5.6. In contrast, the high severity group, while showing large reductions from baseline to posttreatment and maintaining these gains at 3 months, had a significant increase of symptoms from 3- to 6-month follow-up ($p = .011$), likely driving the overall interaction effect. A similar pattern was observed for the complex PTSD measure (See Figure 5.7). Given the relatively small sample size in each severity category, these findings should be interpreted with caution. It should also be noted that the average CPTSD (and PTSD) scores at 6-month follow-up for this subgroup remained significantly lower than baseline scores, and in the case of the PCL-5, below the clinical cut-off.

Table 5.6

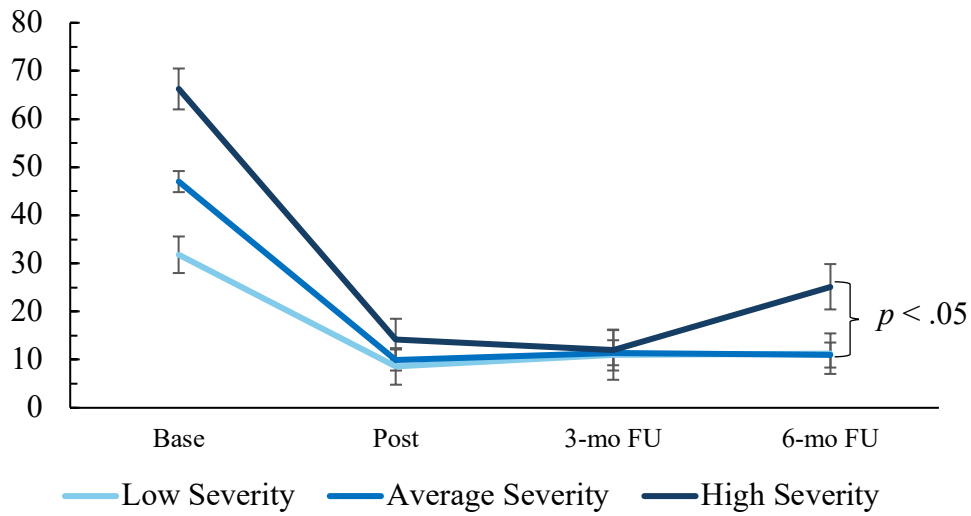
Estimated Marginal Means and Fixed Effects Across Baseline PCL-5 Severity Levels from Baseline to 6-Month Follow-Up (GSH Completers)

Measures	Time	Model Estimates			Fixed Effects					
		Low (<i>n</i> =5) <i>M</i> (<i>SE</i>)	Average (<i>n</i> =15) <i>M</i> (<i>SE</i>)	High (<i>n</i> =4) <i>M</i> (<i>SE</i>)	Group <i>F</i> (<i>df</i>)	<i>p</i>	Time <i>F</i> (<i>df</i>)	<i>p</i>	Group*Time <i>F</i> (<i>df</i>)	<i>p</i>
CAPS-5	Base	29.60 (3.82)	37.20 (2.20)	45.25 (4.27)	2.77 (2, 24.55)	.083	56.80 (3, 48.49)	<.001	1.04 (6, 48.70)	.409
	Post	7.20 (3.82)	11.47 (2.20)	14.00 (4.27)						
	3-mo	8.04 (5.37)	10.75 (2.56)	15.50 (4.27)						
	6-mo	12.32 (4.25)	8.11 (2.64)	20.35 (4.79)						
PCL-5	Base	31.80 (3.80)	47.00 (2.19)	66.25 (4.25)	5.23 (2, 22.94)	.013	130.44 (3, 46.02)	<.001	6.02 (6, 46.65)	<.001
	Post	8.60 (3.80)	9.93 (2.19)	14.25 (4.25)						
	3-mo	10.98 (5.16)	11.44 (2.60)	12.00 (4.25)						
	6-mo	11.25 (4.21)	10.96 (2.60)	25.15 (4.71)						
ITQ-CPTSD	Base	20.40 (2.54)	28.33 (1.47)	40.00 (2.84)	3.79 (2, 23.75)	.037	110.26 (3, 43.93)	<.001	4.85 (6, 44.55)	<.001
	Post	5.00 (2.54)	6.53 (1.54)	7.21 (3.07)						
	3-mo	5.14 (3.41)	7.63 (1.74)	7.25 (2.84)						
	6-mo	6.34 (2.81)	6.30 (1.74)	15.05 (3.14)						
DASS-D	Base	9.60 (3.67)	17.20 (2.12)	27.50 (4.11)	1.73 (2, 22.67)	.200	15.51 (3, 46.77)	<.001	1.54 (6, 46.67)	.187
	Post	4.00 (3.67)	6.53 (2.12)	7.50 (4.11)						
	3-mo	2.48 (4.99)	6.85 (2.49)	8.00 (4.11)						
	6-mo	5.85 (4.54)	6.07 (2.50)	11.13 (4.54)						
AQoL-8D Utility	Base	0.61 (0.08)	0.47 (0.04)	0.30 (0.08)	2.57 (2, 22.72)	.099	16.51 (3, 41.08)	<.001	1.49 (6, 40.95)	.205
	Post	0.76 (0.08)	0.64 (0.05)	0.61 (0.09)						
	3-mo	0.80 (0.10)	0.62 (0.05)	0.75 (0.09)						
	6-mo	0.84 (0.11)	0.61 (0.05)	0.67 (0.08)						

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ-CPTSD-Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale- Depression Subscale; AQoL-8D= Assessment of Quality of Life.

Figure 5.6

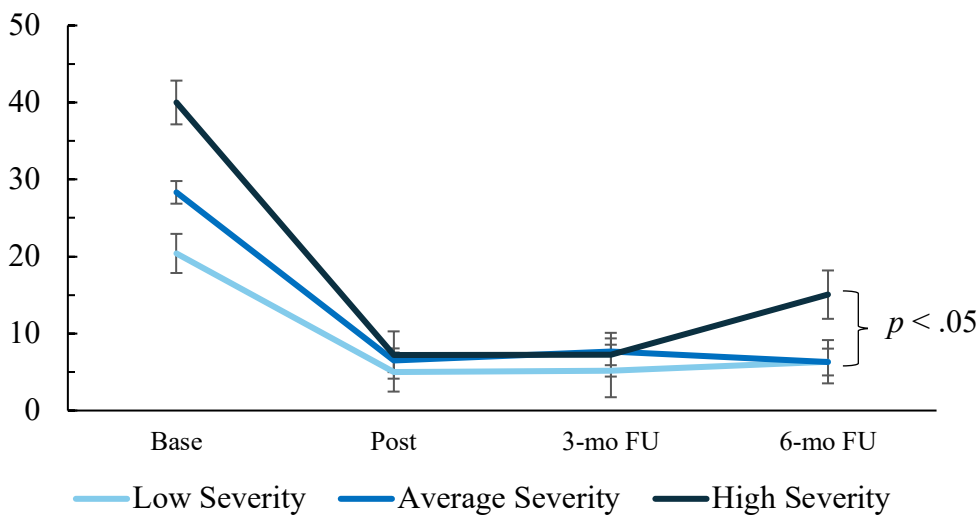
Interaction of Baseline PCL Severity on PCL-5 Outcome with Estimate Means and Standard Errors



Note. The error bars represent ± 1 SE of the estimated means.

Figure 5.7

Interaction of Baseline PCL Severity on ITQ-CPTSD Outcome with Estimate Means and Standard Errors



Note. The error bars represent ± 1 SE of the estimated means.

I also investigated another important question frequently raised in the context of low-intensity interventions; that is, whether clinician time impacted treatment outcomes. Given the variability in time spent by clinicians on preparing feedback emails, I examined whether average session time spent on providing feedback predicted treatment completion. Logistic regression analysis showed that average time per session was not a significant predictor of completion, $\chi^2(1) = 3.33, p = .068$. Although the association suggested that longer average session time was linked to reduced odds of completion, this effect did not reach statistical significance, OR = 0.27, 95% CI [0.05, 1.36], $p = .112$.

Who Was Stepped Up from the GSH Intervention?

Results indicated no significant differences in baseline demographic characteristics between those who completed only the GSH ($n = 24$) and those who were stepped up ($n = 15$) (all $ps > .05$) (Tables 5.7 and 5.8). When comparing symptom profiles, there was also very little to distinguish the groups, except that the stepped-up group reported higher emotional dysregulation on the DERS (Table 5.9). To further explore whether baseline symptom severity could predict stepping up to standard CPT, a binary logistic regression was conducted using baseline measures that showed significant differences between groups (DERS and CEQ- Credibility at session 1). The overall model was significant, $\chi^2(2) = 14.10, p < .001$, suggesting a trend-level association between baseline symptom profiles and the likelihood of stepping up. Notably, the model explained a substantial proportion of variance in step-up status (Nagelkerke $R^2 = .594$), indicating a strong effect. Within the model, higher baseline emotional dysregulation (as measured by the DERS) was significantly associated with greater odds of being stepped up (OR = 1.17, 95% CI [1.001, 1.36], $p = .042$). Conversely, lower scores on treatment credibility were almost significant with higher odds of stepping up (OR = 0.61, 95% CI [0.35, 1.10], $p = .085$).

Table 5.7*Baseline Demographic Characteristics Between GSH-only (n=24) and Stepped-up Group (n=15) Completers*

Characteristics	GSH <i>M (SD) or n (%)</i>	GSH+CPT <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Age (Years)	39.21 (13.20)	42.93 (15.64)	$t(37) = -0.80$	.431	-0.26 [-0.89, 0.38]
Gender					
Female	18 (75.0%)	12 (80.0%)	$\chi^2(3) = 2.54$	.467	0.26
Male	5 (20.8%)	2 (13.3%)			
Non-binary	1 (4.2%)	0 (0.0%)			
Other	0 (0.0%)	1 (6.7%)			
Ethnicity					
White	9 (37.5%)	10 (66.7%)	$\chi^2(6) = 6.95$	.325	0.42
Indigenous Australian	1 (4.2%)	0 (0.0%)			
European	8 (33.3%)	3 (20.0%)			
Asian	0 (0.0%)	0 (0.0%)			
Middle Eastern	1 (4.2%)	0 (0.0%)			
New Zealander Maori	1 (4.2%)	2 (13.3%)			
Pacific Islander	0 (0.0%)	0 (0.0%)			
Multiethnic	2 (8.3%)	0 (0.0%)			
Other	2 (8.3%)	0 (0.0%)			
Education (Years)	15.75 (0.59)	15.60 (0.58)	$t(37) = 0.17$	.864	0.06 [-0.58, 0.71]
Currently Employed	19 (79.2%)	14 (93.3%)	$\chi^2(1) = 1.42$	.233	0.19

Characteristics	GSH <i>M (SD) or n (%)</i>	GSH+CPT <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Income					
< \$20,000	5 (20.8%)	3 (20.0%)	$\chi^2(5) = 8.57$	.128	0.47
\$20,000 – 50,000	3 (12.5%)	1 (6.7%)			
\$50,001– 80,000	7 (29.2%)	2 (13.3%)			
\$80,001 – 110,000	4 (16.7%)	5 (33.3%)			
\$110,001 – 140,000	1 (4.2%)	4 (26.7%)			
> \$140,0000	4 (16.7%)	0 (0.0%)			
Marital Status					
Single	7 (29.2%)	3 (20.0%)	$\chi^2(5) = 6.88$	.230	0.42
In a relationship but not living together	1 (4.2%)	2 (13.3%)			
In a relationship and living together	3 (12.5%)	2 (13.3%)			
Married	9 (37.5%)	2 (13.3%)			
Separated/ divorced	3 (12.5%)	6 (40.0%)			
Widow/ widower	1 (4.2%)	0 (0.0%)			
Full PTSD Diagnosis	24 (100.0%)	15 (100.0%)	$\chi^2(10) = 11.90$	.292	0.55
PTSD Duration (Months)	198.96 (206.33)	181.93 (155.95)	$t(36) = 0.27$	.791	0.09 [-0.57, 0.75]

Note. CPT = Cognitive Processing Therapy.

Table 5.8

Trauma History and Symptom Profiles Between GSH-only (n=24) and Stepped-up Group (n=15) Completers

Characteristics	GSH <i>M (SD) or n (%)</i>	GSH+CPT <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Index Trauma					
Child sexual abuse	4 (16.7%)	4 (26.7%)	$\chi^2(10) = 11.9$	.292	0.55
Child physical abuse	3 (12.5%)	2 (13.3%)			
Adult sexual assault	6 (25.0%)	2 (13.3%)			
Adult physical assault	1 (4.2%)	0 (0.0%)			
Motor vehicle accident	0 (0.0%)	2 (13.3%)			
Witnessed trauma	2 (8.3%)	0 (0.0%)			
Threatened death	0 (0.0%)	1 (6.7%)			
Intimate partner violence	4 (16.7%)	3 (20.0%)			
Life-threatening illness/ injury	3 (12.5%)	0 (0.0%)			
War	1 (4.2%)	0 (0.0%)			
Professional duties	0 (0.0%)	1 (6.7%)			
Learned about a traumatic event	4 (16.7%)	4 (26.7%)			
Adverse Childhood Experiences (ACE)^a	4.58 (2.79)	5.00 (2.17)	$t(37) = -0.49$	.626	-0.16 [-0.79, 0.48]
Current Comorbid Diagnoses					
Anxiety disorder	16 (66.7%)	8 (53.3%)	$\chi^2(1) = 0.69$	.405	-0.13
Mood disorder	11 (45.8%)	6 (40.0%)	$\chi^2(1) = 0.13$	.721	-0.06
Eating disorder	2 (8.3%)	2 (15.4%)	$\chi^2(1) = 0.44$	.510	0.11
Substance use disorder	1 (4.2%)	0 (0.0%)	$\chi^2(1) = 0.56$	.456	-0.12
Current suicide risk	2 (8.3%)	1 (6.7%)	$\chi^2(1) = 0.04$	.849	-0.03

Note. CPT = Cognitive Processing Therapy.

^a The ACE score was calculated as the total number of adverse childhood experience types reported by each participant (ranges from 0-10).

Table 5.9

Baseline Scores on Primary and Secondary Measures Between GSH-only (n=24) and Stepped-up Group (n=15) Completers

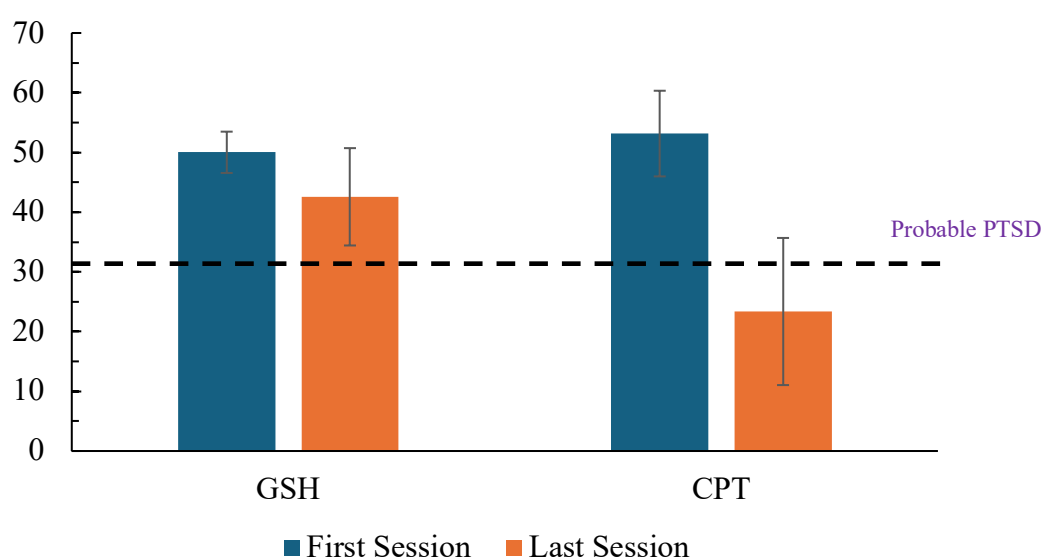
Measures	GSH <i>M (SD)</i>	GSH+CPT <i>M (SD)</i>	Test	<i>p</i>	<i>g</i> [95% CI]
<i>Primary Measures</i>					
CAPS-5	36.96 (8.06)	40.67 (6.82)	$t(37) = -1.54$	.133	-0.48 [-1.12, 0.17]
PCL-5	47.04 (11.42)	44.27 (11.47)	$t(37) = 0.74$	.466	0.24 [-0.40, 0.87]
ITQ-CPTSD	28.63 (7.32)	28.33 (7.87)	$t(37) = 0.12$	.907	0.04 [-0.61, 0.67]
DASS-D	17.33 (10.09)	19.47 (13.87)	$t(37) = -0.52$	.610	-0.18 [-0.81, 0.46]
AQoL- 8D					
Psychometric	59.60 (12.20)	57.49 (12.37)	$t(37) = -0.52$	.610	0.17 [-0.47, 0.82]
Utility	0.47 (0.16)	0.42 (0.15)	$t(37) = 0.83$	.409	0.27 [-0.38, 0.92]
<i>Secondary Measures</i>					
ISI	14.08 (6.60)	12.87 (6.39)	$t(37) = 0.57$	.574	0.18 [-0.46, 0.83]
SCID-BPD	5.21 (3.19)	6.14 (3.39)	$t(36) = -0.84$	.400	-0.28 [-0.93, 0.37]
PTCI	152.33 (37.19)	155.40 (30.54)	$t(37) = -0.27$	.791	-0.09 [-0.72, 0.55]
DERS	41.96 (11.28)	49.07 (9.22)	$t(36) = -2.13$	.049	-0.66 [-1.31, -0.00]
AUDIT	4.54 (4.29)	6.93 (5.93)	$t(37) = -1.35$	.188	-0.47 [-1.11, 0.17]
CUDIT-R	3.21 (6.09)	2.67 (5.65)	$t(37) = 0.28$	.783	0.09 [-0.56, 0.74]
DAR-5	9.63 (2.78)	8.47 (2.85)	$t(37) = 1.25$	.218	0.41 [-0.24, 1.06]

Note. CPT = Cognitive Processing Therapy; CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ-CPTSD- Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale-Depression Subscale; AQoL- 8D= Assessment of Quality of Life; ISI = Insomnia Severity Index; SCID-BPD = Structured Clinical Interview for DSM 5-Borderline Personality Disorders; PTCI = Posttraumatic Cognitions Inventory; DERS = Difficulties in Emotional Regulation Scale; AUDIT = Alcohol Use Disorders Identification Test; CUDIT-R = Cannabis Use Disorders Identification Test- Revised; DAR-5= Dimensions of Anger Reaction.

Within the stepped-up group, I examined the extent of progress during the initial GSH phase compared to the subsequent CPT phase. This analysis aimed to clarify the clinical rationale for the step-up process by identifying whether significant gains occurred prior to or following the transition to higher-intensity treatment. LMM analyses indicated that minimal change in symptom severity (in PCL-5) occurred during the GSH phase, $F(7, 60.28) = 1.10, p = .373$. However, once participants transitioned into standard CPT, there was a significant improvement over time, $F(19, 110.94) = 2.46, p = .002$ (Figure 5.8). A similar pattern was observed for DASS-D. Participants showed no significant reduction in the DASS-D scores during the GSH phase, $F(7, 58.54) = 1.88, p = .090$, but in the standard CPT phase, depressive symptoms significantly decreased over time, $F(19, 109.19) = 1.73, p = .042$ (Figure 5.9). These findings support the rationale for the stepped care model, specifically, that stepping up to CPT is associated with meaningful clinical gains when GSH alone is insufficient.

Figure 5.8

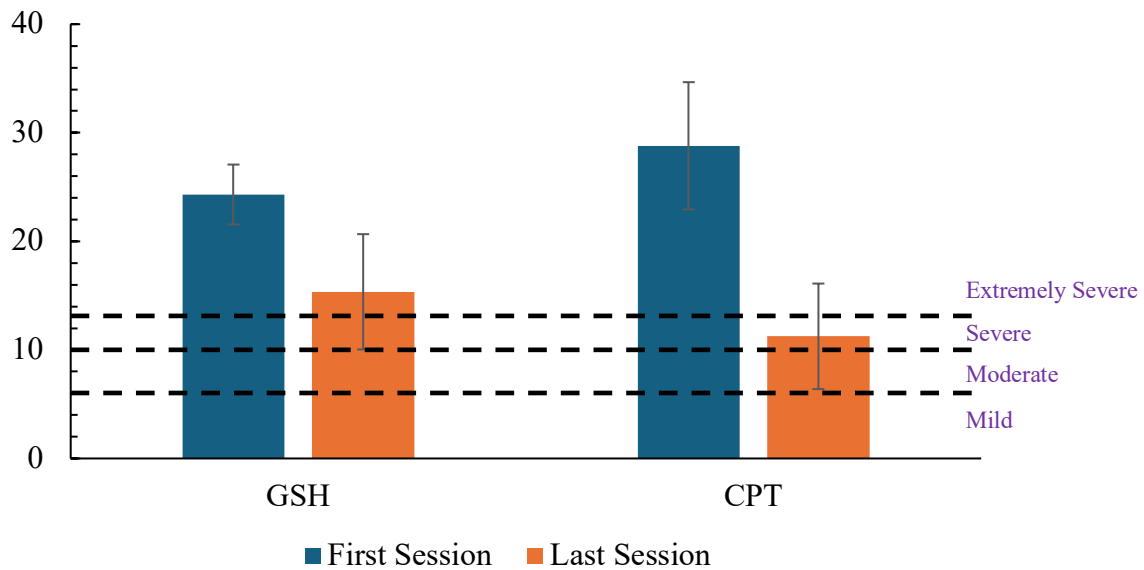
Estimated Mean PCL-5 Scores at First and Last Session of GSH and CPT Phases (Stepped-up Group)



Note. The error bars represent ± 1 SE of the estimated means.

Figure 5.9

Estimated Mean DASS-D Scores at First and Last Session of GSH and CPT Phases (Stepped-up Group)



Note. The error bars represent ± 1 SE of the estimated means.

Who Was More Likely to Drop Out of the GSH Intervention?

Given that PTSD self-help therapies with minimal clinician contact run the risk of reduced engagement (Bisson et al., 2022), it was important to examine the characteristics of participants who completed the GSH intervention compared to those who did not. As a reminder, dropout in the GSH condition was defined as not completing all 12 modules (excluding those who were stepped up) and withdrawing from the trial. Seventeen participants assigned to the stepped care condition dropped out during the GSH phase.

Thus far, no major significant differences were found between completers in the GSH and standard CPT conditions, or between the GSH and stepped-up groups in terms of demographic characteristics or baseline measures. Likewise, baseline characteristics did not significantly differ between GSH completers and those who dropped out (Table 5.10), however participants who reported a current mood disorder at baseline, such as depression, were more likely to discontinue the intervention (82.4% with mood disorder in dropout vs. 45.8% in completer sample) (Table 5.11).

Baseline scores on primary and secondary outcome measures for GSH completers and non-completers are presented in Table 5.12. Significant differences were found on complex PTSD, depression, and quality of life measures. Those who dropped out had higher scores on complex PTSD and depression, indicating greater symptom severity. They also had lower quality of life scores, reflecting greater functional difficulties. Although some differences were nonsignificant (e.g., sleep problems, traits of borderline personality disorder symptoms, emotional regulation difficulties), somewhat sizeable effect size differences were present, and thus these analyses might have been hampered by low power given the modest sample size. Interestingly, when linear mixed modelling was conducted to examine weekly symptom change among participants who dropped out, a significant reduction was observed on the PCL from a pretreatment mean of 52.92 to a posttreatment mean of 42.62 ($p < .026$). However, no significant change was found on the DASS-D over the same period ($p = .408$). Although the posttreatment (or last available) PCL score remained above the clinical cut-off for these participants, 29% of those in the dropout group still showed a clinically meaningful reduction in PTSD symptoms (≥ 9.70 points).

Table 5.10*Baseline Demographic Characteristics Between GSH Completers (n=24) and GSH Dropouts (n=17)*

Characteristics	GSH Completers <i>M (SD) or n (%)</i>	GSH Dropouts <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Age (Years)	39.21 (13.29)	38.71 (13.35)	$t(39) = 0.12$	.906	0.04 [-0.57, 0.65]
Gender					
Female	18 (75.0%)	9 (52.9%)	$\chi^2(2) = 2.20$	.332	0.23
Male	5 (20.8%)	7 (41.2%)			
Non-binary	1 (4.2%)	1 (5.9%)			
Ethnicity					
White	9 (37.5%)	9 (52.9%)	$\chi^2(7) = 4.98$	.663	0.35
Indigenous Australian	1 (4.2%)	0 (0.0%)			
European	8 (33.3%)	5 (29.4%)			
Asian	0 (0.0%)	1 (5.9%)			
Middle Eastern	1 (4.2%)	1 (5.9%)			
New Zealander Maori	1 (4.2%)	0 (0.0%)			
Multiethnic	2 (8.3%)	0 (0.0%)			
Other	2 (8.3%)	1 (5.9%)			
Education (Years)	15.75 (2.88)	14.24 (2.80)	$t(39) = 1.68$	.101	0.52 [-0.10, 1.14]
Currently Employed	19 (79.2%)	14 (82.4%)	$\chi^2(1) = 0.06$	.800	0.19

Characteristics	GSH Completers <i>M (SD) or n (%)</i>	GSH Dropouts <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Income					
< \$20,000	5 (20.8%)	2 (11.8%)	$\chi^2(5) = 2.53$	.773	0.25
\$20,000 – 50,000	3 (12.5%)	4 (23.5%)			
\$50,001– 80,000	7 (29.2%)	3 (17.6%)			
\$80,001 – 110,000	4 (16.7%)	3 (17.6%)			
\$110,001 – 140,000	1 (4.2%)	2 (11.8%)			
> \$140,0000	4 (16.7%)	3 (17.6%)			
Marital Status					
Single	7 (29.2%)	3 (17.6%)	$\chi^2(5) = 3.91$	.563	0.31
In a relationship but not living together	1 (4.2%)	2 (11.8%)			
In a relationship and living together	3 (12.5%)	1 (5.9%)			
Married	9 (37.5%)	10 (58.8%)			
Separated/ divorced	3 (12.5%)	1 (5.9%)			
Widow/ widower	1 (4.2%)	0 (0.0%)			
Full PTSD Diagnosis	24 (100.0%)	17 (100.0%)	$\chi^2(1) = 2.97$	.085	0.27
PTSD Duration (Months)	198.96 (206.33)	145.47 (136.12)	$t(37) = 0.89$	.380	0.29 [-0.35, 0.92]

Note. CPT = Cognitive Processing Therapy.

Table 5.11*Trauma History, and Symptom Profiles Between GSH Completers (n=24) and GSH Dropouts (n=17)*

Characteristics	GSH Completers <i>M (SD) or n (%)</i>	GSH Dropouts <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Index Trauma					
Child sexual abuse	4 (16.7%)	3 (17.6%)	$\chi^2(9) = 11.18$	.264	0.52
Child physical abuse	3 (12.5%)	3 (17.6%)			
Adult sexual assault	6 (25.0%)	1 (5.9%)			
Adult physical assault	1 (4.2%)	2 (11.8%)			
Motor vehicle accident	0 (0.0%)	0 (0.0%)			
Witnessed trauma	2 (8.3%)	1 (5.9%)			
Threatened death	0 (0.0%)	0 (0.0%)			
Intimate partner violence	4 (16.7%)	2 (11.8%)			
Life-threatening illness/ injury	3 (12.5%)	0 (0.0%)			
War	1 (4.2%)	1 (5.9%)			
Professional duties	0 (0.0%)	3 (17.6%)			
Learned about a traumatic event	0 (0.0%)	1 (5.9%)			
Adverse Childhood Experiences (ACE)^a	4.58 (2.80)	5.29 (2.71)	$t(39) = -0.81$	.422	-0.25 [-0.86, 0.36]
Current Comorbid Diagnoses					
Anxiety disorder	16 (66.7%)	10 (58.8%)	$\chi^2(1) = 0.26$	.607	-0.08
Mood disorder	11 (45.8%)	14 (82.4%)	$\chi^2(1) = 5.58$	.018	0.37
Eating disorder	2 (8.3%)	3 (18.8%)	$\chi^2(1) = 0.95$	.329	0.15
Substance use disorder	1 (4.2%)	3 (18.8%)	$\chi^2(1) = 2.27$	.132	0.24
Current suicide risk	2 (8.3%)	2 (11.8%)	$\chi^2(1) = 0.13$	.715	0.06

Note. CPT = Cognitive Processing Therapy.^a The ACE score was calculated as the total number of adverse childhood experience types reported by each participant (ranges from 0-10).

Table 5.12

Baseline Scores on Primary and Secondary Measures Between GSH Completers (n=24) and GSH Dropouts (n=17)

Measures	GSH Completers <i>M (SD)</i>	GSH Dropouts <i>M (SD)</i>	Test	<i>p</i>	<i>g</i> [95% CI]
Primary Measures					
CAPS-5	36.96 (8.06)	38.71 (5.81)	$t(39) = -0.76$	.450	-0.24 [-0.85, 0.38]
PCL-5	47.04 (11.42)	52.53 (10.64)	$t(39) = -1.56$	.127	-0.49 [-1.12, 0.14]
ITQ-CPTSD	28.63 (7.32)	34.59 (6.08)	$t(39) = -2.75$	.009	-0.86 [-1.49, -0.21]
DASS-D	17.33 (10.89)	25.75 (8.82)	$t(38) = -2.71$	.010	-0.86 [-1.50, -0.20]
AQoL- 8D					
Psychometric	59.60 (12.20)	50.86 (9.90)	$t(39) = 2.44$	.019	0.76 [0.12, 1.39]
Utility	0.47 (0.16)	0.37 (0.10)	$t(39) = 2.31$	.027	0.72 [0.08, 1.34]
Secondary Measures					
ISI	14.08 (6.60)	16.71 (4.62)	$t(39) = -1.41$	.167	-0.44 [-1.05, 0.18]
SCID-BPD	5.21 (3.18)	6.82 (3.49)	$t(39) = -1.54$	.132	-0.48 [-1.09, 0.14]
PTCI	152.33 (37.20)	153.94 (28.09)	$t(38) = -0.15$	.884	-0.05 [-0.67, 0.57]
DERS-18	41.92 (11.28)	49.53 (13.17)	$t(39) = -1.95$	.058	-0.61 [-1.24, 0.02]
AUDIT	4.54 (4.29)	6.29 (8.07)	$t(39) = -0.90$	.373	-0.28 [-0.89, 0.33]
CUDIT-R	3.21 (6.09)	3.76 (7.99)	$t(39) = -0.25$	.802	-0.08 [-0.69, 0.53]
DAR-5	9.63 (2.78)	11.29 (5.79)	$t(39) = -1.23$	.226	-0.38 [-1.00, 0.23]

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ-CPTSD- Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale-Depression Subscale; AQoL- 8D= Assessment of Quality of Life; ISI = Insomnia Severity Index; SCID-BPD = Structured Clinical Interview for DSM 5-Borderline Personality Disorders; PTCI = Posttraumatic Cognitions Inventory; DERS = Difficulties in Emotional Regulation Scale; AUDIT = Alcohol Use Disorders Identification Test; CUDIT = Cannabis Use Disorders Identification Test; DAR-5= Dimensions of Anger Reaction.

Summary

Both stepped care and GSH were less costly than standard CPT, and the GSH format was perceived as acceptable and feasible by both clients and clinicians. Moderator analyses indicated significant interactions for age, gender, and clinician time. Younger and average-aged participants tended to perform better than older participants, although when age was analyzed categorically, these differences were not statistically significant. In the stepped-up group, female participants showed greater improvements than male participants, and longer clinician contact was associated with greater symptom reduction. However, these patterns should be considered preliminary, as the small sample size limits the ability to examine these effects in detail. Within the GSH condition, large and significant reductions in PTSD symptoms were observed regardless of initial symptom severity. Emotional dysregulation emerged as a predictor of stepping up to standard CPT, whereas individuals with a history of depressive episodes were more likely to discontinue treatment. Importantly, even participants who dropped out of GSH showed clinically meaningful reductions in PTSD symptoms, suggesting that partial engagement may still offer therapeutic benefit for some clients. The next chapter will summarize the overall key findings, discuss the trial's strengths and limitations, outline future research directions, and review the clinical implications of my program of research.

CHAPTER 6:

General Discussion

Thesis Overview

My thesis examined the adaptation of CPT into a GSH format with limited clinician support, integrated within a stepped care model. The primary objective was to determine whether CPT-GSH effectively reduces PTSD symptoms. Drawing on evidence that PTSD treatments often yield broader benefits, my thesis also explored the potential of the GSH format to reduce depressive symptoms and enhance overall quality of life. Given the status of CPT as a gold-standard treatment for PTSD, I further investigated the extent to which the GSH adaptation achieves clinical outcomes comparable to those of standard CPT. Acknowledging that clinical efficacy alone is insufficient for widespread adoption, I also evaluated the cost implications, acceptability, feasibility and treatment moderators of the GSH format to determine its potential suitability for implementation in routine care settings. This final chapter synthesizes the key findings of the thesis, critically appraises its limitations and strengths, and outlines recommendations to guide future research and clinical practice.

Chapter 1 outlined the clinical relevance of PTSD, describing its high prevalence, comorbidity with other mental health conditions, and associated psychological, social, and economic costs. Although many individuals experience trauma, only a subset develop PTSD, a disparity explained by theoretical models focusing on trauma memory, fear networks, and maladaptive cognitions. The role of unhelpful cognitions has become central in PTSD research and forms the foundation for most cognitive-based treatments. This thesis centers on CPT, a well-established trauma-focused intervention with strong empirical support. Despite its efficacy, access to CPT remains limited due to barriers such as cost, wait times, and stigma. To address these gaps, this chapter introduced the potential value of adapting CPT into a more flexible GSH format while ensuring appropriate level of clinical care was not compromised through delivery within a stepped

care framework. Building on this rationale, the chapter outlined the key aims and objectives of the thesis.

Chapter 2 provided a critical review of structural adaptations of CPT which preserved the core therapeutic components but changed the delivery method, session format, or intensity. The systematic review and meta-analysis showed that such adaptations led to significant reductions in PTSD and depressive symptoms, with outcomes comparable to standard CPT and, at times, to other trauma-focused treatments. These results highlight the potential of flexible CPT formats to improve access and meet diverse clinical needs. However, the literature is limited by its focus on US veterans, a small number of randomised controlled trials, and a frequent reliance on self-reported measures, underscoring the need for more diverse and rigorous research in this area.

Following the review of existing adaptations and in response to the identified gaps, **Chapters 3 to 5** presented the methodology and findings of the randomized controlled trial evaluating the efficacy, cost, acceptability, feasibility, and treatment moderators of the stepped care model, with a focus on outcomes in the GSH condition. The next section integrates the key findings of the current trial and clarifies how this work contributes to new evidence on the role of low-intensity intervention in a stepped care model in the treatment of PTSD.

Summary of Key Findings

Can Stepped Care and GSH Produce Outcomes Comparable to Standard CPT?

As predicted, the stepped care model and the GSH format in particular led to significant improvements in PTSD symptoms, as assessed by clinician-administered CAPS-5, self-reported PCL-5, and complex PTSD measures. These gains were maintained from posttreatment through to 6-month follow-up, based on intent-to-treat analyses ($p < .001$). Within-group effect sizes in the stepped care condition and GSH format were moderate to large ($g_s = 1.48$ to 2.94) in this trial. Given standard CPT has established efficacy in reducing PTSD symptoms and related difficulties

(Asmundson et al., 2019), the GSH version likely retained its core, effective components, contributing to the positive clinical outcomes observed.

Compared with other GSH studies, the current trial's between-group effect sizes ($g = -0.01$ to -0.69 for GSH versus standard CPT) were smaller than the pooled effect size of $g = -0.81$, 95%CI [-1.24 to -0.39] reported in a recent meta-analysis of 17 self-help RCTs (Siddaway et al., 2022). The larger effect sizes observed in that meta-analysis may be attributable to the comparison between active treatments and waitlist control groups, which tend to overestimate treatment effects due to the absence of therapeutic exposure in the control condition (Hoppen et al., 2024). In contrast, the current trial used CPT as an active comparator, an evidence-based intervention with strong empirical support, thereby making the observed effect sizes in my study particularly compelling.

Similar patterns were observed for other primary outcomes. In my trial, depressive symptoms and quality of life both showed large improvements at 6-month follow up. These results are consistent with positive findings from other GSH trials. The RAPID trial by Bisson et al. (2022) evaluated an internet-based, trauma-focused CBT program ('Spring') delivered through an eight-step online platform with up to 3hrs of clinician contact. Similarly, Ivarsson's trial (2014) assessed a clinician-assisted intervention delivered via weekly text-based modules over eight weeks. Both studies reported small to moderate, statistically significant reductions in depressive symptoms (Cohen's $d = 0.32$ and 0.55 , respectively) and improvements in quality of life (Cohen's $d = 0.22$ and 0.53 , respectively) at one-year follow-up. In contrast, my findings indicated larger effects, with Hedges' $g = 1.02$ for depressive symptoms and 1.14 for quality of life at the 6-month follow-up. Although effect sizes should be interpreted with caution due to differences in study design, follow-up periods, and outcome measures, these findings still allow for a tentative comparison. As noted earlier, this may reflect the impact of adapting a robust, evidence-based intervention such as CPT into a low-intensity format, which could account for the relatively greater clinical benefits observed in my trial.

Regarding treatment gains, over 60% of participants no longer met criteria for a PTSD diagnosis, demonstrated a strong treatment response, and showed good end-state functioning at the 6-month follow-up. Although research on the long-term outcomes of low-intensity PTSD treatments remains limited, my findings align with those of Ivarsson et al. (2014) trial that 61.3% of participants showed reliable change at a one-year follow-up in their GSH trial, suggesting reasonably sustained gains associated with the GSH model.

My study also extended prior low-intensity PTSD treatment research by examining common comorbid difficulties. Results indicated medium to large within-group effect sizes for non-PTSD symptoms in both the stepped care and GSH conditions at 6-month follow-up, suggesting a broader transdiagnostic impact. Although many studies have shown that standard CPT leads to improvements across a range of secondary outcomes (i.e. sleep, emotional regulation, substance use), to date, only a limited number of secondary domains have been examined in GSH studies. For instance, Lewis et al. (2017) found reductions in alcohol use following an 8-module internet-based self-help intervention with modest clinician support, and Belleville et al. (2023) reported significant improvements in sleep quality after a 12-module clinician-guided online CBT program. Nonetheless, both studies primarily involved individuals with low to moderate PTSD severity only.

Unlike other secondary measures, minimal changes were observed in alcohol and substance use outcomes in both the stepped care and standard CPT conditions ($gs = 0.12$ to 0.34), which stand in contrast to emerging evidence suggesting that CPT may be effective in reducing substance use (Kaysen et al., 2014; Mefodeva et al., 2023). However, in this trial, baseline scores were within the low-risk range, indicating limited severity at baseline. The absence of significant change is likely attributable to a floor effect, as participants had minimal scope to demonstrate clinically meaningful reductions in alcohol or substance use given their already low initial levels.

The current study found that both stepped care and GSH conditions were non-inferior to standard CPT in reducing PTSD (measured by CAPS) and depressive symptoms, with treatment gains maintained at the 3-month follow-up. However, likely due to limited power, non-inferiority

could not be conclusively determined for outcomes indexed with the PCL and complex PTSD scores. To my knowledge, only two previous trials have evaluated the non-inferiority of GSH interventions for PTSD. The RAPID trial (Bisson et al., 2022) reported that guided internet-based CBT-TF was non-inferior to face-to-face CBT-TF at 16 weeks. In contrast, findings from Robert's (2023) trial did not establish non-inferiority for PTSD or quality of life outcomes at posttreatment or follow-up assessments. However, non-inferiority was demonstrated only for depression at posttreatment and 6-month follow-up. These mixed findings highlight the need for further research to determine whether the long-term effects of GSH and stepped care approaches can reliably match those of standard PTSD interventions.

Together, these findings show that both stepped care and GSH effectively reduced PTSD and depressive symptoms, improved quality of life, and addressed common comorbidities. Symptom improvements were large and comparable to standard CPT, with sustained gains reflected in PTSD remission and good end-state functioning. Although non-inferiority was not fully established, the GSH format remains clinically valuable for producing robust, sustained improvements across multiple outcomes.

Do Stepped Care and GSH Strike the Right Balance Between Cost and Clinical Utility?

Findings indicated that the stepped care model was less costly than standard CPT overall because of the reduced clinician time, but the existing literature presents mixed evidence regarding the cost-effectiveness of guided interventions for PTSD. For example, the STOP-PTSD trial found that trauma-focused internet-based cognitive therapy (iCT-PTSD) was more cost-effective compared to a stress-management program for PTSD (iStress-PTSD) (Penington et al., 2024). In contrast, while the RAPID trial reported that GSH intervention was less costly (cost-saving) than face-to-face therapy, it did not meet the standard thresholds for cost-effectiveness used by the UK National Health Service (Bisson et al., 2022). Specifically, improvements in quality of life were insufficient to justify the cost savings. These variations may be due to differing standards for

determining cost-effectiveness, as well as differences in the type of intervention and the setting in which it is delivered. Research into the optimal methods for establishing the cost-effectiveness of PTSD interventions remains in its early stages (Matthews et al., 2025).

These discrepancies also make it difficult to assess the cost within stepped care approaches, particularly given that outcomes may vary significantly depending on how individuals are allocated to low- versus high-intensity interventions (von der Warth et al., 2020). In this trial, where participants were randomly assigned to treatment conditions, costs were higher among those who were stepped up to standard CPT. This may partly reflect the small sample size in the stepped-up group, which could have inflated per-person estimates. However, another explanation is that beginning with a low-intensity intervention may be less efficient for individuals with more complex presentations who ultimately require full CPT. Resources may be unnecessarily spent on low-intensity care that does not sufficiently address clinical needs, whereas beginning with high-intensity treatment may have been more cost-effective. Hence, these findings highlight the importance of considering both cost and clinical benefit when evaluating stepped care models.

Compared to standard CPT, participants and clinicians found the GSH format acceptable and feasible. Client feedback highlighted a strong therapeutic alliance within the GSH approach, with many participants feeling supported through regular email check-ins and finding the content informative and relevant. These observations are consistent with previous research on GSH interventions. For instance, the ‘Spring’ program from the RAPID trial (Simon et al., 2023; Bisson et al., 2022) received similar positive feedback, with participants describing it as calming, empowering, essential, structured, and comparable to face-to-face therapy. As in the current study, some participants in the ‘Spring’ trial also expressed concerns about the pace and length of the modules. Requiring participants to engage independently may have necessitated more examples and case studies to support comprehension, lengthening the modules. This common GSH challenge reflects the trade-off between accessibility and clear understanding of core therapeutic components.

From clinicians' perspective, they reported that the GSH was easier to learn and implement, particularly when supported by structured training and ongoing supervision. Most existing trials evaluating CPT have involved experienced clinicians. In the assessment of a web-based GSH for PTSD, Lewis et al. (2017) explicitly highlighted the need for future research to determine whether treatment outcomes generalize to early-career providers. Other studies have reported variability in treatment fidelity and outcomes when interventions are delivered by less experienced clinicians (Ehlers et al., 2013). However, emerging evidence reveals that with sufficient training and supervision, novice clinicians can achieve outcomes comparable to those of experienced clinicians in PTSD treatment (Krüger-Gottschalk et al., 2025; Semmlinger et al., 2025). Consistent with this, my findings demonstrate that participants showed clinically meaningful improvements in PTSD and associated symptoms when treatment was delivered by clinicians in training, supported by strong therapeutic alliance. This is also helpful because GSH being deliverable by early-career clinicians increases the scalability and accessibility of evidence-based trauma treatment, addressing workforce shortages.

A challenge in my study was the variability in clinician feedback time, averaging 47 minutes, influenced by caseload and familiarity with the GSH format. Initially, clinicians spent more time crafting responses, which decreased as they grew accustomed to the intervention. This extra early time likely reflected efforts to make feedback clear, concise, and supportive rather than uncertainty about the content. Similar variability in clinician time has been reported in previous trials. For example, Ivarsson et al. (2014) found weekly correspondence time ranged from 11 to 52 minutes across five clinicians. Other studies reported total clinician time per participant ranging from 104 minutes ($SD = 97.0$) in Spence et al. (2011) to 238.7 minutes ($SD = 143.2$) in Klein et al. (2009). These programs are mostly focused on basic cognitive strategies like psychoeducation, breathing retraining, and cognitive restructuring. Spence et al. (2011) also used automated emails alongside personalized messages, which likely reduced clinician time. In contrast, the current study adapted a high-intensity, manualized treatment (CPT) into a GSH format. A comparable example is

the CPT-Text trial, which adapted CPT into a low-intensity format and measured feasibility by word count exchanged: clinicians wrote an average of 9,036 words ($SD = 8297$), and clients wrote 7,400 words ($SD = 7877$). Clinician writing was significantly less than in the treatment-as-usual group, indicating reduced clinician time on text communication. These findings suggest that structured, higher-intensity treatments like CPT can be effectively delivered in a more time-efficient GSH format, with challenges around high clinician time likely decreasing as familiarity and practice increase.

On the whole, findings from this trial are promising in demonstrating that GSH can serve as a cost-effective, acceptable, and feasible approach for delivering PTSD treatment, both as a stand-alone intervention and when integrated within a stepped care framework, thereby achieving a favorable balance between cost and clinical utility.

What Predicts Treatment Engagement and Dropout in GSH?

The sample in the current study reflected a population often seen in a routine clinical setting in Australia and included characteristics that are often excluded from low-intensity interventions, such as high symptom severity, exposure to more than one traumatic event, and severe rates of comorbid conditions such as mood disorders. Given this diversity, I was particularly interested in whether any client or treatment-related characteristics predicted treatment outcomes and dropout, as both remain critical issues in trauma-focused interventions (Youn et al., 2019).

As a reminder, of the baseline variables examined, only age, gender and clinician time significantly moderated treatment outcomes across group and time. Despite evidence indicating that PTSD symptom presentation may differ in older participants (Cook & Simiola, 2017; Thorpe et al., 2011), my study finding aligns with emerging evidence suggesting that older participants may still achieve outcomes comparable to those of other age groups in PTSD interventions (Gielkens et al., 2021; Pless Kaiser et al., 2019). Greater reductions in PTSD symptoms were also observed among female participants, aligning with prior research (Wade et al., 2016); however, this interaction was

predominantly attributable to differences observed within the stepped-up group when compared with male participants. Moreover, male participants represented only 30% of the overall sample, and when further divided by treatment condition, the number was reduced even further. This unequal distribution may have influenced the observed interaction. Clinician contact time also emerged as a significant moderator, with increased contact linked to greater symptom reduction in the stepped-up group, reflecting accurate clinical judgment in identifying those needing intensive support.

Given that participants with varying PTSD severity were eligible for the GSH condition, a less common approach in low-intensity trials, I explored whether baseline symptom levels predicted outcomes. Results showed positive outcomes, including substantial improvements even for those with high symptom severity, which were maintained up-to 6-month follow-up. This is a noteworthy finding because most of the low-intensity interventions have been tested only with mild to moderate level of severity (Lewis et al., 2017; RAPID trial, Bisson et al., 2022). Although Ivarsson's (2014) study included participants with a range of severity and reported improvements in PTSD and depression, it excluded individuals with symptoms related to childhood abuse, limiting its generalizability to more complex clinical presentations as observed in my study.

The quality of the therapeutic relationship is another key variable that may shape treatment engagement (Baier et al., 2020; Howard et al., 2022). Participants in this trial developed a strong therapeutic alliance across both treatment conditions. These findings directly contribute to ongoing discussions about the role of therapeutic alliance in digitally delivered interventions. More recent studies have found comparable levels of alliance in online formats and relationships with outcomes as seen with standard therapeutic delivery. For example, Berger (2017) reported that strong alliances can form even in asynchronous interventions relying on email or text. Similarly, Kaiser et al. (2021), in a meta-analysis of clinician-assisted internet-based treatments, found a significant association between alliance and treatment outcome. They also revealed no significant differences in the strength of the alliance between written (e.g., email, chat) and oral (e.g., videoconferencing,

telephone) communication modalities. This was also observed in my trial where the alliance was not significantly different between stepped care including the GSH format and CPT delivered via telehealth.

Participants who stepped up from GSH condition did not differ significantly from those who completed the program on demographic characteristics or most baseline measures. Those who were stepped-up were done so after attending an average of only three sessions, underscoring the importance of early engagement in determining treatment outcomes. It is likely that without the opportunity to step up to a high-intensity intervention, these individuals may have disengaged entirely, emphasizing the value of a stepped care model in retaining participants and supporting flexible treatment pathways. Higher levels of emotional dysregulation predicted whether participants transitioned from GSH to standard CPT. This finding supports existing research indicating that individuals with greater difficulties in emotion regulation often require more intensive therapeutic support as it might hinder the ability to apply self-guided techniques to engage effectively in trauma-focused treatment (McLean & Foa, 2017; Van Toorenburg et al., 2020).

A common concern with low-intensity interventions is the potential for higher dropout due to their self-paced nature (Duhne et al., 2022). Interestingly, unlike findings from a similar study (Roberts, 2024), the stepped care condition in this trial did not show higher dropout rates and the rate was comparable to standard CPT (36%) – a typical rate observed in trauma-focused treatment (Siddaway et al., 2021). In Roberts' (2023) RCT, dropout in the TWU condition was considerably higher (72%) compared to the 27% attrition observed in the GSH stage in the present study, although in both trials most dropouts occurred within the first four sessions of GSH. Several factors may explain this difference. Given the established efficacy of CPT in the PTSD literature, participants in the current trial may have had greater confidence in the adapted GSH format, reflected in session 1 treatment credibility ratings for GSH ($M = 21$) and standard CPT ($M = 22$), potentially increasing retention. In addition, Roberts' trial was conducted during the COVID pandemic, when many services were transitioning from in-person to online delivery. Participants at

that time may have been less familiar or comfortable with digital treatment formats (Appleton et al., 2021; Galvin et al., 2023), whereas such delivery methods have since become more common and widely accepted, possibly improving engagement in the current trial.

Furthermore, participants who disclosed withdrawing from the trial declined the offer to step up to standard CPT, suggesting that dropout may be driven more by individual factors such as readiness to engage or willingness to address trauma than by intervention intensity. This implies that similar dropouts might have occurred even with standard CPT. Some participants who disengaged without informing clinicians might have done so due to dissatisfaction with the GSH format or discouragement from perceived lack of progress. Additionally, four participants dropped out before starting the program, a pattern commonly seen in trauma-focused treatments and often linked to willingness to engage, and general avoidance as noted (Varker et al., 2021). However, 29% of dropouts still achieved meaningful symptom reduction, supporting the idea that premature treatment completion does not necessarily lead to negative outcomes (Szafranski et al., 2017).

In exploring factors linked to treatment non-response, my findings demonstrated that participants who dropped out of treatment were more likely to report higher levels of complex PTSD symptoms, a greater prevalence of mood disorders, and poorer quality of life at baseline compared to those who completed treatment. The role of complex PTSD in predicting dropouts remains unclear. Some studies, particularly in prolonged exposure (PE) and eye movement desensitization and reprocessing (EMDR) trials, have found no association (Hoeboer et al., 2021; van Vliet et al., 2024), but this may partly reflect how complex PTSD is measured. In my study, a modified instrument was used by combining PCL scores with additional items from International Trauma Questionnaire (ITQ), which may not have fully captured the diagnostic features of complex PTSD, limiting the reliability of the findings related to dropout. The evidence linking depression to dropout is also mixed. Although some studies have identified it as a predictor (Barawi et al., 2020), others have found no association (Kline et al., 2021; Mitchell et al., 2022). Quality of life, meanwhile, is rarely examined as a moderator of treatment engagement and is more commonly

reported as an outcome variable. However, some evidence from a veteran sample suggests that individuals with higher quality of life, particularly in terms of good social support, happiness, life satisfaction, and a sense of purpose, may be more likely to engage effectively in treatment (Vogt et al., 2023). The studies discussed above are drawn primarily from high-intensity treatments, with limited research examining predictors within low-intensity interventions. Thus, the current findings provide an important contribution by offering early evidence on moderators of treatment engagement and dropout in the GSH intervention.

Client treatment preference has also been examined as a potential predictor of therapy engagement and outcomes. In this trial, participants were randomized to conditions, and when asked about their preference for data collection, most did not report a strong preference for a particular format. Among those who did express a preference, receiving the preferred intervention did not appear to influence treatment completion. This may appear to contrast with findings from other trials, where alignment with treatment preference has been associated with lower dropout rates, including studies involving psychosocial mental health interventions (Windle et al., 2020) and treatments for depression, anxiety and eating disorder (Johnson et al., 2025). Alternatively, my findings may reflect that preference alone may not be sufficient to sustain engagement without adequate support and other facilitating factors such as readiness for change, perceived credibility, or early symptom improvement.

Overall, the question of what predicts treatment engagement and dropout remains the subject of ongoing debate, with mixed findings in the broader PTSD literature and limited evidence in the low-intensity treatment field. Though preliminary, the present findings offer valuable insights into how certain demographic and clinical characteristics, along with the type of intervention, may distinguish those who complete treatment from those who do not, thereby contributing to the evidence base needed to inform tailored intervention to improve retention in trauma-focused treatment.

Limitations

The study sample was predominantly female and White. Although this reflects the demographic composition of national PTSD treatment-seeking populations (Australian Bureau of Statistics [ABS], 2024), it limits somewhat the generalizability of findings to other gender and ethnically diverse participants to assess the utility for broader population. Although the study achieved the planned sample size required to examine the main effects of the intervention over time, subgroup analyses were limited by smaller sample sizes, potentially resulting in insufficient statistical power to detect small meaningful interactions. This limitation was particularly evident at the 3-month and 6-month follow-ups, where overall participant numbers were low, reducing the robustness of certain comparisons across the three groups.

A further limitation concerns the composition of participants who completed follow-up assessments, as these were primarily individuals who completed the full course of treatment. This may have introduced bias, as these results do not necessarily capture the experiences or progress of individuals who discontinued treatment prematurely. Although linear mixed model analyses were used to account for missing data and provide unbiased estimations, there remains a risk that the findings are skewed in favour of the intervention due to the higher follow-up rates among those who completed therapy. This challenge is well-documented in treatment studies and reflects broader challenge in engaging and retaining participants in clinical trials (Juul et al., 2024). In terms of the GSH delivery, all modules were provided as secured PDFs to protect the content; however, some participants found it difficult to edit the documents directly. This was particularly challenging for individuals with limited digital literacy, who reported difficulty completing materials online. To accommodate this, participants were given the option to complete worksheets by hand and submit photos to the clinician.

Furthermore, the study clinicians consisted mainly of provisional psychologists, many of whom were simultaneously learning standard CPT and the GSH format within a limited timeframe. As a result, clinicians had less opportunity to develop full familiarity with standard CPT before

transitioning to the adapted GSH model. It is possible that outcomes may have differed had the intervention been delivered by clinicians with prior experience in CPT. However, it could also be argued that novice clinicians, not yet trained to delivering CPT in a specific way, may have demonstrated greater flexibility and adaptability when learning the GSH format. This study also incorporated weekly supervision with accredited CPT supervisor to support treatment fidelity and address clinician concerns throughout the intervention period.

Last, some methodological limitations arose due to the time and resource constraints. One such limitation was the dual role of the study author, who also acted as a treating clinician and was not fully blinded to participants' progress in either condition. To minimize the potential bias, all primary outcome assessments (i.e., CAPS) were conducted by independent assessors blinded to clients' therapy status, and weekly session measures were self-reported by participants online just prior to the session (not clinician-administered). This approach helped ensure that the evaluation of clinical outcomes remained reasonably objective. An additional weakness of the study was that it did not incorporate formal treatment fidelity checks or inter-rater reliability ratings of diagnostic assessments. However, previous research has shown that when interviewers are trained using structured protocols and gain experience by coding unrelated assessment tapes prior to conducting clinical interviews, as was done in this trial, high levels of diagnostic accuracy and reliability can still be achieved. This training method has been associated with diagnostic agreement rates of 92% – 100% for PTSD and 87% – 100% for comorbid disorders (Angelakis, 2014; Nixon & Bralo, 2019). Although clinicians received regular supervision and had the opportunity to review session recordings with their supervisor, no structured fidelity monitoring was implemented. In addition, formal qualitative analysis was not conducted to capture participants' perspectives on acceptability or clinicians' perspectives on feasibility. Consequently, this limits the generalizability of the findings and introduces potential bias, restricting the ability to draw systematic conclusions regarding the acceptability and feasibility of the intervention.

Strengths

Despite these limitations, the study also demonstrated several key strengths. Foremost, although CPT has been extensively examined within the PTSD literature, this represents the first empirical evaluation of the GSH version. CPT self-help manual was released in 2023, however, no formal assessment of its clinical efficacy had been undertaken. This study advanced both clinical application and methodological rigor by testing a flexible, low-intensity CPT format within a stepped care model.

As previously noted, to my knowledge, only a few studies have employed randomization irrespective of PTSD symptom severity (e.g., Ehler et al., 2003; Ehlers et al., 2023b; Ivarsson et al., 2014). This likely reflects clinical caution in early research settings and/or assumptions, often based on non-PTSD clinical research, that individuals with higher symptom severity require more intensive treatment modalities (NICE, 2018). However, there is now growing consensus that some individuals with high symptom severity can still benefit from low-intensity interventions (Held et al., 2021). Previous RCTs of low-intensity PTSD interventions have typically focused on individuals with mild to moderate symptom severity (Lewis et al, 2017) or those exposed to a single traumatic event (Simon et al., 2023). In contrast, this study included participants regardless of symptom severity, with approximately half likely to have met criteria for complex PTSD based on the modified ITQ-CPTSD measure. By broadening the study inclusion in this way, the trial directly challenged the clinical assumptions by demonstrating the potential viability of GSH for individuals across the severity spectrum. The findings demonstrated promising outcomes even within this clinically complex population, positioning CPT-GSH as a promising initial step in a stepped care model and laying the groundwork for future clinical investigation.

Additional strengths were that the study protocol was preregistered, and the study adhered to the CONSORT guidelines for the reporting of RCTs. The study incorporated both self-report measures and clinician-administered assessments to capture PTSD symptom severity, thereby enhancing the robustness and objectivity of outcome evaluation. Furthermore, the assessment

battery captured not only PTSD symptom reduction but also the broader functional impact of the intervention. The study incorporated 3-month and 6-month follow-ups to evaluate the maintenance of treatment gains beyond the immediate posttreatment period. This extended follow-up represented a considerable methodological strength and was a substantial undertaking, particularly given the constraints of a PhD study. As mentioned earlier, all follow-up assessments were conducted by independent assessors who were unaware to both the treating clinician and the participant's assigned intervention, ensuring unbiased evaluation of outcomes.

This study also addressed several logistical barriers that frequently impede access to PTSD treatment. The use of telehealth delivery for CPT enabled participation from individuals across Australia, including those residing in remote areas with limited access to clinical services. The GSH format further enhanced accessibility by offering participants the flexibility to engage with therapeutic materials at their own pace, thereby accommodating work schedules and other personal commitments. Moreover, the inclusion of brief clinician support facilitated sustained engagement with the intervention while preserving a therapeutic alliance, without requiring the intensity of a conventional therapy. Both the standard CPT and the GSH formats incorporated flexibility in session length (either fast-tracked or extended), allowing adjustments based on individual client progress.

Clinical Implications

Addressing PTSD at a population level requires not just effective treatments like CPT, but also delivery models that are accessible, acceptable, and scalable across settings (Hitchcock & Fitzpatrick, 2025). Even though CPT has shown robust evidence in symptom improvement (Resick et al., 2024), its uptake is limited by structural and logistical barriers (Ackland et al., 2023; Thomas et al., 2023). Stepped care and GSH have emerged as promising approaches for overcoming these barriers and improving timely access to care. This trial is the first to formally evaluate the integration of a GSH adaptation of CPT within a stepped care framework, offering preliminary

evidence for a low-intensity model that can be feasibly implemented while maintaining clinical effectiveness. Given the increasing attention for more research on stepped care approaches for PTSD (Roberts & Nixon, 2024), these findings offer important evidence supporting this model by demonstrating that reserving high-intensity treatment for those who need it most can enhance the efficiency of clinician time and resource use and contribute to reduced overall service delivery costs.

The finding that the GSH approach could be delivered effectively by early-career professionals also has important clinical implications. It suggests that trauma-focused interventions may not require delivery exclusively by highly experienced clinicians. With appropriate training and supervision, early-career practitioners can facilitate strong therapeutic outcomes (Brown et al., 2023; Finch et al., 2020). This has potential to expand workforce capacity and increase access to care, particularly in settings with limited availability of senior clinicians. Findings from this study also indicated that participants across all severity levels, including those likely meeting criteria for complex PTSD, responded favorably to the GSH format. This challenges the common assumption that low-intensity interventions are more suitable for individuals with only low to moderate level of symptom presentation (NICE, 2018). It establishes the importance of *considering* diagnostic severity in treatment allocation decisions without *automatically* using it as a strict exclusion criterion.

This study lends further support to the flexible-length delivery model of CPT outlined by Galovski et al. (2012), demonstrating that adaptability in session length can be effectively applied within GSH formats. Within this framework, some of my study participants progressed rapidly and were able to complete the intervention in less than 12 sessions, whereas others required a longer course beyond the typical 12-session structure to achieve clinically significant improvement. Another important feature in this trial was the online delivery of treatment, which expanded access to participants across Australia. This adds to the growing evidence supporting telehealth delivery of PTSD interventions (Bruce et al., 2025; Morland et al., 2020), demonstrating that therapeutic

alliance can be maintained without in-person contact. This has important implications for delivering trauma-focused care in resource-limited or remote settings where in-person services are less accessible.

Furthermore, I conducted an exploratory analysis of factors associated with treatment outcomes. Existing research has produced mixed findings on what predicts treatment response, likely because multiple interacting factors contribute to treatment outcomes in complex and varied ways (Murad et al., 2024). Nonetheless, this trial identified a few early indicators such as age, gender, clinician contact time, and emotional dysregulation, that may influence engagement and outcomes in a GSH context. These findings, while preliminary, offer potential to identify early risk factors for dropout and guide timely strategies to support retention and improve treatment responsiveness.

Another common concern when delivering low-intensity interventions for trauma populations with severe symptom presentation is how to manage risk, particularly given minimal clinician contact and the possibility that participants may experience distress while working through materials independently. In this trial, no adverse events were reported in the GSH condition. While a few participants expressed passive suicidal ideation (a common presentation among individuals with PTSD) (Whiteman et al, 2021), no new active suicidal intent or plans were noted. This is not to say that the approach adopted in the study is completely devoid of risk but does indicate that the presence of client risk alone should not *automatically* preclude the use of low-intensity formats. Rather, it underscores the importance of having clear risk protocols and clinical oversight in place when implementing such models.

Directions for Future Research

As a contribution to a growing field, this study also identified several gaps that warrant further investigation. Currently, there are no established criteria for determining when to step up to higher-intensity care. Although this study used the reliable change index during treatment to guide

clinical decisions, further empirical research is required to identify practical methods, such as using measures like the PCL to establish thresholds of symptom change predictive of poor outcomes. Recent machine learning approach underscores the complexity of this task, demonstrating that predicting early treatment response in CPT is feasible by approximately session 6. However, identifying individuals unlikely to respond typically remains challenging until later stage of treatment, around session 10 (Nixon et al., 2021). These findings highlight the need for additional research to better understand which individuals may or may not respond adequately to CPT.

Relapse prevention is an important consideration at the end of any type of treatment, and strategies to maintain gains in the long term become critical when evaluating the effectiveness of an intervention. Future research could explore structured booster sessions or modules to support long-term outcomes and prevent relapse, especially in low-intensity formats where ongoing support is limited. Additionally, effective strategies for preventing early dropout from trauma-focused interventions remain underexplored. While these areas are beginning to receive research attention (Crespo et al., 2025; Simmons et al., 2021; Wamser-Nanney et al., 2023), more systematic evidence is needed to guide clinical decision-making and optimize outcomes in future trials. Moving beyond identification of variables associated with attenuated treatment progress or contribute to early dropout, studies need to focus on how to address these factors effectively and test strategies for integrating them into clinical practice. Some studies have introduced preparatory components, such as motivational interviewing (Blain, 2013; Murphy et al., 2009) or phased treatment approaches (i.e. including emotional regulation skills) (Cloitre et al., 2002; Ter Heide et al., 2011), to enhance engagement. However, there is no clear consensus on whether such pretreatment strategies are necessary or preferable to initiating evidence-based trauma-focused interventions directly (Kehle-Forbes & Kimerling, 2017; Lewis et al., 2020). Thus, there is a clear need to further investigate predictors of dropout and identify strategies to improve retention in trauma-focused treatment.

There is also considerable variation across studies in how treatment completion and dropout are defined. Some studies have adopted minimum-dose criteria to define treatment completion,

classifying participants as completers if they finish a predetermined number of core modules. For example, Acosta et al. (2017) defined completion as finishing at least 12 core modules out of 24, while Ivarsson et al. (2014) used a minimum dose as of 4 out of 8 modules. In contrast, my trial used a stricter definition, requiring participants to complete the full protocol to be considered treatment completers. While this approach strengthens the interpretation of adherence and treatment fidelity, it might be underestimating the benefits received by the dropouts (Szafranski et al., 2017). Future studies should examine how differing definitions of treatment completers or dropouts impact conclusions about treatment effectiveness in low-intensity interventions. Dropout and retention could be explored using mixed-methods designs, combining quantitative monitoring of engagement patterns with qualitative interviews to understand reasons for disengagement.

Future research should systematically evaluate the feasibility and cost of implementing the GSH intervention. This includes assessing clinician burden, workflow integration, perceived usefulness, and practical challenges. Using structured approaches such as standardized checklists, time logs, and qualitative interviews could also be beneficial. In addition, a comprehensive cost analysis that accounts for clinician time, training and supervision, and indirect costs (e.g., administrative support, technological infrastructure) would provide a clearer understanding of the full resources required to deliver the intervention in routine care.

CPT has been tested across a range of cultural settings and has consistently demonstrated effectiveness in reducing PTSD symptoms. Although the current trial was delivered in English, the structural adaptations of CPT covered in the systematic review and meta-analysis in this thesis and the intervention approach in the present thesis suggest strong potential for adapting and delivering the intervention in culturally and linguistically diverse populations. Cultural modified interventions could be developed and tested through co-design methods and pilot feasibility trials in diverse populations for GSH intervention. The Australian Mental Health Commission reports that individuals living in rural and remote areas experience self-harm and suicide rates 1.5 times higher than those in metropolitan areas. They are also more likely to engage in behaviors linked to poorer

health outcomes (National Mental Health Commission, 2018). At the same time, Australian workforce data reveal a major disparity in access to care, with around 90 full-time equivalent (FTE) psychologists per 100,000 people in major cities, compared to only 15 to 55 per 100,000 in rural regions (Kavanagh et al., 2023). This gap highlights a substantial mismatch between mental health service demand and workforce capacity in rural/remote areas. Digital self-help interventions, therefore, can overcome such geographical, logistical, and systemic barriers to care by reaching individuals in rural, remote, or underserved areas. Hence, a key future direction involves testing and adapting this model for diverse community settings to help reduce disparities in access to evidence-based mental health care.

Conclusion: Is Less More?

As stepped care and GSH continue to gain momentum in PTSD treatment research and practice, my program of research offers important contributions by addressing both clinical and methodological gaps in the field. It provides preliminary but meaningful evidence supporting the utility of low-intensity interventions in improving PTSD symptoms, associated comorbidities, and overall quality of life. The GSH format, when built on a strong evidence base, appears to be a viable, scalable, and cost-effective alternative, especially for individuals who may not otherwise access timely support. Clinicians viewed it as easy to implement, and clients found it acceptable and beneficial. For trauma-affected populations facing systemic barriers or long wait times, GSH may offer an efficient first step of health care. This study also highlights areas for further investigation that could refine the use of CPT across varying intensity levels and support its integration into routine care. GSH may be less intensive, but for the right person at the right time, it could be more!

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SUPPLEMENTARY ANALYSES

Table S1

Means and Standard Deviations for PTSD Severity (Self-reported and Clinician-administered Measures) at Baseline, Posttreatment, and Final Follow-up for RCTs (Chapter 2)

Study	Time	PTSD severity (Self-reported Measure)		PTSD Severity (Clinician-administered measure)	
		Structurally Adapted CPT <i>M (SD)</i>	Control <i>M (SD)</i>	Structurally Adapted CPT <i>M (SD)</i>	Control <i>M (SD)</i>
Bass et al., 2013	Base	1.9 (0.6)	2.2 (0.5)	-	-
	Post	0.8 (0.6)	1.7 (0.8)	-	-
	6-mo	0.7 (0.6)	1.5 (0.7)	-	-
Bohus et al., 2020	Base	49.5 (11.0)	49.3 (11.5)	40.9(8.9)	39.9 (10.8)
	Post	45.6 (13.6)	41.3 (13.5)	38.0 (9.9)	36.9 (10.9)
	15-mo	33.7 (19.6)	23.8 (17.9)	26.4 (16.0)	20.6 (15.8)
Galovski et al., 2012	Base	-	-	74.4 (16.9)	77.00 (18.4)
	Post	-	-	24.2 (25.9)	60.6 (24.1)
Kearney et al., 2021	Base	-	-	35.5 (11.5)	35.5 (12.1)
	Post	-	-	29.5 (13.1)	29.4 (12.6)
	6-mo	-	-	28.0 (16.0)	25.9 (15.8)
Kelly et al., 2021	Base	50.37 (12.1)	50.80 (11.7)	33.69 (7.6)	35.84 (8.1)
	Post	40.1 (18.4)	39.9 (16.2)	25 (13.7)	20.4 (10.0)
	3-mo	34.1 (17.8)	38.5 (17.9)	17.6 (12.7)	21.2 (11.2)
Liu et al., 2020	Base	59.1 (13.7)	58.5 (12.6)	71.3 (17.4)	72.5 (18.4)
	Post	51.3 (16.3)	49.3 (16.7)	62.1 (27.5)	53.4 (26.2)
	6-mo	48.3 (17)	51.5 (16.7)	56.6 (28.5)	57.3 (26.9)
Maieritsch et al., 2016	Base	60.7 (10.5)	60.1 (10.2)	81.5 (15.7)	78.6 (15.1)
	Post	47.1 (16.2)	43.2 (13.3)	51.2 (28.3)	50.7 (22.1)

Study	Time	PTSD severity (Self-reported Measure)		PTSD Severity (Clinician-administered measure)	
		Structurally Adapted CPT	Control	Structurally Adapted CPT	Control
		<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Maxwell et al., 2016	Base	54.13 (24.9)	63.50 (18.4)	-	-
	Post	38.1 (15.1)	49 (26.6)	-	-
	3-mo	25.1 (23.3)	33.5 (25.4)	-	-
Morland et al., 2014	Base	-	-	72.0 (14.6)	68.9 (13.0)
	Post	-	-	55.6 (18.8)	58.7 (21)
	6-mo	-	-	56.2 (18)	57.7 (19.8)
Morland et al., 2015	Base	-	-	67.2 (15.3)	67.1 (16.8)
	Post	-	-	50.5 (41.9)	53.6 (38.5)
	6-mo	-	-	52.3 (50.4)	46.5 (44.5)
Peterson et al., 2022 ^b	Base	49.7 (14.5)	49.9 (12.8)	37.3 (9.9)	36.4 (8.6)
	Post	22.9 (19.5)	26.2 (20.4)	23.4 (16.5)	22.4 (15.8)
	6-mo	24.3 (18.7)	23.9 (19.8)	19.8 (12.1)	19.2 (9.5)
Resick et al., 2015	Base	59.3 (10.1)	58.5 (10.6)	27.7 (7.4)	27.1 (7.0)
	Post	48.4 (15.9)	42.1 (15.9)	22.8 (9.7)	23.6 (8.7)
	12-mo	45.7 (15.8)	49.4 (16.9)	19.1 (8.6)	19.2 (9.5)
Resick et al., 2017	Base	55.2 (10.2)	55.0 (10.8)	24.4 (6.1)	24.2 (6.3)
	Post	48.2 (14.6)	42.1 (15.9)	20 (8.8)	16.8 (9.8)
	6-mo	50.2 (15.9)	44.8 (17.7)	20.4 (8.4)	17.1 (10.2)
Schnurr et al., 2022	Base	50.5 (13.1)	50.7 (13.6)	40.3 (9.3)	39.9 (8.7)
	Post	27.2 (18.6)	24.3 (13.0)	27.2 (18.6)	24.3 (13.0)
Taylor et al., 2023 ^a	Base	47.8 (13.2)	53.35 (12.7)	35.6 (5.9)	35.8 (7.9)
	Post	39.1 (15.7)	40.5 (23.4)	30.7 (9.2)	31.5 (14.0)
	6-mo	36.6 (21.4)	36.7 (24.8)	31.5 (11.1)	27.6 (15.9)

^a Average of the Mean and SD of two control groups have been used.

Table S2

Means and Standard Deviations for Depression Severity (Self-reported and Clinician-administered Measures) at Baseline, Posttreatment, and Final Follow-up for RCTs (Chapter 2)

Study	Time	Depression Severity	
		Structurally Adapted CPT <i>M (SD)</i>	Control <i>M (SD)</i>
Bohus et al., 2020	Base	34.1 (10.8)	33.2 (11.2)
	Post	32.9 (11.3)	30.2 (11.4)
	15-mo	26.9 (15.1)	21.6 (14.0)
Kearney et al., 2021 ^a	Base	60.5 (7.6)	61.3 (8.2)
	Post	61.3 (8.1)	58.5 (7.8)
	6-mo	61.2 (9.8)	58.9 (9.7)
Liu et al., 2020	Base	15.6 (6.5)	16.4 (5.8)
	Post	12.9 (7.2)	12.7 (6.7)
	6-mo	12.5 (6.8)	13.3 (6.9)
Maieritsch et al., 2016	Base	30.3 (14.2)	28.2 (11.0)
	Post	19.2 (13.2)	15.5 (10.6)
Maxwell et al., 2016	Base	23.63 (16.3)	26.13 (11.3)
	Post	14.8 (10.99)	20.3 (16.0)
	3-mo	11.4 (11.1)	18.1 (13.3)
Peterson et al., 2022 ^b	Base	33.5 (11.8)	34.0 (10.6)
	Post	13.4 (11.4)	15.2 (12.7)
	6-mo	15.6 (8.8)	15.1 (13.6)
Resick et al., 2015	Base	28.9 (9.8)	28.3 (12.0)
	Post	21.4 (11.9)	24.4 (14.1)
	12-mo	25 (12.9)	26.3 (14.3)
Resick et al., 2017	Base	29.5 (11.8)	29.2 (10.8)
	Post	23.3 (14.2)	20.7 (15.6)
	6-mo	24.1 (14.6)	20.6 (14.2)
Schnurr et al., 2022	Base	30 (10.4)	30.3 (14.7)
	Post	22.7 (15.3)	22 (16.3)

^a Baseline PROMIS depression T-score was reported.

^b Average of the Mean and SD of two control groups have been used.

Table S3*Baseline Demographic Characteristics (Completer Sample) (Chapter 4)*

Characteristics	Total (<i>n</i> = 59) <i>M (SD) or n (%)</i>	Stepped Care (<i>n</i> = 39) <i>M (SD) or n (%)</i>	Standard CPT (<i>n</i> = 20) <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Age (years)	38.20 (13.54)	40.46 (14.16)	33.45 (11.09)	$t(57) = 2.14$	.038	0.54 [-0.01, 1.08]
Gender						
Female	45 (76.3%)	30 (76.9%)	15 (75%)	$\chi^2(3) = 1.36$	.716	0.15
Male	12 (20.3%)	7 (17.9%)	5 (25%)			
Non-binary	1 (1.7%)	1 (2.6%)	0 (0.0%)			
Other	1 (1.7%)	1 (2.6%)	0 (0.0%)			
Ethnicity						
White	31 (52.5%)	19 (48.7%)	12 (60.0%)	$\chi^2(8) = 15.39$	.052	0.51
Indigenous Australian	2 (3.4%)	1 (2.6%)	1 (5.0%)			
European	12 (20.3%)	11 (28.2%)	1 (5.0%)			
Asian	3 (5.1%)	0 (0.0%)	3 (15.0%)			
Middle Eastern	1 (1.7%)	1 (2.6%)	0 (0.0%)			
New Zealander Maori	3 (5.1%)	3 (7.7%)	0 (0.0%)			
Pacific Islander	1 (1.7%)	0 (0.0%)	1 (5.0%)			
Multiethnic	2 (3.4%)	2 (5.1%)	0 (0.0%)			
Other	4 (6.8%)	2 (5.1%)	2 (10.0%)			
Education (years)	15.75 (2.86)	15.69 (2.61)	15.85 (3.36)	$t(57) = 2.32$	.024	0.65 [0.09, 1.22]
Currently Employed	49 (83.1%)	33 (84.62)	16 (80%)	$\chi^2(1) = .20$	.655	-0.06

Characteristics	Total (<i>n</i> = 59) <i>M (SD) or n (%)</i>	Stepped Care (<i>n</i> = 39) <i>M (SD) or n (%)</i>	Standard CPT (<i>n</i> = 20) <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Income						
< \$20,000	14 (23.7%)	8 (20.5%)	6 (30.0%)	$\chi^2(5) = 6.44$	.265	0.33
\$20,000 – 50,000	9 (15.3%)	4 (10.3%)	5 (25.0%)			
\$50,001– 80,000	11 (18.6%)	9 (23.1%)	2 (10.0%)			
\$80,001 – 110,000	10 (16.9%)	9 (23.1%)	1 (5.0%)			
\$110,001 – 140,000	8 (13.6%)	5 (12.8%)	3 (15.0%)			
> \$140,0000	7 (11.9%)	4 (10.3%)	3 (15.0%)			
Marital Status						
Single	15 (25.4%)	10 (25.6%)	5 (25.0%)	$\chi^2(5) = 7.74$	.171	0.36
In a relationship but not living together	7 (11.9%)	3 (7.7%)	4 (20.0%)			
In a relationship and living together	10 (16.9%)	5 (12.8%)	5 (25.0%)			
Married	16 (27.1%)	11 (28.2%)	5 (25.0%)			
Separated/ divorced	9 (15.3%)	9 (23.1%)	0 (0.0%)			
Widow/ widower	2 (3.4%)	1 (2.6%)	1 (5.0%)			
Full PTSD Diagnosis	57 (96.6%)	39 (100%)	18 (90%)	$\chi^2(1) = 4.04$	.045	-0.262
Subthreshold PTSD Diagnosis	2 (3.4%)	0 (0%)	2 (10%)	$\chi^2(1) = 4.04$	.045	-0.262
PTSD Duration (Months)	188.59 (192.55)	192.68 (187.29)	179.94 (208.29)	$t(54) = 0.23$	.820	0.07 [-0.49, 0.62]

Table S4*Trauma History, and Symptom Profiles (Completer Sample) (Chapter 4)*

Characteristics	Total (<i>n</i> = 59) <i>M</i> (<i>SD</i>) or <i>n</i> (%)	Stepped Care (<i>n</i> = 39) <i>M</i> (<i>SD</i>) or <i>n</i> (%)	Standard CPT (<i>n</i> = 20) <i>M</i> (<i>SD</i>) or <i>n</i> (%)	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Index Trauma						
Child sexual abuse	13 (22.0%)	8 (20.5%)	5 (25%)	$\chi^2(11) = 16.42$	.126	0.53
Child physical abuse	8 (13.6%)	5 (12.8%)	3 (15%)			
Adult sexual assault	8 (13.6%)	8 (20.5%)	0 (0%)			
Adult physical assault	2 (3.4%)	1 (2.6%)	1 (5%)			
Motor vehicle accident	2 (3.4%)	2 (5.1%)	0 (0%)			
Witnessed trauma	3 (5.1%)	2 (5.1%)	1 (5%)			
Threatened death	3 (5.1%)	1 (2.6%)	2 (10%)			
Intimate partner violence	9 (15.3%)	7 (17.9%)	2 (10%)			
Life-threatening illness/ injury	5 (8.5%)	3 (7.7%)	2 (10%)			
War	1 (1.7%)	1 (2.6%)	0 (0%)			
Professional duties	1 (1.7%)	1 (2.6%)	0 (0 %)			
Learned about a traumatic event	4 (6.8%)	0 (0%)	4 (20%)			
Adverse Childhood Experiences (ACE)^a	4.76 (2.62)	4.74 (2.55)	4.8 (2.8)	$t(57) = -0.08$	.938	-0.02 [-0.55, 0.51]
Current Comorbid Diagnoses						
Anxiety disorder	37 (62.7%)	24 (61.5%)	13 (33.3%)	$\chi^2(1) = 0.07$	.795	0.03
Mood disorder	24 (40.7%)	17 (43.6%)	7 (17.9%)	$\chi^2(1) = 0.40$	.525	-0.08
Eating disorder	6 (10.7%)	4 (10.3%)	2 (5.1%)	$\chi^2(1) = 0.00$	.974	-0.00
Substance use disorder	2 (3.6%)	1 (2.6%)	1 (2.6%)	$\chi^2(1) = 0.24$	.625	0.07
Current suicide risk	5 (8.5%)	3 (7.7%)	2 (5.1%)	$\chi^2(1) = 0.09$	.763	0.04

Note. CPT = Cognitive Processing Therapy.

^a The ACE score was calculated as the total number of adverse childhood experience types reported by each participant (ranges from 0-10).

Table S5*Baseline Scores on Primary and Secondary Measures (Completer Sample) (Chapter 4)*

Measures	Total (n = 59) <i>M (SD) or n (%)</i>	Stepped Care (n = 39) <i>M (SD) or n (%)</i>	Standard CPT (n = 20) <i>M (SD) or n (%)</i>	Test	<i>p</i>	<i>g</i> [95% CI] or ϕ
Primary Measures						
CAPS-5	37.63 (7.75)	38.38 (7.73)	36.15 (7.77)	$t(57) = 1.05$	.299	0.28 [-0.25, 0.82]
PCL-5	46.17 (10.64)	45.97 (11.37)	46.55 (9.33)	$t(57) = -0.19$	.846	-0.05 [-0.58, 0.48]
ITQ-CPTSD	28.41 (7.36)	28.51 (7.43)	28.20 (7.41)	$t(57) = 0.15$	.879	0.04 [-0.49, 0.57]
DASS-D	18.28 (10.88)	18.15 (11.56)	18.53 (9.63)	$t(56) = -0.12$	.904	-0.03 [-0.57, 0.51]
AQoL- 8D						
Psychometric	58.68 (12.41)	58.79 (12.15)	58.48 (13.21)	$t(57) = 0.09$	.927	0.03 [-0.51, 0.56]
Utility	0.46 (0.16)	0.45 (.16)	0.47 (.18)	$t(57) = -0.34$	.737	-0.09 [-0.62, 0.44]
Secondary Measures						
ISI	14.05 (6.49)	13.62 (6.46)	14.90 (6.62)	$t(57) = -0.72$	.476	-0.19 [-0.73, 0.34]
SCID-BPD	5.88 (3.34)	5.55 (3.25)	6.50 (3.50)	$t(56) = -1.03$	.309	-0.28 [-0.82, 0.26]
PTCI	151.56 (32.77)	153.51 (34.40)	147.75 (29.81)	$t(57) = 0.64$	.527	0.17 [-0.36, 0.70]
DERS-18	45.48 (11.71)	44.76 (10.97)	46.85 (13.20)	$t(56) = -0.64$	.524	-0.17 [-0.71, 0.36]
AUDIT	5.12 (4.82)	5.46 (5.05)	4.45 (4.39)	$t(57) = 0.76$	.451	0.21 [-0.33, 0.74]
CUDIT-R	2.47 (5.51)	3.00 (5.86)	1.45 (4.72)	$t(57) = 1.02$	.310	0.28 [-0.26, 0.81]
DAR-5	9.81 (3.50)	9.18 (2.83)	11.05 (4.36)	$t(57) = -1.99$	.051	-0.54 [-1.08, 0.00]

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ CPTSD-Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale -Depression Subscale; AQoL- 8D= Assessment of Quality of Life; ISI = Insomnia Severity Index; SCID-BPD = Structured Clinical Interview for DSM 5- Borderline Personality Disorders; PTCI = Posttraumatic Cognitions Inventory; DERS = Difficulties in Emotional Regulation Scale; AUDIT = Alcohol Use Disorders Identification Test; CUDIT = Cannabis Use Disorders Identification Test; DAR-5= Dimensions of Anger Reaction.

Table S6

Estimated Marginal Means and Fixed Effects from Linear Mixed Models from Baseline to 6-Month Follow-Up for Primary Measures (Completer Sample) (Chapter 4)

Measure	Time	Model Estimates			Fixed Effects					
		GSH-only	GSH + CPT	CPT-only	Group		Time		Group*Time	
		<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
CAPS-5	Base	36.96 (2.13)	40.67 (2.69)	36.15 (2.33)	5.24 (68.91)	.008	86.73 (121.01)	<.001	2.14 (120.48)	.053
	Post	11.00 (2.13)	20.49 (3.02)	19.94 (2.60)						
	3-mo	11.06 (2.39)	19.40 (3.33)	19.00 (2.87)						
	6-mo	11.06 (2.39)	21.62 (3.35)	21.96 (2.98)						
PCL-5	Base	47.04 (2.61)	44.27 (3.30)	46.55 (2.85)	3.28 (65.31)	.044	123.37 (124.40)	<.001	2.91 (123.76)	.011
	Post	10.38 (2.61)	23.13 (3.30)	16.10 (2.85)						
	3-mo	10.87 (3.01)	24.74 (3.89)	19.27 (3.90)						
	6-mo	13.51 (2.99)	22.98 (3.92)	19.28 (3.82)						
ITQ-CPTSD	Base	28.63 (1.77)	28.33 (2.24)	28.20 (1.94)	2.98 (64.57)	.058	96.35 (112.99)	<.001	1.91 (112.32)	.086
	Post	6.47 (1.84)	14.52 (2.45)	10.22 (2.11)						
	3-mo	6.74 (2.04)	15.93 (2.65)	12.21 (2.63)						
	6-mo	7.84 (2.03)	13.45 (2.65)	11.55 (2.58)						
DASS-D	Base	17.33 (2.01)	19.47 (2.54)	18.37 (2.24)	1.47 (58.43)	.238	31.07 (116.91)	<.001	0.71 (116.36)	.645
	Post	6.17 (2.01)	9.60 (2.54)	6.95 (2.20)						
	3-mo	6.26 (2.30)	14.00 (2.96)	13.00 (2.94)						
	6-mo	6.88 (2.34)	11.01 (3.00)	9.20 (2.91)						
AQoL-8D Psychometric	Base	59.60 (2.82)	57.49 (3.57)	58.48 (3.09)	2.94 (66.15)	.060	7.29 (110.43)	<.001	1.90 (109.83)	.087
	Post	72.02 (2.93)	62.94 (3.90)	62.23 (3.36)						
	3-mo	73.84 (3.38)	57.42 (4.17)	65.85 (4.42)						
	6-mo	70.67 (3.30)	62.57 (4.02)	71.03 (4.31)						

Measure	Time	Model Estimates			Fixed Effects					
		GSH-only	GSH + CPT	CPT-only	Group	Time		Group*Time		
		<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
AQoL-8D utility	Base	0.47 (0.04)	0.43 (0.05)	0.47 (0.04)	2.75 (63.17)	.072	19.08 (107.14)	<.001	1.60 (106.04)	.153
	Post	0.66 (0.04)	0.56 (0.05)	0.58 (0.04)						
	3-mo	0.69 (0.04)	0.47 (0.05)	0.56 (0.06)						
	6-mo	0.66 (0.04)	0.54 (0.05)	0.58 (0.06)						

Note. CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; PCL-5 = Posttraumatic Stress Disorder Check List for DSM-5; ITQ CPTSD-Complex PTSD criteria based on ICD-11; DASS-D = Depression Anxiety and Stress Scale -Depression Subscale; AQoL- 8D= Assessment of Quality of Life.

Table S7

Estimated Marginal Means, Standard Errors and Univariate Test for Weekly PCL-5 Scores Across Treatment Conditions (Intent-to-treat Sample)

(Chapter 4)

Session	GSH-only		GSH + CPT		CPT-only		Test	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>F (df)</i>	<i>p</i>
1	42.93	2.70	50.03	3.74	41.74	2.98	1.67 (190.71)	.192
2	40.81	2.71	48.37	3.75	40.40	2.99	1.66 (193.57)	.193
3	39.07	2.75	45.18	3.75	41.87	3.03	0.88 (198.34)	.417
4	35.36	2.81	44.64	3.78	37.83	3.06	1.96 (204.11)	.143
5	32.75	2.89	41.83	3.83	33.52	3.12	2.00 (214.57)	.137
6	29.98	2.96	38.04	3.91	30.22	3.19	1.58 (224.35)	.208
7	26.75	3.01	34.50	3.97	28.02	3.26	1.28 (228.06)	.280
8	22.30	3.09	32.72	4.05	27.52	3.37	2.15 (237.01)	.119
9	18.40	3.17	34.54	4.13	26.26	3.50	4.91 (244.38)	.008
10	17.20	3.27	30.32	4.15	25.24	3.56	3.32 (243.18)	.038
11	13.81	3.40	28.85	4.26	22.09	3.70	3.95 (254.72)	.021
12	10.21	3.59	28.10	4.35	20.39	3.80	5.22 (262.09)	.006
13			31.32	4.76	21.31	4.39	3.52 (462.41)	.030
14			26.29	5.17	20.17	5.19	1.70 (402.93)	.403
15			20.87	5.60	19.92	5.73	0.01 (420.27)	.905
16			26.79	5.90	26.97	6.86	0.00 (461.93)	.984
17			32.58	6.12	19.76	8.30	1.55 (497.03)	.214
18			30.46	6.71	27.12	9.25	0.09 (490.48)	.770
19			27.62	8.21	22.12	9.90	0.18 (502.34)	.669
20			31.06	10.84	19.79	10.38	0.56 (543.29)	.453
21			44.44	12.47	27.36	12.17	0.96 (562.77)	.328
22					23.73	13.37		
23					40.92	14.22		
24					21.96	14.83		
25					33.87	15.27		

Table S8

Estimated Marginal Means, Standard Errors and Univariate Test for Weekly DASS-D Scores Across Treatment Conditions (Intent-to-treat Sample)

(Chapter 4)

Session	GSH-only		GSH + CPT		CPT-only		Test	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>F (df)</i>	<i>p</i>
1	20.54	1.85	24.30	2.56	20.63	2.06	0.82 (239.24)	.441
2	18.91	1.87	25.38	2.61	19.90	2.05	2.15 (246.80)	.119
3	18.88	1.90	21.74	2.57	19.48	2.08	0.41 (247.29)	.661
4	16.37	1.95	20.48	2.61	18.48	2.10	0.83 (256.46)	.435
5	17.24	2.02	20.11	2.64	16.52	2.17	0.59 (270.22)	.554
6	15.98	2.07	17.79	2.71	13.84	2.21	0.66 (277.68)	.517
7	14.26	2.10	17.66	2.75	13.12	2.26	0.84 (277.51)	.431
8	10.57	2.16	16.81	2.81	13.42	2.36	1.57 (285.99)	.211
9	10.23	2.21	16.90	2.87	10.82	2.45	1.89 (292.25)	.153
10	9.94	2.29	14.54	2.88	14.03	2.49	1.06 (286.46)	.347
11	9.32	2.39	14.38	2.97	11.99	2.58	0.90 (300.76)	.407
12	6.35	2.55	13.08	3.03	13.23	2.64	2.22 (306.64)	.110
13			15.68	3.38	9.94	3.10	1.18 (527.29)	.308
14			14.15	3.71	7.81	3.63	1.49 (443.52)	.223
15			13.03	4.14	11.25	4.11	0.09 (476.65)	.760
16			17.08	4.24	11.63	5.05	0.68 (494.44)	.409
17			15.82	4.37	3.52	6.19	2.63 (516.50)	.105
18			15.76	4.84	8.06	6.85	0.84 (492.46)	.359
19			18.53	6.08	7.32	7.26	1.40 (498.35)	.237
20			11.89	8.20	3.35	7.52	0.59 (538.74)	.443
21			13.73	9.36	9.29	8.97	0.12 (550.96)	.732
22					4.87	9.82		
23					8.17	10.35		
24					15.23	10.69		
25					10.10	10.91		

Table S9

Estimated Marginal Means, Standard Errors and Univariate Test for Weekly Session Rating Scale (SRS) Scores Across Treatment Conditions (Intent-to-treat Sample) (Chapter 4)

Session	GSH-only		GSH + CPT		CPT-only		Test	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>F (df)</i>	<i>p</i>
1	35.04	1.13	33.95	1.46	36.08	1.13	0.68 (330.18)	.508
2	33.86	1.14	33.79	1.50	35.81	1.14	0.92 (365.52)	.398
3	33.27	1.09	32.79	1.44	37.09	1.16	3.83 (346.96)	.023
4	35.44	1.14	37.04	1.42	37.71	1.18	1.01 (347.52)	.364
5	35.37	1.21	35.11	1.42	37.39	1.21	1.00 (352.60)	.369
6	35.90	1.22	36.11	1.68	37.18	1.27	0.29 (412.56)	.752
7	37.08	1.35	34.86	1.59	36.55	1.31	0.60 (401.14)	.551
8	36.72	1.29	36.20	1.69	37.31	1.33	0.14 (384.10)	.871
9	36.85	1.38	38.11	1.79	37.73	1.42	0.18 (428.94)	.834
10	36.96	1.34	36.63	1.59	38.00	1.45	0.23 (356.63)	.792
11	36.82	1.48	38.89	1.63	38.32	1.54	0.49 (392.01)	.615
12	37.24	1.40	37.89	1.69	38.24	1.66	0.11 (373.69)	.892
13			38.39	2.18	37.81	2.06	0.04 (535.05)	.844
14			36.59	2.19	37.79	2.25	0.15 (458.54)	.704
15			35.81	2.29	37.77	2.48	0.34 (424.99)	.562
16			39.79	2.68	37.85	3.04	0.23 (482.42)	.63
17			39.80	3.11	39.86	3.72	0.00 (499.42)	.989
18			40.12	3.29	35.74	3.99	0.72 (429.56)	.397
19			40.08	4.91	36.29	4.84	0.30 (564.03)	.582
20			38.06	5.50	38.88	4.17	0.01 (437.50)	.906
21			38.23	5.76	38.08	5.21	0.68 (330.18)	.508
22					37.93	5.63		
23					37.90	5.81		
24					37.24	5.89		
25					39.53	5.93		

Table S10

Estimated Marginal Means, Standard Errors and Univariate Test for Weekly Outcome Rating Scale (ORS) Scores Across Treatment Conditions

(Intent-to-treat Sample) (Chapter 4)

Session	GSH-only		GSH + CPT		CPT-only		Test	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>F (df)</i>	<i>p</i>
1	15.18	1.39	12.78	1.92	16.68	1.52	1.27 (272.35)	.284
2	19.28	1.39	16.00	1.95	16.95	1.53	1.15 (280.45)	.319
3	19.99	1.43	16.44	1.93	16.66	1.56	1.67 (284.43)	.190
4	20.33	1.47	17.02	1.95	18.79	1.58	0.94 (291.57)	.392
5	21.88	1.52	16.60	1.98	20.36	1.63	2.25 (306.33)	.108
6	22.39	1.58	18.59	2.04	20.62	1.67	1.09 (318.30)	.336
7	25.38	1.60	18.85	2.07	22.06	1.71	3.20 (312.99)	.042
8	25.51	1.64	19.93	2.12	20.60	1.78	2.99 (320.41)	.052
9	26.79	1.67	18.55	2.17	21.66	1.86	4.92 (325.87)	.008
10	27.48	1.74	19.12	2.16	21.38	1.88	5.28 (317.41)	.006
11	28.55	1.82	20.48	2.24	21.11	1.96	5.47 (334.33)	.005
12	29.98	1.94	20.63	2.28	22.46	2.00	5.92 (339.59)	.003
13			19.08	2.58	22.24	2.39	0.41 (571.09)	.664
14			21.20	2.84	25.03	2.81	0.92 (482.14)	.339
15			20.30	3.10	20.39	3.19	0.00 (488.52)	.985
16			19.57	3.24	22.44	3.94	0.32 (516.23)	.574
17			17.45	3.33	28.39	4.84	3.47 (532.35)	.063
18			17.48	3.71	23.92	5.32	0.99 (501.26)	.321
19			17.61	4.73	22.32	5.59	0.41 (507.36)	.521
20			24.78	6.44	27.37	5.75	0.09 (549.71)	.765
21			20.92	7.30	22.97	6.94	0.04 (558.74)	.838
22					20.56	7.57		
23					13.61	7.94		
24					12.71	8.16		
25					12.89	8.29		

Table S11

Estimated Marginal Means, Standard Errors and Univariate Test for Weekly Brief Revised Working Alliance Inventory (BR-WAI) Total Scores Across Treatment Conditions (Intent-to-treat Sample) (Chapter 4)

Session	GSH-only		GSH + CPT		CPT-only		Test	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>F (df)</i>	<i>p</i>
2	63.85	1.32	64.27	1.89	63.70	1.42	0.03 (134.19)	.971
6	67.82	1.45	69.95	1.97	68.19	1.59	0.40 (158.62)	.674
10	70.19	1.58	73.40	2.21	68.88	1.73	1.31 (173.59)	.271
12	71.48	1.85	71.65	2.49	73.90	1.95	0.46 (185.59)	.629

Table S12

Estimated Marginal Means, Standard Errors and Univariate Test for Weekly Homework Review (HR) Scores Across Treatment Conditions (Intent-to-treat Sample) (Chapter 4)

Session	GSH-only		GSH + CPT		CPT-only		Test	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>F (df)</i>	<i>p</i>
2	6.79	.54	6.05	.78	3.70	.58	7.90 (412.92)	<.001
3	7.93	.55	5.68	.73	6.87	.60	3.05 (411.81)	.049
4	7.44	.57	7.31	.74	7.48	.60	.02 (414.73)	.982
5	8.76	.60	7.07	.76	6.89	.63	2.75 (432.50)	.065
6	8.84	.62	6.91	.79	7.71	.65	1.97 (438.89)	.141
7	8.76	.62	7.69	.80	7.15	.66	1.64 (417.22)	.195
8	9.02	.63	7.99	.82	7.79	.70	.99 (425.97)	.371
9	8.56	.65	8.16	.84	7.08	.73	1.19 (432.26)	.305
10	8.51	.68	8.55	.82	7.78	.73	.35 (416.76)	.708
11	9.14	.71	8.76	.87	9.21	.77	.09 (445.44)	.917
12			10.16	.88	8.85	.78	1.23 (426.98)	.267
13			9.57	1.05	9.10	1.01	.35 (584.90)	.708
14			8.43	1.16	9.18	1.19	.20 (547.35)	.652
15			8.67	1.26	10.53	1.34	1.02 (521.61)	.313
16			9.81	1.29	9.36	1.69	.04 (536.44)	.832
17			7.89	1.30	8.00	2.09	.00 (539.04)	.965
18			9.37	1.51	7.29	2.20	.61 (498.00)	.436
19			9.77	2.04	9.67	2.24	.00 (517.89)	.973
20			8.87	2.86	9.60	2.25	.04 (558.57)	.841
21			5.92	3.09	9.34	2.92	.65 (550.10)	.421
22					11.20	3.11		
23					4.12	3.17		
24					8.07	3.19		
25					8.04	3.19		

Table S13

Estimated Marginal Means and Fixed Effects from Linear Mixed Models from Baseline to 6-Month Follow-Up for Secondary Measures (Completer Sample) (Chapter 4)

Measure	Time	Model Estimates			Fixed Effects					
		GSH-only	GSH + CPT	CPT-only	Group		Time		Group*Time	
		<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
ISI	Base	14.08 (1.27)	12.87 (1.60)	14.90 (1.39)	3.28 (60.36)	.044	7.30 (106.80)	<.001	3.47 (106.39)	.004
	Post	7.70 (1.30)	11.13 (1.71)	13.71 (1.48)						
	3-mo	7.75 (1.43)	13.53 (1.83)	12.20 (1.77)						
	6-mo	8.08 (1.44)	14.69 (1.86)	11.70 (1.77)						
SCID-BPD	Base	5.21 (0.67)	5.97 (0.86)	6.50 (0.74)	3.01 (59.61)	.057	5.27 (106.06)	.002	1.30 (104.63)	.263
	Post	3.08 (0.69)	5.18 (0.91)	5.72 (0.78)						
	3-mo	2.26 (0.76)	5.31 (0.96)	4.91 (0.98)						
	6-mo	3.67 (0.77)	4.82 (0.98)	5.03 (0.98)						
PTCI	Base	152.33 (7.89)	155.40 (9.98)	147.75 (8.64)	2.65 (66.68)	.078	36.69 (114.65)	<.001	1.12 (113.98)	.358
	Post	85.03 (8.22)	110.57 (11.03)	100.47 (9.50)						
	3-mo	86.60 (9.21)	120.18 (11.98)	117.50 (12.05)						
	6-mo	87.32 (9.31)	112.18 (11.92)	108.18 (11.65)						
DERS	Base	41.67 (2.33)	49.07 (2.90)	46.85 (2.52)	6.98 (62.00)	.002	13.20 (108.57)	<.001	0.76 (106.92)	.605
	Post	31.06 (2.38)	41.66 (3.16)	39.94 (2.72)						
	3-mo	30.12 (2.68)	43.99 (3.40)	37.02 (3.57)						
	6-mo	30.50 (2.68)	41.20 (3.42)	41.72 (3.49)						

Measure	Time	Model Estimates			Fixed Effects					
		GSH-only	GSH + CPT	CPT-only	Group		Time		Group*Time	
		<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>	<i>F(df)</i>	<i>p</i>
AUDIT	Base	4.54 (0.91)	6.93 (1.16)	4.45 (1.00)	1.65 (61.05)	.200	7.64 (107.32)	<.001	1.18 (106.75)	.323
	Post	3.09 (0.93)	5.47 (1.21)	1.94 (1.05)						
	3-mo	2.54 (1.00)	5.50 (1.27)	3.66 (1.24)						
	6-mo	3.04 (1.02)	4.01 (1.30)	2.68 (1.23)						
CUDIT	Base	3.21 (0.96)	2.67 (1.22)	1.45 (1.05)	0.68 (56.64)	.512	3.28 (103.41)	.024	0.75 (103.02)	.608
	Post	1.68 (0.98)	1.76 (1.26)	0.66 (1.09)						
	3-mo	1.29 (1.03)	3.01 (1.30)	0.64 (1.23)						
	6-mo	1.74 (1.04)	2.58 (1.33)	0.51 (1.23)						
DAR	Base	9.63 (0.56)	8.47 (0.71)	11.05 (0.62)	2.55 (60.56)	.086	15.11 (108.80)	<.001	1.12 (107.59)	.357
	Post	6.44 (0.59)	7.43 (0.80)	7.89 (0.69)						
	3-mo	6.90 (0.69)	7.12 (0.87)	8.20 (0.94)						
	6-mo	7.16 (0.67)	5.96 (0.86)	8.00 (0.84)						

Note. ISI = Insomnia Severity Index; SCID-BPD = Structured Clinical Interview for DSM 5- Borderline Personality Disorders; PTCI = Posttraumatic Cognitions Inventory; DERS = Difficulties in Emotional Regulation Scale; AUDIT = Alcohol Use Disorders Identification Test; CUDIT = Cannabis Use Disorders Identification Test; DAR-5= Dimensions of Anger.

APPENDICES

Appendix A: Trauma Interview

This measure was removed due to copyright restrictions. It was a semi-structured interview gathering information on demographics, trauma history, medication use, and social support.

**Appendix B: Posttraumatic Stress Disorder Checklist (PCL-5) with Additional International
Trauma Questionnaire (ITQ) Items (ITQ-CPTSD)**

This measure was removed due to copyright restrictions. It was an adapted version of the standard PCL-5 with five supplementary items to capture core features of complex PTSD.

Appendix C: The Daily Inventory of Stressful Events (DISE)

This measure was removed due to copyright restrictions. It consisted of questions assessing daily stressors experienced in the past 24 hours.

Appendix D: Modified SRS Questionnaire for GSH Condition

This measure was removed due to copyright restrictions. It was an adapted version of Session Rating Scale tailored for the GSH condition.

Appendix E: Homework Review Questionnaire

This measure was removed due to copyright restrictions. It was an adapted version of the Homework Review Form (Wiltsey Stirman et al., 2018), assessing the relationship between homework completion and symptom reduction.

Appendix F: Adapted Telehealth Satisfaction Survey

This measure was removed due to copyright restrictions. It was an adapted measure assessing patient satisfaction with telemedicine using Telemedicine Satisfaction and Acceptance Scale (TSS; Frueh et al., 2005) and outpatient services using Charleston Psychiatric Outpatient Satisfaction Scale (CPOSS; Pellegrin et al., 2001).

Appendix G: Guided Self-help Module- Sample Pages

These sample pages were removed due to copyright restrictions. They were from the adapted workbook based on the standard CPT protocol developed by Resick and colleagues (Resick et al., 2023).

Appendix H: Guided Self-help Feedback

1) Feedback 1

The content of the
module was confusing

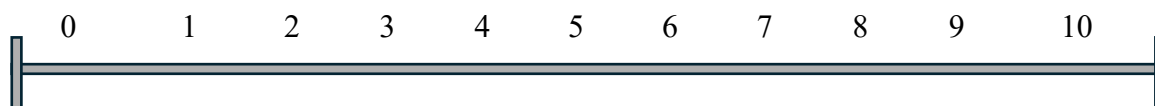
The content of the module was
clear and specific



2) Feedback 2

I was not able to understand the
instructions for the worksheets

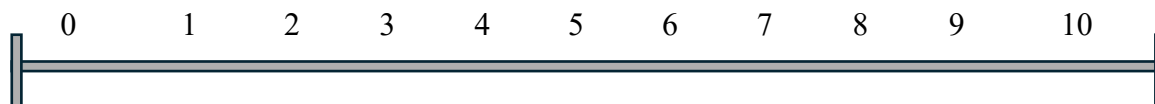
I was able to understand the
instructions for the worksheets



3) Feedback 3

I did not have time to complete
worksheets within the week

I was able to complete worksheets
within the week



4) Feedback 4

I did not learn useful information
(e.g., my way of thinking, strategies to
overcome my PTSD, new
understanding of myself, etc.)

I learnt useful information (e.g., my
way of thinking, strategies to
overcome my PTSD, new
understanding of myself, etc.)



5) Any other feedback about last week's module/ check-in :
