The Mediating Roles of Psychological Pain Proxies and Pain Catastrophising in the Relationship between Childhood Trauma and Self-Harm: A Mixed Methods Investigation

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Contents

Abstract

Background: The relationship between childhood trauma (CT) and self-harm (SH) is well documented in the literature, and both are associated with significant negative consequences. This highlights the need to understand mediators that facilitate this relationship. One such mediator is Psychological Pain (PP), a multifaceted construct, encompassing both cognitive and emotional components. This study operationalised PP through proxies of emotional regulation and emotional reactivity, with Pain catastrophising (PC) explored as a potential secondary mediator.

Aims: This study aimed to explore the correlational relationships between CT, SH, PP and PC, and to assess the potential mediating roles of PP and PC in this relationship. Additionally, this study aimed to explore the lived experiences of individuals who engaged in SH, specifically exploring themes related to CT and PP.

Method: First, a secondary data analysis was conducted, which utilised existing measures including the Childhood Traumatic Events Scale, SH scale, the Emotional Reactivity Scale, the Difficulties in Emotional Regulation Scale and the Pain Catastrophising Scale. Second, a convergent mixed-methods study was conducted, incorporating these measures alongside semi-structured interviews, which were analysed using Reflexive Thematic Analysis.

Findings: Both the quantitative and qualitative results indicated that PP proxies mediated the CT-SH relationship. Study one found both frequency and intensity of CT predicted PP, which in turn predicted SH. Study two found the intensity of CT predicted PP, which also predicted SH. The mediating effect of PC varied within and between studies. Qualitative themes revealed that CT contributed to PP and PC, and SH served as a coping mechanism.

Conclusions: The findings highlight the central mediating role of PP in the CT-SH relationship. Clinical interventions aimed at resolving PP may be beneficial in

reducing SH. Future research should investigate additional mediators and protective factors. Limitations include challenges in conceptualising PP, and the use of measures with limited validation.

Chapter 1: Introduction

Introductory Chapters Overview

The introduction is presented across chapters 1 to 3.

Chapter 1 introduces the current study, which aims to examine factors that mediate the relationship between Childhood Trauma (CT) and Self-harm (SH). The primary mediating factor explored is emotional components that serve as proxies of Psychological Pain (PP), hereafter referred to as PP proxies for ease of reading. The secondary mediating factor is Pain Catastrophising (PC). This chapter outlines the conceptualisation of CT, SH and PP, as situated within the literature, and explores the existing relationships between these variables.

Chapter 2 includes a systematic literature review on cognitive mechanisms (CM) that mediate the relationship between CT and SH, and their relationship to PP. This review synthesises the existing literature, and provides further rationale for the current study.

Chapter 3 outlines the research aims of both the quantitative and qualitative components of the study. This chapter also outlines the conceptualisation of PC.

Self-Harm

The ability to keep oneself safe serves a vital function within society. SH represents harm that occurs when people cannot, or do not, keep themselves physically safe. It is defined as the intentional act of self-poisoning or injury, irrespective of the apparent purpose (National Institute for Health and Care Excellence [NICE], 2022). However, SH is a highly subjective behaviour that varies across individuals and cultural contexts (Gholamrezaei et al., 2017), and has been both socially sanctioned and socially condemned throughout time (Gilman, 2013). For example, socially sanctioned forms of SH, such as getting tattoos or piercings,

are often normalised within certain settings. When normalised, these practices can be understood as culturally approved behaviours that involve physical harm but are typically associated with self-expression, identity, and social belonging (Hewitt, 1997). Conversely, socially condemned forms of SH, such as self-neglect, substance abuse and starvation, are often viewed through a clinical lens and highly pathologised within wider society (Gilman, 2013). Moreover, the dominant discourse in the UK is that of SH being framed within a pathologised medical or psychological context (Millard, 2015). This research aims to explore highly subjective experiences of SH and therefore does not seek to exclude any form of SH, as experiences vary based on the individual.

The term SH is used in this research instead of Non-Suicidal Self-Injury (NSSI) (American Psychiatric Association [APA], 2013), as suicidal intent is measured along a continuum where the general public, service-users and clinicians views may vary (Gouveia-Pereira et al., 2022). The definition of NSSI excludes acts that involve suicidal intent, potentially overlooking important aspects of this continuum. This research does not wish to exclude SH that occurs with suicidal intent. Therefore, the term SH is used to capture the full range of self-injurious behaviours. NICE guidelines within the UK refer to the term SH throughout. However, SH and its definition are highly varied throughout the wider literature, so when citing previous research this thesis will adopt the specific terminology used in each study, respecting the authors' chosen terms. Their definition was cross-referenced with the NICE (2022) definition of SH to ensure clarity and consistency, and allowing a standardised understanding of the concept.

Risk factors for SH include being from a lower socioeconomic background, interpersonal problems, a family history of suicidal behaviour and a feeling of deep

hopelessness (Hawton et al., 2012). Within the population aged 16-74 in the UK, there is a 6.4% prevalence of SH (McManus et al., 2016). Although SH has historically been linked to common psychiatric disorders it is often found in non-clinical samples as well, including high-functioning individuals who do not outwardly display mental health difficulties but use deliberate SH to cope with distress and anxiety (Klonsky et al., 2003).

There is contradictory evidence concerning gender as a risk factor in SH behaviour. Some studies suggest women are more likely to engage in SH in comparison to men (McManus et al., 2016), with apparent differences in methods, such as women being more likely to cut themselves (Demuthova & Demuth, 2019; Lundh et al., 2007). However, other research has found inconsistent results in SH rates, specifically NSSI, between genders (Bresin & Schoenleber, 2015). The absence, or presence, of gender differences could be the result of sampling methods or societal stigma, among other reasons (Moloney et al., 2024). In recent years, research into SH has dramatically increased, due to the increased prevalence of SH, especially since the Covid-19 crisis (B. H. Wong et al., 2022). Additionally, the actual and potential ramifications of SH can have serious consequences, further demonstrating the need for research in this area.

One such consequence is death by suicide. Within the literature, NSSI is consistently linked to suicide (Hamza et al., 2012). While both suicide and NSSI involve deliberate harm to one-self, suicide is conceptualised as the specific intent to end one's life, often due to feelings of hopelessness or unbearable suffering (Pompili, 2010). However, within the context of NSSI, the absence of suicidal intent is difficult to measure (Hooley et al., 2020). Additionally, NSSI assumes a dichotomy of suicidal versus non-suicidal behaviours, rather than a complex multidimensional

construct that is subject to interpretative variability (Zetterqvist, 2015). Importantly, SH has been identified as a key risk factor for suicide, regardless of intent. Those who engage in SH are at greater risk of escalating their behaviours (Carroll et al., 2014) and have a 31 to 57 fold increase in risk of suicide the year after presenting to hospital (Goldman-Mellor et al., 2019) highlighting the importance of assessing for these issues across various settings. For both NSSI and suicide, there are similar intervention and prevention strategies that can be implemented to mitigate the risk (Hawton et al., 2012).

Additionally, it is important to note other research has identified SH as a protective factor against suicide, with people engaging in SH to relieve emotional pain, as a means of survival and avoiding the finality of suicide (Pembroke, 1998). Despite this, SH is considered a maladaptive coping mechanism that does not address the underlying issues contributing to the distress and therefore it is important to identify adaptive coping mechanisms and address the core difficulties that drive the behaviour (Demuthova & Demuth, 2020). However, the significance of addressing SH extends beyond its link to suicide, affecting both individual well-being and broader societal factors.

The presence of SH during adolescence, specifically NSSI, can significantly contribute to heightened stress, anxiety, and emotional dysregulation in adulthood, with these effects intensifying proportionally to the severity of the SH (Daukantaitė et al., 2021). Moreover, individuals who engage in SH are at an elevated risk for recurrent self-injury and the development of additional mental health disorders (Mars et al., 2014). There is a substantial economic burden of SH on healthcare systems, with hospitals incurring costs of £128 million in 2013, disproportionately affecting socio-economically deprived areas (Tsiachristas et al., 2020). This financial strain

has escalated over time, specifically in adolescents (Tsiachristas et al., 2017). Notably, one study found a 10% increase in lifetime prevalence of NSSI within the adolescent population during the pandemic in comparison to seven and ten years prior (Zetterqvist et al., 2021).

There are multiple reasons why a person may engage in SH and various theoretical models have been proposed to aid this understanding. For example, Social Learning Theory (SLT), initially used to explain how an individual's behaviour is learnt through observation, reinforcement or social modelling (Bandura, 1977) has been utilised to explain SH. Jarvi et al. (2013) conducted a review of literature on the impact of 'social contagion' on NSSI and found social learning or modelling of NSSI increased risk of engagement in NSSI. This effect was prominent in those with underlying psychiatric conditions like social anxiety, or individual characteristics including difficulties with self-regulation and perceived susceptibility to peer-influence. Other studies have additionally found that when people receive care or support following SH, this acts as a reinforcement factor for the behaviour (Nock & Prinstein, 2005).

Another theory suggested in the literature is the Affect-Regulation Model of SH (Nixon et al., 2002). This model proposes SH is a maladaptive coping mechanism used to manage emotional distress by reducing negative emotions or increasing positive ones. This occurs when an individual experiences negative emotions but is either unable, or unwilling, to express them, resulting in an overwhelming affective reaction whereby SH is used as a coping mechanism (Nixon et al., 2002). This model is supported by Klonsky's (2007) review, which found negative emotions typically precede NSSI and NSSI is used as a means of relief.

Likewise, decreased negative affect and feelings of relief were observed following NSSI.

The last theory discussed in this introduction is the Experiential Avoidance Model (EAM) (Chapman et al., 2006). The EAM posits SH is used as an avoidance behaviour, to escape negative events, and narrow attention to the instant sensations SH produces. As a result, SH behaviours are strengthened through negative reinforcement. Negative events could include undesirable emotions, thoughts, traumatic memories and somatic sensations. This has been supported by studies such as Gratz and Roemer (2004) who found higher levels of emotional non-acceptance associated with SH behaviour. Most models discussed describe SH as a behaviour used to avoid or minimise emotional distress.

Edmondson et al. (2016) conducted a meta-synthesis into reasons why individuals SH and completed a systematic review of the literature reporting first-hand accounts of the reasons for SH other than intent to die. Within this systematic review they identified seven main reasons including; managing distress, help-seeking, punishment, inducing or terminating dissociative states, sensation seeking, averting suicide, defining one's personal boundaries and expressing or coping with one's sexuality. They reported these findings aligned with previous research, however the amount of research varied across areas, with most studies focused on managing distress and help-seeking behaviours. This highlights the need to explore what factors contribute to feelings of distress and identify the barriers to receiving help. However, within Edmondson et al.'s (2016) research, the diversity of the literature prevented meaningful data pooling and meta-analysis, resulting in limited understanding of the prevalence and characteristics of various SH reasons, requiring more homogenous data to be collected. Trauma is a major contributor to feelings of

distress (Van der Kolk, 2014) and has been consistently identified as a significant underlying factor in the prevalence of NSSI within the population (Ford & Gómez, 2015; Serafini et al., 2017).

Trauma

Definitions of trauma vary and are dependent on the context in which the word is used. Dalenberg et al. (2017) explored the conceptual origins of trauma definitions. These ranged from the psychodynamic view, where trauma was defined as any subjective stimulation that exceeded an individual's ability to cope, to the behavioural view, which focused on objective and observable antecedents and outcomes. These viewpoints provided a strong foundation for the research into trauma that followed. After the introduction of Post-Traumatic Stress Disorder (PTSD) into the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III) in 1980 (3rd ed.; DSM–III; APA, 1980), the research into studying trauma catapulted, and along with it a unified definition for trauma was sought (Weathers & Keane, 2007).

The DSM-III originally defined trauma as a stressor that would evoke significant distress in almost anyone, however, this was revised to include the stressor must be outside the range of usual human experience. This served as a problematic marker, as certain events may not cause significant distress in almost everyone, but may cause extreme distress in someone, resulting in symptoms of PTSD (Bonanno & Mancini, 2012). Additionally, not all events named in the DSM-III that were deemed significantly distressing, resulted in symptoms of PTSD (Karam et al., 2010). Difficulties in establishing the definition of trauma persisted and ranged from how broad it should be, and if it could be measured with reliability and validity due to the highly subjective perception and personal appraisal of stressors. These

issues have persisted into the DSM-5 (APA, 2013) definition of PTSD, although changes have been made to somewhat accommodate individual differences, including the addition of different forms of exposure (direct, indirect, repeated). However, while trauma and PTSD are discussed interchangeably, the reality of trauma as a multifaceted psychological and physiological response extends beyond the diagnostic criteria of PTSD and it is important to separate the two.

In line with this, various definitions of types of trauma have been adopted; with the underlying theme relating to experiencing an upsetting or threatening situation/s and perceiving it as such (Center for Substance Abuse Treatment [CAST], 2014a). Examples of this include Chronic Trauma, where there is repeated and prolonged exposure to a distressing experience (Van der Kolk, 2014); Complex Trauma where there is prolonged exposure to distressing experiences of an interpersonal nature, often occurring in childhood (Courtois & Ford, 2012) and Developmental Trauma where distressing experiences are had during the critical childhood developmental period (Van der Kolk, 2005). There is a variety of overlap between definitions, further representative of the nuanced nature of trauma. Research has found many people who SH have been exposed to, or endured, a traumatic event during their lifetime (CAST, 2014a). These events include witnessing violence, severe emotional abuse, being involved in an accident and experiencing a natural disaster (CAST, 2014a). Given the strong connection between trauma and SH, it is important to examine how specific types of trauma contribute to long-term behavioural and psychological outcomes.

Childhood Trauma

Research has explored grouping traumas based on a variety of factors including, but not limited to, age of occurrence (Permanente, 1998), frequency and

variability of trauma (Kliethermes et al., 2014) and direct vs indirect trauma (Kira, 2001). When grouped via age of occurrence, traumas that happen under the age of 18 can be called Adverse Childhood Experiences (ACEs) and include, but are not limited to; physical abuse, sexual abuse, emotional abuse, neglect, parental divorce and incarceration of a household member (Herzog & Schmahl, 2018). They can be one-off events, or repeated exposures. Research has found experience of ACEs are linked to long-term psychological and physical health risks including depression, substance abuse and chronic illness (Felitti et al., 1998).

Further research has been conducted into the effects of repeated exposure during peak developmental years; a concept coined Developmental Trauma Disorder (DTD) (Van der Kolk, 2005). Although this term has not been entered into diagnostic manuals, it refers to multiple trauma exposure that results in impairments in areas of human development including attachment, affect regulation and behaviour regulation (Teague, 2013), accounting for symptoms not seen in the traditional PTSD diagnosis criterion. Although very similar to previously mentioned models of trauma due to focus on the impact of early and repeated trauma on an individual, it differs in the focus being on neurodevelopmental consequences of trauma during the critical developmental time (Van der Kolk, 2005).

For the purposes of this research, trauma is defined as a perceived experience that threatens serious harm, and causes feelings of fear, terror and helplessness (CAST, 2014a) specifically within childhood up to 18 years, and will be referred to as CT moving forward.

Relationship between Self-Harm and Childhood Trauma

The relationship between CT and SH is a nuanced one. Within the literature, SH has been described as a maladaptive coping mechanism following trauma

experienced within childhood, offering the ability to regulate one's own experiences (Sim et al., 2009). Linehan (1993) described this process through the lens of the biosocial approach, whereby family environments that invalidated children contributed to the disruption of developing emotion regulation skills. This disturbed the ability to cope with negative emotions leading to regulating emotions in dysfunctional ways, such as SH. Connors (1996) described this happening in four ways: re-enactment of the original trauma, expression of needs, reorganization of the self and management of dissociative processes.

Many studies demonstrate the link between CT and SH (Lang & Sharma-Patel, 2011). This link is especially strong when sexual abuse is the CT experienced (Serafini et al., 2017). One systematic review exploring the relationship between CT and NSSI found strong positive associations between all CT subtypes, especially with emotional abuse and sexual abuse, in clinical and non-clinical samples of adolescents (Calvo et al., 2024). Various models are suggested to explain this.

The Diathesis-Stress model posits SH behaviour, including suicidal behaviour, manifests from the interaction of a behavioural and biological disposition to act on self-destructive urges, and an environmental trigger such as a stressful life event. Brodsky and Stanley (2001) further refined this model by incorporating early life events (ELE), suggesting disruptive or traumatic ELE, like CT, influence the biological and behavioural disposition of an individual towards increased propensity for SH behaviours when faced with later stressors. However, the pathways linking CT to SH are not purely biological or behavioural, and other mechanisms will play a key role.

To further support this, some studies have shown no difference in the prevalence of trauma in people who have engaged in NSSI versus those who have

not (Johnstone et al., 2016) unless mediated by factors such as emotional regulation and cognitive appraisals (Heath et al., 2008; Weismoore & Esposito-Smythers, 2010). This suggests that although there can be a direct link between SH and trauma, there can also be additional factors that influence the prevalence of SH following the experience of trauma. Identifying and understanding the role of potential factors is important for future knowledge of contributors to SH and shaping interventions.

Some other examples of mediators between trauma and SH include impulsivity, particularly that of negative urgency where a person acts impulsively when experiencing negative emotions (Arens et al., 2012), the symptoms of trauma (N. B. Smith et al., 2014), Alexithymia (Paivio & McCulloch, 2004) and emotional dysregulation (Titelius et al., 2018). Another mediator researched less within the literature is pain. Pain, whether physical or emotional, can be both a direct consequence of trauma and a mechanism to manage internal states (B. N. Johnson & McKernan, 2021). As such, it is important to understand the role pain plays in the link between CT and SH. This requires an understanding of how pain is conceptualised within the literature.

Conceptualising Pain

Conceptualisation of Physical Pain

Although this research focuses on Psychological Pain (PP) in the context of CT and SH, it is useful to first consider how pain has been conceptualised more broadly, including physical pain. Loeser and Melzack (1999) suggested pain could be understood through four main concepts: nociception, perception of pain, pain behaviours and suffering. Nociception refers to the detection of tissue damage via specialised sensory receptors in the body, and is distinct from the perception of pain,

which is a subjective experience shaped by physiological processes as well as cognitive and emotional factors (Peters, 2015). Pain behaviours encompass actions undertaken in conjunction with, or because of, experiencing pain. Lastly, suffering is a negative response often induced by pain, though not all suffering is necessarily caused by pain and other factors can influence this. Given the complexity of these components, a unified definition of pain was required.

The International Association for the Study of Pain (IASP) defined pain as “An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage” (IASP, 2020). This definition provided an inclusive perspective, recognising that pain can exist in the absence of tissue damage. The updated definition encompasses all concepts suggested by Loeser and Melzack (1999), and distinguishes between physical pain and PP, although the two are not mutually exclusive, as seen by the concept of suffering which includes both aspects. Although overlap between the two exists, historically research on physical pain typically aligns with biomedical literature (Trachsel et al., 2019), while research on PP is often associated with trauma literature due to its relevance (Meerwijk & Weiss, 2011). Consequently, this research will focus on PP, and its role as a mediator in the relationship between CT and SH. To do this, it is necessary to explore the conceptualisation of PP, beginning with an expansion on the idea of suffering.

Conceptualisation of Suffering

In early research, Frankl (1985) conceptualised suffering as an experience that stems from a loss of meaning in life, where finding meaning could alleviate such suffering. His insights were shaped by his time as a prisoner in Nazi concentration camps, where he observed that individuals who found a sense of purpose, even in

the direst conditions, were more likely to survive. Later research has linked these observations to an increase in compassion, eudemonic happiness and resilience (P. T. Wong, 2014).

Building on this perspective, subsequent studies have shown suffering can arise from various states, including physical pain, fear, anxiety, and fatigue (Loeser, 2000). Cassell (1999) further expanded on this by emphasising that suffering encompasses non-physical dimensions such as social, cultural, psychological, and spiritual aspects, thus distinguishing it from medically diagnosable pain. This broader perspective of suffering paved the way for more comprehensive definitions.

One such definition of suffering is “a multidimensional and dynamic experience of severe stress that occurs when there is a significant threat to the whole person and regulatory processes are insufficient, leading to exhaustion” (Krikorian & Limonero, 2012, p. 45). This definition underscores the cognitive component of suffering, as it involves a cognitive appraisal of threats to one’s sense of self (Sensky, 2020). While early research predominantly focused on suffering in the context of medicine and chronic illness, exploring how it manifests in physical pain (Cassell, 2004; Wittmann et al., 2009), the broader understanding of suffering now recognises its complex interplay with various psychological and existential factors.

Conceptualisation of Psychological Pain

Building on the broader understanding of suffering, the concept of PP emerges as a critical component in this multifaceted experience. PP is sometimes referred to as psychache *(*Shneidman, 1993*)*, mental pain or emotional pain. Within the literature, PP is prominent in the field of loss and trauma and the most frequently mentioned reason for suicide (O'Connor et al., 1999).

Shneidman (1993) believed PP included excessively felt guilt, humiliation, fear and anger. He posited that understanding these components, and the concept of PP, was crucial to explaining why suicide is contemplated or attempted. In his earlier research, Shneidman suggested people have individual thresholds for tolerating PP (Shneidman, 1993). In later research, he conducted autopsy studies of suicide completers, and found a recurring presence of suicide notes stating the individual was unable to endure the PP they were in any longer (Shneidman, 1998). From this, he concluded suicide occurred when PP became unbearable. This theory was influential as it provided an understanding of how extreme distress, and its management, could influence behaviours such as suicide. Further to this, it provided a potential direction for addressing these behaviours through interventions aimed at supporting these difficulties. This research was among the first to help start the transition moving PP from an abstract concept into a concrete phenomenon.

Over time, extensive research has sought to further conceptualise PP, resulting in multiple definitions. Sandler (1967) defined the concept as “the affective state associated with discrepancy between ideal and actual perception of self”. Orbach et al. (2003), in a literature review on PP, define it as “a wide range of subjective experiences characterised as an awareness of negative changes in the self and in its functions accompanied by negative feelings” (p.228). Mee et al. (2006) defined PP as “a diffuse subjective experience...differentiated from physical pain which is often localized and associated with noxious physical stimuli” (p.681).

As seen, the exact conceptualisation of PP varies between publications. This variation is due, in part, to the subjective nature of the phenomenon, making it difficult to establish a universally accepted theory (Tossani, 2013*).* Additionally, distinctions between related concepts, such as suffering and PP, often stem from the

fields in which research is primarily conducted, suffering is more commonly studied in the context of physical pain, and PP is more commonly studied in the context of suicidality and trauma (Sensky, 2020). However, despite these differences, both concepts also share similarities, as they involve an individual's appraisals of their circumstances and function as trans-diagnostic measures. Given this, the need for an accepted definition was identified.

Meerwijk and Weiss (2011) advocated for an operational definition and conducted research via concept analysis of various models and theoretical frameworks surrounding PP. Despite alternative framings, Meerwijk and Weiss (2011) concluded that the experiences described as psychache, psychic pain and emotional pain, were essentially the same. The finalised definition was "a lasting, unsustainable, and unpleasant feeling resulting from negative appraisal of an inability or deficiency of the self." (Meerwijk & Weiss, 2011). This suggests PP is a multidimensional construct that includes both cognitive and emotional components. This definition will be utilised within this study, as it encapsulates the required components of the research and is accepted within the research field (Casanova et al., 2021). Although various measures have been proposed to measure PP, there is currently no single validated construct that is recommended in the literature due to issues of reliability and validity (Charvet et al., 2022).

Given that PP is theorised to arise from negative self-appraisal, and be a key factor in understanding SH behaviours, it is important to explore the underlying mechanisms that contribute to this, and examine their impact in the relationship between CT and SH. Research has found negative appraisal is strongly influenced by cognitive mechanisms (CM) (Williams & Moulds, 2008). Overall, CM are mental processes involved in acquiring, processing, storing, and retrieving information

(Bechtel, 2008; Li, 2001). They affect functions like perception, learning, memory, reasoning, and decision-making (Posner et al., 1997). These mechanisms play a central role in shaping self-appraisal, and in turn PP, as they determine how individuals encode and respond to internal and external experiences. Although often intertwined with behavioural outcomes, personality traits and emotional states, CM are conceptually distinct, wherein they focus on the cognitive operations underlying thought and behaviour (Bechtel, 2008). However, overlap does occur, and some constructs, such as hopelessness or dissociation, function as both CM and mechanisms of broader psychological phenomena (Abramson et al., 2000; Low et al., 2000). Other clear examples of CM include executive functioning and rumination, each of which may affect the CT-SH link.

For example Mehu & Scherer (2015) report individuals prone to engaging in depressive rumination, characterised by peoples tendency to constantly analyse themselves, their problems and their negative feelings, is a stable cognitive mechanism contributing to people engaging in repetitive self-focus, resulting in increased distress. These findings are supported in multiple studies (Van Vugt et al., 2018; Wong et al., 2023). The next section presents a systematic narrative review exploring CM that influence the CT/SH relationship.

The Relationship between Childhood Trauma, Cognitive Mechanisms, and Self-Harm: A Narrative Synthesis

Aims and Rationale of the Synthesis

Previous studies have observed the relationship between CM and SH and found negative thought patterns, such as hopelessness and defeat, play a robust role in predicting SH thoughts and behaviours (Cha et al., 2019). However, effects found were inconsistent, suggestive of other factors further influencing this relationship. Similarly, previous studies have found CT is linked to various psychopathologies through the mechanisms of decreasing cognitive flexibility (W. Huang et al., 2024) and cognitive function (Majer et al., 2010) although these studies required further research to strengthen their findings. This highlights the importance of exploring how CT and SH are interconnected through CM, as both appear to influence and be influenced by impairments in mental processes.

Given the complexity of how individuals respond to CT, there is a need to understand what factors contribute to SH following CT exposure. This Narrative Synthesis aims to address the gaps in the literature by synthesising existing studies and providing a comprehensive understanding of how CM interact with CT to influence the likelihood of SH. Specifically, it aims to explore the impact of CM on the CT-SH link via mediation, explaining how or why CT leads to SH, or via moderation, identifying under what CM is the CT-SH relationship more likely to occur (Kraemer et al. 2001).

Review Aims:

1. To synthesise studies exploring CM influenced by CT that contribute to SH behaviours

2. Inform the development of targeted interventions and preventative strategies to mitigate SH risks in individuals with a history of CT

Method

Eligibility Criteria

Studies were eligible for inclusion if they met the following criteria. First, all studies had to explore the link between CT and SH. The definition of CT included, but was not limited to, physical/emotional/sexual abuse and neglect. SH included acts of NSSI up to, and including, suicide. Secondly, included studies had to explore the impact of the chosen CM on this link. The CM explored could include, but were not limited to, cognitive flexibility, attentional biases, memory distortions, or executive functioning. Only empirical studies (quantitative, qualitative, or mixed-methods) that directly explored the link between CT, CM, and SH behaviours were included. Thirdly, included studies had to report SH behaviours as an outcome. There were no restrictions on publication language or publication year. There were no restrictions on the age of participants, to allow for a comprehensive synthesis of the available literature.

Search strategy and study selection

A literature search was conducted across four databases; Web of Science, SCOPUS, PubMed and EBSCOHost. EBSCOHost was used to simultaneously search individual databases including, APA PsycInfo, APA PsycArticles, CINAHL Ultimate, E-Journals, MEDLINE Ultimate and OpenDissertations. Previous reviews exploring the topics of CT and SH were consulted to identify appropriate search terms, and subsequently altered to fit this review scope by using key words associated with the review's focus, as seen in Figure 1. Preliminary searches were completed with title and abstract included. Appropriate papers were screened by

title and abstract and those deemed suitable for a full text read were retrieved. Additional papers were identified through forward and backward citation searching of relevant papers. This is demonstrated using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (O'Dea et al., 2021) (Figure 2).

Figure 1

Search terms used

Search 1: "child* abuse" OR "child* neglect" OR "child* advers*" OR "child* maltreat*" OR "child* trauma" OR "early life stress" OR "early advers*" OR "ACEs" OR "adverse childhood experience*"
AND
Search 2: "self-harm" OR "self-injur*" OR "NSSI" OR "non-suicidal self-injur*" OR "suicid*" OR "self-poison*" OR "self-mutilat*" OR "self-cut*" OR "deliberate self-harm" OR "DSH"
AND
Search 3: cognitive mechanisms OR cognitive distortions OR "cogn* function*" OR "cogn* flexib*" OR "executive function*" OR "attentional bias*" OR "memory bias*" OR "ruminat*" OR "decision-mak*" OR "cognitive reappraisal" OR "cognitive control" OR "working memory"

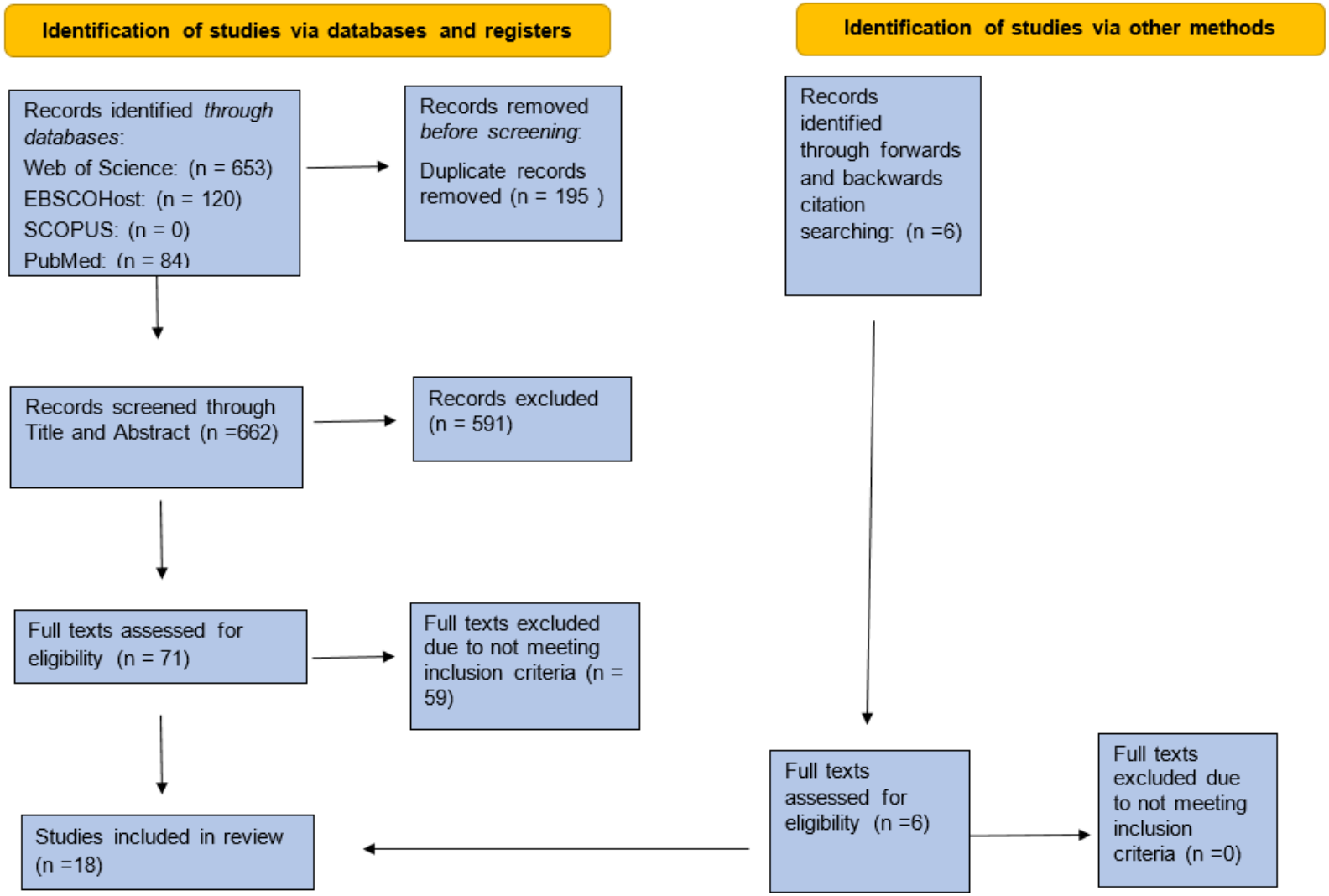
A Narrative Synthesis of the relevant literature was conducted. Narrative synthesis is a methodological approach that informs development of new knowledge based on analysis of current literature in a specific area where words and text are used to summarise and explain the findings (Popay, 2006). This review did not limit data based on quantitative or qualitative findings, as both may offer complementary insights to one another (Creswell & Creswell, 2005). However, all studies identified

as appropriate utilised quantitative analysis. Narrative Synthesis was used, as it is a structured approach that enables the synthesis of evidence where statistical pooling is not feasible due to the heterogeneity of included studies (Siddaway et al., 2019). Consequently, Narrative Synthesis allows for the exploration of complex and multi-faceted constructs, like CT and SH, where the contextual and theoretical framework that underpins each study can be considered and explored during the synthesis of findings.

Narrative Synthesis follows a structured four-step approach. This review followed the guidance provided in the ESRC Methods Programme (Popay, 2006). The first step is to create a Theory of Change to inform the systematic review – this is optional and is dependent on the researcher's choice. Following this, a preliminary synthesis is conducted to develop an initial description of the results of the included studies. Next, relationships are rigorously explored both within and between studies. Finally, the robustness of the synthesis is assessed, looking at methodological quality of included studies and the review process.

Figure 2

PRISMA flowchart



Results

Theory of Change

This review did not include a Theory of Change. CT and SH have well established theoretical pathways documented in the literature (Klonsky, 2007; Liu et al., 2018). Additionally, this narrative synthesis focused on synthesising existing findings and exploring relationships, rather than evaluating the effectiveness or implementation of a suggested intervention (Popay, 2006). For these reasons, a Theory of Change was deemed out of the scope of this review.

Preliminary Synthesis

Summary of Included Studies. Descriptions of the studies are provided in Table 1, which summarises the included studies to facilitate accessibility (Levitt, 2020) and consistency (Liberati et al., 2009). The table is organised in date order.

Four studies utilised only female participants, fourteen studies utilised a mixture of male and female participants. Six studies utilised adolescents and eleven studies utilised adults aged 18 onwards. One study utilised a youth population aged 14-24. Nine studies were based in China, six were based in North America, one was based in the UK, one was based in Germany and one based in Australia. One study utilised a longitudinal design, 17 studies utilised a cross-sectional design. Of the CM included, two studies included hopelessness, four included dissociation, six included rumination, one included maladaptive perfectionism, and one included general negative cognitive errors such as catastrophising, overgeneralisation, personalising, selective abstraction. Additionally, two addressed executive functioning and four addressed cognitive emotion regulation mechanisms. Some studies assessed multiple CM. Most studies found CT and SH were positively correlated, although this finding was not significant in some (Low et al., 2000; Valderrama et al., 2022;

Weismoore & Esposito-Smythers, 2010). Statistical significance helps determine whether observed relationships in the data are indicative of a true pattern, or have occurred by chance (Field, 2024). Most studies found at least one CM mediated or moderated the relationship between CT and SH, while a smaller number identified no effects (Allen et al., 2021; Valderrama et al., 2022)..

Table 1

Summary of Included Studies

Reference	Demographics	Study Design	Measures Used	Results
1. Low et al. (2000)	50 female participants Inpatients at UK mental health hospital Aged 18-51 years	Cross-Sectional	Traumatic Antecedents Questionnaire Beck Hopelessness Scale (BHS) Dissociative Experiences Scale self-harm levels identified via previous study (Non-Harmers (NH)/ Infrequent Harmers (IH)/ Frequent Harmers (FH))	No significant relationship between CT and SH alone FH had higher dissociation levels than NH/IH, higher levels of anxiety, irritability, suicidal ideation, and impulsivity No significant differences between groups for hopelessness Path analyses revealed sexual abuse increased dissociative experiences, which contributed to self-harming behaviours
Rodriguez-Srednicki (2002)	441 female participants	Cross-Sectional	Trauma Symptom Checklist (TSC)	Significant relationship between CT and SH via

	College students in New York Aged 18-23 years		DES Questionnaire was included in the survey instrument to assess CSA history, substance abuse, self-mutilation, and suicidality	substance misuse, binge-eating and suicide attempts CT and dissociation have a strong correlation Dissociation was weakly but significantly positively related to every index of self-destructive behaviour except binge eating Dissociation a significant mediator in some SH behaviours (substance misuse) but not others (suicide attempts/binge-eating)
Meadows and Kaslow (2002)	361 African American Females (176 Suicide attempters / 185 non-attempters) Recruited from public health facility for low income area	Cross-Sectional	Childhood Trauma Questionnaire (CTQ) BHS Suicidality: coded as 1 for attempters, 0 for non-attempters	Suicide attempters had significantly higher reports of abuse compared to non-attempters Suicide attempters had significantly higher hopelessness scores.

	Aged 18-64 years			Hopelessness mediated the relationship between childhood maltreatment and suicidality
Weismoore and Esposito-Smythers (2010)	185 Adolescents – 71.4% female, 29.6% male, and their parents Inpatients at North American mental health hospital Aged 13-18 years 84% Caucasian, 2.7% African American, 2.2% Asian, 3.2% Native American, 7.6% other racial background and 9.2% Hispanic/Latino	Cross-sectional	Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (measured psychiatric disorders, NSSI, abuse, and assault) Children's Negative Cognitive Errors Questionnaire (CNCEQ) (measured catastrophising, overgeneralisation, personalising, and selective abstraction.)	Cognitive errors were significantly correlated with NSSI Greater cognitive errors (CNCEQ total score) were significantly associated with NSSI but abuse history alone was not The interaction of assault and cognitive errors significantly predicted NSSI
Swannel et al. (2012)	11,423 Australian adults Randomly	Cross-Sectional	Researcher made NSSI measure CTQ items	CT and NSSI positively correlated

	selected from the Australian Electronic White Pages Aged 18-100 years 62.2% Female, 37.8% Male		DES items	Dissociation mediated the relationship between CT and NSSI Dissociation was the strongest mediator for males
Franzke et al. (2015)	87 Caucasian females (42 NSSI, 45 non-NSSI) Inpatient Clinic in Germany Aged 18-66 years	Cross-sectional	CTQ NSSI Self-report questionnaire developed by the clinic Fragebogen für Dissoziative Symptome (FDS-20) PTSD and depression measures	NSSI group reported significantly more abuse and neglect than persons without NSSI NSSI group had significantly higher dissociative symptoms compared to the no-NSSI group CT and neglect had significant direct effects on dissociative, posttraumatic, and depressive symptoms. Dissociative symptoms had a significant direct effect on NSSI

				Indirect effects of CT on NSSI through dissociative symptoms were significant
Gu et al. (2020)	949 adolescents in China – 50.9% female, 50.1% male (38.9% NSSI) Junior High School Aged 11-16 years	Cross-Sectional	Emotional abuse measured by psychological abuse subscale from the Child Psychological Abuse and Neglect Scale The NSSI Scale Ruminative Response Scale	Emotional abuse and rumination were significantly associated with NSSI Rumination moderated the indirect effect of emotional abuse on NSSI through identity confusion and amplified the direct association between emotional abuse and NSSI
Allen et al. (2021)	144 adults inpatients in USA mental health hospital Aged 18-65 years 58.33% Female, 41.67% Male	Longitudinal	Columbia Suicide Severity Rating Scale (C-SSRS) CTQ Emotional Stop-Signal Task (ESST) measuring NEAT (negative emotional action termination)	CT positively correlated with lifetime suicidal behaviours (SBs) NEAT performance was linked to past and future SBs independently of childhood maltreatment.

				CT was not a significant predictor of SBs when controlling for other factors. Poor NEAT increased risk of future SBs x3
Ying et al. (2021)	5619 adolescents in China – 54.7% males, 45.3% female High school Aged 15-16 years	Cross-sectional	CT assessed using My memories of upbringing subscales (rejection and overprotection) Maladaptive perfectionism assessed using Frost Multidimensional Perfectionism subscales (concern over mistakes (CM) and doubts about actions (DA)) 10-item Ruminative Response Scale NSSI assessed using 7 behaviours from the Deliberate Self-Harm Inventory	NSSI positively correlated with CT measures Rumination mediated relationship between maternal overprotection and NSSI but not between the other negative parenting practices and NSSI The indirect effects of all negative parenting practices on NSSI through maladaptive perfectionism were significant The mediation assumptions of negative parenting practices to

				maladaptive perfectionism to rumination and to NSSI, were supported
Valderrama et al. (2022)	426 undergraduates from NYC university Aged 18-43 years 78% Female, 22% Male	Cross-sectional	Early Trauma Inventory – Self Report Short Form Revised (ETISR-SF) Ruminative Responses Scale (RRS) - brooding and reflection subscales UPPS Impulsive Behaviour Scale The Suicidal Behavior Screening (SBS)	CT correlated with higher brooding and reflection Brooding and reflection, through lack of perseverance, partially mediated the link between CT and suicide ideation but not attempts Rumination not associated with higher suicide attempts
Qian et al. (2022)	114 youth participant outpatients of Wuhan University with Major Depressive Disorder Aged 14-24 years 77.2% Female, 22.8% Male	Cross-sectional	CTQ Diagnostic interview to assess NSSI – present or not present Hamilton Rating Scale (HAMD) for depression Adolescent Self-Rating Life Events Checklist (ASLEC)	More CT correlated with more NSSI CERS partially mediated the link between CT and NSSI Stressful life events didn't directly affect NSSI, it worked only through adaptive CERS

			Cognitive Emotion Regulation Questionnaire (CERQ)	
Gu et al. (2023)	1042 prisoners in China Aged 20 to 71 years 100% Male	Cross-sectional	CTQ-SF for CT NSSI interview from Inventory of Statements About Self-Injury Psychopathy subscale of Dirty Dozen Cognitive Reappraisal subscale of Emotion Regulation Questionnaire (ERQ)	CT positively associated with NSSI Psychopathy mediated the CT/NSSI link Cognitive reappraisal moderated the psychopathy/NSSI link, buffering negative effects Cognitive reappraisal did not moderate the direct effect of CT on NSSI
W. Wang et al. (2023)	1254 students in China – 49.2% females and 46.5% males, 4.31% unknown (23.6% NSSI, 4.7% Suicidal Ideation) Chinese Colleges Mean aged 21.16 years	Cross-sectional	Childhood Emotional Abuse Questionnaire Non-Suicidal Self-Injury Questionnaire Suicidal ideation (SI) was assessed with one item 'I want to end my life, rated 1(never)-5 (always) on Likert scale	Higher CEA in NSSI and SI CEA linked to maladaptive emotion regulation strategies, specifically rumination and EA

			22-Item Ruminative Response Scale	Rumination mediated the relationship between CEA and NSSI/SI
Brown et al. (2024)	119 participants recruited from an inpatient psychiatric hospital in USA Aged 13-18 years 72.3% Female, 27.7% Male	Cross-sectional	CTQ-SF Self-Injurious Thoughts and Behaviours Interview (SITBI) The Behaviour Rating Inventory of Executive Function-Parent Form (BRIEF)	CT threat and suicide attempts correlated CT deprivation no correlation with suicide attempts Executive functioning moderated link between CT threat and suicide - suicide risk a potential mix of cognitive strengths and emotional weaknesses
Fu et al. (2024)	833 adolescents – 73.7% female, 26.3% male 12 Chinese hospitals – outpatient and inpatient Ages unknown	Cross-sectional	CTQ Functional Assessment of Self-Mutilation 22-Item Ruminative Response Scale	CT directly related to NSSI behaviour CT significantly positively correlated with rumination CT directly and indirectly increases NSSI behaviour in adolescents with depression through rumination.

				The impact of CT and rumination on NSSI is stronger in women. Women are more prone to rumination, which heightens their emotional pain and risk of maladaptive behaviours.
Gong & Zhang (2024)	1,984 adolescents from grades 7-9 in Middle Schools in China Mean age 12.84 years 47.9% Female, 52.1% Male	Cross-sectional	CTQ-SF Depressive Disorders in Childhood Self-Rating Scale (DSRSC) Deliberate Self-Harm Inventory (DSHI) Cognitive reappraisal subscale of the ERQ	CT and NSSI correlated Direct effect of CT on NSSI = not significant after accounting for depressive symptoms = depressive symptoms fully mediate this link No significant interaction between CT and cognitive reappraisal on NSSI itself Significant interaction between CT and cognitive reappraisal on depressive symptoms. Higher

				cognitive reappraisal = weaker impact of CT on depressive symptoms Cognitive appraisal moderates the pathway from CT to depressive symptoms
Li et al. (2024)	651 participants recruited from the psychiatry department of Renmin Hospital of Wuhan University Aged 13-25 years No NSSI = 58.8% Female, 41.2% Male NSSI = 72.6% Female, 27.4% Male	Cross-sectional	The Adolescent Non suicidal Self-Injury Behaviour Questionnaire (ANSAQ) CTQ-SF Cognitive Reappraisal subscale of ERQ The Trait Coping Style Questionnaire	More CT correlated with more NSSI Cognitive reappraisal and negative coping styles partially mediated the link between CT and NSSI.
Q. Wang (2024)	1270 adolescents – 58.5% female, 41.5% male High schools in China Mean age 15.92 years	Cross-sectional	CTQ 22-Item Ruminative Response Scale Adolescents Self-Harm Scale	CT positively correlated with rumination Rumination positively correlated with NSSI.

	CT predicted NSSI directly and indirectly through rumination Rumination identified as partial mediator between CT and NSSI

Critical Appraisal. Eighteen studies were included in this review and were critically appraised using the Critical Appraisal Skills Programme (CASP) (2024) for descriptive/cross sectional studies. This checklist provides a comprehensive framework for checking the methodological quality of quantitative studies. Critical appraisal is an important process to assess the possibility of bias in a study's design, conduct and analysis, informing interpretation of findings (Tod et al., 2022). Overall study quality was high. Studies were included despite quality score; however, quality was taken into account when considering contribution to the overall narrative synthesis.

All papers addressed a clearly focused issue, used an appropriate method to answer their question and recruited participants in an acceptable way. A well-defined research question ensures the studies remained targeted and relevant, improving the quality of the findings (National Institutes of Health [NIH], 2016). Ensuring the use of appropriate methods also increases the validity of the findings by minimising methodological bias (Gyure et al., 2014). All papers also clearly presented their results and findings, provided an in-depth description of the data analysis and made a valuable contribution to the research area. Providing an in-depth description of the data analysis promotes transparency, which is crucial for the replication of research (Buthe et al., 2015). It is important to ensure that research is contributing to data already collected and offering to fill gaps in knowledge to advance understanding and support communities (Schools & Smith, 1999).

Most studies utilised previously validated measures to reduce bias. These measures explored SH and grouped participants via binary presence, frequency, severity and type. This variation in measurement approach could account for some of the differences identified in the findings, and results should be interpreted with

caution. Additionally, a few studies used measures of their own creation. Rodriguez-Srednicki (2002), Swannel et al. (2012) and Franzke et al. (2015) utilised non-validated measures of SH. Rodriguez-Srednicki (2002) utilised a self-made questionnaire to assess both trauma history and SH, they did not report the process for this, or include any assessments of reliability and validity. Swannel et al. (2012) reported their NSSI questions were specifically created for the telephone interview they conducted, based on their own prior research and informed by several well-known NSSI studies and validated tools, such as the Deliberate Self-Harm Inventory (Gratz, 2001). Franzke et al. (2015) utilised a measure they created in previous research to capture the levels of NSSI among participants. There was no comment on the formal validity or reliability of either of these measures, which introduces potential measurement bias and could question the credibility of the study findings (M. H. Frost et al., 2007), requiring them to be interpreted with caution. Nine studies utilised populations that were not generalisable to the local population, eight included inpatients/outpatients within specific hospitals that specialised in the treatment of mental health difficulties, and one included imprisoned people. This could reduce the external validity of the results (Borsboom et al., 2004). However, because this synthesis investigated mediating mechanisms of the relationship between CT and SH, a clinical population is highly relevant, as they are likely to exhibit the most pronounced effects of the issues being studied (Mertens, 2019).

All studies provided meaningful data for the synthesis question. The strongest papers received 11/11 (Fu et al., 2024; Gong & Zhang, 2024; Gu et al., 2020; Gu et al., 2023; Ling et al., 2024; Q. Wang, 2024; W. Wang et al., 2023; Ying et al., 2021). The weakest papers received 9/11 (Franzke et al., 2015; Low et al., 2000; Meadows & Kaslow, 2002). Multiple papers received 10/11 (Allen et al., 2021; Brown et al.,

2024; Qian et al., 2022; Rodriguez-Srednicki, 2002; Swannel et al. 2012; Valderrama et al., 2022; Weismoore & Esposito-Smythers, 2010). The most frequently observed methodological limitation was the absence of an explicit power calculation to justify the sample size, or the use of un-validated measurement instruments. Lastly, all studies included were retrieved from peer-reviewed articles. Peer-reviewed articles have several benefits including increased credibility, reliability and inclusion of evidence-based data (Morley & Grammer, 2021).

Exploring Relationships between Studies

This synthesis included studies that explore the interplay between CT, SH and various CM. Between these studies, consistent results have emerged, however variations in the study design, populations and measured constructs provide nuanced understanding. This section will explore these relationships via grouping into different variations and portraying their findings.

The Direct Link Between Self-Harm and Childhood Trauma

Each study explored the direct link between CT and SH. Of the 18 included studies, seven found a significant association, demonstrating the strong impact of these experiences on emotional and behavioural regulation. For example, Gu et al. (2020) and W. Wang et al. (2023) assessed emotional abuse using validated scales and found emotional abuse in childhood had a significant direct effect on the presence of NSSI behaviours, where higher levels of emotional abuse correlated with higher levels of NSSI. In studies that did not specify NSSI, the direct link between CT and SH was also present. Meadows and Kaslow (2002), whose research focused on clinical populations, found suicide attempters reported significantly higher recounts of abuse, suggesting a specific link between CT and suicidal behaviours.

Three studies (Low et al., 2000; Valderrama et al., 2022; Weismoore & Esposito-Smythers, 2010) did not identify a direct link between CT and SH. These studies employed different measures to assess the impact of CT compared to most studies that found a direct association. Specifically, a majority of the studies that observed a significant relationship between CT and SH typically employed CTQ's, utilising 5-point Likert scales (Bernstein et al., 1998; Wingenfeld et al., 2010). In contrast, Low et al., (2000), Valderrama et al., (2022)and Weismoore and Esposito-Smythers (2010) used the Traumatic Antecedents Questionnaire, the ETISR-SF and the Schedule for Affective Disorders and Schizophrenia for School-Age Children Present and Lifetime Version, respectively. The use of these different assessment tools may have contributed to the discrepancy in results, highlighting the potential influence of measurement variation on study outcomes.

Cognitive Mechanisms linking Self-Harm and Childhood Trauma

Several CM were identified as key factors linking CT to SH. The most explored mechanisms in the studies included in this synthesis are Rumination, Dissociation, and Cognitive Emotion Regulation (CER). Additional CM explored were Hopelessness, General Negative Cognitive Errors, Emotion Response Inhibition (ERI), Executive Functioning and Maladaptive Perfectionism. Most of these CM appear to mediate or moderate the relationship between CT and SH in different ways, providing valuable insight into the underlying psychological pathways that contribute to SH behaviours, however some did not.

Rumination emerged as the most frequently studied CM and the most robust, with consistent findings across all studies reviewed. Research consistently shows rumination plays an indirect role in the relationship between CT and SH, with studies indicating that traumatic experiences increase ruminative propensities, consequently

exacerbating emotional distress and contributing to maladaptive coping strategies. Rumination not only mediated the CT-SH relationship, but also moderated the effects of other symptoms, demonstrating its pivotal role. Gu et al., (2020) found rumination moderated the effect of emotional abuse on NSSI by interacting with identity confusion. W. Wang et al., (2023) and Q. Wang (2024) demonstrated a mediation effect, where the experience of CT increased rumination, leading to increased NSSI. Fu et al. (2024) also found this relationship, and identified that it was stronger in females, and posited this was due to women being more prone to rumination, which heightens their emotional pain and risk of maladaptive behaviours. Additionally, Ying et al. (2021) found rumination to mediate the negative effects of CT, fostering repetitive negative thinking that contributed to NSSI. Additionally, their study suggested a complex interplay between CT, rumination, maladaptive perfectionism, and NSSI, with rumination acting as a mechanism that amplifies the effects of perfectionist tendencies stemming from CT and contributing to increased NSSI. Across these studies, rumination consistently emerged as a significant mediator or moderator of the CT–SH relationship, accounting for up to 24% of the total effect. These findings suggest rumination exerts a small-to-moderate effect on this relationship, amplifying the impact of CT on SH outcomes.

One studies results were more complex, Valderrama et al. (2022) found rumination, specifically brooding and reflection, partially mediated the relationship between CT and suicidal ideation but not suicide attempts. These results may be due to a number of reasons. For example, this study only utilised two subscales of the RRS, whilst all other studies included the whole measure. The final scale, depression-related items, may be more aligned with acting on suicidal ideation, therefore omitting this scale means this relationship is missed. Research in the

literature partially supports this, with global rumination and brooding found to be linked to suicide attempts, whereas reflection did not have an effect (Rogers & Joiner, 2017).

CER consistently affected the relationship between CT and SH, both as a mediator and a moderator. Qian et al. (2022) found CER strategies partially mediated the relationship between CT and SH. Specifically, they found that adaptive CER e.g., reappraisal, was protective, whereas maladaptive CER e.g., rumination, increased risk. In line with this, Li et al. (2024) also found that CER, specifically reappraisal, partially mediated the CT-SH relationship. Across these studies, CER consistently emerged as a significant mediator of the CT–SH relationship, accounting for up to 38% of the total effect. These findings suggest CER exerts a small-to-moderate effect on this relationship, amplifying the impact of CT on SH outcomes. Gu et al. (2023) found that CER reappraisal moderated the CT-SH by buffering the impact of psychopathy traits, again acting as a protective factor. Similarly, Gong & Zhang (2024) found that CER reappraisal moderated the CT-SH link via its buffering effects on depressive symptoms. Across these studies, CER demonstrated a small effect size as a moderator, suggesting it plays a modest but meaningful role in the CT-SH relationship.

Dissociation and maladaptive perfectionism both mediated the relationship between CT and SH, though the limited number of studies examining these mechanisms highlights potential limitations regarding the reliability and generalisability of these findings, relative to rumination. Ying et al.'s (2021) study on maladaptive perfectionism is discussed above. Four studies found dissociation served as an indirect mechanism through which CT contributed to SH. Low et al. (2000) found that specifically childhood sexual abuse increased dissociative

experiences, which in turn linked to SH. Similarly, Swannel et al. (2012) and Franzke et al. (2015) found CT contributed to dissociative symptoms, and in turn, NSSI. Of these studies, Low et al. (2002) and Franzke et al. (2015) found a moderate to large effect size for dissociation as a mediator. Swannel et al. (2012) found a small effect size for females and a moderate effect size for males, suggesting sex differences affect the strength of dissociation as a mediator. Additionally, as with rumination, some studies were more nuanced. Rodriguez-Srednicki (2002) found dissociation mediated the relationship between CT and some SH behaviours, such as substance misuse, but not others.

In contrast, hopelessness significantly mediated the CT-SH link in only 50% of the studies reviewed. Low et al. (2000) did not find a significant effect of hopelessness on the relationship between CT and SH. Conversely, Meadows and Kaslow (2002) found higher levels of hopelessness were associated with suicidal behaviours, and that hopelessness mediated the relationship between CT and suicide attempts. The discrepancy in findings could be attributed to differences in the type of SH behaviours examined, with hopelessness likely being a more salient predictor of suicidality (Pompili, 2010), as opposed to general SH behaviours. Furthermore, the division of participants into three distinct levels of SH in Low et al.'s (2000) study, compared to the binary classification of suicidal participants (suicidal vs. non-suicidal) in Meadows and Kaslow's (2002) study, may have obscured the detection of an opposite effect. This highlights the importance of considering the specific nature of SH when examining CM.

Next, Brown et al. (2024) found that executive functioning ability moderated the link between threatening CT such as physical abuse, and SH via suicidal behaviours. Specifically, adolescents who struggled to initiate tasks, or mentally shift

between tasks, were more likely to have attempted suicide if they experienced high levels of threat-based CT. Executive dysfunction amplified the relationship between CT threat and SH via suicide attempts, suggesting a small but meaningful moderating effect size. From this, they posited that suicide risk is a potential mix of cognitive strengths and emotional weaknesses. In support of this, Weismoore and Esposito-Smythers (2010) looked at a variety of CM and found physical and sexual assault contributed to these, which then led to NSSI. None of the CM examined including catastrophising, overgeneralisation, personalising, and selective abstraction, were included in any other studies in this synthesis.

Allen et al. (2021) explored ERI via measuring negative emotional action termination (NEAT), and found that impaired NEAT performance was strongly linked to both past and future SH behaviours, namely suicidal behaviours. However, this effect was found independently of CT, suggesting that NEAT may act as an independent or additive risk factor, as opposed to a mediator or moderator of the CT-SH relationship.

Overall, the included studies highlight how dissociative states, hopelessness and cognitive distortions can function as mechanisms through which traumatic experiences contribute to SH behaviours, although an effect is not always guaranteed.

Population Diversity and Cultural Context

Studies included in this synthesis were conducted across diverse settings and cultural contexts, providing varying insights into these interactions.

Clinical vs. Community Populations. Western studies predominantly sampled homogenous clinical populations, including inpatients in mental health hospitals (Allen et al., 2021; Brown et al., 2024; Franzke et al., 2015; Low et al.,

2000; Weismoore & Esposito-Smythers, 2010) and outpatients from public health facilities (Meadows & Kaslow, 2002). These studies identified ERI, dissociation and hopelessness as significant moderators and mediators of the CT-SH relationship, consistent with findings in high-risk populations. Conversely, Eastern studies primarily utilised community-based samples, such as high school and college students (Gong & Zhang, 2024; Gu et al., 2020; Q. Wang, 2024; W. Wang et al., 2023; Ying et al., 2021). In these populations, CER and rumination were prominent mediators, often interacting with socio-familial variables such as culturally specific parental practices.

The observed differences may be partly attributable to the population characteristics. Clinical populations are more likely to exhibit severe trauma symptoms and comorbidities (Qassem et al., 2021), aligning with the chosen mechanism of ERI, dissociation and hopelessness, which are strongly associated with psychopathology. Contrastingly, community populations may manifest subtler cognitive processes, such as rumination, which reflect general maladaptive coping strategies rather than acute psychopathology, which can contribute to clinical risk behaviours.

However, despite general trends, both Eastern and Western studies have examined both clinical and community populations. Interestingly, while the population type varied, the CM explored often remained consistent with cultural patterns. For example, both Rodriguez-Srednicki (2002) and Swannel et al. (2012) sampled community populations in America and Australia, and both investigated dissociation, aligning with the Western focus on trauma-related psychopathology. Likewise, Fu et al. (2024), Gu et al. (2023), Qian et al. (2022) and Li et al. (2024) all sampled clinical populations in China, and investigated CER or rumination as key

CM, in line with CM often studied in Eastern Cultures.**Cultural variations.** In addition to population characteristics studied, the cultural context of these studies is equally relevant. In Eastern cultures, the cultural norm is a collectivist society which emphasises self-reflection facilitating social harmony (Tsai & Lau, 2013), but may inadvertently foster repetitive negative thinkingin response to trauma. On the other hand, Western cultures emphasise individualistic values that prioritise autonomy, but could increase vulnerability to disengagement with support teams following trauma (CAST, 2014b).

Robustness of Synthesis

The Evidence for Policy and Practice Information and Co-ordinating Centre Weight of Evidence Framework (WOEF) (Gough, 2007) will be utilised to analyse the robustness of this synthesis. The WOEF framework evaluates the relevance and methodological quality of included studies against criteria tailored to the specific review objectives rather than solely to the individual papers, providing a systematic foundation for determining the overall strength of the synthesis findings.

Weight of evidence A includes examining the overall quality of individual studies; this was completed in the critical appraisal section of this review. All studies were of high quality, with the weakest quality study scoring 9/11 on CASP. Weight of evidence B involved evaluating the appropriateness of the research design used to address the review question. Most studies utilised a cross-sectional design, which, while valuable for identifying relationships between variables and exploring potential mediators, is inherently limited in its ability to establish causal links due to the absence of temporal precedence (Fay et al., 2010). Nonetheless, this design was relevant to the review's aims, as the primary focus was on exploring the mechanisms linking CT and SH, rather than establishing causality.

Weight of evidence C examines whether the study focus matches the review question. The inclusion criteria set at the beginning of the synthesis ensured all studies specifically investigated the relevant variables. All studies included populations that had experienced CT alongside SH behaviours. The populations differed by age, with studies involving adolescents and people aged 18+. However, this did not affect study weighting, as this was not a focused aspect of the synthesis. Likewise, the studies were based in both Western and Eastern cultures as geographical homogeneity was not an explicit requirement of the review. Contrastingly, diversity in this area provided an enhanced view of how CT and SH interact across different cultural contexts. However, this could affect generalisability across cultures.

Overall, when combining judgments for Weight of Evidence D, all studies were weighed equally throughout the review process.

Discussion

This review synthesised evidence on CM that link CT and SH, offering insights into how cognitive processes mediate and moderate this relationship, and providing potential avenues for further research. Across all but two studies (Allen et al., 2021; Valderrama et al., 2022), at least one CM played a significant role in the CT-SH link, in line with previous research that found CT is linked to various psychopathologies through mechanisms that decrease cognitive function (Majer et al., 2010). Although the included studies did not explicitly examine PP, the presence of CM such as rumination and hopelessness, which are central to negative appraisals of the self (Sloan et al., 2021), alongside CER which is related to regulating feelings, heavily align with Meerwijk and Weiss's (2011) conceptualisation

of PP. This conceptual alignment provides a foundation for interpreting the review findings in greater depth, beginning with the role of rumination.

Rumination was the most frequently studied CM, with consistent significant effects identified. Rumination is characterised by repetitive thinking and dwelling on negative feelings or experiences (Ehring, 2021). Wisco and Nolen-Hoeksema (2008) describe ruminating as a method of reacting to distress by passively focusing on causes or consequences of the distress without utilising active coping skills and problem solving. As such, ruminating can perpetuate emotional dysregulation and impair the ability to identify or utilise adaptive coping mechanisms (Nolen-Hoeksema et al., 2008). From this, it may be suggested CT contributes to ruminative tendencies, and rumination contributes to PP and subsequent SH by reinforcing negative self-appraisals and making distress more intense and harder to alleviate, as discussed in Fu et al.'s (2024) study.

The majority of the current review findings are in line with previous reviews that identified significant associations between rumination and NSSI, this association was found in both longitudinal and cross-sectional studies, and was consistent across age, gender, race and rumination reasons (Nagy et al., 2023). Lupo (2023) also found rumination to be a clear component in the stress-diathesis model, as a precursor to ensuing psychopathologies by exacerbating the effects of stress. This is in line with Brodsky and Stanley's (2001) ELE stress-diathesis model, where CT contributes to ruminative tendencies, in turn contributing to SH behaviours. However, Valderrama et al. (2022) reported a more nuanced finding, whereby rumination mediated the link between CT and suicidal ideation, but not CT and suicide attempts. One potential reason for this difference is that Valderrama et al. (2022) focused specifically on suicidal ideation and suicidal attempts, whereas other studies in the

review focused on NSSI. Although conceptually related, the behaviours differ. NSSI is often reportedly used as a means of regulating emotions or relieving tension, and is closely associated with CM like rumination (Klonsky, 2007). Conversely, suicide attempts often reflect a more permanent desire to end one's life and require additional risk factors, such as hopelessness, to materialise (Britton et al., 2008). These findings suggest that although rumination is a robust predictor of SH via NSSI, its role in SH via suicide attempts may depend on the presence of other mediating or moderating factors.

In addition to rumination, maladaptive perfectionism and dissociation also yielded significant effects, although the prevalence of studies focusing on these CM was less. This may be due to these constructs having increased complexity and multidimensionality in comparison to rumination (Patterson et al., 2021; Steele et al., 2009). Maladaptive perfectionism is described as the tendency to be over-critical of one's own performance (R. O. Frost et al., 1990), and has been found to be linked to rumination, contributing to the onset and maintenance of mental health difficulties, in multiple studies (Flett et al., 2016; Xie et al., 2019). This could be explained by Perfectionism Cognition Theory, which posits people who experience maladaptive perfectionism have adverse emotional experiences and cognitive processes contributing to overthinking behaviours (Ying et al., 2021). The study included in this review did not differentiate between types of maladaptive perfectionism, risking overlooking nuanced mechanisms that may underlie the presented results. There are two types recorded in the literature; socially prescribed perfectionism which is more strongly linked to depression and interpersonal stress, and self-oriented perfectionism which is linked to internalising distress (M. M. Smith et al., 2022). Nonetheless, the link between rumination and maladaptive perfectionism is well

established in the literature, and helps further explain the consistent results presented in this review.

Dissociation is also a multifaceted construct and is not yet fully conceptualised; this poses challenges for both research and clinical practice (Cavicchioli et al., 2021; Steele et al., 2009). Low et al. (2000) utilised the APA (1994) definition; “Dissociation consists of a disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment, which may be sudden or gradual, transient or chronic”. This definition is also utilised in more recent review literature on dissociation and trauma (Cavicchioli et al., 2021), suggesting potential uniformity across dissociation studies in this area. The current review findings are also supported by the literature, where dissociation is often associated with trauma as a form of psychological escape, and SH is associated with trauma via management of dissociative tendencies to induce or cease dissociative states (Polskaya & Melnikova, 2020). This suggests dissociation may be helpful for some individuals and unhelpful for others, demonstrating further the nuanced capabilities of the phenomenon.

Within the literature, researchers have suggested dissociation serves as a maladaptive coping mechanism to avoid PP (Levinger et al., 2015). Additionally, researchers have suggested dissociation prevents integration of traumatic memories, resulting in persistent negative appraisals of the self in relation to traumatic events (Ehlers & Clark, 2000). This suggests dissociation is not only a CM to avoid PP, but one that contributes to it. This experience also contributes to further SH to manage the distress (Polskaya & Melnikova, 2020).While dissociation appears to be a consistent CM linking CT and SH, the role of hopelessness in this relationship remains less clear.

CER was also heavily represented in the chosen studies, with four studies exploring this CM. CER refers to conscious, mental strategies employed by a individual to manage their emotional responses to stressful or traumatic stimuli (Garnefski & Kraaij, 2006; Gross & John, 2003). CER can be broadly categorised into two categories: adaptive e.g., cognitive reappraisal, and maladaptive e.g., catastrophising. As seen, both categories can have clear effects on mental health, with CER directly mediating the CT-SH link, or indirectly moderating this link through other factors such as depressive symptoms and psychopathy. This aligns with trauma-informed models of psychopathology, where CT disrupts learning adaptive CER skills, resulting in reliance on maladaptive CER skills, which fail to alleviate distress and at times worsening it, increasing the risk of SH behaviours (Linehan, 1993; van Dijke et al., 2012)

Importantly, some components of CER overlap with other CM explored independently in this literature review, such as rumination, demonstrating the complexity of CM. However, when explored within the context of CER, these CM are linked to emotional regulation. For example, in CER rumination is conceptualised as a maladaptive regulatory strategy employed in response to emotional distress (Garnefski & Kraaij, 2006) which contributes to the emotion-focused components of the PP definition, in contrast to the self-appraisal components discussed earlier. In line with broader emotional regulation strategies, Allen et al. (2021) explored ERI, which focused on more automatic CM, centering specifically on the inhibition of already started or ongoing emotional actions, rather than the deliberate regulation strategies typically associated with CER.

Specifically, Allen et al. (2021) explored Negative Emotional Action Termination (NEAT), as the later stage of ERI. Within their study, individuals had to

override reflexive behaviour responses triggered by emotionally salient cues. In contrast to CER, this study found ERI functioned independently of CT, and was linked only to past and future SH via suicidal behaviours. These findings diverge from the previous studies, and suggest deficits in cognitive functioning, specifically ERI, may arise from factors beyond CT. In addition to the CM explored being different, another reason for the contrast in findings may be related to methodological variance between studies. Notably, Allen et al. (2021) utilised a behavioural measure, the Emotional Stop-Signal Task, to assess NEAT, whereas a majority of studies in this literature review relied on self-report measures to assess CER and other CM. Whilst self-report measures offer valuable insight into individuals' subjective experiences and perceptions, behavioural tasks may capture more automatic or implicit processes that operate outside of conscious awareness. These findings highlight the importance of utilising diverse methodological approaches to understand the range of CM that may contribute to the CT-SH link. Other studies explored re-centre CT as a key contributing factor to the CT-CM-SH pathway.

Brown et al. (2024) found CT involving threat, such as physical abuse, was significantly associated with SH via suicide attempts. Additionally, executive functioning as measured via parent-report, moderated this relationship. Executive functioning includes higher-level cognitive abilities, for example working memory, cognitive flexibility, and inhibitory control (Baggetta & Alexander, 2016). These abilities support goal-directed behaviours like planning and initiating tasks. Brown et al. (2024) findings suggest that higher levels of executive functioning buffer the effects of CT on suicidality, as individuals with better executive functioning demonstrated a lower likelihood of suicide attempts. These results align with models

of self-regulation that emphasise the role of top-down control in distress management and the preclusion of maladaptive responses (Eisenberg et al., 2024). Whilst executive functioning reflects cognitive control, other CM like hopelessness involve the content of thought, such as negative expectations about the future.

Hopelessness yielded inconsistent results. Hopelessness is defined as having no hope (Pan & Chiou, 2004), and is a cognitive mechanistic vulnerability that affects how information is processed, often leading to overgeneralised and stable negative expectations (Abramson et al., 2000). Due to the limited studies on this construct, it is difficult to determine the effect of hopelessness on the CT-SH relationship. Hopelessness is a leading cause for suicidal behaviour (Britton et al., 2008), thus Meadows and Kaslow's (2002) findings of hopelessness mediating the relationship between CT and suicidal SH behaviour further supports the literature. Contrastingly, Low et al.'s (2000) findings contradict previous literature that identifies hopelessness as a predictor of NSSI behaviours (Ali & Soomar, 2019; Steeg et al., 2016). However, other studies may help explain this.

McMillan et al. (2007) found the Beck Hopelessness Scale, used within both Meadows and Kaslow's (2002) and Low et al.'s (2000) studies, could identify people at risk of future SH, however this was done with low specificity and was not precise enough for practical application. This raises the possibility that the increased specificity of Low et al.'s (2000) study, whereby groups of SH were broken down into three groups, found no significant link. This is a more precise approach that accounts for confounding factors and excludes false positives, in contrast to Meadows and Kaslow's (2002) dichotomous approach. As a result, the findings of Meadows and Kaslow's (2002) study should be interpreted with caution. Beyond the specific role of hopelessness, broader CM were explored.

In utilising a generalised cognitive questionnaire, Weismoore and Esposito-Smythers (2010) demonstrated the CT-SH link is mediated across multiple cognitive domains. However, the lack of specificity regarding which CM drive this association introduces challenges in identifying clinical implications and targeted therapeutic interventions. Future research would benefit from replicating this study and systematically reviewing the mediating mechanisms to improve therapeutic applicability. Alternatively, it may be that the CM focused on underlay a general construct. The inclusion of distortions such as selective abstraction, personalising, catastrophising and overgeneralisation could be unified under self-directed negativity or feelings of worthlessness (Beck, 1967). This aligns with the definition of PP as determined by Meerwijk and Weiss (2011), further supporting the integral part CM play in the relationship between CT and SH.

The studies utilised in this review incorporated a range of Western and Eastern cultural populations. This facilitated depth within the synthesis, however also incorporated difficulties of generalisation and cultural relevance (Henrich et al., 2010). Studies conducted in the West focused mostly on clinical samples, future studies should continue to include both clinical and non-clinical samples to ascertain differences or similarities between the populations. Conversely, studies in the East that focused on mostly non-clinical populations would benefit from replicating more of the research within clinical populations. Despite this, the diversity represented suggests exploring the link between CT and SH is a relevant research topic worldwide.

Limitations

Some studies utilised in the review failed to include definitions for the constructs they used. This could be potentially problematic for synthesising data, as

it requires certain knowledge that studies are exploring the same construct. However, this only occurred in two of the nine studies (Franzke et al., 2015; Ying et al., 2021) and further reading within the studies helped clarify this information. Future studies should include clear definitions of the constructs measured.

A majority of studies relied on self-report measures, which are inherently susceptible to social desirability bias, memory bias and response bias (Furnham, 1986). While some of these studies supplemented self-report measures with patient data to gain objective information about CT and SH behaviours, future studies should incorporate more objective measures. Additionally, all data collected was quantitative, precluding a deeper exploration of the observed relationships (Mayer, 2015). Due to the subjective nature of CT and SH, future research would benefit from the inclusion of qualitative methodologies to capture the nuanced contextual factors that may influence the findings.

Lastly, this review encompassed a small number of studies with noticeable heterogeneity of study characteristics including participants, study measures, CM chosen and environmental settings. This presents issues with synthesising findings and reduces generalisability (Popay, 2006). This could be due to most existing research focusing on the role of CM in either SH behaviours or CT, rather than investigating how these mechanisms function as mediators between the two. However, 12 out of the 18 studies included within this review were completed within the last five years, and nine were completed within the last two years, indicating research in this area is ongoing.

Clinical Implications

The results of this narrative synthesis suggest important developmental and clinical implications. Many studies utilised an adolescent population and found the

CT-SH link to be significantly mediated by factors like rumination. These findings indicate a need to promote healthy cognitive development in these formative years as a preventative measure against the use of maladaptive coping mechanisms (Compas et al., 2014).

Clinicians working with people who have encountered stressful life events could aim to include a focus on identifying and addressing cognitive vulnerabilities, specifically those such as rumination. This could include interventions that focus on addressing maladaptive coping mechanisms and providing helpful alternatives. One meta-analysis found treatments that target specific CM like rumination had medium-sized effects on reducing rumination relative to the control groups (Spinhoven et al., 2018).

Gaps in the Literature

Despite the need for further studies, it is clear CM play a role in mediating the relationship between CT and SH. However, CM alone may not fully explain this relationship. Many of the identified CM either intensified negative emotional experiences or aimed to alleviate them. Therefore, further research should explore emotional components that contribute to negative self-appraisal and, in turn, PP, and examine their role in the relationship between CT and SH.

Study Focus and Research Questions

Rationale for the Current Research Project

The current research aims to explore emotional proxies contributing to PP that mediate the link between CT and SH. As previously noted, PP is a multifaceted construct, that is difficult to measure and is deeply interconnected with various

cognitive and emotional processes. Two key emotional processes in the manifestation and persistence of PP are emotional regulation and emotional reactivity (Koole, 2009; Linehan, 1993).

For example, Shelef et al. (2015) utilised a direct measure of PP, and found that emotional regulation of PP moderates the link between PP and suicidal ideation. This study supports the idea that emotional regulation is an active component in the process and maintenance of PP, making it unbearable and leading to maladaptive coping mechanisms. Additionally, Klonsky and Muehlenkamp (2007) found that individuals who engage in SH were more likely to display certain psychological traits, the most prominent being negative emotionality, which includes emotional dysregulation and heightened emotional reactivity. They also identified self-derogation, characterised by negative self-appraisal, as a prominent trait. To conclude, they stated that individuals high in negative emotionality and self-derogation, in line with Meerwijk and Weiss's (2011) definition of PP, were at particular risk for SH. This further demonstrates the significant contribution of emotional regulation and emotional reactivity to PP, supporting their use as emotional proxies for understanding and measuring this construct.

These PP proxies offer insight into how PP can become intolerable, contribute to SH and in extreme cases, suicidal ideation and enactment (Klonsky, 2007).

Emotional Regulation and Emotional Reactivity as Emotional Components of Psychological Pain

Emotional regulation encompasses both external and internal processes that involve monitoring, assessing, and adjusting emotional responses, in order to achieve personal goals (Thompson, 1994). It includes both conscious, voluntary regulation and automatic, unconscious processes (R. Smith & Lane, 2015). Gross

(1999) introduced the Process Model of Emotional Regulation, a widely cited framework that conceptualises the unfolding of emotional responses into distinct stages. In doing so, this highlights specific points at which individuals can intervene to manage and regulate their emotions. This model has shaped subsequent research concerning emotional regulation, particularly relating to trauma and SH (McKenzie & Gross, 2014). Effective emotional regulation enables individuals to maintain emotional balance, even in times of distress (Quoidbach et al., 2015). However, when individuals fail to regulate their emotions, they are more vulnerable to distress, contributing to PP and ensuing maladaptive behaviours (Gratz & Roemer, 2004; Shelef et al., 2015). Research has demonstrated that individuals who struggle to regulate emotions effectively are more likely to engage in SH as a means of alleviating psychological distress (Glenn et al., 2011). Dysregulation, particularly the inability to downregulate intense emotions, is a hallmark of PP, due to the cyclical nature of negative emotions. This suggests emotional regulation is not simply an outcome of PP, but an integral part of how PP is formed, processed and managed.

Emotional reactivity refers to the frequency and intensity of an individual's emotional arousal, occurring for both positive and negative emotions (Karrass et al., 2006). Individuals with high emotional reactivity often have stronger and longer lasting emotional responses to both positive and negative stimuli (Nock et al., 2008). High emotional reactivity can amplify negative emotions, intensifying the distress felt by an individual, again contributing to maladaptive coping behaviours such as SH (S. C. Hayes et al., 1996; Sauer-Zavala et al., 2012). Those who SH have been found to be less sensitive to physical pain (Kirtley et al., 2016) yet more sensitive to PP, characterised by heightened emotional reactivity (Glenn et al., 2011; Kirtley et al.,

2015). Heightened emotional reactivity has been linked to increased amygdala activation and impaired regulation from prefrontal regions, which may contribute to the experience of overwhelming PP (Casey et al., 2019). This suggests that emotional reactivity not only exacerbates PP but can also act as a core mechanism through which such pain manifests.

As discussed, the interaction between emotional regulation and emotional reactivity is crucial to understanding the concept of PP. Poor emotional regulation coupled with high emotional reactivity help create a feedback loop where negative emotions are intensified and poorly managed, contributing to and sustaining PP, as supported by multiple studies (Becker et al., 2019; Shelef et al., 2015). PP, therefore, may also be conceptualised as an outcome of dysregulated emotional processes. This aligns with Meerwijk and Weiss (2011), as individuals with difficulties regulating and managing their emotions are prone to experience overwhelming emotions, amplifying the distress linked to perceived deficiencies or failures in the self (Gratz & Roemer, 2004; Linehan, 1993). To conclude, PP could be conceptualised as both a cognitive and emotional consequence of impaired emotional management systems, where negative appraisals of the self and the inability to manage emotional states work together to generate and maintain distress. Consequently, these emotional components are utilised as proxies for PP measurement.

Pain Catastrophising

To further investigate the role of PP as a potential mediator between SH and CT, pain catastrophising (PC) will also be explored. While there is conceptual overlap between PP and PC, particularly in their shared emphasis on negative cognitive-emotional processes, PC is treated as an interacting but distinct CM in this study (Quartana et al., 2009). PC is a CM, and has been shown to intensify the

emotional distress caused by PP, thus exacerbating the experience for individuals (Sullivan et al., 1995). Given its influence, PC holds clinical relevance, as targeted interventions may help manage PP and improve outcomes. To begin, it is important to understand the theoretical underpinnings of PC, and how research in this area has evolved.

Historically, Ellis (1962) coined the term “catastrophising” within the framework of Rational Emotive Behaviour Therapy, defining it as the tendency to predict a negative conclusion with the worst possible outcome. This concept stemmed from his broader theory that rational and irrational beliefs guide human behaviours and emotional responses, with catastrophising arising in response to irrational beliefs. However, whilst Ellis conceptualised catastrophising as an irrational response, subsequent trauma research has recognised that within the context of trauma, catastrophising is often shaped by lived experience. In this context, catastrophising can be viewed as a rational, adaptive response to threatening environments. Individuals who have experienced trauma, may interpret ambigious stimuli as threatening because their cognitive systems have been recalibrated in response to trauma, in an effort to detect and avoid potential danger (Ehlers & Clark, 2000). Despite this, Ellis (1962) thought catastrophising to be a core element of emotional dysfunction, and a significant contributor to physical health difficulties.

Building on Ellis’s (1962) work, researchers recognised the need for a model that could situate psychological components, such as catastrophising, into the dominant biomedical discourse of pain. George Engel (1977) introduced the biopsychosocial model, which posits medical and psychological conditions are comprised of biological (genetics, neurophysiology etc.), psychological (emotions, thoughts, behaviours etc.) and social (culture, socioeconomic status, family

dynamics) components. The model, which is now widely accepted within the literature due to its holistic approach (Petrini & Arendt-Nielsen, 2020), posited further research into PC.

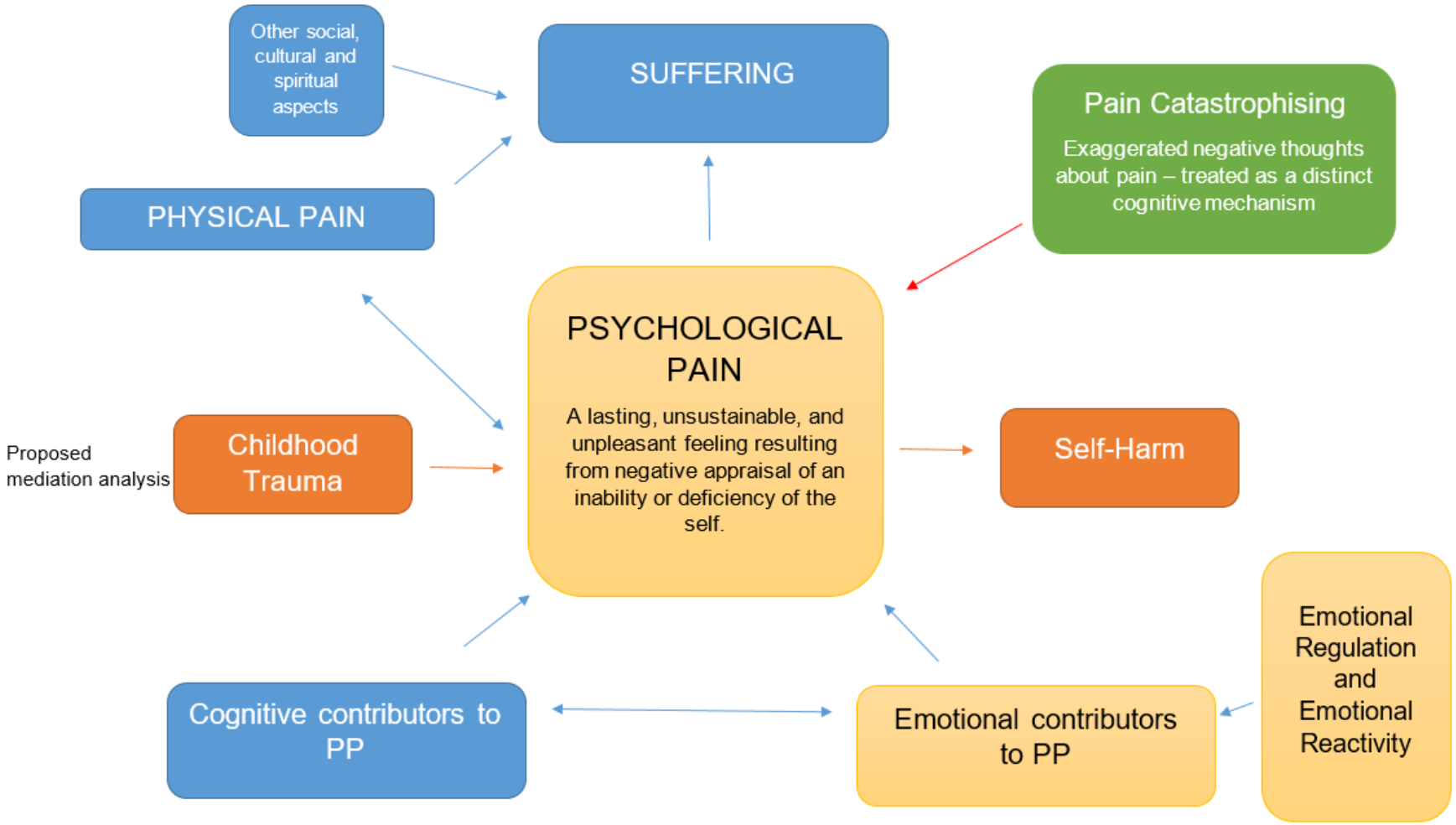
Following this, other psychological approaches adopted the term, including Beck's (1979) Cognitive Therapy. This approach classified catastrophising as an automatic cognitive error, and as a tendency to anticipate danger and disaster. Later studies found catastrophising intensified negative effects of worry, worsening outcomes for individuals (Kendall & Ingram, 1987). As a result, catastrophising has been identified as a key feature of emotional dysregulation, arising from and contributing to, emotional distress. The construct of catastrophising was further operationalised through the Pain Catastrophising Scale (PCS) (Sullivan et al., 1995) and its relationship to both physical and emotional distress, where increased PC increases distress in both areas (Sullivan et al., 1995). This highlights PC role as a distinct construct that significantly contributes to the experience of PP. PC is associated with perceptions of personal inadequacy to cope with distress (Quartana et al., 2009). This self-perceived inability to cope further impairs one's ability to manage PP (Meerwijk & Weiss, 2011).

For the purpose of this thesis, PC is defined as "an exaggerated negative mental set brought to bear during actual or anticipated painful experience" (Sullivan et al., 2001). Research has shown there is a link between PC and SH via intentional overdoses, where increased PC is significantly related to increased intentional overdoses (Sansone et al., 2014). Additionally, research has found a significant association between PC and trauma, measured by the presence of PTSD (Horsham & Chung, 2013). This overlap with other factors explored in this study, further

supports the inclusion of PC as a valuable component of the research. A conceptual map is provided, to aid understanding of the included variables (Figure 3).

Figure 3

Concept Map of Psychological Pain (PP) and Pain Catastrophising (PC), Situated within the Literature



Previous Research

To the researcher's knowledge, only one study has explicitly explored the role of PP as a potential mediator between various CTs and SH, specifically NSSI. Holden et al. (2022) found NSSI correlated with negative psychological states and PP statistically mediated the link between CT and NSSI. This study had limitations that the current study aims to address.

Firstly, the study focused specifically on NSSI rather than SH as a whole. Given that SH is a complex and highly subjective construct, excluding SH behaviours associated with suicidality may have led to the omission of important data (Klonsky & Muehlenkamp, 2007). This study will not omit specific SH behaviours, or explicitly differentiate between NSSI and SH with suicidal intent. Additionally, the study relied solely on quantitative self-report methods, namely the administration of questionnaires. Quantitative self-report questionnaires have many positive features: statistical interpretations based on large samples, are easy to administer, can be anonymous and self-paced. However, Quantitative self-report measures do not allow for expansion into an individual's subjective experience, missing nuances in the data collected, important for the complex phenomenon's investigated within this study.

This study includes a qualitative component, where clinical interviews will expand upon the quantitative data, thus providing a richer understanding into the unique perspective of the study participants and potential reasons behind the results obtained. Lastly, Holden et al.'s (2022) study focused on PP as a whole, and used a direct measure of PP. The current study aims to focus on emotional proxies of PP, using well-validated measures (Gratz & Roemer, 2004; Nock et al., 2008).

As seen in previous paragraphs, there is a strong link between SH and trauma demonstrated in quantitative studies (Lang & Sharma-Patel, 2011), although

their quantitative nature offers only a partial understanding into why. Additionally, a smaller body of previous studies have utilised qualitative research investigating SH and its relationship to trauma in various populations including older adults (Troya et al., 2019), younger female adults (Daley, 2015) and adolescents (Hill & Dallos, 2012). All studies found a majority of participants who partake or partook in SH endured adverse childhood experiences. This study aims to contribute to the smaller pool of studies that take a qualitative stance on investigating this link.

Research Aims

Following on from the literature reviewed in this introduction, the research aims are as follows. For the quantitative section of this study we aim to investigate the following hypotheses:

1. There will be a direct link between CT and SH; that is, the more CT someone has experienced the more SH behaviours they engage in.
2. CT, SH, PP proxies, and PC will be positively correlated.
3. Links between CT and SH will be statistically mediated by PP proxies
4. Links between CT and SH will be statistically mediated by levels of PC
5. Links between CT and SH will be statistically mediated by PP proxies even when controlling for individual differences in PC.

In the qualitative section of the study, we aim to explore the experiences of CT, PP and PC in people who SH, by identifying themes related to this phenomenon.

Methods

Chapter Overview

This chapter outlines the steps taken to explore the relationship between CT and SH, with a focus on PP proxies and a secondary focus on PC. This research utilised a mixed methods approach, incorporating both quantitative and qualitative data. The chapter begins with an exploration of the researchers ontological and epistemological positioning, followed by sections on design, procedure, measures, analysis, participants and ethical considerations. Given the mixed methodology, the studies are divided into two parts; part one covers the quantitative secondary data analysis (SDA), part two covers the mixed methods primary data collection and analysis, conducted by the author.

Ontological and Epistemological Positioning

Ontology refers to the beliefs about the nature of reality, and whether it exists independent of human perception i.e. Realism, or is socially constructed i.e. Interpretivism/Constructivism (Al-Saadi, 2014). Between these poles, exist ontological perspectives that encompass a mixture of viewpoints. Quantitative research is often grounded in Positivism, which states reality exists outside of human perception, and only that which can be empirically verified is meaningful, aligning with the idea that data collection should involve objective standardised measures (Park et al., 2020). Qualitative research is often grounded in Constructivism, which states humans create their own reality through their relationships, experiences and social interactions, and as a result, multiple realities can exist at once (Berger & Luckmann, 2016). Mixed methods approaches, like that used within this study, utilise an ontological perspective that exists between realism and constructivism. The ontological stance taken influences the epistemological stance taken.

Epistemology refers to the assumptions made about the nature of knowledge, and whether knowledge is purely objective, measurable and observable through experimentation, or subjective and context-dependant, requiring deeper integration with the research process (Al-Saadi, 2014). Quantitative research is often grounded in an empirical epistemological view; Empiricism refers to the theory that all knowledge is derived from sensory experiences (Hossain, 2014), a theory that gained traction during the 17th and 18th centuries due to the emergence of experimental science. Within quantitative research, this refers to the notion that information can be obtained using systematic and objective measurement, where research can be analysed statistically to provide conclusions (Creswell & Creswell, 2017).

Conversely to this, qualitative data is often grounded in the Constructivist epistemological approach. This approach believes that knowledge is not objective or passively absorbed, but that an individual's social and cultural circumstances actively construct their knowledge depending on how they make sense of their experience (Amineh & Asl, 2015). As a result, a constructivist view focuses on exploring and understanding people's constructions of their reality, both individually and within a group (Yilmaz, 2008). Constructivism has multiple domains including cognitive, social and contextual (Phillips, 1995). Additionally, the constructivist approach supports the idea that researchers cannot detach themselves from their research, and their findings will be influenced by their perspectives and values (Guba & Lincoln, 1994).

This research is grounded in a Critical Realist ontological and epistemological approach, positing a real world does exist independently of human perception, however this reality, nor our knowledge of this reality, cannot be directly accessed as

understanding is shaped by social, cultural and psychological factors (Archer et al., 2013). This perspective, created by Roy Bhasker, distinguishes between three layers of reality; the Empirical – what is observed and experienced, the Actual – events that occur whether observed or not and the Real – underlying structures and mechanisms that generate these events (Archer et al., 2013). These layers influence how researchers understand causation, knowledge production and social research.

The Ontological and Epistemological approach used influences the choice of methodology (Guba & Lincoln, 1994).

Justification of Methodology

Methodology is a framework of theories or ideas that guide the way researchers explore relationships between phenomena and acquire knowledge about the world (Creswell & Creswell, 2017). As this is a two-part study including SDA and primary data analysis, the influence of the Critical Realist paradigm will differ in each part.

In study one, I was not directly involved in the design or distribution of the methodology used. Consequently, my ontological and epistemological perspective did not directly shape the quantitative methodology. Quantitative research is often grounded in a Positivist philosophical foundation. Positivism is useful for data aimed to capture a snapshot of an association between variables at a particular point in time, and utilise statistical analysis to draw conclusions and identify relationships within the data, to answer hypotheses. However, this study differed from traditional positivism in that variables were not manipulated, and so causal inference could not be claimed from the results (Park et al., 2020). Additionally, the variables chosen are unable to be manipulated, as it would be unethical to purposefully expose a person to trauma to see if they begin to self-harm (E. Newman et al., 2001). However,

although my philosophical perspective did not shape the data, it did influence my interpretation of the data and the conclusions drawn from it.

A Critical Realist paradigm acknowledges that patterns reflected in the data apply to real phenomena. However, it suggests that these patterns were also shaped by the underlying structures and mechanisms not directly observable during the data collection process (Archer et al., 2013). As a result, it was important for me to consider what these underlying mechanisms were, and how they may have influenced the data. This included considering broader systemic factors such as socio-cultural influences and the historical context that shaped how CT and SH were understood (Danermark et al., 2019).

In study two, I chose to use a mixed methods approach, integrating both quantitative and qualitative data, in line with the Critical Realist ontological and epistemological perspectives, acknowledging that both objective and subjective views are valuable in social research (Ansari et al., 2016). Historically, mixed methods approaches were heavily discouraged in the literature, due to their seemingly opposing philosophical paradigms (Wiggins, 2011). However, over time, this conflict has lessened, and mixed methods research is utilised more widely within the literature, particularly within social science research which sees the two approaches as complementary (Ansari et al., 2016). This method promotes comprehensive understanding of the data, providing patterns in the quantitative and a deeper exploration of what may underlay these patterns in the qualitative (Wiggins, 2011).

This approach is particularly useful for my research, which seeks to ascertain patterns in SH behaviours following experiences of CT, as well as explore the reasons for why these patterns may be present. The quantitative aspect allows for

the discovery of statistical associations but does not explain why these associations exist. Complementarily, the qualitative aspect allows for individuals personal experiences, and the psychological or social mechanisms that influence them, to surface, providing context to the quantitative data. This is also especially useful when the construct being investigated, and its conceptualisation, is relatively new in the literature (Creswell & Clark, 2017).

Study One – Secondary Data Analysis

Design

This study analysed data from an existing quantitative dataset, focusing on key variables of CT, SH, PP proxies and PC. This analysis identified significant relationships between variables, and was used to inform and guide the development of the mixed methods study. Specifically, this study explored how PP proxies and PC mediate the relationship between CT and SH. The existing dataset included seven waves of questionnaires advertised to the public, exploring the link between CT and SH, and various potential mediators of this link. Each wave consisted of a distinct sample of cross-sectional data from participants collected at different time points, as opposed to a longitudinal design where repeated measures are collected from the same individuals. For this study, waves one, two and seven were used, as they included measures of the key mediators of interest – emotional dysregulation and emotional reactivity, which together act as proxies for PP. Wave seven did not include PC, and so this measure was analysed using waves one and two.

This study employed a cross-sectional correlational design, which examines relationships between variables at a single point in time without manipulating conditions (Thomas, 2022), in line with a positivist philosophical foundation. More specifically, an analytic cross-sectional design was used to investigate the

association between CT and SH. Cross-sectional studies do not identify cause and effect within the data variables as both are measured at a single point in time, so researchers are unable to say if one preceded the other (Omair, 2015). However, this study design is commonly used to explore relationships and carryout mediation analysis (MacKinnon et al., 2007).

The benefits of cross-sectional studies include the ability to easily collect large amounts of data and assess numerous characteristics at once, alongside the ability to determine what would be beneficial to investigate in future research, helping guide the research direction (X. Wang & Cheng, 2020). However, cross-sectional research also has disadvantages, including the inability to control confounding variables that may affect the research outcome and its validity (X. Wang & Cheng, 2020).

Procedure

The surveys were created by fellow researchers on the team by combining each of the required measures within the Qualtrics (Qualtrics, 2024) platform. Following this, the surveys were hosted on this platform for data collection. Approved researchers with access to the survey information could download the data for analysis. The survey was advertised via a university study recruitment system, whereby students complete research for credits towards their course, in addition to advertisement across various social media sites. Due to this, the participants were free to complete the survey wherever was convenient for them. This flexibility is found to increase accessibility and participant response rates (Nkyekyer et al., 2021).

At the start of each survey, all participants were shown a screen which informed them of the objectives, their right to choose to participate or not, and their right to withdraw at any point during the survey if they wished (Appendix A).

Participants who chose to take part indicated their consent by clicking an arrow to confirm their agreement with the terms and conditions. Participants then completed the survey independently. The typical survey completion time was advertised as 15-25 minutes, and remained hosted on the platform open-ended until enough responses were received.

Participants

Participants were obtained via a variety of different non-probabilistic sampling methods including convenience sampling via a university study recruitment system for course credit, and purposeful sampling via social media, where the survey was shared on various social media platforms detailing the purpose of the study. Participants were aware of the study aims as these were included in the recruitment advert. The requirements for participants to take part included being 18 years of age or older. There were no inclusion or exclusion criteria regarding having experienced SH or CT, as a sample more representative of the community was sought.

Measures

To complete this research, there were a variety of questionnaires input into one survey; each of these will be explained below.

Childhood trauma. CT was assessed utilising 25 questions taken from the Pennebaker and Susman (1988) Childhood Traumatic Events Scale (CTES) (Appendix B). The questions aimed to explore a variety of traumas that occurred before the age of 17. The participants were asked if they had experienced various traumas e.g., the death of a parent. If they answered yes to this question, they were then asked to state the age at which this experience occurred, and rate the intensity of their trauma using a 7-point scale; example ratings include 1 = not at all traumatic, 4 = somewhat traumatic, 7 = extremely traumatic. Following this, participants were

asked how much they felt they could confide in others in relation to the trauma, where 1 = not at all to 7 = a great deal. The CTES is commonly used in studies to assess the presence and impact of childhood trauma (Rosa et al., 2023). Previous studies have reported the CTES has good reliability and validity, without explicitly reporting standardised psychometric properties (Pennebaker & Susman, 1988; Wegner & Pennebaker, 1993). However, the CTES measures distinct categories of CT and their intensity, and is not designed to measure a single underlying construct. Consequently, internal consistency measures such as Cronbach's alpha are not appropriate for this instrument (Streiner, 2003), as described in previous studies (Wamser-Nanney et al., 2018).

In recent years, questionnaires examining ACEs have expanded to include various experiences such as bullying, death of a parent or sibling and homelessness (Mersky et al., 2017). This expansion reflects the recognition that no individual survey can comprehensively capture all ACE's due to their vast variability, as well as the individual differences in how each child experiences and interprets an event (Lacey & Minnis, 2020). Pennebaker and Susman's (1988) CTES accounts for this variability by including a question that asks whether an individual experienced any other major upheaval prior to the age of 17, and invites them to rate how traumatic they perceived this. Studies that have used both the ACEs and the CTES and have found that they were positively correlated (Martin-Cuellar et al., 2018; Rose et al., 2023).

Self-Harm. To understand the impact, epidemiology and intervention efficacy of SH, it is essential to establish a robust method for measuring SH. Research indicates that one in six individuals who present to hospital for SH will repeat the behaviour within a year (Owens et al., 2002), highlighting the need for reliable

assessment tools to evaluate and address the issue. As SH is often linked to underlying psychopathologies such as depression, anxiety and trauma, reliable screening tools can help identify and monitor these behaviours, contributing to successful interventions (Witt et al., 2021).

As this was a secondary data analysis, the quantitative portion of this study was constrained by measures used in the original dataset. SH was assessed via a set of questions that sought information around types of self-harm that have been engaged in, if any, as well as the recency and frequency of behaviour, and pain felt during these behaviours. However, this dataset did not include a validated or standardised measure of SH, and frequency data were limited to participants single most-used SH behaviour, rather than capturing the full spectrum of their SH engagement. Consequently, this study analysed the amount of SH behaviours engaged in, calculated by summing the number of SH methods selected by participants at baseline (Appendix C). While frequency and function were not directly analysed, findings in the literature suggest that increased variety of NSSI is significantly associated with lifetime frequency of NSSI (Glenn & Klonsky, 2011). Additionally, although severity was not measured in this dataset,literature shows that engaging in a range of broader SH behaviours is associated with increased distress and severity of SH (Turner et al., 2013).

The scale questions were designed by the original researchers. The questions included a diverse list of pathologised SH behaviours such as cutting, burning, attempted hanging and forms of self-poisoning. Although the measure was not formally validated, the format was similar to that of established measures including the Self-Harm Inventory (Sansone et al., 1998), the Deliberate Self-Harm Inventory (Gratz, 2001) and the Functional Assessment of Self-Mutilation (Lloyd et al., 1997).

In contrast to previously validated measures, Cronbach's alpha was calculated to be low (α = .383), suggesting poor internal consistency across the set of SH items. A potential reason for this was the inclusion of the item "None of These", which measured the absence of SH, distinct to other items that measured the presence of SH. To support this, Cronbach's alpha rose to an acceptable level (Tavakol & Dennick, 2011) when this item was removed (α = .710). Due to this, results were interpreted with caution, recognising the limitations in the scale reliability.

Psychological Pain. This section will explore the initial proposals for measuring PP in the literature, then explain how PP was measured by proxy within this study.

Measuring Psychological Pain. As previously mentioned, PP is a complex and multidimensional concept (Meerwijk & Weiss, 2011; Sensky, 2020; Tossani, 2013). Following its conceptualisation, there was a need to develop a reliable and valid psychometric instrument to measure PP (Casanova et al., 2021). Various instruments have been proposed, however, each instrument included a unique set of limitations or a lack of valid and reliable psychometric properties. An example of a proposed instrument is The Psychological Pain Scale (Shneidman, 1999), which was found to have limited scale reliability. On the other hand, both The Psychache Scale (Holden et al., 2001) and The MeeBunney Psychological Pain Assessment fail to capture PP constructs such as pain intensity and negative feelings. Charvet et al. (2022) found that within these different measures, there is substantial variability with regards to the theoretical frameworks used, the definition of PP and poor content overlap.

Moreover, a systematic review found there is not enough evidence to recommend using one measure over another, in research or clinical practice (Charvet et al., 2022). Additionally, the above instruments attempt to analyse PP as a whole, whereas this study aims to focus specifically on emotional processes as proxies of PP. As difficulties in emotional management systems have been found to be important factors in the concept of PP, and significant determining factors as to whether a person engages in self-harm or not (Wolff et al., 2019), utilising measures that assess this would be useful.

Emotional Reactivity and Emotional Regulation. The Emotional Reactivity Scale (ERS) assesses a person's subjective experience of emotion sensitivity, intensity, and persistence (Nock et al., 2008), all of which are of primary importance within SH (Glenn et al., 2011). Nock et al. (2008) found scores on the ERS positively correlated with similar ideas on other measures including behavioural inhibition and fear whilst being negatively correlated with attention and behavioural control. The interaction between these constructs relates to the prevalence of SH. For example, problems with behavioural control increase chances of engagement with SH (Lynch et al., 2004). Nock et al. (2008) also found emotional reactivity mediated the relationship between psychopathology and both SH and suicidal ideation. A caveat of this study was that, despite this link, other components could also mediate this relationship, such as the ability to regulate activated emotions.

As discussed, emotional regulation is another process, that when combined with emotional reactivity, can be used as a proxy for PP, helping build a more comprehensive picture of the inner workings of the mind. This is supported by previous studies where emotional dysregulation, referring to patterns of emotional experience or expression that interfere with personal goals (Thompson, 1994), was a

mediator between SH and CT (Titelius et al., 2018). As a result of this, both the ERS and the Difficulties in Emotional Regulation Scale (DERS) (Gratz & Roemer, 2004) will be used as PP proxies to explore their function in the link between CT and SH within this study. This study does not wish to propose a new measure for PP; rather it aims to use two widely accepted emotional processes, and well-established measures that assess these processes, to provide a proxy measure of PP within this research.

The ERS (Nock et al., 2008) assessed one's subjective experience of emotion sensitivity, intensity, and persistence. Items on the scale used a 4-point scale ranging from "not at all like me" to "completely like me" (Appendix D). The ERS has been found to have strong internal consistency and validity (Nock et al., 2008), repeated in this study (α = .957).

Next, two subscales from the DERS (Gratz & Roemer, 2004) were used (Appendix E). The subscales included "Limited access to emotion regulation strategies" and "Lack of emotional clarity". These items were rated on a 5-point scale ranging from "almost never" to "almost always". The DERS has also been found to have a high internal consistency, good test–retest reliability, and adequate construct and predictive validity (Gratz & Roemer, 2004). Within the current study, Cronbach's alpha was also high (α = .921) aligning with these findings.

Pain Catastrophising. PC was assessed utilising the Pain Catastrophising Scale (PCS) (Sullivan et al., 1995) (Appendix F). The PCS is often utilised in relation to physical pain, however the concept can be broken down into three areas: rumination, magnification and helplessness. Rumination occurs when a person engages in circular thinking going over the same thoughts and feelings regarding their pain in their mind, inhibiting problem solving, alternative thought generation and

attention switching (Petrini & Arendt-Nielsen, 2020) and is associated with higher incidences of self-harm (Borrill et al., 2009). Magnification is a cognitive distortion, which relates to a disproportionate focus on pain that becomes exaggerated in an individual's mind (Sullivan et al., 1995). This can lead to intensification of the negative emotional experience and contribute to depressed mood and reduced quality of life (Craner et al., 2016). Helplessness refers to one's self-prophesised inability to deal with the pain experience, leading to heightened levels of emotional pain (Sullivan et al., 1995).

These areas relate to PP as catastrophising contributes to emotional distress (Sullivan et al., 1995) where higher levels of catastrophising lead to higher levels of emotional distress (Sullivan et al., 2001). Items on this scale were measured using a 5-point scale where participants were asked to indicate the degree to which they have certain thoughts and feelings when experiencing pain. The 5-point scale ranged from 1-"Not at all", 2-"To a slight degree", 3-"To a moderate degree", 4- "To a great degree" to 5- "All the time". Within the current study, Cronbach's alpha was high ($\alpha = .962$) suggesting high internal consistency

Analysis

As previously mentioned, the original data involved seven waves, three of which were relevant to the current study. Consequently, waves one, two and seven were separated from the rest of the data for analysis. Data was extracted from the Qualtrics platform into an Excel worksheet. Initially, the raw data needed to be cleaned to ensure all data remaining was valid.

Data was first cleansed via the process of removing entries completed suspiciously quickly, supported by J. L. Huang et al. (2012) who suggested participants would be unlikely to respond to survey items faster than two seconds per

item. This was calculated using the minimum survey time e.g., not inclusive of questions that appear following a gateway question. This time was the same for wave one and two but different for wave seven. Following this, duplicate entries were removed. This was determined by entries that had duplicate IP address and duplicate answers. It was not determined by duplicate IP alone due to university students often using the same computer in public spaces to complete their work. Lastly for cleansing, data was edited for progress of completion, where figures under 80% were excluded, due to this being the minimum percentage required for data to be usable within the study. In total 108 participants were removed.

Participant answers were recoded to enable data analysis. The ERS was recoded where 0 = not at all like me up to 3 = completely like me. The ERS was tallied together for a total. The DERS was recoded where 0 = almost never, up to 4 = almost always. However, question 6 on the DERS Strategy subscale was reverse coded where 0 = almost always, up to 4 = almost never. Additionally, questions 4 and 5 on the DERS Clarity subscale were also reverse coded in the same way. The total for ERS and DERS was combined to create the proxy measure of PP. The variables included in the study are shown in Table 2.

Table 2

Overview of Study Variables and Their Definitions

Questionnaire	Variables included	Meaning
CTES	No. of CTES	The number of CT experiences a participant has had
	Lev_Trau	The intensity of how traumatic participants rated these CT experiences
SH	SH-Beh_SC	Amount of SH behaviours participants engaged in

Questionnaire	Variables included	Meaning
PCS	PCS_Scr	Total score of pain catastrophising
	PCS_Rum	Score of rumination portion of pain catastrophising
	PCS_Mag	Score of magnification portion of pain catastrophising
	PCS_Help	Score of helplessness of pain catastrophising
DERS + ERS	DERS_Ttl	Score of the DERS questionnaire
	ERS_Ttl	Score of ERS questionnaire
	PP-Pain_Scr	Combined score of DERS and ERS questionnaires

Quantitative data analysis was completed using SPSS (version 29). This began with analysis of the descriptive statistics. Following this, an inferential analysis was conducted, to examine the strength of the relationships between each variable. Finally, multiple mediation analyses were conducted using hierarchical regression via the PROCESS macro (A. F. Hayes, 2017). The aim was to investigate if the variables of interest (PP proxies) account for a statistically significant amount of variance in our dependent variable, and if this variance continues to exist when other variables (PC) are considered. The mediation analysis was analysed using 5000 bootstrap samples to create meaningful confidence intervals (Preacher & Hayes, 2008).

Throughout the results, the p-value is reported as an inequality when $p < .001$. The actual p value is reported when $p > .001$. Results are considered statistically significant when $p < .05$ (Field, 2024). Additionally, when reporting mediation

analyses, B refers to the unstandardized coefficient, where β refers to the completely standardised coefficient. Using standardised coefficients is beneficial in mediation analysis as it allows for comparison of effect sizes across variables, enabling interpretation of each mediator variables relative strength (A. F. Hayes, 2022).

Ethical considerations

The University of Essex Ethics Board approved the study. Within this, it stated the information sheet would inform participants of the study content and confidentiality. This would instruct them to close the survey if they felt distressed. This sheet would inform participants that SH and CT is mentioned, and would provide them with resources to seek further support if required.

Study Two: Mixed Methods Primary Data Collection and Analysis

Design

Following analysis of the SDA, significant relationships were identified between all study variables, and PP proxies and PC were found to play mediating roles. Study two was developed to further explore this, adding a qualitative component. As a result, the measures used in this study were pre-determined by the existing dataset. This study utilised a mixed methods research design, allowing for deeper exploration of the topic of PP proxies as a mediator between CT and SH, by incorporating quantitative and qualitative data (Creswell & Creswell, 2005). Specifically, a convergent parallel design was used, where quantitative data and qualitative data were collected in the same phase of research, with methods weighed equally, each component separately analysed and results interpreted together (Guest & Fleming, 2015).

Quantitative Data Collection

Within this mixed methods design, the quantitative data collected utilised the same cross-sectional design as described in study one. To avoid redundancy, the full details of this will not be repeated here. Instead, please refer to study one.

Qualitative Data Collection

Qualitative data collection was completed via semi-structured interviews. Semi-structured interviews include a blend of open and closed-ended questions, and are amenable to broader discussions around the agenda topic, allowing for expansion of participants viewpoints' while retaining focus (Adams, 2015). Semi-structured interviews support capturing nuanced and personal viewpoints, in line with the study's critical realist epistemological and ontological view

Individual interviews were chosen over focus groups due to the sensitive nature of the topic, allowing participants to share personal experiences privately, reducing stigma (Kallio et al., 2016). Semi-structured interviews support a researcher-led but participant-guided discussion, important for sensitive topics such as trauma (Braun & Clarke, 2013). It was crucial to maintain focus on the studies aims, as deviating significantly could blur boundaries between therapy and research. This was a distinction I was particularly mindful of given my role as a Trainee Clinical Psychologist, where the intention is not only to listen to trauma, but to support the resolution of distress it may contribute to.

Procedure

Service User Involvement. Prior to data collection, four interviews were completed with members of the university's service user reference group (SURG). Service user involvement can be distinguished by three levels: Consultation – where service users views are requested but there is no requirement to act on them,

Collaboration – where direction of the research is shared between service user and researcher, and Control – where service users control the research process (Hanley et al., 2004). Benefits of service user involvement are plentiful, and include the optimisation of recruitment strategies (Cossar & Neil, 2015), particularly useful when working with marginalised groups (Wallcraft et al., 2009). Additionally, service users may be more sensitive to ethical considerations of research (Barber et al., 2011), an important consideration when researching sensitive topics.

Within this study, service users had a consultation level of involvement. During each interview, detailed notes were taken regarding the content shared. From these notes, key themes were identified.

Need to Define Terms Used. All service users highlighted the importance of understanding how CT and SH were defined, as these definitions would shape the answers they provided. Participants suggested clarifying this at the beginning of each interview. After reviewing the recruitment flyer (Appendix G) which included these definitions, they reported this aided understanding of the researchers' perspective. Defining research terms in a clear and concise way is important to ensure findings are interpreted in the correct context, and that research is replicable (Goodenough & Waite, 2012). Consequently, I ensured the definitions remained on the flyer, and implemented a preliminary discussion during each research interview explaining the study purpose and recapping these terms, to ensure clarity.

Purpose of Research. Service users wanted the intended outcomes of the research clearly stated, especially its real-world applicability. They reported frustration at sharing their stories multiple times, without seeing any tangible benefit. This is a common experience for service users in a mental health context, where individuals often feel their contributions are overlooked (Frankham, 2009).

In response, I provided a summary of the study's intended clinical implications at the end of each interview, and asked participants if they would like a copy of the study once completed. This approach reflects best practice in offering feedback, and demonstrates service user contributions are valued and applied (Frankham, 2009).

Ethical Considerations. A main ethical consideration was post-interview support in case of participant distress. Service users suggested participants should be supplied with information on available support services if required. These services had already been sourced, as detailed in the Ethics section of this thesis. Service users shared resources they found personally helpful, and this information was saved for use, if required.

Service users also emphasised the importance of maintaining trust and respect throughout interviews. They shared experiences of mistrust with professionals, including confidentiality breaches, inappropriate responses to disclosures and information sharing without consent. These experiences highlighted the need for clear boundaries and strong rapport building during the research process (Dickson-Swift et al., 2006). Service users advised including a clear explanation of confidentiality, using simple and accessible language, checking participant communication preferences, returning control back to participants where possible and explicitly informing them of their right to terminate or withdraw.

Recruitment Services Often Best Placed in the Community. Service users shared a comprehensive list of potential recruitment services. They suggested several third-sector organisations, most previously unknown to me. This emphasises the value of drawing on lived experience for accurate service knowledge. Many service users reported the most effective recruitment came from services not directly affiliated with the NHS. Third sector organisations often offer longer-term support

and have established trust-based relationships with service users, enhancing engagement. This aligns with the literature acknowledging the instrumental role of third-sector organisations in community-based care (Dickinson et al., 2012). All participants obtained in the final sample were recruited through services recommended by service users.

Consent. Following service-user involvement, recruitment emails were sent to recommended services. Twenty-three participants signed up for the study via email correspondence. Following this, they were sent a Participant Information Sheet (PIS) (Appendix H) and consent form (Appendix I). If they provided consent, they returned the form. Following receipt of the consent form, they were sent an online survey on the Qualtrics platform (Qualtrics, 2024), forming the quantitative portion of the study. Additionally, the email contained a booking link for the interview. Participants were informed they needed to complete the survey before the interview took place.

Questionnaire. Throughout the period of June 2024 to December 2024, 12 participants successfully completed the study. During early recruitment, one participant indicated current SH on the survey, despite confirming this was not the case when signing the consent form. As SH occurring in the last year was an exclusion criterion for the study, in accordance with ethical requirements imposed during the studies approval process, the participant needed to be disqualified from participation. The participant was informed of this, and offered links to support services. Consequently, the survey was adapted to include gateway questions regarding SH behaviour of participants. If the participant indicated yes to current SH, the survey was set to automatically end, providing the participant with a thank you page. Following this, I would contact the participant to inform them of the reason for the survey ending, their disqualification from participation and offer support services.

Other reasons for attrition included scheduling conflicts, non-response to ethical consent or no longer wishing to take part in the study.

Semi-Structured Interviews. Semi-structured one-to-one interviews were conducted with participants between July 2024 and December 2024. During this period, 12 participants took part, with interviews lasting between 50 and 75 minutes. The average interview time was 57 minutes. Most interviews were completed via Zoom and Microsoft Teams (MT). One interview started over MT, however a phone call was added due to the participants connection difficulties. This phone call was recorded on MT. Interviews were transcribed on Zoom or MT, and recordings were watched back alongside these auto-transcriptions for editing, improving accuracy, resulting in the finalised transcripts, pre-analysis.

At the time of data collection, there were no restrictions on collection methods in relation to the covid-19 pandemic. Participants were provided with the option to conduct face-to-face assessments, however all participants opted to complete an online interview. Feedback on the reason for this was not sought, however various benefits of this are demonstrated in the literature. Research has found aspects of “remote presence”, including things such as physical distance and lack of visual cues, can be conducive to data collection when discussing sensitive topics (Hanna & Mwale, 2017). As both CT and SH can be described as sensitive, participants may have felt safer and more comfortable discussing these topics virtually, and in surroundings they felt were familiar (Weller, 2017). In addition to this, remote interviewing facilitates recruitment as it allows a wider variety of participants to take part in the research, due to removing geographical constraints (Lobe et al., 2022). This is particularly important for research based on sensitive topics that will often include members of marginalised

groups, who otherwise may not have their story heard if not for increased accessibility (Lobe et al., 2022). Despite these benefits, there were other components to consider.

Methodological and Ethical Considerations. One component was the consideration of technology used. As aforementioned, one participant could not partake in a video interview due to their poor connectivity. A resolution was found for this; however, it posed issues for data transcription. When conducting remote interviews, researchers need to be aware of participant's access to technology, and have back-up plans for if this fails.

Another component was anticipating potential participant distress, and establishing a clear response plan. Within the literature suggestions include: providing space for emotional expression, offering comforting words and reminding participants of their right to terminate the interview (Lobe et al., 2022). Consistent with this, research has found participants feel an increased sense of agency online as it provides them with increased control via the ability to end their participation at any time (Thunberg & Arnell, 2022). Furthermore, the resources provided during service user interviews were helpful to share with participants should they need it. Although offered, no participants required support services at the end of their interviews.

Measures

Quantitative Measures. As aforementioned, all quantitative measures used were the same as in study one, to maintain methodological rigour and aid comparison. Please refer to study one for further details on this. However, the internal validity of each appropriate measure is discussed below.

The DERS (α = .922), ERS (α = .952) and PCS (α = .958) all had high internal consistency, consistent with study one. However, the calculated Cronbach's alpha for the SH scale was low (α = .444), suggesting poor internal consistency across the

set of SH items. This remained low when item “None of These” was removed (α = .449), unlike in study one. This was expected, as no participants endorsed this item due to a requirement of study two being the presence of at least one SH behaviour. As with study one, this required results to be interpreted with caution, and is explored further in the discussion.

Qualitative Measures. A semi-structured interview approach was utilised for data collection. This approach balances flexibility with consistency, allowing key topics to be addressed whilst providing participants freedom to elaborate on their responses (DeJonckheere & Vaughn, 2019). Prior to data collection, an interview schedule was developed (Appendix J). This was used as a guide to help ensure core themes were explored, and the research question was answered, whilst also enabling adaptability during interviews (Morris, 2015). Creation of the schedule began with finalising the research question with my supervisors, following this reading was done to familiarise myself with the research field on CT, SH, PP and PC. Next, I began to create different topic headlines of areas that would be beneficial to cover, and within each area included examples of questions that could be used to answer the overarching research question. This guide was then shared with my primary supervisor, prior to commencing interviews.

Disadvantages of semi-structured interviews include potential interviewer bias, social desirability in answers and the extensive time required for data collection and analysis (Bryman, 2016). Despite this, they remain valuable tools of research to explore complex phenomena and gain in-depth information (Bryman, 2016).

Analysis

Researcher Reflexivity. Reflexivity in research involves examining how ones background, perspectives and experiences shape the research process (Finlay,

2002). While often associated with qualitative research, reflexivity also benefits mixed-methods studies (Walker et al., 2013). Reflexivity recognises researchers are not objective observers of social phenomenon, as their own social, political and cultural positioning influences the research (Patton, 2014). Reflexivity was integrated across both the quantitative and qualitative components of this study, as recommended within the literature (Cain et al., 2019; Walker et al., 2013), particularly important given the study's' Critical Realist stance.

Positionality Statement. I am a 28-year-old mixed White-Irish and Black-Caribbean female, born and raised in London, UK. I currently identify as middle-class in relation to my education and occupation, however I spent my formative years in a working-class environment. This background shaped my understanding of social and psychological issues, and my approach to research.

I have worked in various NHS and third-sector environments, including as a support worker in an Adolescent Inpatient Unit, an Assistant Psychologist in a college for young people with Learning Disabilities and a Children's Wellbeing Practitioner in a community Child and Adolescent Mental Health team. I had the privilege of working with incredible individuals, many of whom had experienced significant trauma. Supporting them and hearing their stories deepened my commitment to understanding the psychological impact of trauma. These roles, and my role as a Trainee Clinical Psychologist, ultimately shaped my passion for psychological trauma work and my commitment to this field.

Throughout my childhood, I experienced several ACE's, including the loss of my father at five years old. While these experiences were distressing, I was fortunate to have a loving and supportive family, which I believe helped buffer many potential adverse outcomes. Consequently, I often reflected on the risk and protective factors

of the individuals I worked with, and their impact on the outcomes of their lives. These reflections ultimately shaped the foundation of my research.

My background as a scientist-practitioner gives me insight into the importance of utilising mixed methods to understand complex topics such as CT, SH and PP. Additionally, I heavily value hearing others lived experiences, and having them be the voice of their story. Whilst quantitative measures can provide structure and quality, they can also fall short of capturing nuanced complexities present in experiences of CT, SH and PP. Incorporating a qualitative component helps mitigate this, and build a richer understanding of the topic.

In this research, I was aware that my dual identity as a Trainee Clinical Psychologist and a researcher, alongside my personal attributes, could influence how I conducted interviews. As a researcher, my aim was to explore participants' experiences without providing clinical guidance. However, my clinical training and empathic nature made me highly attuned to emotional experiences, and often feel inclined to offer guidance. Although these traits can help build therapeutic rapport, they also presented challenges, such as maintaining appropriate boundaries and avoiding transition into the therapeutic role.

Additionally, I considered my relationship to the participants. I reflected on the potential for participants to present with similar ACE's to me, and the potential impact on my emotional wellbeing. Research has found boundaries between researchers and participants can become blurred due to the interviewer's immersion in the data, particularly relevant when similarities are observed (Dickson-Swift et al., 2006). To address this, I planned to remain reflexive throughout the interview process, diligent in participating in self-care, and engage in regular meetings with my supervisor to flag any concerns.

Reflexive thematic analysis. The qualitative data was analysed using Reflexive Thematic Analysis (RTA) (Braun et al., 2023) and followed the six-phase analytical process. RTA involves identifying and interpreting themes within qualitative data, and emphasises the active role of the researcher in this process (Braun et al., 2023). The six-phase approach includes; familiarisation of data, coding, initial theme generation, reviewing and developing themes, refining and naming themes and finally producing the report (Braun et al., 2023). RTA is a flexible approach, and able to be compatible with the Critical Realist epistemological and ontological position within this research (Braun & Clarke, 2021).

This approach was suitable to explore the experiences of CT and PP in people who SH as it allowed for rich interpretation of the data, grounded in participant narratives (Braun et al., 2023). Additionally, the focus on reflexivity allowed for critical consideration of the researchers influence, essential due to the sensitivity of the research topic.

Evaluating the Quality of Research. The researcher aimed to ensure high quality research and followed Yardley's (2000) criteria to assess this. The four components of this criteria are:

1. Sensitivity to context: demonstrating awareness and understanding of the existing literature and wider socio-cultural context.
2. Commitment and rigour: demonstrating an active engagement with the research process, and ensuring thoroughness in the data collection and analysis process.
3. Transparency and coherence: ensuring documentation of the research process and that the research aligns with the study's theoretical and methodological approach.

4. Impact and importance: recognising the significance and potential contribution of the research into wider theoretical and practical areas.

Yardley's Criteria of Quality Assessment. Yardley's (2000) criteria was used to critically evaluate the qualitative portion of this mixed methods study, as it is an established framework enabling comprehensive evaluation.

The first evaluation criteria is sensitivity to context. The researcher conducted extensive reading to ground themselves in the theoretical context of the subjects explored, including CT, SH, PP and PC. This allowed theory building (R. B. Johnson, 1997), where participant's experiential accounts were situated into wider theoretical explanations, such as explaining participants SH using the EAM. Further to this, the researcher located this understanding in the wider socio-cultural context, such as considering the time participants were raised in, versus current society, and how this affected their experience. The researcher also reflected on her own background both prior to, during and after data collection. This is discussed in-depth in the methods section, and reflected upon further at the end of this chapter.

The next criteria is commitment and rigour. The researcher immersed themselves in the data via completion of RTA in a structured manner, engaging in six phases of data generation. Moreover, the researcher had a personal connection to the study, due to their own ACE's, and a desire to ensure participants experiences were effectively heard and shared due to this. This study utilised a mixed methods approach, allowing triangulation between both the qualitative and quantitative results, strengthening findings.

The third criteria is transparency and coherence. The researcher provided a clear description of the data collection and analysis process. Following this, the researcher ensured each theme included participant quotes, to demonstrate how

themes were identified. The mixed methods study design aligns with the researchers critical realist epistemological and ontological stance, in which data is understood as reflecting an independent reality and being shaped by the way it is observed. Lastly, the researcher aimed to present a narrative of the relationship between PP, CT and SH; first focusing on the origin of PP from CT, then the role of SH in coping with pain, the contributing factor of PC in persistent PP and SH, and lastly the journey towards healing.

The last criteria is impact and importance. Primarily, this qualitative research aimed to share a collective experience stemming from individual stories, in the hope of supporting others through its dissemination. The researcher aims to disseminate this study in relevant journals, and to relevant healthcare providers. This research has wider clinical implications, discussed further below.

Participants

Sampling Method and Size. Participants were recruited using purposive sampling. Study flyers were shared with organisations supporting individuals with lived experiences. Explicitly stating the recruitment approach used improves methodological rigour and replicability (Campbell et al., 2020). The main goal of purposive sampling is to acquire participants with characteristics required to answer the research question. Specifically, this study utilised homogenous purposive sampling, where all participants shared similar experiences of relevance to the research (Rai & Thapa, 2015).

This research aimed to gather rich and detailed information about participants experiences, to reflect this the sample size was kept manageable, to ensure thorough and effective analysis (Vasileiou et al., 2018). Additionally, the authors of RTA proposed it is impossible to determine a one-approach-fits-all sample size, due

to the amount of factors that affect this, and suggest a sample of 6-12 is sufficient for a doctoral research project (Bager-Charleson & McBeath, 2023).

Inclusion Criteria. Participants were required to be 18 years of age or older, which increased the likelihood that they had developed coping mechanisms that would reduce the risk of significant distress during participation (Kessler et al., 1999). Additionally, participants needed to have a history of SH, which was subjectively reported, as well as a history of CT, also subjectively reported. Despite the absence of objective information, all participants had relevant experiences that helped address the research question.

Exclusion Criteria. Individuals who had engaged with SH in the past year were excluded from the study. This was subjectively judged and reported by participants, and aimed to reduce the risk of relapse into SH should a participant become distressed.

Recruitment. The SURG recommended multiple organisations, which were contacted via email. One organisation requested further information before sharing the flyer, one included it in their newsletter, and one declined due to understaffing. One organisation did not respond. Two organisations arranged meetings to discuss the research, after which they shared the flyer with their service users. One organisation suggested I include a picture and a short summary about myself, for them to include with the flyer in their advertising email. Feedback from this organisation stated the information provided was “a brilliant overview that’s very accessible”. Most participants originated from this organisation.

Participants received a £25 Amazon voucher as financial reimbursement. Offering compensation was essential to acknowledge the emotional and cognitive effort required from participants to share their experiences (Pandya & Desai, 2013).

Additionally, service users are often expected to contribute their time and lived experiences without financial recognition, reinforcing existing power imbalances between participants and researchers (Turk et al., 2017). Despite the ongoing ethical debate regarding financial reimbursement of participants (Pandya & Desai, 2013), compensation was deemed appropriate following discussions with my supervisors and a literature review.

Ethical considerations

Ethical Approval. Ethical approval for this study was granted on the 19th January 2024, by the University of Essex School of Health and Social Care ethics committee, prior to starting data collection (Appendix K). This research also followed the principles outlined by the British Psychological Society (BPS) Code of Human Research Ethics (BPS, 2021) including respect for others, maintaining scientific integrity, upholding social responsibility and maximising benefit whilst minimising harm. Minor amendments to the study application were later made on 15th October 2024 in response to one participant request for a transcript of their interview data, for their personal review. This was granted on the 21st October 2024.

Informed Consent. All potential participants received a Participant Information Sheet (PIS) and consent form via email, outlining the study details, withdrawal rights and data handling procedures for both the quantitative and qualitative components. Consent questions were also repeated at the beginning of the survey and qualitative interview. Participants were provided with my email and encouraged to contact me if they had questions, some of whom inquired about payment prior to vouchers being sent out.

Confidentiality and Anonymity. All data was handled in accordance with the Data Protection Act 2018. Survey data was stored separately from interview data.

Qualtrics, Zoom and MT interview data were stored in the researcher's password-protected user profile on an encrypted computer. Additionally, all interview data generated by MT were stored in a password protected OneDrive account. Participants were informed that all recordings and raw transcripts would only be seen by myself, and all data anonymised before being included in the thesis.

Managing Potential Distress. Due to the sensitive nature of the research, a risk management plan was created beforehand (Appendix L) to minimise potential participant distress. Interviews were conducted in a professional and supportive manner, with regular mental state check-ins throughout. At the end of each interview, a debrief was provided to summarise the discussion and assess participant wellbeing. A list of support services was available to participants, promoting options for immediate and ongoing support if required (P. A. Newman et al., 2021). No participants used these services, and reported having their own support in place. All participants were able to complete the interviews.

As the researcher, I also monitored my own mental state throughout the interviews, and took steps to mitigate this risk by implementing self-care, known to improve wellbeing and reduce vicarious trauma (Coles et al., 2014). I was also aware of the access I had to my supervisor should I require it.

Dissemination

The ultimate goal is for this research to be disseminated to key stakeholders in the areas of CT, SH, PP, and PC. This includes potentially publishing in a journal that explores these areas such as the Journal of Trauma & Dissociation, and the Journal of Affective Disorders. Additionally, dissemination also includes sharing results with governing bodies, healthcare institutions and other relevant organisations invested in improving support and outcomes in these areas.

Importantly, this research should be disseminated back to those with lived experience, who are key stakeholders in this area, starting with the participants who took part and requested a copy.

Results

Chapter Overview

This chapter summarises the results of study's one and two. Study one included SDA of an existing quantitative data set. Study two adopted a mixed methods approach, incorporating primary and secondary quantitative data alongside qualitative data. The quantitative component was analysed using bivariate correlation to examine the relationships between variables, followed by regression analysis to assess the predictive power of the chosen variables on the outcome of interest. The qualitative component was analysed using Reflexive Thematic Analysis, which generated five over-arching themes and eight sub-themes.

Study One – Secondary Data Analysis

This section reports the results of study one, including sample characteristics, correlations and mediation results.

Descriptive Statistics

The secondary data analysis utilised three waves of the wider study set and included 536 participants (M = 25.15 years, SD = 10.72). The demographic breakdown is provided in Table 3.

Table 3

Demographic Characteristics of the Sample

Demographic	Category	N	%
Gender	Female	427	79.7%
	Male	103	19.2%
	Other	6	1.1%
Ethnicity	White/Caucasian	362	67.5%
	Asian/Pacific Islander	80	14.9%

Demographic	Category	N	%
	Black/African American	47	8.8%
	Other	39	7.3%
	Hispanic/Latino	8	1.5%

Within participants, 83% experienced at least one CT (N=445) and 59.5% (N=319) engaged in at least one SH behaviour.

Normality Tests

Prior to analysis, data were assessed for normality using the Shapiro-Wilk test (Table 4). This is considered the most powerful test for detecting non-normality in sample sizes under 2000 (Razali & Wah, 2011).

Table 4

Shapiro-Wilk Test for Normality of Study Variables

Variable	Sample Size (N)	S-W Statistic (D)	p-Value	Normality Assumption Met
No. of CTES	536	.912	< .001	No
Lev_Trauma_Scr	536	.908	< .001	No
SH-Beh_SC	536	.836	< .001	No
PP-Pain_Scr	536	.970	< .001	No
DERS_Ttl	536	.970	< .001	No
ERS_Ttl	536	.968	< .001	No
PCS_Scr	360	.944	< .001	No
PCS_Rum	360	.936	< .001	No
PCS_Mag	360	.926	< .001	No
PCS_Help	360	.923	< .001	No

Note. All variables violated the assumption of normality as indicated by the Shapiro-Wilk test.

Since Pearson's correlation assumes normal distribution, a Spearman's rank-order correlation was used to assess the relationship between these variables.

Hypothesis 1: There Will Be a Direct Link between Childhood Trauma and Self-Harm.

A Spearman's rank-order correlation was conducted to examine the relationship between No. of CTES and SH-Beh_SC. Results indicated a statistically significant moderate positive correlation, $r_s(536) = .311$, $p < .001$, suggesting that individuals who report more CT also report more SH behaviours.

Hypothesis 2: Childhood Trauma, Self-Harm, Psychological Pain Proxies, And Pain Catastrophising will be Positively Correlated.

A Spearman's rank-order Correlation was conducted to examine the relationship between No. of CTES, SH-Beh_SC, PP-Pain_Scr and PCS_Scr. Results indicated all variables are positively correlated; the correlation between No. of CTES and SH-Beh_SC was discussed in the previous section.

No. of CTES showed weak positive correlations with PCS_Scr, $r_s(360) = .175$, $p < .001$, and PP-Pain_Scr, $r_s(536) = .217$, $p < .001$. SH-Beh_SC showed moderate positive correlations with PCS_Scr, $r_s(360) = .406$, $p < .001$, and PP-Pain_Scr, $r_s(536) = .497$, $p < .001$. PP-Pain_Scr showed a strong positive correlation with PCS_Scr, $r_s(360) = .712$, $p < .001$. See table 5 for heat-map of results.

Table 5

Heat-map displaying correlation and effect sizes between variables

Variable	No.of CTES	SH_Beh_SC	PP-Pain_Scr	PCS_total
No.of CTES	1.000	.311	.217	.175
SH_Beh_SC	.311	1.000	.497	.406
PP-Pain_Scr	.217	.497	1.000	.712
PCS_total	.175	.406	.712	1.000

Note: Throughout green represents strong effect size, yellow represents moderate effect size and orange represents small effect size.

Further analysis was conducted on variations of the included variables. Results from the CTES were formatted to create Level of Trauma (Lev_Trau), a rating of how intense each participant found the CT event/s they experienced. Results indicated a statistically significant moderate positive correlation between Lev_Trau and SH-Beh_SC, $r_s(536) = .312$, $p < .001$, suggesting that individuals who report higher intensity of CT also report more SH. Lev_Trau showed weak positive correlations with PCS_Scr, $r_s(360) = .214$, $p < .001$, and PP-Pain_Scr, $r_s(536) = .250$, $p < .001$.

PCS_Scr was split into rumination (PCS_Rum), magnification (PCS_Mag) and helplessness (PCS_Help). Results can be seen in Table 6 below. All three components had strong positive correlations with one another and with PP-Pain_Scr. Specifically PCS_Rum, $r_s(360) = .663$, $p < .001$, PCS_Mag, $r_s(360) = .673$, $p < .001$, and PCS_Help, $r_s(360) = .693$, $p < .001$, each demonstrated strong positive correlations with PP-Pain_Scr. The more PP a person experienced, as indicated by proxy measures, the more rumination, magnification and helplessness they experienced.

Next, all three PCS_Scr components had strong positive correlations with each other. They also had moderate positive correlations with SH-Beh_SC; specifically PCS_Rum, $r_s(360) = .368$, $p < .001$, PCS_Mag, $r_s(360) = .397$, $p < .001$, and PCS_Help, $r_s(360) = .401$, $p < .001$. The more rumination, magnification and helplessness they experienced, the more SH behaviours they engaged in. Additionally, all three components had weak positive correlations with No. of CTES, specifically PCS_Rum, $r_s(360) = .126$, $p < .001$, PCS_Mag, $r_s(360) = .220$, $p < .001$, and PCS_Help, $r_s(360) = .178$, $p < .001$. The more rumination, magnification and helplessness they experienced, the more CT they had experienced. Lastly, all three

components had weak positive correlations with Lev_Trauma_Scr, specifically PCS_Rum, $r_s(360) = .169$, $p < .001$, PCS_Mag, $r_s(360) = .255$, $p < .001$ and PCS_Help, $r_s(360) = .207$, $p < .001$. The more rumination, magnification and helplessness they experienced, the more intense they rated their CT.

Table 6

Heat-map displaying correlation and effect sizes between re-formatted variables PCS_Rum, PCS_Mag and PCS_Help

Variable	PCS_Rum	PCS_Mag	PCS_Help
No.of CTES	.126	.220	.178
SH_Beh_SC	.368	.397	.401
PP-Pain_Scr	.663	.673	.693
Lev_Trauma_Scr	.169	.255	.207
PCS_Rum	1.000	.818	.864
PCS_Mag	.818	1.000	.821
PCS_Help	.864	.821	1.000

PP-Pain_Scr was split into difficulties in emotional regulation (DERS_Ttl) and emotional reactivity score (ERS_Ttl). See table 7 for heat-map of results. Both DERS_Ttl and ERS_Ttl had strong positive correlations with PCS_Scr; $r_s(360) = .694$ and .650, respectively, $p < .001$, indicating that higher PC was associated with greater emotional difficulties. Both DERS_Ttl and ERS_Ttl had weak positive correlations with No. of CTES; $r_s(536) = .155$ and .236, respectively, $p < .001$, and with Lev_Trauma_Scr $r_s(536) = .185$ and .265, respectively, $p < .001$. This suggests greater emotional difficulties were associated with more experiences of CT and increased CT intensity. DERS_Ttl and ERS_Ttl had moderate positive correlations with SH-Beh_SC; $r_s(536) = .467$ (both), $p < .001$ indicating greater emotional difficulties were associated with more SH behaviours. Lastly, DERS_Ttl and ERS_Ttl had a strong positive correlation, $r_s(536) = .750$, $p < .001$. This suggests the greater

the difficulties in emotional regulation a participant experienced, the more they struggled with managing their emotional reactivity.

Table 7

Heat-map displaying correlation and effect sizes between re-formatted variables DERS_Ttl and ERS_Ttl

Variable	DERS_Ttl	ERS_Ttl
No.of CTES	.155	.236
SH_Beh_SC	.467	.467
Lev_Trauma_Scr	.185	.265
PCS_Scr	.694	.650
DERS_Ttl	1.000	.750
ERS_Ttl	.750	1.000

Hypothesis 3: Psychological Pain Proxies will Mediate the Relationship between Childhood Trauma and Self-Harm

As a result of the positive correlations, hypothesis three was tested using a multi-step regression via the A. F. Hayes (2022) PROCESS macro in SPSS. This examined whether PP proxies mediated the relationship between CT and SH.

For the first regression model No. of CTES significantly predicted PP-Pain_Scr, with a standardised effect size of β = .223. indicating a small to moderate effect of CT on PP proxies, with individuals who report more CT also reporting greater levels of emotional difficulties.

A second regression model analysed the combined effects of No. of CTES and PP-Pain_Scr on SH-Beh_SC. The overall model was significant, $F(2, 533) = 113.30$, $p < .001$, $R^2 = .298$. Separately, both No. of CTES and PP-Pain_Scr significantly predicted SH-Beh_SC, with standardised effect sizes of β = .216 and β

= .456 respectively. These results suggest PP proxies have a stronger effect on SH than CT alone.

The mediation analysis showed that the total effect of No. of CTES on SH-Beh_SC was B = .408, SE = .053, β = .318, t(534) = 7.75, p < .001, 95% CI [0.304, 0.511]. Before considering PP-Pain_Scr as a mediator, No. of CTES explained 10.10% of the variance in SH-Beh_SC, F(1, 534) = 60.067, p < .001, R^2 = .101. When considering PP-Pain_Scr as a mediator results showed that B = .130, BootSE .028, β = .102, BootCI [.077, .188], suggesting that PP-Pain_Scr partially mediated the relationship between No. of CTES and SH-Beh_SC. A summary of results can be seen in Table 8.

Table 8

Summary of Mediation Analysis Testing PP as a Mediator between CT and SH

Path	B	Standard Error (SE)	t-value	p-value	Beta (β)	95% CI (Lower, Upper)
No. of CTES → PP-Pain_Scr (a path)	4.175	0.789	5.290	< .001	.223	[2.625, 5.725]
No. of CTES → SH-Beh_SC (c' path)	0.277	0.047	5.811	< .001	.216	[0.183, 0.371]
PP-Pain_Scr → SH-Beh_SC (b path)	0.031	0.003	12.240	< .001	.456	[0.026, 0.036]
Indirect Effect (No. of CTES → PP-Pain_Scr → SH-Beh_SC)	0.130	0.028	–	–	.102	[0.077, 0.188]

Path	B	Standard Error (SE)	t-value	p-value	Beta (β)	95% CI (Lower, Upper)
Total Effect (No. of CTES → SH-Beh_SC) (c path)	0.408	0.053	7.750	< .001	.318	[0.304, 0.511]

This regression was repeated utilising the level of trauma variable. Results can be seen in Table 9. Results showed that level of trauma significantly predicted PP proxies, β = .265, and PP proxies, in turn, significantly predicted SH, β = .445. The direct effect of level of trauma on SH remained significant after accounting for PP proxies, β = .221, indicating partial mediation. The total effect of level of trauma on SH was also significant, β = .339, indicating that increased intensity of trauma was associated with more SH before accounting for the mediating role of PP proxies.

Table 9

Summary of Mediation Analysis Testing PP as a Mediator between Level of Trauma and SH

Path	B	SE	t	p	95% CI (Lower, Upper)	β
a path (Lev_Trau → EMOPain)	.900	.142	6.352	< .001	[0.622, 1.178]	.265
b path (EMOPain → SH_BehSC)	.031	.003	11.842	< .001	[0.025, 0.036]	.445
c' path (Direct effect)	.051	.009	5.869	< .001	[0.034, 0.069]	.221

c path (Total effect)	.079	.010	8.320	< .001	[0.060, 0.097]	.339

Lastly, the indirect effect of level of trauma on SH through PP proxies was significant, B = .027, BootSE = .005, β = .038, 95% CI [0.018, 0.038], indicating that emotional difficulties partially mediate the relationship between level of trauma and SH.

Hypothesis 4: Pain Catastrophising will Mediate the Relationship between Childhood Trauma and Self-Harm

Hypothesis four was tested using the same mediation analysis, examining whether PC mediated the relationship between CT and SH.

In the first regression model results indicated that No. of CTES significantly predicted PCS_Scr, β = .163,suggesting a small but significant effect of No. of CTES on PCS_Scr, with individuals who report more CT exhibiting higher levels of PC.

A second regression model analysed the combined effects of No. of CTES and PCS_Scr on SH-Beh_SC. The overall model was significant, F(2, 357) = 54.73, $p < .001$, $R^2 = .235$, demonstrating that both predictors together explained 23.5% of the variance in the SH-Beh_SC score. Separately, both CT and PC significantly predicted SH, β = .227 and β = .393 respectively, suggesting that greater PC is associated with more SH behaviours.

The total effect of No. of CTES on SH-Beh_SC was B = .403, SE = .070, β = .291, t(358) = 5.74, $p < .001$, 95% CI [0.265, 0.542]. Before considering PCS_Scr as a mediator, No. of CTES explained 8.44% of the variance in SH (F(1, 358) = 32.987, $p < .001$, $R^2 = .084$). Next, the mediation effect was examined. The indirect effect of No. of CTES on SH-Beh_SC through PCS_Scr was B = .089, BootSE .031, β = .064,

BootCI [.032, .155], suggesting that PC partially mediated the relationship between CT and SH. A summary of results can be seen in Table 10.

Table 10

Summary of Mediation Analysis Testing PC as a Mediator between CT and SH

Path	B	SE	t-value	p-value	β	95% CI (Lower, Upper)
No. of CTES → PCS_Scr (a path)	1.662	.534	3.116	.002	.163	[0.613, 2.712]
No. of CTES → SH-Beh_SC (c' path)	0.315	.065	4.830	< .001	.227	[0.187, 0.443]
PCS_Scr → SH-Beh_SC (b path)	0.053	.006	8.370	< .001	.393	[0.041, 0.066]
Indirect Effect (No. of CTES → PCS_Scr → SH-Beh_SC)	0.089	.031	–	–	.064	[0.032, 0.155]
Total Effect (No. of CTES → SH-Beh_SC) (c path)	0.403	.070	5.740	< .001	.291	[0.265, 0.542]

This regression was repeated utilising the level of trauma variable. Results can be seen in Table 11. Results showed that level of trauma significantly predicted PC, β = .202, and PC, in turn, significantly predicted SH, β = .384. The direct effect of level of trauma on SH remained significant after accounting for PC, β = .228, indicating partial mediation. The total effect of level of trauma on SH was also

significant, β = .305, indicating that more intense ratings of trauma were associated with more SH before accounting for the mediating role of PC.

Table 11

Summary of Mediation Analysis Testing PC as a Mediator between Level of Trauma and SH

Path	B	SE	t	p	95% CI (Lower, Upper)	β
a path (Lev_Trau → PCS_Scr)	.372	.096	3.892	< .001	[0.184, 0.560]	.202
b path (PCS_Scr → SH_BehSC)	.052	.006	8.119	< .001	[0.039, 0.065]	.384
c' path (Direct effect)	.057	.012	4.817	< .001	[0.034, 0.080]	.228
c path (Total effect)	.076	.013	6.061	< .001	[0.052, 0.101]	.305

Lastly, the indirect effect of level of trauma on SH through PC was significant, B = .019, BootSE = .005, β = .077, 95% CI [0.008, 0.032], indicating that PC partially mediates the relationship between level of trauma and SH.

Hypothesis 5: Psychological Pain Proxies will Mediate the Relationship between Childhood Trauma and Self-Harm Even when Controlling for Pain Catastrophising

Hypothesis five was tested using a serial mediation analysis, examining whether PP proxies mediated the relationship between CT and SH, when controlling for the effects of PC.

The first regression model analysed the effect of No. of CTES on PP-Pain_Scr. Results show the overall model was significant, $F(1, 358) = 19.289$, $p < .001$, $R^2 = .051$. No. of CTES significantly predicted PP-Pain_Scr, $B = 4.456$, $SE = 1.015$, $\beta = .226$, $t(358) = 4.392$, $p < .001$, 95% CI [2.461, 6.452], suggesting that individuals with more CT experienced greater emotional difficulties.

The second regression model analysed the effect of No. of CTES and PP-Pain_Scr on PCS_Scr. No. of CTES did not significantly predict PCS_Scr, $\beta = -.003$, however PP-Pain_Scr did significantly predict PCS_Scr, $\beta = .730$. These results suggest PP proxies predicts PC; however, CT does not directly predict PC once the effects of PP proxies are included.

The third regression model analysed the effect of No. of CTES, PP-Pain_Scr and PCS_Scr on SH-Beh_SC behaviours. Results show the overall model was significant, $F(3, 356) = 44.519$, $p < .001$, $R^2 = .273$. No. of CTES significantly predicted SH-Beh_SC, $\beta = .195$ suggesting that individuals with more CT reported more SH behaviours. PP-Pain_Scr also significantly predicted SH-Beh_SC behaviours, $\beta = .289$ suggesting greater emotional difficulties are associated with more SH. Lastly, PCS_Scr also significantly predicted SH-Beh_SC, $\beta = .188$ suggesting higher levels of PC are associated with more SH. The standardised coefficients show PP-Pain_Scr had the strongest effect on SH-Beh_SC, then No. of CTES and PCS_Scr.

The fourth regression model assessed the total effect of No. of CTES on SH-Beh_SC behaviours without accounting for mediators. Results show the model was significant ($F(1, 358) = 32.987$, $p < .001$, $R^2 = .084$) explaining 8.4% of the variance in SH-Beh_SC. No. of CTES had a significant total effect on SH-Beh_SC

behaviours, β = .096, suggesting individuals with more CT engaged in more SH behaviours, before accounting for mediation.

Next, indirect effects were analysed . There was a significant indirect effect through PP-Pain_Scr alone, β = .065, and through the sequential path from PP-Pain_Scr to PCS_Scr to SH-Beh_SC, β = .031. The indirect effect through PCS_Scr alone was not significant, β = -.001. This suggests CT contributes to PP proxies which influence SH, additionally PC only influences SH through PP proxies. A summary of these results can be seen in Table 12.

Table 12

Summary Table for Hypothesis 5: Serial Mediation Model (PP-Pain_Scr and PCS_Scr as Mediators between No. of CTES and SH-Beh_SC

Path	B	SE	t-value	p-value	β	95% CI (Lower, Upper)
No. of CTES → PP-Pain_Scr	4.456	1.015	4.392	< .001	.226	[2.461, 6.452]
No. of CTES → PCS_Scr	-0.025	0.381	-0.067	.947	-.003	[-0.774, 0.723]
PP-Pain_Scr → PCS_Scr	0.379	0.019	19.615	< .001	.730	[0.341, 0.417]
No. of CTES → SH-Beh_SC (direct effect, c')	0.270	0.064	4.196	< .001	.195	[0.144, 0.397]
PP-Pain_Scr → SH-Beh_SC	0.020	0.005	4.321	< .001	.289	[0.011, 0.030]
PCS_Scr → SH-Beh_SC	0.025	0.009	2.839	< .001	.188	[0.008, 0.043]
No. of CTES → SH-Beh_SC (total effect, c path)	0.403	0.070	5.744	< .001	.096	[0.265, 0.542]

Path	B	SE	t-value	p-value	β	95% CI (Lower, Upper)
No. of CTES → PP-Pain_Scr → SH-Beh_SC (Ind1)	0.091	0.030	–	–	.065	[0.029, 0.110]
No. of CTES → PCS_Scr → SH-Beh_SC (Ind2)	-0.001	0.007	–	–	-.001	[-0.016, 0.015]
No. of CTES → PP-Pain_Scr → PCS_Scr → SH-Beh_SC (Ind3)	0.043	0.023	–	–	.031	[0.011, 0.087]

However, the direct effect of No. of CTES on SH-Beh_SC remained significant (B = .270, SE = .064, β = .195, t(358) = 4.196, p < .001, 95% CI [0.143, 0.397]) suggesting a partial mediation via PP-Pain_Scr.

This mediation analysis was repeated utilising the level of trauma variable. The first regression model analysed the effect of Lev_Trau on PP-Pain_Scr. Results show the overall model was significant, F(1, 358) = 20.873, p < .001, R^2 = .055. Lev_Trau significantly predicted PP-Pain_Scr, B = .834, SE = .183, β = .235, t(358) = 4.569, p < .001, 95% CI [.475, 1.194], suggesting that individuals with greater intensity of CT experienced greater emotional difficulties.

The second regression model analysed the effect of Lev_Trau and PP-Pain_Scr on PCS_Scr. Lev_Trau did not significantly predict PCS_Scr, β = .032, however PP-Pain_Scr did significantly predict PCS_Scr, β = .721. These results suggest PP proxies predict PC, however level of trauma does not directly predict PC once the effects of PP proxies are included.

The third regression model analysed the effect of Lev_Trau, PP-Pain_Scr and PCS_Scr on SH-Beh_SC behaviours. Results show the overall model was significant, $F(3, 356) = 44.968$, $p < .001$, $R^2 = .275$. Lev_Trau significantly predicted SH-Beh_SC, $\beta = .201$ suggesting that individuals with greater trauma intensity reported more SH. PP-Pain_Scr also significantly predicted SH-Beh_SC behaviours, $\beta = .296$ suggesting greater levels of emotional difficulties are associated with more SH. Lastly, PCS_Scr also significantly predicted SH-Beh_SC behaviours, $\beta = .174$ suggesting greater levels of PC are associated with more SH behaviours. The standardised coefficients show PP-Pain_Scr had the strongest effect on SH-Beh_SC, then Lev_Trau and PCS_Scr.

The fourth regression model assessed the total effect of Lev_Trau on SH-Beh_SC behaviours without accounting for mediators. Results show the model was significant ($F(1, 358) = 36.738$, $p < .001$, $R^2 = .093$) explaining 9.3% of the variance in SH-Beh_SC. Lev_Trau had a significant total effect on SH-Beh_SC behaviours, $B = .076$, $SE = .013$, $\beta = .305$, $t(358) = 6.061$, $p < .001$, 95% CI [.052, .101], suggesting individuals with greater trauma intensity engaged in more SH behaviours, before accounting for mediation.

Next, indirect effects were analysed. There was a significant indirect effect through PP-Pain_Scr alone, $\beta = .070$, and through the sequential path from PP-Pain_Scr to PCS_Scr to SH-Beh_SC, $\beta = .029$. The indirect effect through PCS_Scr alone was not significant, $\beta = .006$. This suggests level of trauma contributes to emotional difficulties which influences SH, additionally PC only influences SH through emotional difficulties. A summary of results can be seen in Table 13.

Table 13

Summary Table for Hypothesis 5: Serial Mediation Model (PP-Pain_Scr and PCS_Scr as Mediators between Lev_Trau and SH-Beh_SC

Path	B	SE	t-value	p-value	β	95% CI (Lower, Upper)
Lev_Trau → PP-Pain_Scr	0.834	0.183	4.569	< .001	.235	[0.475, 1.194]
Lev_Trau → PCS_Scr	0.059	0.069	0.864	.389	.032	[-0.076, 0.195]
PP-Pain_Scr → PCS_Scr	0.375	0.019	19.377	< .001	.721	[0.337, 0.413]
Lev_Trau → SH-Beh_SC (direct effect, c′)	0.050	0.012	4.316	< .001	.201	[0.027, 0.073]
PP-Pain_Scr → SH-Beh_SC	0.021	0.005	4.452	< .001	.296	[0.012, 0.030]
PCS_Scr → SH-Beh_SC	0.025	0.009	2.628	.009	.174	[0.006, 0.041]
Lev_Trau → SH-Beh_SC (total effect, c path)	0.076	0.013	6.061	< .001	.305	[0.052, 0.101]
Lev_Trau → PP-Pain_Scr → SH-Beh_SC (Ind1)	0.017	0.006	–	–	.070	[0.007, 0.030]
Lev_Trau → PCS_Scr → SH-Beh_SC (Ind2)	0.001	0.002	–	–	.006	[-0.002, 0.005]
Lev_Trau → PP-Pain_Scr → PCS_Scr → SH-Beh_SC (Ind3)	0.007	0.003	–	–	.029	[0.001, 0.015]

However, the direct effect of Lev_Trau on SH-Beh_SC remained significant (B = .050, SE = .012, β = .201, t(358) = 4.316, p < .001, 95% CI [0.027, 0.073]) suggesting a partial mediation via PP-Pain_Scr.

Study Two

This section reports the mixed-methods results of study two, including the quantitative portions: sample characteristics, correlations, mediation results, and qualitative portions: RTA and research quality appraisal.

Quantitative Data Analysis

Descriptive Statistics. Primary data collection initially included twelve participants. However, to increase sample size additional participants from study one who had experienced at least one CT and engaged in at least one form of SH were included, as they met the eligibility criteria for part two of the study.

A total of 292 participants (M = 23.87 years, SD = 8.13) were included in the analysis (Table 14).

Table 14

Demographic Characteristics of the Sample

Demographic	Category	N	%
Gender	Female	243	83.2%
	Male	43	14.7%
	Other	6	2.1%
Ethnicity	White/Caucasian	205	70.2%
	Asian/Pacific Islander	41	14.0%
	Black/African American	20	6.8%
	Other	20	6.8%
	Hispanic/Latino	6	2.1%

All participants experienced at least one CT and one SH behaviour.

Normality Tests Prior to analysis, data were assessed for normality using the Shapiro-Wilk test (Table 15).

Table 15

Shapiro-Wilk Test for Normality of Study Variables

Variable	Sample Size (N)	S-W Statistic (D)	p-Value	Normality Assumption Met
No. of CTES	292	.890	< .001	No
Lev_Trauma_Scr	292	.927	< .001	No
SH-Beh_SC	292	.898	< .001	No
PP-Pain_Scr	292	.979	< .001	No
DERS_Ttl	292	.977	< .001	No
ERS_Ttl	292	.974	< .001	No
PCS_Scr	197	.969	< .001	No
PCS_Rum	197	.957	< .001	No
PCS_Mag	197	.955	< .001	No
PCS_Help	197	.950	< .001	No

Note. All variables violated the assumption of normality as indicated by the Shapiro-Wilk test.

Since Pearson's correlation assumes normal distribution, a Spearman's rank-order correlation was used to assess the relationship between these variables.

Hypothesis 1: There Will Be a Direct Link between Childhood Trauma and Self-Harm. A Spearman's rank-order correlation was conducted to examine the relationship between CT and SH. Results indicated a statistically significant weak positive correlation, $r_s(292) = .240$, $p < .001$, suggesting individuals who report more CT also report more SH behaviours.

Hypothesis 2: Childhood Trauma, Self-Harm, Psychological Pain Proxies, And Pain Catastrophising will be Positively Correlated. A Spearman's

rank-order Correlation was conducted to examine the relationship between CT, SH, PP proxies and PC. Results show some variables are positively correlated whilst others are not.

The correlation between No. of CTES and SH-Beh_SC remained positive. Contrastingly to study one, there were no significant correlations between No. of CTES and PCS_Scr, $r_s(197) = .060$, $p = .406$, and PP-Pain_Scr, $r_s(292) = .111$, $p = .058$. SH-Beh_SC behaviour showed moderate positive correlations with PCS_Scr, $r_s(197) = .403$, $p < .001$, and PP-Pain_Scr, $r_s(292) = .433$, $p < .001$. PP-Pain_Scr showed a strong positive correlation with PCS_Scr, $r_s(197) = .684$, $p < .001$. See table 16 for heat-map of results.

Table 16

Heat-map displaying correlation and effect sizes between variables

Variable	No.of CTES	SH_Beh_SC	PP-Pain_Scr	PCS_total
No.of CTES	1.000	.240	.111	.060
SH_Beh_SC	.240	1.000	.433	.403
PP-Pain_Scr	.111	.433	1.000	.684
PCS_total	.060	.403	.684	1.000

Note: Throughout green represents strong effect size, yellow represents moderate effect size, orange represents small effect size and white represents no significant effect.

Further variations of included variables were analysed. Results indicated a statistically significant weak positive correlation between Lev_Trau and SH-Beh_SC score, $r_s(292) = .229$, $p < .001$, suggesting that individuals who report higher trauma intensity also report more SH behaviours. Lev_Trau also showed weak positive correlations with PP-Pain_Scr, $r_s(292) = .172$, $p = .003$. However, there were no significant correlations between Lev_Trau and PCS_Scr, $r_s(197) = .137$, $p = .055$.

PCS was broken down into its sub-components of rumination, magnification and helplessness and compared with study variables. Results can be seen in Table 17 below. All three components had strong positive correlations with one another and with PP-Pain_Scr. Specifically PCS_Rum, $r_s(197) = .625$, $p < .001$, PCS_Mag, $r_s(197) = .626$, $p < .001$, and PCS_Help, $r_s(197) = .673$, $p < .001$, each demonstrated strong positive correlations with PP-Pain_Scr. The greater the PP a person experienced, as indicated by proxy measures, the more rumination, magnification and helplessness they experienced.

Next, all three PCS_Scr components had moderate positive correlations with SH-Beh_SC; specifically PCS_Rum, $r_s(197) = .350$, $p < .001$, PCS_Mag, $r_s(197) = .346$, $p < .001$, and PCS_Help, $r_s(197) = .401$, $p < .001$. The more rumination, magnification and helplessness they experienced, the more SH behaviours they engaged in. Contrastingly, all three components had no significant correlations with No. of CTES, specifically PCS_Rum, $r_s(197) = .019$, $p = .788$, PCS_Mag, $r_s(197) = .100$, $p = .163$, and PCS_Help, $r_s(197) = .055$, $p = .442$. Lastly, two out of three components had no significant correlations with Lev_Trauma_Scr, specifically PCS_Rum, $r_s(197) = .101$, $p = .158$, and PCS_Help, $r_s(197) = .120$, $p = .093$, had no significant correlations. PCS_Mag did have a small significant correlation with Lev_Trauma_Scr, $r_s(197) = .180$, $p = .012$, the more magnification participants experienced, the more intense they rated their CT.

Table 17

Heat-map displaying correlation and effect sizes between re-formatted variables PCS_Rum, PCS_Mag and PCS_Help

Variable	PCS_Rum	PCS_Mag	PCS_Help
No.of CTES	.019	.100	.055
SH_Beh_SC	.350	.346	.401

Variable	PCS_Rum	PCS_Mag	PCS_Help
PP-Pain_Scr	.625	.626	.673
Lev_Trauma_Scr	.101	.180	.120
PCS_Rum	1.000	.774	.858
PCS_Mag	.774	1.000	.785
PCS_Help	.858	.785	1.000

PP-Pain_Scr was broken down into its components; DERS_Ttl and ERS_Ttl, and compared with study variables (Table 18). Both DERS_Ttl and ERS_Ttl had positive correlations with PCS_Scr; $r_s(197) = .693$ and .597, respectively, $p < .001$, indicating that greater PC was associated with greater emotional difficulties. DERS_Ttl had no significant correlation with No. of CTES; $r_s(292) = .081$, $p = .166$. ERS_Ttl had a weak positive correlation with No. of CTES; $r_s(292) = .118$, $p = .043$. Both DERS_Ttl and ERS_Ttl had weak positive correlations with Lev_Trauma_Scr $r_s(292) = .135$, $p = . 021$, and $r_s(292) = .178$, $p = .002$. This suggests greater emotional difficulties were associated with increased CT intensity. DERS_Ttl and ERS_Ttl had moderate positive correlations with SH-Beh_SC; $r_s(292) = .432$ and .384, respectively, $p < .001$ indicating greater emotional difficulties were associated with more SH behaviours. Lastly, DERS_Ttl and ERS_Ttl had a strong positive correlation, $r_s(292) = .731$, $p < .001$. This suggests the greater the difficulties in emotional regulation a participant experienced, the more they struggled with managing their emotional reactivity.

Table 18

Heat-map displaying correlation and effect sizes between re-formatted variables DERS_Ttl and ERS_Ttl

Variable	DERS_Ttl	ERS_Ttl
No.of CTES	.081	.118
SH_Beh_SC	.432	.384

Variable	DERS_Ttl	ERS_Ttl
Lev_Trauma_Scr	.135	.178
PCS_Scr	.693	.597
DERS_Ttl	1.000	.731
ERS_Ttl	.731	1.000

Hypothesis 3: Psychological Pain Proxies will Mediate the Relationship between Childhood Trauma and Self-Harm. Due to no significant relationship existing between PP-Pain_Scr and No. of CTES, hypothesis three was tested utilising the Lev_Trau variable. To address hypothesis three, a multi-step regression was completed using the A. F. Hayes (2022) PROCESS macro on SPSS. This regression examined whether PP proxies mediated the relationship between level of trauma and SH.

For the first regression model results indicated that Lev_Trau significantly predicted PP-Pain_Scr, with a standardised effect size of β = .206. (Table 19). These findings suggest a small to moderate effect of level of trauma on PP proxies, with individuals who report higher levels of trauma also reporting higher levels of emotional difficulties.

Table 19

Regression Analysis (Lev_Trau → PP-Pain_Scr)

Predictor	B	Standard Error (SE)	t-value	p-value	95% CI (Lower, Upper)	Beta (β)
Lev_Trau	.673	.187	3.588	< .001	[0.304, 1.042]	.206

A second regression model analysed the combined effects of Lev_Trau and PP-Pain_Scr on SH-Beh_SC. The overall model was significant, F(2, 289) = 42.139,

$p < .001$, $R^2 = .226$. Separately, both Lev_Trau and PP-Pain_Scr significantly predicted SH-Beh_SC, with standardised effect sizes of β = .221 and β = .378 respectively. See Table 20 for a breakdown. These results suggest PP proxies have a stronger effect on SH behaviours than level of trauma alone.

Table 20

Regression Analysis (Lev_Trau + PP-Pain_Scr → SH-Beh_SC)

Predictor	B	SE	t-value	p-value	95% CI (Lower, Upper)	β
Lev_Trau	.044	.011	4.179	< .001	[0.023, 0.065]	.221
PP-Pain_Scr	.023	.003	7.137	< .001	[0.017, 0.030]	.378

The mediation analysis showed the total effect of Lev_Trau on SH-Beh_SC was B = .060, SE = .011, β = .299, $t(290) = 5.333$, $p < .001$, 95% CI [0.038, 0.082]. Before considering PP-Pain_Scr as a mediator, Lev_Trau explained 8.93% of the variance in SH-Beh_SC, $F(1, 290) = 28.449$, $p < .001$, $R^2 = .089$. When considering PP-Pain_Scr as a mediator results showed that B = .016, BootSE .005, BootCI [.006, .026], β = .078, suggesting that PP-Pain_Scr partially mediated the relationship between Lev_Trau and SH-Beh_SC.

Hypothesis 4: Pain Catastrophising will Mediate the Relationship between Childhood Trauma and Self-Harm. This hypothesis could only be partially tested as there was a small significant positive correlation between level of trauma and PCS Magnification. Hypothesis four was tested using the same mediation analysis, examining whether PC Magnification mediated the relationship between CT and SH.

In the first regression model, results indicated that Lev_Trau significantly predicted PCS_Mag, B = .080, SE = .031, t(195) = 2.587, p < .05, 95% CI [.019, .141], β = .182. These findings show a small significant effect of level of trauma on PCS Magnification, and suggest individuals with greater trauma intensity report greater levels of PCS Magnification.

A second regression model analysed the combined effects of Lev_Trau and PCS_Mag on SH-Beh_SC. The overall model was significant, F(2, 194) = 18.231, p < .001, R^2 = .158, demonstrating both predictors together explained 15.8% of the variance in SH-Beh_SC. Separately, both level of trauma and PCS Magnification significantly predicted SH, β = .204 and β = .306 respectively,(Table 21), suggesting that greater trauma intensity and greater PCS Magnification is associated with more SH. PCS Magnification predicted SH with a stronger effect than level of trauma.

Table 21

Regression Analysis (Lev_Trau + PCS_Mag → SH-Beh_SC)

Predictor	B	SE	t-value	p-value	95% CI (Lower, Upper)	β
Lev_Trau	.043	.014	3.043	< .001	[0.015, 0.071]	.204
PCS_Mag	.147	.032	4.574	< .001	[0.084, 0.211]	.306

The total effect of Lev_Trau on SH-Beh_SC was B = .055, SE = .210, t(195) = 3.755, p < .001, 95% CI [.026, .083], β = .260. Before considering PCS_Mag as a mediator, Lev_Trau explained 6.7% of the variance in SH (F(1, 195) = 14.103, p < .001, R^2 = .067). Next, the mediation effect was examined. The indirect effect of Lev_Trau on SH-Beh_SC through PCS_Mag was B = .012, BootSE .005, BootCI

[.003, .024], β = .056, suggesting that PCS Magnification partially mediated the relationship between level of trauma and SH.

Hypothesis 5: Psychological Pain Proxies will Mediate the Relationship between Childhood Trauma and Self-Harm Even when Controlling for Pain Catastrophising. Hypothesis five was tested using a serial mediation analysis examining whether PP proxies mediated the relationship between level of trauma and SH, when controlling for the effects of PCS magnification.

The first regression model analysed the relationship between level of trauma and PP proxies. The overall model was significant, $F(1, 195) = 5.408$, $p = .021$, $R^2 = .027$, suggesting that Lev_Trau explained 2.7% of the variance in PP-Pain_Scr. Results showed Lev_Trau significantly predicted PP-Pain_Scr, B = .538, SE = .232, β = .164, t(195) = 2.326, p = .021, CI [.082, .995]. This suggests individuals with greater trauma intensity experience greater emotional difficulties.

The second regression model analysed the effect of Lev_Traum and PP-Pain_Scr on PCS_Mag. Lev_Trau did not significantly predict PCS_Mag, β = .080, however PP-Pain_Scr did significantly predict PCS_Mag, β = .620 (Table 22). These results suggest PP proxies predict PCS Magnification, however level of trauma does not directly predict PCS Magnification once the effects of PP proxies are included.

Table 22

Regression Analysis (Effect of Lev_Trau and PP-Pain_Scr on PCS_Mag)

Predictor	B	SE	t-value	p-value	95% CI (Lower, Upper)	β
Lev_Trau	.035	.025	1.434	.153	[-0.013, 0.084]	.080
PP-Pain_Scr	.083	.008	11.059	< .001	[0.068, 0.098]	.620

The third regression model analysed the effect of Lev_Trau, PP-Pain_Scr and PCS_Mag on SH-Beh_SC. Results show the overall model was significant, $F(3, 193) = 16.808$, $p < .001$, $R^2 = .207$. Lev_Trau significantly predicted SH-Beh_SC ($\beta = .189$), as did PP-Pain_Scr ($\beta = .286$), however, PCS_Mag did not significantly predict SH-Beh_SC ($\beta = .128$) (Table 23).

Table 23

Regression Analysis (Effect of Lev_Trau, PP-Pain_Scr, and PCS_Mag on SH-Beh_SC)

Predictor	B	SE	t-value	p-value	95% CI (Lower, Upper)	β
Lev_Trau	.040	.014	2.90	< .001	[0.013, 0.067]	.189
PP-Pain_Scr	.018	.005	3.451	< .001	[0.008, 0.029]	.286
PCS_Mag	.061	.040	1.535	.126	[-0.018, 0.140]	.128

The fourth regression model assessed the total effect of Lev_Trau on SH-Beh_SC behaviours without accounting for mediators. Results show the model was significant ($F(1, 195) = 14.103$, $p < .001$, $R^2 = .067$) explaining 6.7% of the variance in SH-Beh_SC. Lev_Trau had a significant total effect on SH-Beh_SC behaviours, $\beta = .260$, suggesting individuals with greater trauma intensity engaged in more SH, before accounting for mediation (Table 24).

Table 24

Regression Analysis (Regression Analysis: Total Effect of Lev_Trau on SH-Beh_SC)

Model	B	SE	t-value	p-value	95% CI (Lower, Upper)	β
Total effect Lev_Trau	0.055	0.015	3.755	< .001	[0.026, 0.083]	0.260

Next, indirect effects were analysed (Table 25). There was a significant indirect effect through PP-Pain_Scr alone, β = .047. However, there was no significant effect from PCS_Scr alone, β = .010, or through the sequential path from PP-Pain_Scr to PCS_Mag to SH-Beh_SC, β = .013. Results suggest PP proxies exert a more direct role in contributing to SH, rather than working through PCS Magnification.

Table 25

Regression Analysis (Indirect Effects of Variables on SH-Beh_SC)

Model No.	B	SE	95% CI (Lower, Upper)	β
Ind1	.010	.006	[0.001, 0.023]	.047
Ind2	.002	.002	[-0.002, 0.008]	.010
Ind3	.003	.002	-[0.001, 0.008]	.013

Note: the key for the models is: Ind1 = Lev_Trau -> PP-Pain_Scr -> SH-Beh_SC, Ind2 = Lev_Trau -> PCS_Mag -> SH-Beh_SC, Ind3 = Lev_Trau -> PP-Pain_Scr -> PCS_Mag -> SH-Beh_SC

However, the direct effect of Lev_Trau on SH-Beh_SC remained significant (B = .040, SE = .014, β = .189, t = 2.90, p = .004, 95% CI [0.013, 0.067]) suggesting a partial mediation via PP-Pain_Scr.

Qualitative Data Analysis

Sample Demographics

Participant's ages ranged from 23-69 years old (M = 42.17 years, SD = 15.46). There were eight females, two males and two participants who identified as "other". One participant was Asian, one participant was Black and ten participants were White. Table 26 below displays further information.

Table 26

Participant Demographic Characteristics

Participant Pseudonym	Gender	Age
Lena	Female	45
Charlie	Other	26
Dylan	Male	59
Magda	Female	69
Chloe	Female	52
Luna	Other	23
Grace	Female	31
Zara	Female	27
Leo	Male	50
Vivian	Female	59
Mia	Female	34
Hannah	Female	31

Overview of themes

Table 27 below summarises the themes and sub-themes identified utilising RTA (Braun & Clarke, 2006).

Table 27

Overview of Themes

Theme	Subtheme
Theme 1: The Impact of Childhood Trauma on Psychological Pain	Childhood Trauma and Struggles with Emotion Identification and Expression

Theme	Subtheme
	Negative Effects of Childhood Trauma on Emotion Processing Over Time The Intensity of Emotional Reactions: Fear, Sadness, and Numbness in Response to Childhood Trauma Childhood Trauma and the Development of Low Self-Worth and Shame
Theme 2: The Role of Self-Harm in Coping with Psychological Pain	The Journey of Self-Harm SH Served Purposes Linked to Psychological Pain
Theme 3: PCS as a Consequence of Childhood Trauma	
Theme 4: The Need to Manage and Process Emotions	
Theme 5: The Role of Support in Coping with Childhood Trauma, Psychological Pain and Self-Harm	Lack of Support Worsens Psychological Pain and Contributes to Self-Harm Presence of Support Improves Psychological Pain and Lessens Self-Harm

Theme 1: The Impact of Childhood Trauma on Psychological Pain. A recurring theme emerged regarding the emotional consequences of enduring CT, particularly in relation to emotional identification, expression and regulation. These difficulties were present across trauma type, age, race and gender, and contributed to emotional suppression, heightened emotional intensity, internalised stigma and difficulties in seeking or receiving support.

Childhood Trauma and Struggles with Emotion Identification and Expression. Multiple participants expressed that throughout their childhood they had difficulty in identifying and understanding their emotions, and received no support or guidance from caregivers around this. Without clear models of emotional expression, they described feeling overwhelmed, confused and disconnected from their emotional experiences. Lena captured this experience, saying, “But it was like, I don't know what these emotions are. When I’m young you just feel something, and no one told you. This is what you're feeling.” Mia described a similar experience, “I think I didn't really know how to deal with it at the time. Didn't really know what those emotions meant, what they felt. Didn't really have anyone that was kind of guiding me through it”. These difficulties in emotional identification appeared to contribute to difficulties with emotion expression. Several participants reflected on how, even into adulthood, they struggled to name and express their emotions. Hannah reflected on how her lack of emotional awareness persisted until beginning therapy:

“When I started my therapy at 19, I realised I didn't know what, like I knew, angry, sad and happy. But those were kind of the only three emotions that I knew… So I was very emotionally constipated. And. Didn't really show much of it. Took me a really long time in therapy to, like, start crying about anything.”

For some, these difficulties were not directly linked to a single trauma they had experienced, but instead the result of a wider consequence of traumatic events and growing up in an environment that discouraged emotional expression. Hannah further explained:

“… as a child, I wasn't allowed to cry. It was like, you know, shut up and move on sort of thing. So. Yeah. Then going back. I don't think I showed much emotion because I was taught not to.”

The expectation or encouragement to suppress emotions was a recurring experience between participants, and reinforced by multiple sources beyond the perpetrators of abuse, including professionals and family members. Charlie recalled being told to face emotional difficulties alone, “That is a direct quote from CAMHS. Don't be a burden. When you're feeling like this. Leave the situation… Deal with it yourself”. Dylan described how his family’s attempts to protect him, though well intentioned, paradoxically silenced his emotions, “[Family] were very supportive, very loving, and I think they were doing it for all the right reasons, but anytime I wanted to talk about it. They would close me down because they didn't want to see me upset”.

Some participants internalised the expectation that particular emotions were not acceptable to discuss, due to their life experiences, as described by Vivian:

“Yeah, I internalised it or I kept it in because. We were free to speak about adoption, but I just didn't feel comfortable and I didn't think it was something that I could talk about or I should talk about.”

Early challenges in emotional identification and emotional suppression, combined with both external and internal invalidation, shaped a foundation for long-term emotional dysregulation. Participants reflected on these difficulties continuing to affect them into adulthood.

Negative Effects of Childhood Trauma on Emotion Processing Over Time. Participants described how suppressing emotions during childhood often led to a build-up of distress within adulthood, which manifested in explosive reactions or a persistent sense of stagnant emotions. Charlie reflected on the intensity of their emotional reactions, and the unpredictability of how their emotions manifested:

“More often than not, erm, 90% of the time. It's numb. But when an emotion does stick. It's 0 to 60 in 0.3 seconds. So it will be a manic high, and I'll end the day

with neon green hair or my entire flat has been rearranged or it'll be a depressive low, and I won't have moved for 24 hours.”

Mia also described struggling with emotional explosiveness, acknowledging how her reactions often seemed disproportionate to the situation, “I find my emotions quite explosive. Sometimes I can react quite, to other people quite. I'm like blown out of proportion. I'd say that's the way I can express it.” Dylan echoed this experience, recognising a pattern of bottling his emotions until they become overwhelming “I sometimes just let things boil up, boil up, boil up, and then explode”.

For some participants, emotional suppression led to a deep, unresolved, emotional paralysis. Lena described a prominent feeling of being emotionally stuck in adulthood, due to the childhood emotional abuse she experienced from her father:

“It's unresolved family, no matter how much counselling or therapy. It's never going to be healed. He was just cold, and I didn't see him since I left home, so I think that didn't help, because I think about him, and he was quite cold, and they can never heal. And then you're yeah, again stuck. It's like banging [your] head against a brick wall…, I think it always comes back to whatever age the internal emotions [are]. You go back to the childhood.”

Other participants described the challenge of managing the emotions of family members also involved in the trauma, which further impeded their own emotional processing ability. Zara shared how she had to suppress her own feelings to protect the emotional state of others:

“I would remember like having to, like, put myself away and kind of feel upset or sad about something separately or after, and it was muted so that it could come up at a later stage where my mum was OK or my sister was OK.”

As seen, although participants attempted to suppress their emotions, this suppression could occasionally breakthrough in overpowering ways, and be effected by the presence of others. The outcome of this breakthrough was also heavily influenced by the intensity of the emotions.

The Intensity of Emotional Reactions: Fear, Sadness, and Numbness in Response to Childhood Trauma. Participants described experiencing intense emotional reactions, often overwhelming and difficult to regulate, in response to their childhood trauma. Fear was frequently mentioned as one of the most intense emotions, as illustrated by Leo speaking about the visceral reaction he gets in present day recalling the fear he had when hospitalised with a chronic disease as a child:

“Yeah, I'm. I'm knotting in my stomach now just thinking of, just talking about it actually, it's that that nausea which is fear, mainly fear of what's going to happen to me. What's going to be done to me and fear of being alone. Really. Yeah. That strong, overwhelming fear.”

For one participant, the high intensity of the feeling of fear worsened PP as it impeded help seeking behaviours. Magda described the fear she had following her experience of sexual abuse by an unidentified perpetrator, and how this resulted in her feeling unable to disclose her trauma, “And also I thought I'd done something very, very bad as well. And I thought I'd get told off and in trouble”. For Magda, although the incident happened once, this fear persisted throughout her childhood, “And also I was terrified right up until my mum died that this man would find me every night I'd lay in bed thinking he's going to come in my bedroom and get me”.

Contrastingly, for other participants strong feelings of fear were used as motivation to engage in help and recovery behaviours. Grace described how fear of

continued bullying motivated her to take preventative action, “My absolute fear was that the bullying would start again but in a different way at sixth form. So I made sure that I did just enough so I didn't have to go back into hospital”. Although this fear was not a pleasant experience, it enabled her to continue to implement changes she had previously struggled to maintain.

Alongside fear, participants also commonly described a feeling of deep and pervasive sadness, often intertwined with feelings of hopelessness and worthlessness. These powerful emotional states contributed to suicidal thoughts and SH behaviours. Grace reflected on her mind-set during childhood traumatic events, describing her emotional state as feeling trapped in an overwhelming sense of darkness:

“Yeah, back then, it used to be a very like I'd say I was in a dark hole that I couldn't get out of they’re very, very dark thoughts. Like, I, I couldn't care less if I'm no longer here.”

Hannah illustrated a similar experience of her childhood years, describing a devastating sense of sadness that left her feeling stuck and unable to cope, “Just, I guess, sadness. And then I'm like, right, what do I do with this? This is like a big old black hole of awfulness. I can't get out of it.” Similarly, Luna described how her feelings of hopelessness grew so intense they led to suicidality and demonstrated how the weight of her emotional pain became unbearable, “Especially when, like my mind, is just going like, oh, there's like, there's no point in living anymore like you, you know, you should just kill yourself kind of thing”. The combination of sadness and hopelessness was pervasive, and resulted in participants contemplating extreme measures to end their PP, demonstrating the unsustainable nature of this phenomenon.

Following intense emotional reactions, participants discussed becoming numb as a maladaptive coping mechanism in response to experiencing too many intense emotional reactions. Dylan described this, “I've kind of felt every emotion I possibly can. So I think my tank is empty if you like. So I don't. I can't feel anymore”. The emotional numbness, as described by participants, became a form of self-preservation, and helped them avoid difficult emotional intensity. Chloe reflected on the process of maintaining emotional numbness being intertwined with SH behaviours:

“I think I was emotionally numb and that's what I use the self-harm to help with as well is to stay numb. So when I felt like the emotion was becoming not numb. I would like OK. This wasn't a conscious thought, but I know that I use the self-harm then to numb things down again. It's like I needed to be numb.”

Emotional numbness was a direct response to the PP participants experienced when facing extreme and difficult emotions. The persistent difficulties in emotion management, compounded by the effects of childhood trauma, contributed to difficulties with self-worth.

Childhood Trauma and the Development of Low Self-Worth and Shame. Throughout interviews, there was a common theme of CT contributing heavily to negative self-appraisal, often manifesting as feelings of inadequacy and not being good enough. These emotional responses were rooted in various aspects of participant’s experiences. For example, Zara shared how the trauma of coming from a broken home led her to feel unworthy, “I feel like it still comes to that kind of feeling of like stigma or shame. It knocked my self-esteem that. I was part of this family that was breaking down.” Magda reflected on her previously internalised belief that she

was responsible for the sexual abuse she had experienced, which led to a belief that she was not a good person and should feel ashamed:

“I was so ashamed because I thought it was my fault…Because I let him do it. It was my fault. I must have gone. I must have given out a signal. That it was all right. That is what I really believed. And living with all that guilt and shame as well.”

Luna described the lasting impact the emotional and physical abuse she experienced had on her sense of self-worth. From a young age she, she internalised the harmful messages conveyed during the abuse, which had long-lasting impacts on her self-perception. She reflected, “So I kind of, from that, kind of youngish age you are made to believe that you are this horrible, nasty person and then you grow up believing it”.

In addition to the trauma itself, negative self-appraisal also stemmed from coping mechanisms the participants used to deal with the PP and emotional effects of the trauma, such as SH. Lena discussed how these feelings remained the same across the course of her SH, and worsened her psychological distress, “When you're doing it the pain is still the same. I'm not worthy. I don't think it changes”. Dylan described the shame he felt disclosing his SH relapse to his wife after a prolonged period of abstinence, “ [I] felt I'd let her down, and I knew she didn't want to hear it. So yeah, a lot of shame”. This shame could be so powerful it would prevent participants from seeking support for their SH, as illustrated by Mia:

“And there were days that I needed medical intervention. But. Everyone that I've ever met, that's a self-harmer. Very rarely go and get help for their [wounds]. There's so much around that I think in terms of shame, and I think in terms of when you're opening up even more. So I kind of just. Dealt with it myself.”

Vivian also internalised this feeling of shame, when discussing if she felt proud of herself once she had ceased her SH behaviours she reflected on this, “No, I didn't. I felt a bit more ashamed of myself that I didn’t know why I was doing it, I guess. Thought, I was just a stupid person really.”

Across interviews participants frequently expressed deep-seated beliefs that they deserved to be punished, stemming from their CT, resulting in SH. Grace discussed her default coping mechanism of engaging in eating disorder behaviours when experiencing unworthiness following severe bullying, “Then I'll be like, no, I don't deserve that. I'm not going to have my favourite breakfast today because actually I need to go for a really restrictive thing. That's how I used to deal with it.” Similarly, Magda spoke about her need to SH to deal with her belief of needing to be punished due to her experiences of abuse and parental loss, “I’d hurt myself because I still have to punish myself. It's never enough. It's never enough to make that go away. I'm never punished enough. It's always more punishment”.

Theme 2: The Role of Self-Harm in Coping with Psychological Pain.

The Journey of Self-Harm. Participants reflected on their journeys with SH, and described how it became their primary coping mechanism over time. For many participants, SH initially began as an unconscious response to the PP they experienced due to their childhood trauma. Charlie recalls noticing their SH behaviours only after becoming aware of the pain that accompanied them, “It was almost it became subconscious, so I wouldn't even realise I was doing it until I’d move on to doing something else and be like, why am I hurting”. Leo described how his SH started with behaviours he attributed to frustration, “I mean, I would certainly in early teens, I would. I would head-butt walls, things like doors, kick walls, things

like that”. This physical aggression served as an outlet for difficult emotions. Hannah described her SH beginning in childhood:

“So I can remember as far back as when I was six of. Kind of like hitting my head against the wall. Yeah, it took me a really long time. Once I started kind of therapy to realise that that was obviously a way of kind of like regulating emotions and some sort of way of like self-harm”.

Grace also discussed how her SH initially began as an attempt to incorporate healthier habits, but this spiralled into disordered eating due to the bullying she experienced regarding her physical appearance:

“It started more of a health kick to start with, like I was trying to just be a bit healthier, became like a vegetarian… Then it kind of my eating it kind of became a bit of addictive… And kind of that spiral… then it my eating I was just I was like, well, what's the point, you know, no one really likes me. No one likes who I am. So kind of. I just, my restriction got worse and worse”.

Other participants consciously began to SH, in response to the overwhelming psychological distress they experienced, and used it as a form of emotional regulation. Chloe described her SH occurring in tiers that reflect the intensity of her PP:

“Well, my self-harms always had like 3 tiers, so my go to is binge eating. So if I'm feeling particularly emotional about anything I'll suddenly find myself in a shop, buying a load of foods and then eating very fast”.

As her emotional state worsened, Chloe described the next tier of SH, “And then my second tier is when things are getting. More intense… I get those thoughts that kind of go round and round and round and round in your head. But I want to hit

myself or cut myself". Lastly, when Chloe's PP reached a peak, she would seek out her most dangerous form of self-harm, she reflected:

"then the third tier would be that I would go online and I would say to someone, basically go through the BDSM community. And say I'm a masochist. I need a sadist, and I just need to be beaten up".

Chloe's experience demonstrates how SH can evolve and escalate over time. Zara spoke about how SH originally started as an experiment and escalated into her default coping mechanism in response to overwhelming PP,

"But it only yeah came as a kind of, not a last resort, but more of like an experimental thing where it was kind of like, OK, this hasn't worked… Let's try this and see what happens. So that was my go to rather than like being really low and crying. I would just self-harm because it would. Yeah, it would relieve that. Yeah, that kind of feeling overwhelm or out of, like, loss of control at the time. Yeah".

Zara's experience highlights the way in which SH can evolve from an experimental response to PP, into a habitual coping mechanism. SH helped participants to alleviate PP.

Self-Harm Served Purposes Linked to Psychological Pain. Multiple participants described SH as allowing them to release the emotions they were feeling, when other coping mechanisms had failed. Dylan described this process:

"It was kind of, it allowed me to manifest the, some of the bad feelings I was feeling inside to get them out. So if I could cut myself and make myself bleed, then I could see the pain... I think it gave me a sense of relief."

Leo similarly described SH as a way to momentarily relieve overwhelming emotions stating, "It is like a relief. It's like a deep breath if you like that things are reset a little bit. And it takes that edge off the internal feeling of. Fear / dread." Zara

stated SH helped her deal with her internal processes when trying to understand her CT, “It was the release for me. I've been relieved of the kind of internal process that happened when I was trying to make sense of things”. Hannah spoke candidly of SH as a tool to release PP, “And then there was when I got a bit older, there was a lot of kind of like cutting. To release. That pain.”

SH also allowed participants to suppress their emotions in order to avoid the negative effects of feeling them, Hannah described this process, “But I do know that later in life. It definitely came a way of. Just suppressing all of the emotions and suppressing all of the things that had happened to me”.

In contrast to a distraction from PP, some participants felt it enabled them to focus on their pain in the moment and work through the emotions that came with this. Luna shared how SH helped her to stop her thoughts from spiralling and focus on regulating her current emotional state, “It's one way for your head to kind of slow down a bit. It's one way for you to be kind of present in how you're feeling”.

Magda recalled feeling such intense negative emotions, stemming from traumatic events throughout her lifespan, she felt SH was the only option to end her PP:

“I tried to kill myself because of the one thing that I thought I'd achieved, and I've done well in - I failed my mum, I had this terrible secret with this man - Was with being a mum to my own boys and when [son] said you should have left him, you didn't. You kept making excuses. I felt so. I felt so guilty, I thought I. I can't even be a mum and I'm I tried to kill myself.”

The need to use SH as a coping mechanism for extreme PP, demonstrates the pervasive feelings of helplessness that can be present as a result of CT. This helplessness co-exists with other responses to PP.

Theme 3: PCS as a Consequence of Childhood Trauma. Throughout interviews participants described experiencing their emotional pain as overwhelming, and at times, unmanageable. This often stemmed from ruminating on their emotional states, which intensified their psychological distress. For example, Vivian shared how difficulties at work would trigger deep-seated feelings of rejection linked to her trauma of being adopted, “I used to get very worried. And think that I would get the sack because I wasn’t doing things properly and I wasn't. I had that rejection feeling”. This tendency to fixate on negative scenarios led to a fixation on negative emotional experiences. Mia discussed magnifying potentially emotionally distressing situations in her head in order to prepare for PP, due to fear that being underprepared would be even more unmanageable:

“I always think of worst case situations because if you think of the worst case scenario, it can only be better than that. If I don't think the worst case scenario, then it could be worse than what I imagine... everything will consume me. With that, whatever I'm worrying about.”

While Vivian’s catastrophising focused on ruminations around feelings of rejection, and Mia’s catastrophising focused on magnification of worst-case scenarios to avoid PP, both participants demonstrated how persistent negative thinking patterns intensified their PP. Other participants recognised this impact, and the need to engage in coping mechanisms to cease these unhelpful thinking styles. Leo described needing to get out of his head and avoid his emotions, as ruminating on them would contribute to a pattern of exaggerated negative thinking that intensifies his PP:

“My default is always to try and stop thinking, to try and get out of my head because my head will feel the anxiety there and the dread and it's then a cycle

between the two. It will cause paranoia... I will catastrophise which will again make me want to drink on something to just suppress it off".

Hannah described the emotional intensity when she feels rejected or alone, and the notion it won't end or she won't be able to escape the feeling, which usually resulted in maladaptive coping mechanisms such as SH, "And then it's like that whole feeling of. Just, I guess, sadness. And then I'm like, right, what do I do with this? This is like a big old black hole of awfulness. I can't get out of it". This description highlights the helplessness facet of PC, where participants feel unable to support themselves when experiencing PP. These patterns of catastrophising demonstrate the consequence of participants PP being compounded by their inability to regulate their emotions, or control their thinking patterns.

Theme 4: The Need to Manage and Process Emotions . Within interviews participants expressed a clear need to manage their emotions to avoid the negative consequences of emotional overwhelm, including SH, and maintain psychological wellbeing. The ability, or inability, to regulate emotions impacted a variety of areas including cognitive processing, mental health and overall coping mechanisms.

Magda described how her inability to down-regulate intense feelings of guilt following an experience of abuse led to overwhelming suicidal ideation, "I just don't deserve to live. That is the only thought in my head. I do not deserve to live because of what I've done and what I've been, what I am and everything else kind of falls away." The inability to manage emotions also contributed to intense SH behaviours with severe physical health consequences. Grace discussed how emotional spiralling in relation to her eating disorder, resulted in severe exercise behaviours leading to hospitalisation:

“I got to the point that I collapse, I'd end up in hospital because, you know, my heart rate would be through the roof because I've gone to the point, you know, where most people you're, you know, you're you're you've hit your limit, you stop”.

For some participants their mental health did not seem significantly affected during childhood, despite experiencing traumatic events. However, as they transitioned into adulthood the accumulation of unresolved emotions and trauma, alongside the pressures of adult responsibilities, triggered mental health difficulties. Mia described having a mental health crisis following difficulties at work:

“I think what happened was I suppressed a lot of the feelings at the time when I'm at that [child] age. And. When I really suffered with my mental health and had. Quite a bad breakdown. All that trauma came to the top and I really struggled to. Evaluate it and make sense of it and understand why it happened”.

Luna described a similar situation happening whilst completing her nursing degree and attempting to process unresolved emotions in counselling at the same time, resulting in a build-up of emotions and difficulty managing the outcome:

“So it was it kind of, I guess it was trying to juggle everything at once... that kind of you'd buried so deep in your mind that it just, you know, it's almost like you pretend it didn't exist. Basically it very much impacts me now. And I think I guess you open the can of worms and then it's like, oh, OK, what now?”

Following the build-up of overwhelming emotions, participants turned to maladaptive coping mechanisms, often utilising SH. For Zara, the transition to university acted as a catalyst for overwhelming emotions, and when she found herself without the familiar coping mechanisms used at home she relied on SH to regulate these emotions:

“The self-harm manifested similarly to how I was dealing with situations at home, where there'll be that kind of quiet space to kind of release or quiet space to feel like you could process what was happening… But also, yeah, that kind of internal process of feeling, extreme distress, something that I felt was quite difficult for me to process outside of the context”.

Chloe described a similar experience, in which the loss of her familiar coping mechanism due to physical health difficulties, left her unable to distract herself. Consequently, she was forced to confront difficult emotions that became unmanageable, worsened SH and led to a crises:

“But I couldn't ever think about, you know what, what might be going on in my head or how I was feeling or how I was thinking. So as soon as I stopped working, I very, very quickly had a mental breakdown... I was literally hurting myself to keep going. So yeah.”

To promote healthier coping mechanisms, participants recognised the importance of having safe spaces to process and regulate overwhelming emotions. Lena described her relationship with her ex-partner, where she felt able to be her authentic self and take the space to experience her feelings, “we look after each other, we can be vulnerable… and he knows when I'm really angry or stressed, and he doesn't judge me”. Vivian described a similar experience, highlighting the importance of a non-judgemental space to process emotions and her SH with her counsellor, “Because she didn’t. Tell me off for what I was doing. She kind of understood. Where I actually found that with talking therapy. They are kind of judgmental. Whereas [counsellor] wont kind of judge, she’ll just talk it out”. These safe spaces facilitated recovery journeys, and promoted their emotional wellbeing. However, without these safe spaces, emotional wellbeing could worsen.

Theme 5: The Role of Support in Coping with Childhood Trauma, Psychological Pain and Self-Harm.

Lack of Support Worsens Psychological Pain and Contributes to Self-Harm. Throughout interviews participants reflected on the impact of an absent support system on emotional distress, and the ensuing maladaptive coping mechanisms that attempt to compensate for this. Participants generally agreed that during their childhoods, there was less emphasis on safeguarding children from trauma and recognising its lasting effects. Mia reflected on her experience of disclosing to professionals that she had been physically abused, and professionals not acting on this, “I confided it in someone through one of those agencies. But I'll be honest, when I was at school. Things wasn't picked up, I think, like they would be now”. She went on to state this experience of disclosure prevented her from confiding in anyone else, until she experienced a mental breakdown during adulthood. Similarly, Dylan reflected on his negative first experiences of disclosing his sexual abuse to professionals in order to get support. Initially he spoke to a school psychologist who dismissed his disclosure, resulting in severe psychological distress, he explained, “Well he didn't want to know about the abuse. All he wanted to do was, get me back into school. And then, when I was 15, I've had a huge depression”.

He then discussed a further attempt at disclosure for support, this time to his doctor, which resulted in further emotional distress and SH, “And he said, well, this happened in your childhood, pull your socks up. You know. Bear in mind I was 16. It had only happened like 3 years previously. So that's when I started to drink a lot”.

These extracts demonstrate the impact that early invalidating responses have on support seeking, reinforcing distress and contributing to a pervasive pattern of PP

and harmful coping mechanisms. Furthermore, in addition to dismissal, participants described receiving support that was not only unsatisfactory, but also left them feeling judged or shamed. Vivian described the reaction her first NHS therapist had when she disclosed her self-destructive behaviours: “She was telling me off and. And once I told her, that I’d send my phone across the floor. I'd throw, I’d throw my computer on the floor and she was really disgusted with me”.

Charlie echoed this view, and spoke of their interactions with professionals as a child, which left them feeling silenced and dismissed, and influenced how they respond to their emotional distress in the present:

“I'll be trying to temper [emotions] down, so I'll isolate myself. Not inflict that issue upon anyone else, to not be a burden as therapy has taught… That is complete and utter bull and no one should be told that”.

These accounts highlight the lasting effects that inadequate responses from professionals can have on individuals navigating trauma. This rupture in early intervention contributed to a cycle of emotional suppression and maladaptive coping, which all participants carried into adulthood. The consistent thread across narratives was not just a lack of support, but the harm caused by systems intended to protect and help, leaving participants to manage their trauma alone. These reports emphasise the importance of having a responsive and caring support system in the journey of recovering from CT, PP and SH.

Presence of Support Improves Psychological Pain and Lessens Self-Harm. Participants emphasised the significance of having a reliable emotional support system in their recovery from CT. A consistent and compassionate presence was essential in creating the safe environment required to confront painful memories. Hannah spoke of the transformative nature of her current therapeutic

relationship, which allowed her to begin healing earlier relational wounds from the abuse she experienced in childhood, “And I think I got very lucky with my therapist… that attachment has helped me heal a lot of that kind of emotional childhood trauma and allowed me to talk about and disclose all of that abuse that happened”. Similarly, Chloe described her first experience of receiving meaningful support, following initial hesitation rooted in previous mistrust of professional services developed during childhood, “And for whatever reason, I gelled with this woman and I ended up seeing her for 10 years. And she's the first person that I then ended up telling what had happened to me when I was a child”.

This account highlighted the impact a trustworthy and attuned professional can have, even after years of silence, in creating an environment that fosters emotional safety. Grace reflected on the lasting support she received from her therapist during childhood, which helped her develop long-term coping strategies still utilised during adulthood:

“He gave me a lot of toolkits... And I built, built up a toolkit that worked for me for coping strategy. So if I was having, felt like…things were creeping in... Then I had my toolkit to fall back on”.

Grace’s experience highlights how effective support can empower individuals to manage emotional distress independently. However, support was not only found in formal therapeutic settings, and some participants described receiving meaningful help from unexpected sources.

Charlie reflected on their dog supporting them by preventing completion of SH, “I get harassed by Cheeto if I put my hands anywhere in my mouth, not that I taught her to do that, she just does. She's just smart, honestly, she's my life saver”. Leo also reflected on the support his dog provides when he feels emotionally

distressed, “He's entirely intelligent and he knows if I'm fed up and as my last dog did, will come and nudge me or sit with me or whatever. So it makes a big difference. They're quite empathic”. These examples demonstrate how emotional support can emerge from any relationships that provide genuine safety and comfort.

Building on this, Zara reflected on her experience of getting support, emphasising the importance of persistence from others in reaching out to her. The outcome of having a persistent presence allowed her to acknowledge and reflect on her experiences:

“One of my friends [was] like what's going on and I was like, I don't want to talk about it's like, no, what's going on. We're going to talk about this … I know you're feeling ****, but I'm just going to be here to sit with you because it's hard to go through **** by yourself. And that was just like, you know what? Yeah, that's what I needed.”

This demonstrates that although initial reluctance to engage in support can be a barrier, persistent outreach from trusted sources can successfully break this barrier. This section highlights the importance of having meaningful support during the recovery process. Whether from professionals, peers or unexpected sources like animals, this support helps individual’s process trauma and PP, develop healthier coping mechanisms and heal from childhood adversity.

Discussion

Chapter Summary

This chapter summarises the key findings from study one and study two, situating them within the context of the existing literature and broader socio-political context. Following this, it discusses the strengths and limitations of the research, highlighting potential avenues for future investigation. Next, the chapter outlines the clinical implications of the study, before concluding with a presentation of the researcher's reflective account.

Summary of findings

This study aimed to examine the mediating role of PP proxies in the relationship between CT and SH, with a particular focus on emotional regulation and emotional reactivity. A mixed methods approach was utilised, incorporating both quantitative and qualitative analyses. This was a two-part study; for ease of interpretation, the findings for each part are summarised below.

Study One – Findings of the Secondary Data Analysis

Study one included members of the public, without requiring a history of SH or CT. Despite this, 83% reported at least one CT event, findings echoed in the literature, indicating over half of the UK population has experienced CT (Hamilton et al., 2024). Additionally, 60% of the sample reported engaging in at least one form of SH. These findings are considerably higher than the 6.4% prevalence reported in existing literature (McManus et al., 2016). A potential explanation includes using different SH assessment tools (Borschmann et al., 2012), particularly relevant in this study due to use of an un-validated tool, requiring results to be interpreted with caution. Additional explanations include the study's sample size, potentially inflating prevalence rates (Arya et al., 2012), and possible participation bias from individuals

with a vested interest in the study's topic (Elston, 2021). Nonetheless, the high sample prevalence of CT and SH histories increased the potential for identifying significant relationships, due to increased statistical power and variable variance (Fritz et al., 2015).

Hypothesis 1 predicted a direct link between CT and SH, the findings supported this, revealing a moderate positive correlation ($r_s = .311$). This indicated greater CT is associated with increased SH, in line with previous literature (Lang & Sharma-Patel, 2011). This relationship remained significant when trauma intensity was measured, indicating the robustness of this association across trauma indices.

Hypothesis 2 predicted positive correlations across all key variables, which was supported. The strongest association was between PP proxies and PC ($r_s = .712$). This suggests greater emotional difficulties are associated with increased PC, and aligns with research demonstrating CM, such as rumination, exacerbate emotional regulation difficulties (Nolen-Hoeksema et al., 2008). Emotional regulation is a key mechanism in PC, contributing to increased psychological distress (Petrini & Arendt-Nielsen, 2020). PP proxies and PC also had moderate associations with SH. These results support the Affect-Regulation Model of Self-Harm (Nixon et al., 2002), where SH increases as emotional distress increases, in an attempt to manage the experience. Both DERS and ERS had equal correlations ($r_s = .467$), suggesting emotional reactivity plays an equally important part in the bigger picture of PP and SH. Lastly, PP proxies and PC had weak positive correlations with both measures of CT, suggesting that in addition to CT other factors likely mediate this relationship. This supports the idea that early adversity creates a vulnerability to, but does not universally result in, increased PP, PC and maladaptive coping behaviours (Johnstone et al., 2016).

Hypotheses 3 and 4 explored how CT may influence SH through PP proxies and PC. PP proxies partially mediated this relationship, whereby CT significantly predicted emotional difficulties, which was associated with increased SH. This suggests CT contributes to the development of intense emotional distress via difficulties in emotional regulation and emotional reactivity, increasing vulnerability to maladaptive coping strategies such as SH. These findings are consistent with Sim et al. (2009) who found a link between CT, emotional dysregulation and SH, whereby SH served to alleviate overwhelming internal experiences. Notably, the present study utilised both emotional reactivity and regulation to capture the experience of PP. Although DERS and ERS were not analysed as distinct mediators within the model, their strong correlation (r_s = .750) supports previous findings that they are closely intertwined (Becker et al., 2019; Shelef et al., 2015), suggesting individuals who are more emotionally reactive exhibit more difficulties with emotional regulation. This duality may intensify PP, and in turn contribute to unhelpful coping mechanisms, as supported by previous literature (Gratz & Roemer, 2004). Although PP proxies mediated the CT-SH link, a direct effect remained. This suggests other factors, such as impulsivity (Arens et al., 2012) and Alexithymia (Paivio & McCulloch, 2004), also influence this relationship. This aligns with existing literature that characterises the CT–SH pathway as complex and multifactorial (Howard et al., 2017; Stagaki et al., 2021; Warrier & Baron-Cohen, 2021).

The results of hypothesis 4 indicated that PC significantly partially mediated the CT-SH relationship, whereby CT predicted PC, which was associated with increased SH. The relationship between trauma and PC is well documented in the literature (Horsham & Chung, 2013; T. M. MacDonald et al., 2021; Tidmarsh et al., 2022), however much of the research remains focused on chronic pain rather than

PP, limiting generalisability. Nonetheless, these findings support the existing literature that suggests a link between CT and PC. The relationship between PC and SH is less explored in the literature, however significant associations between the two have also been identified (Shim et al., 2017). As with PP proxies, this partial mediation further supports the complexity of the CT-SH pathway. However, the strength of the mediation was weaker than for PP proxies, suggesting PC may influence SH more indirectly. This aligns with previous findings that PC exacerbates negative emotional experiences, thereby increasing vulnerability to maladaptive behaviours such as SH (Sullivan et al., 1995).

Hypothesis 5 further clarified the relationships between these mechanisms. Findings showed the direct effect of CT on PC was non-significant when PP proxies was included in the model, therefore PC only played a mediating role after accounting for emotional difficulties. This suggests a directional pathway, where CT contributes to emotional difficulties, which then contributes to maladaptive CM, ultimately increasing SH risk. Further to this, the detrimental impact of CT on maladaptive CM may require the presence of an underlying emotional mechanism, such as PP, to occur. Importantly, PP proxies retained an indirect mediating effect, suggesting that emotional dysregulation and reactivity may serve as a more central mechanism linking CT to SH, operating at a neurocognitive and emotional level. This suggests that individuals with high levels of PP feel intense emotions whilst simultaneously struggling to effectively regulate these, resulting in an increased use of SH as a regulation strategy. These findings align with the literature, where a systematic review found individuals who attempted suicide had greater dysregulation in neural regions associated with PP, versus those with only suicidal ideation (Eddis & Oliver, 2025). In contrast, PC appears to function as a secondary mechanism,

amplifying distress via cognitive appraisal processes such as rumination and magnification. Nonetheless, causality cannot be claimed from these results, due to the cross-sectional nature of the study, and other mechanisms may also contribute to this, including those discussed in the narrative synthesis, such as executive functioning (Brown et al., 2024) and dissociation (Franzke et al., 2015; Low et al., 2000; Rodriguez-Srednicki, 2002; Swannel et al., 2012). For example, a meta-analytic review conducted in 2021 found significant associations between dissociation, emotional generation and emotional regulation, with particularly strong links between dissociation and maladaptive cognitive emotional regulation strategies (Cavicchioli et al., 2021). Additionally, research has found that emotion reactivity strongly predicted dissociative severity, and partially mediated the CT-dissociation pathway (Rauch, 2024). These studies support the possibility that other CM could contribute to the identified findings.

Study Two – Findings of the Primary Data Collection

Quantitative Data Collection. Study two explored the same hypotheses. Results for hypothesis 1, mirrored those of Study one, revealing a significant positive correlation between CT and SH, consistent with previous literature (Serafini et al., 2017). However, the strength of this association differed; while study one demonstrated a moderate association, study two had a weak association ($r_s = .240$). This may reflect differences in sample characteristics. Study two included only participants with both CT and SH histories, whereas study one included a broader general population. Previous research suggests the CT-SH link may appear stronger in non-clinical samples (Liu et al., 2018). While neither study used proven clinical populations, participants in study two may more closely resemble a clinical

population, potentially attenuating the observed correlation due to overlapping risk factors.

Interestingly, results for hypothesis 2 differed to those in study one. No significant correlations were found between the number of CT events and PP or PC. However, moderate to strong associations were found between SH, PP and PCS. This discrepancy may reflect the limitations of an event-based trauma measure, which captures frequency but not subjective appraisal, particularly in a sample where all participants have experienced at least one CT event. According to Ehlers and Clark's (2000) cognitive model, it is not simply the frequency of traumatic events, but the way in which these events are emotionally interpreted and encoded, that determines psychological outcomes. In support of this, when CT was measured via subjective appraisal of trauma intensity (Level of Trauma), a weak but significant association with PP proxies emerged. Despite this, no significant association was captured between trauma intensity and PC, until PC was examined by subcomponents.

A weak positive association was found between trauma intensity and the PC subcomponent, magnification. These findings may reflect individuals who perceive their trauma as overwhelming, which amplifies distressing thoughts and feelings, indicative of catastrophic thinking (Sullivan et al., 2001). While research on magnification in PC is limited, studies have demonstrated the significant link between trauma and PC (McDermott et al., 2024; Pimentel et al., 2020). Additionally, cognitive affective models, such as Beck's (1979), support these findings, suggesting that past traumatic experiences foster negative automatic thoughts, intensifying PP through exaggerated interpretations.

Like in study one, hypotheses 3 and 4 were concerned with exploring the mediation effects of PP proxies and PC on the CT-SH relationship. Due to no significant correlation between number of CT events and PP proxies, the level of trauma variable was utilised instead. Results showed PP proxies partially mediated the relationship between trauma intensity and SH, suggesting that individuals who interpret their trauma as more intense, experience greater emotional distress, increasing SH risk. This aligns with literature showing that difficulties in emotional reactivity and regulation negatively shape psychological and behavioural outcomes following trauma (Badour & Feldner, 2013). Klonsky (2007) further supports this, proposing that a primary function of SH is to avoid negative affective states, explaining why those in intense emotional distress may engage in SH to relieve this.

Hypothesis 4 explored the mediating relationship of PC between CT and SH. Due to the lack of significant correlations between either measure of CT and PC as a whole, trauma intensity and PC magnification were examined. PC magnification partially mediated the CT-SH relationship, suggesting individuals who percieve their CT as more intense are more likely to magnify their emotional distress, increasing the risk of SH. These findings align with recent literature that found trauma-related affective states such as hyperarousal, increase an individual's tendency to catastrophise (Yamin et al., 2024). Additionally, prior research found PC was significantly associated with PTSD and poor psychological wellbeing (Horsham & Chung, 2013). However, both aforementioned studies did not explicitly examine magnification, which may limit the generalisability of their results to the current study. Studies have shown magnification, more so than rumination and helplessness, is strongly associated with poor mental health outcomes, including depression (Craner et al., 2016). These findings suggest magnification may be most closely linked to

PTSD and poor psychological wellbeing. Given the significant mediation effects of both PP proxies and PC magnification, hypothesis 5 further explored these relationships.

Hypothesis 5 explored whether PP proxies remained a significant mediator after accounting for PC magnification. Unlike in study one, magnification played no significant mediating role in the CT-SH link. This may be due to the smaller sample size, which likely reduced statistical power (Mascha & Vetter, 2018), limiting the ability to detect a significant effect. Additionally, since only one component of PC was included, rather than the full construct, the statistical power of the analysis may have been reduced. Sullivan et al. (2001) describe PC as a multidimensional construct, suggesting that omitting components may limit analysis sensitivity. Contrastingly, PP proxies was a consistent mediator in all models, reinforcing findings from study one that PP proxies are a primary mechanism through which CT impacts SH.

Qualitative Data Collection. This section presents the qualitative results from study two. Each theme is summarised and discussed in relation to the research question, the existing literature and the wider biopsychosocial context. This study utilised a convergent parallel mixed methods study design, therefore discussion will include points of convergence and divergence with the quantitative findings.

Theme 1: The Impact of Childhood Trauma on Psychological Pain.

Throughout interviews, participant's accounts highlighted the significant negative impact of CT on emotional wellbeing, consistent with findings in the literature. This aligns with the quantitative results of study one, where CT significantly predicted emotional difficulties. However, results from study two were more nuanced, where CT only predicted emotional difficulties when accounting for trauma intensity rather

than frequency. This partial divergence may reflect sample differences, as study two only included participants with CT history. Nonetheless, both studies highlight the emotional impact of CT and its role in shaping PP.

Gruhn and Compas (2020) conducted a meta-analysis and found childhood maltreatment is broadly associated with poor emotion regulation, suppression and expression. Additionally, Carvalho Fernando et al. (2014) reported strong links between CT and emotional dysregulation, especially following emotional abuse or neglect. In line with this, multiple participants described feeling alone in their emotional development, and identified a lack of emotional guidance as a key contributing factor to their emotional dysregulation. These early experiences appeared to have lasting effects, as supported by Wolfe et al. (2001), who found that abusive childhood environments impaired later ability to display appropriate emotional reactions. This may partly stem from the impact of CT on brain development, whereby maltreatment alters brain regions involved in emotional processing (Teicher & Samson, 2016), particularly during sensitive developmental windows (Pechtel et al., 2014). These changes may reflect adaptive responses to withstand emotional distress (Teicher & Samson, 2016). In addition to neurological changes, genetic vulnerabilities may also contribute, as outlined in Linehan's (1993) Biosocial approach.

The Biosocial approach (Linehan, 1993) suggests genetic predispositions to emotional vulnerabilities, when coupled with emotionally invalidating environments, foster chronic emotional dysregulation. Invalidation, which includes the consistent dismissal, minimisation or punishment of emotional expression (Musser et al., 2018), was evident in participants accounts. Many participants described being encouraged to suppress or hide their emotions during childhood, or received little guidance

around their emotional development. These environments teach children that their emotions are unacceptable, contributing to emotional distress (Cohodes et al., 2023). Linehan's (1993) framework provides a lens through which to understand how PP may emerge from disrupted emotional development and act as a mediator in the pathway between CT and SH. Importantly, not all emotionally invalidating environments are inherently abusive, and participants described emotional invalidation originating from well-intentioned family members, echoed in the literature (Yap et al., 2008). This suggests a wider difficulty in recognising and acknowledging potential avenues to emotional distress, and mental health difficulties.

In addition to emotional dysregulation, participants described difficulties with emotional reactivity, specifically regarding the intensity of emotional experiences. Linehan's (1993) biosocial theory accounts for this, suggesting a core feature of emotional vulnerability is feeling emotions at a greater intensity and duration, which can impair the ability to regulate emotions. Across participant accounts in the present study, fear emerged as a frequently cited emotion, often described as all-consuming and unmanageable. Although this research did not focus on clinical populations, fear is a hallmark symptom of PTSD, where hyper arousal and emotional dysregulation form part of the diagnostic criteria (Zoellner et al., 2020). Previous research has found that trauma-related emotional reactivity predicts PTSD symptom intensity (Badour & Feldner, 2013), suggesting heightened emotional responses such as fear, may mediate the long-term psychological effects of CT. These long-term effects shape individuals chosen coping mechanisms (Cohodes et al., 2023).

Another frequently cited emotion was unworthiness, contributing to persistent feelings of inadequacy. These emotional responses were shaped by the nature of the trauma, particularly experiences of emotional, physical, and sexual abuse, the

coping strategies used, and the internalisation of negative self-appraisals. Feelings of unworthiness align with Meerwijk and Weiss's (2011) definition of PP; "a lasting, unsustainable, and unpleasant feeling resulting from negative appraisal of an inability or deficiency of the self", demonstrating how difficulties in emotion regulation and reactivity drive internal emotional and cognitive states, increasing distress and maladaptive coping responses.

Following prolonged periods of intense emotional reactions, many participants reported emotional numbing. This appeared to be adaptive, where numbness prolonged psychological survival in hostile environments. This is supported by studies that found emotional numbing promotes resilience, and can protect against PTSD in adolescents who have experienced CT (Lansford et al., 2006). For some participants, SH was used to induce or maintain emotional numbness, a finding consistent with Edmondson et al.'s (2016) meta-synthesis, where managing dissociative states was a key function of SH. However, SH also served other roles in the management of the emotional experience.

Theme 2: The Role of Self-Harm in Coping with PP. Many participants described initial instances of SH as unconscious and reactive, an automatic response to overwhelming internal distress. In these instances, SH was used to reduce or release PP in the absence of a deliberate coping strategy. These insights converged with the quantitative findings, where PP proxies consistently predicted SH, highlighting the role of intense emotional distress in driving this behaviour. These findings also align with Chapman et al.'s (2006) Experiential Avoidance Model (EAM), which suggests SH functions as a way to avoid or escape intense negative emotional experiences. Additionally, this model explains how SH can become automatic and repetitive, as SH is negatively reinforced via the removal of PP.

However, these experiential accounts challenge the NICE (2022) definition of SH, which assumes the presence of intentionality, by raising the question of whether intent can exist in the absence of conscious awareness. This aligns with philosophical debates, such as Libet's (1985) findings, which suggest intent may precede consciousness. Nonetheless, as demonstrated throughout participant accounts, SH was also a conscious strategy used to manage PP, and facilitate emotional regulation.

This method of regulation was nuanced and deliberately constructed for some participants. For example, Chloe's tiered system of SH demonstrated different coping mechanisms matched to the intensity of her PP. The more intense her distress, the more severe her method, ranging from binge eating, to self-injury and ultimately, physically violent interactions. These findings align with research that suggests worsening PP can lead to more severe SH behaviours (Selby et al., 2013). In contrast, other participants took a more experimental approach to engaging in SH, and utilised it as a trial mechanism to manage emotional distress. Over time, this evolved into a habitual behaviour, likely due to automatic negative reinforcement via the removal of PP (Chapman et al., 2006). This pattern reflects operant conditioning models of SH (Nock & Prinstein, 2004), which propose that automatic reinforcement can occur through various mechanisms, reflected in participants accounts of their specific SH functions.

Multiple participants described SH as an outlet for difficult and overwhelming emotions. These qualitative accounts converge with the quantitative findings, where SH and PP proxies were moderately correlated, indicating greater emotional distress was associated with increased engagement in SH. When PP proxies were broken down, the association between SH and emotional reactivity was stronger than with

emotional regulation difficulties, suggesting the intensity of emotions may play a more central role in driving SH, than emotion regulation deficits. Notably, this difference was only evident in study two, suggesting sample differences may affect how emotional reactivity and emotional regulation individually impact SH. Nonetheless, the perception of SH as an emotional outlet is well documented within the literature, where affect regulation via the release of built-up emotional pressure, is quoted as a primary motivator for SH (Klonsky, 2009). Nock and Prinstein (2004) support this, and proposed that SH can be reinforced by automatic-positive mechanisms, such as the sense of calm or relief it produces. Furthermore, this reinforcement may be strengthened by physiological mechanisms within the body.

Research suggests that individuals who routinely engage in SH have lower baseline levels of endorphins than those who do not, and engaging in SH can release endorphins resulting in temporary positive affect and feelings of relief (Stanley et al., 2010). However, this research could not determine whether low endorphins were the result of repeated SH, or a predisposing factor for SH, therefore limiting ability to establish causality. For some participants in the current study, temporary relief was not enough, and they sought permanent solutions.

In extreme cases, SH manifested as suicidal behaviour, in an attempt to permanently resolve PP. This behaviour emerged in response to overwhelming, intense and prolonged emotional distress, often stemming from CT and compounded by additional life traumas. For example, Magda spoke about her intense guilt over her perceived failures as a mother, which removed a significant protective factor for her, resulting in unbearable emotional distress and culminating in a suicide attempt. This aligns with Shneidman's (1993) view that excessively felt guilt is a core component of PP, and PP is a key driver of suicide attempts. His later findings

further support this, where he noted a recurring theme of unbearable PP in suicide notes (Shneidman, 1998). As seen, SH following PP that stemmed from CT could very quickly escalate from unconscious coping mechanisms, to conscious behaviour and, in extreme circumstances, suicide attempts. The next theme will discuss the incorporation of PCS in this concept.

Theme 3: PCS as a Consequence of Childhood Trauma. Throughout interviews, participants described emotional distress as feeling overwhelming and intolerable. They described this in ways that mapped closely onto the three components of PC; rumination, magnification and helplessness (Sullivan et al., 1995). Again, these findings show convergence with the quantitative results, where PP proxies and PC had consistently strong correlations. However, findings related to CT were less robust. The frequency of CT showed no significant association with PC, and CT intensity showed a weak association with magnification only. Furthermore, PC only predicted SH when PP proxies was removed from the model. Again, this finding was only present in study two, suggesting contextual or sample differences may have influenced the results (Tavakol & Dennick, 2011). Despite this, PC was present in the sample, as described in the qualitative accounts, further supporting the benefit of mixed methods studies in gaining richer insights (Plano Clarke, 2017).

Participants described ruminating on emotions associated with their CT, such as rejection, in response to present day stressors. These episodes of rumination could be highly disruptive, impairing participants daily functioning and exacerbating their emotional distress. These findings align with Lazarus and Folkman's (1984) model of stress and coping, which posits that it is not just events that cause emotional distress, but an individual's cognitive appraisal of these events. This

underscores the importance of teaching emotional regulation techniques, such as reappraisal, to people who have experienced CT, thereby reducing levels of stress and reducing the experience of PP (Sloan et al., 2017).

Some participants thought catastrophising was adaptive, believing it enabled them to prepare for worst-case scenarios and in turn manage their emotional responses. This finding echoes the literature, where individuals report that rumination supports them to cope, problem-solve, and avoid repeating mistakes (Edwards et al., 2011; Schütze et al., 2017). This was often driven by participants fear that if the worst-case scenario were to occur, they would be severely emotionally overwhelmed, another finding replicated within the literature (Lazarus & Folkman, 1984; Petrini & Arendt-Nielsen, 2020). These cognitive processes correspond with feelings of helplessness (Seligman, 1972), particularly when participants had already experienced their perceived “worst case scenarios” linked to early experiences of CT, and the enduring emotional consequences. For example, Hannah described an intense emotional response to perceived rejection, rooted in childhood abuse, which triggered emotional distress. Following this, she felt trapped in her emotional experience, resulting in depressed mood, an outcome strongly associated with feelings of helplessness (Craner et al., 2016). It is important to note that the subcomponents of PC are not mutually exclusive, rather they can interact and influence one another simultaneously (Petrini & Arendt-Nielsen, 2020; Sullivan et al., 1995).

Leo discussed how ruminating often lead to exaggerating his negative thoughts, which in turn magnified his PP. This aligns with existing research that found magnification of existing negative mood states is a key mechanism through which rumination exacerbates psychopathology (Watkins & Roberts, 2020) making it

more difficult to engage in adaptive coping mechanisms. These effects may occur as rumination contributes to increased focus on one's PP and one's negative cognitive processes, creating a feedback loop in which each element amplifies the other, resulting in salient attention being given to ones deficiencies (Ciesla & Roberts, 2007; Nolen-Hoeksema & Morrow, 1993). This in turn worsens PP, aligning with the definition presented by Meerwijk and Weiss (2011). Additionally, Hannah's experience of helplessness appeared linked to magnification, where she amplified her emotional distress, describing it as a "big old black hole of awfulness". Research has shown individuals who magnify the emotional consequences of distress, are more likely to feel powerless or incapable of coping, reinforcing helplessness (Quartana et al., 2009). Experiencing this level of PP, combined with ineffective or insufficient coping mechanisms, contribute to coping in maladaptive ways such as engaging in SH (Chapman et al., 2006). From these experiences, a clear need for participants to be able manage and process their emotions was identified.

Theme 4: The Need to Manage and Process Emotions. Participants reflected on the negative outcomes that arose from unmanageable emotional distress stemming from CT, including the use of maladaptive coping mechanisms such as SH. These qualitative accounts converge with quantitative findings from both study one and two, where CT, measured by amount or intensity, significantly predicted emotional distress, which in turn significantly predicted SH. This cross-method convergence highlights the central role of unresolved emotional distress in the pathway from CT to SH behaviour.

Furthermore, the qualitative data align with previously discussed theoretical models of SH, including the EAM (Chapman et al., 2006) and Connors (1996) framework. Gross's (1999) Process Model of Emotional Regulation also offers a

valuable lens for understanding how individuals who experience CT may struggle with emotional regulation, contributing to PP, and ultimately engaging in SH to cope with overwhelming emotional states. This model outlines five stages in the emotional generation process: (1) selection of the situation, choosing situations to influence emotional outcomes; (2) modification of the situation, changing the situation to alter its emotional impact; (3) deployment of attention, directing focus to manage emotional responses; (4) change of cognitions, reframing thoughts to shift emotional meaning; and (5) modulation of responses, regulating emotional expression and physiological response (Gross, 1999). This model has also been adapted specifically to address NSSI (McKenzie & Gross, 2014).

Participants in this study had limited ability to engage in situation selection or modification, due to the developmental timing of CT, occurring at ages where people lack the autonomy and resources required to escape adverse emotional situations (Skinner & Wellborn, 2019), resulting in emotional distress. However, some participants reported mental health difficulties did not emerge until they were much older, aligning with the Latent Vulnerability Theory (McCrory & Viding, 2015), whereby the neurodevelopmental changes resulting from CT may not manifest until later in life. This potentially explains why the emotional effects of CT continued to impact participants' ability to utilise their autonomy or reframe situations in adulthood, as evidenced by Chloe's excessive work rate and Magda's prolonged guilt.

Some participants described engaging in attentional deployment, however without adaptive resources this often involved focusing on maladaptive coping strategies, which in turn prolonged emotional distress. For example, Grace focused on weight loss instead of her PP, resulting in hospitalisation. Grace may have

ruminated on her weight loss, a process that has been significantly linked to engagement in NSSI for the purpose of automatic reinforcement (Hilt et al., 2008). Participants also discussed the ways they were able to reframe their cognitions with positive outcomes when they had external support systems, findings echoed in the literature (Bjørlykhaug et al., 2022). Lena described how a supportive ex-partner helped her realise she could be vulnerable, while Vivian described a non-judgemental therapist who helped her reflect on her SH. Lastly, all participants reported using various strategies to modulate their emotional responses. SH was a dominant form of response modulation, promoting a cycle of engaging in SH to relieve PP. However, the presence of safe support systems could help delay this action, and promote alternative thoughts and behaviours.

Theme 5: The Role of Support in Coping with Childhood Trauma, PP and Self-Harm. Multiple participants spoke of their unsatisfactory attempts at getting support during childhood, with both CT and the resulting emotional consequences. These will be explored through the lens of Bronfenbrenner's Ecological Systems Theory (1979), where participants narratives illustrate how failures across multiple systems contributed to the continuation of CT, PP and ensuing maladaptive coping strategies like SH.

The Microsystem refers to the immediate environment around the individual. Many participants shared experiences of emotional invalidation and rejection during childhood, from key support figures including GP's, teachers and school psychologists. These early experiences of negative disclosure contributed to longstanding mistrust of professionals and delayed access to support (Allnock & Miller, 2013), exacerbating PP. This mistrust was further reinforced by later negative

experiences, as described by Vivian and Charlie, who's therapists were not only unhelpful but also perpetuated harmful narratives about PP and SH.

The Mesosystem, which encompasses the interconnections between Microsystems, also played a significant role. Participants highlighted instances where these interconnections broke down. For example, when disclosures of abuse to school professionals were not appropriately communicated to relevant agencies, facilitating continuation of harmful circumstances. This is echoed in the literature, where school interconnectedness heavily influences children's developmental outcomes (Modi, 2022). Conversely, when participants experienced positive interactions within this system, such as working with helpful and understanding therapists, they were able to begin their recovery journey. Participants also shared that support emerged from unexpected sources, including pets and persistent friends. Although less formal than psychological services, these forms of support were perceived as equally impactful, aligning with literature highlighting the value of alternative methods of support in recovery (McConnell et al., 2011). While these systems have focused on the immediate environment surrounding the individual, external systems also play a crucial role in shaping experiences.

The Exosystem encompasses external environments that indirectly affect the individual, such as institutional policies. Participants described a wider societal lack of acknowledgement for children's mental health and the impact of CT during their upbringing, which may have contributed to professionals dismissive responses following disclosures. This is supported by findings that attitudes to children's mental health is shaped by wider institutions (Strong & Sesma-Vazquez, 2015). Participants born in the 1950's and 1960's grew up in environments where attachment and emotional needs were deprioritised, in favour of discipline and moral development

(Stewart, 2012). However, participants born in the 21st Century reported similar experiences, suggesting that although there is increased awareness of CT effects (Asmussen et al., 2022), further reform is needed within healthcare systems. This is supported by professionals who acknowledged that systemic factors, such as risk management frameworks and institutional cultures, hinder effective care (S. MacDonald et al., 2021).

The aforementioned systems interconnected and influenced by the wider Macrosystem, which refers to broader cultural values and societal norms. Some participants described a pervasive cultural silence regarding mental health and CT throughout their childhoods. This silence exacerbated PP by hindering support seeking, and fostering maladaptive coping mechanisms (Gruhn & Compas, 2020). Lastly, the Chronosystem refers to the dimension of time, including changes over the lifespan, and the socio-historical context. Many participants reported being unable to access meaningful support until adulthood, and often only after experiencing severe mental health crises. This demonstrates the long-term consequences of early ecological failures, and the shift in societal attitudes around the importance of mental health and CT over time (Strong & Sesma-Vazquez, 2015).

Summarising Findings of Study One and Study Two

In summary, results across both studies consistently indicate PP, measured by proxy of emotional difficulties, plays a significant mediating role in the relationship between CT and SH. Study one found both the frequency of CT, and the intensity of CT, significantly predicted PP proxies. In turn, this was associated with increased SH behaviour, supporting the idea that CT contributes to intense emotional distress. This distress stems from difficulties in emotional regulation and emotional reactivity, making individuals more vulnerable to using SH as a maladaptive coping strategy to

relieve overwhelming internal experiences. While PP proxies is a significant mediator, the CT–SH relationship remains partially direct, suggesting the involvement of other contributing factors.

Interestingly, Study two found no significant correlation between the frequency of CT events and PP proxies, but a significant relationship did emerge when considering trauma intensity. This highlights the importance of an individual's perception of trauma intensity in the development of emotional distress, especially in a sample where all participants had experienced at least one CT and engaged in SH. Despite this difference, Study two also found that PP proxies partially mediated the relationship between trauma intensity and SH.

Qualitative findings further supported this link, with participants describing how CT contributed to long-term emotional difficulties and intense internal experiences, underlying PP. SH was frequently described as a reactive response to overwhelming PP, functioning as a means to escape or avoid intense negative emotional states.

PC was also identified as a significant mediator in both studies, though the consistency of this mediation varied. Study two only found a link with PC magnification. Despite this, PC was also explored in the qualitative data, demonstrating some degree of stability. While PC mediates the CT–SH relationship, the findings suggest that PP proxies may serve as a more central mechanism. In Study one, the impact of CT on PC became non-significant once PP proxies was considered, suggesting that CT may lead to emotional distress, which in turn contributes to catastrophic thinking. Although the findings from study two regarding PC mediation were less definitive, PP proxies consistently demonstrated a mediating effect.

Strengths

To the researchers knowledge, this is the first mixed methods study that has explored the mediating role of PP proxies in the relationship between SH and CT. As a result, this research offers a novel contribution to the existing literature, by offering a more nuanced understanding of how CT impacts PP, which in turn impacts SH. Mixed method studies allow researchers to explore complex phenomena to a greater degree than if a single method was adopted (Plano Clark, 2017). Further to this, the process of triangulation offers the ability to assess convergence, divergence and corroboration of results derived from alternative research methods, strengthening findings (Greene et al., 1989). In the context of this study, mixed methods approaches are considered valuable for health and social science research, as they can improve real world applicability by providing an understanding of outcomes and lived experiences, useful for practical implications (Fielding, 2010).

Another strength of this study is the use of validated measures to measure the construct of PP by proxy, as previous scales used to measure this construct have been found to lack reliability or validity (Leenaars & Lester, 2005). Additionally, research has found that even in cases where scales are valid or reliable, there is not enough evidence to recommend the use of one measure over another (Charvet et al., 2022). Both the ERS and DERS have demonstrated high internal validity and strong psychometric properties across diverse samples (Gratz & Roemer, 2004; Nock et al., 2008), echoed within this study. These measures also explore the emotional components of PP that are of interest in the current study. The results of study one closely align with results by Holden et al. (2022), who found PP, measured using the Psychache Scale (Holden et al., 2001), statistically mediated the

relationship between CT and NSSI. This convergence may suggest that the ERS and DERS effectively captured the relevant aspects of PP in our study.

Another notable strength of this research is the use of two measures of CT, one observing the frequency of CT events, and one observing the intensity of CT events. The inclusion of both measures enabled a more comprehensive understanding of the CT experience, and facilitated the identification of mediation effects in both samples, even when the sample size was significantly reduced. The methodological approach of diversifying measures has been shown to enhance the robustness of findings, by increasing the statistical power and reducing the chance of a Type 2 error, increasing the likelihood of detecting a significant mediation (MacKinnon, 2012).

A further strength of this study was the consistent application of trauma informed principles throughout the research process. This was particularly important given the sensitive nature of the topics explored, and helped ensure the participation process was as safe and supportive as possible. An example of this included adapting ethical approval in response to a participants request for their interview transcript, which they expressed would aid with their emotional processing. This required submitting an amendment of the ethics application, which was approved. The participant subsequently expressed their gratitude via email correspondence. This responsiveness highlights the importance of emphasising participant autonomy and wellbeing in trauma focused research (Alessi & Kahn, 2023).

Limitations and Research Recommendations

A key limitation of this study is the relative novelty of the construct of PP. Whilst the innovative nature of PP adds to the study's originality, it also introduces complexity in terms of conceptual clarity and measurement. This is reflected in the

literature, as whilst research is consistently growing, it remains inconsistent (Baryshnikov et al., 2024; Charvet et al., 2022; Chen et al., 2023), presenting ongoing challenges for researchers. As the definition, operationalisation and measurement of PP evolves, it shapes how future research in this area is conducted. Nonetheless, this study is not unique in facing these conceptual challenges, and rather reflects an outcome of the broader fields' efforts to understand an emerging construct. In this way, the study provides useful insights and contributions into the advancement of research on PP.

Another limitation is the study's use of a cross-sectional design, which restricts the ability to draw causal conclusions from the data. While the significant associations identified are informative, they can only be interpreted as correlations. However, in the context of CT and SH, establishing causality is inherently complex, due to the ethical restrictions of experimentally controlling for exposure to either variable. To address this, future research could utilise longitudinal study designs that track individuals over time, allowing for better insight into the temporal relationships and potential mediating pathways between CT, SH, PP and PCS. Additionally, longitudinal research would allow for real-time responses and updates to questions surrounding CT, SH and emotional responses, without relying on retrospective data, which is often unreliable and susceptible to recall bias (Hardt & Rutter, 2004). This issue may be exacerbated for CT research, as a key component of trauma is disrupted memory processing, affecting not only the traumatic event itself, but also the surrounding time (Van der Kolk, 1988, 2014). However, it is important to note that whilst trauma can affect memory, retrospective accounts should not be presumed false, or dismissed. Individuals lived experiences provide crucial insight, and disregarding these risks invalidation of their experiences (Hardt & Rutter, 2004).

An additional limitation of the study was the varying breadth of information provided by participants. While some provided rich and meaningful information across all topics, others focused more narrowly on particular areas, a common experience in qualitative interviews (Braun & Clarke, 2013). Moreover, due to the flexibility of semi-structured interviewing, not all topic questions were asked consistently or explored in equal depth across interviews. This affected the comprehensiveness to which some topics were addressed. However, this is a known characteristic of qualitative research and remaining aware of this encourages researcher reflexivity regarding the boundaries of qualitative research (Willig, 2013). Additionally, having an adequate sample size helps mitigate this, increasing the chance of covering a broader range of experiences (Vasileiou et al., 2018).

A key methodological limitation was the low Cronbach's alpha of the SH scale. Internal consistency reached an acceptable level in study one (α = .710) following the removal of an item. A potential explanation for this is item interrelatedness, where behaviours included in the scale may not have been closely related and equally endorsed, suggesting the scale is not measuring a single underlying construct (Tavakol & Dennick, 2011), common in behaviourally based checklists like SH (Fliege et al., 2006). Additionally, this measure was created by the original research team, and was not formally validated, contributing to the potential difficulties with item interrelatedness. This is especially true for the "None of These" item, which measures the absence of SH behaviours, in contrast to the other items measuring the presence of SH behaviours. However, this also holds true for the other items, as they measure distinct SH behaviours.

This may have contributed to the consistently low Cronbach's alpha in study two (α = .449). Additionally, a suggested explanation for the reduced internal

consistency may be the sample group. This sample was smaller, and may have been more heterogeneous in SH behaviours displayed, showing greater variability and weaker correlations across items (Tavakol & Dennick, 2011). These findings highlight the challenges of using broad behavioural checklists to assess SH across different populations (Borschmann et al., 2012). As with study one, results were interpreted with caution, recognising the limitations in the scale reliability. Despite this limitation, the results obtained in the study are consistent with those in the literature, suggesting this did not significantly impact findings. Additionally, a low Cronbach's alpha is less problematic if the focus is on the number of behaviours rather than their interrelation, as is the case in this study (Tavakol & Dennick, 2011). Nonetheless, future research should incorporate fully validated measures that display strong internal consistency, to improve the reliability and validity of the results. Additionally, future studies should include validated measures that explore the history, frequency and severity of SH behaviours, alongside the amount of SH behaviours utilised, for a comprehensive understanding of SH behaviour.

A further limitation of the study is that it utilised a mostly White and Female sample, and although there was diversity present in the sample, this was in small numbers. Research has shown that Race is closely correlated with CT, with White children generally reporting lower exposure to ACE's compared to Black and Latin children (Maguire-Jack et al., 2020). Future research should aim to increase participation by Black, Latin and other marginalised racial and ethnic groups to better capture the diversity of CT experiences in the population. Further to this, research has shown that marginalised racial groups tend to experience different mental health and life outcomes following CT (Widom et al., 2013), demonstrating the importance of increasing representation of these groups in research.

Potential Avenues of Future Research

Throughout data analysis, potential avenues of future research were identified. This study intentionally measured SH in its entirety, without differentiating between SH behaviours with suicidal intent vs NSSI. This was done to prevent excluding participants who's SH may not fit neatly into either binary, and to capture the wide range of SH experiences. However, given the complexity of SH behaviours, and research suggesting these exist on a spectrum (Gouveia-Pereira et al., 2022), future studies could replicate this study whilst simultaneously collecting data on SH occurring with or without suicidal intent. This could allow researchers to explore the presence of differences or similarities in the way PP mediates the relationships between these behaviours and CT. This approach may be particularly valuable regarding the construct of PCS, as specific dimensions, such as helplessness, have been found to have strong associations with suicidality (Shneidman, 1993). Furthermore, categorising SH by intent may help further clarify the relationship between PP and PCS, offering important research and clinical insights.

Another potential avenue of future research could include refining the CT variable. This study examined CT via both cumulative events, and perceived intensity of events. However, proceeding studies could examine whether specific types of trauma, such as sexual abuse, physical abuse or emotional neglect, have significant differential impacts on the mediating role of PP. Prior research has found a stronger association between CT and SH when the CT experienced is sexual abuse (Serafini et al., 2017). Future studies could help disentangle whether this identified effect is due to the levels of PP experienced following sexual abuse, in comparison to other forms of CT, or other co-occurring factors. Disentangling the

contributions of CT types is important for understanding risk and shaping clinical interventions.

This study focused on risk variables that potentially mediate the relationship between CT and SH, namely PP and PCS. However, future research could expand on existing studies (Tian et al., 2021) and explore protective factors that potentially moderate this relationship, such as social support and emotional regulation strategies. Investigating these moderators may provide a more comprehensive understanding of the CT-SH link, whilst simultaneously informing the development of interventions that are both preventative and strengths based. This is particularly important within clinical practice, as understanding and promoting protective mechanisms is just as impactful as mitigating risk (Khan & Ungar, 2021; Younas & Gutman, 2023). This research could help promote resilience and recovery in individuals who have experienced CT and SH.

Clinical Implications

This study has provided insight into potential clinical implications regarding CT, SH, PP and PCS.

Targeting Included Variables in Psychological Interventions

As PP played a mediating role between CT and SH, clinicians should focus on incorporating interventions that focus on components of PP, such as difficulties in emotional regulation, into the therapeutic journey. This allows clinicians to support individuals to work on the integral components that may be driving engagement in maladaptive coping behaviours, such as SH. Due to this study exploring PP through components of emotional difficulties, interventions that are based around this could be beneficial. Examples of this include Emotion Focused Therapy (EFT) (Greenberg,

2010), where an individual's emotional experience is posited as a key component of their distress, and the central mechanism of change is emotional processing.

EFT posits that the process of change occurs through emotional awareness, regulation, reflection and corrective emotional experience with a safe emotional connection via the therapist. Awareness of emotion is considered the most fundamental component, emphasising the requirement for individuals to connect with themselves and establish what their emotional experience is communicating to them about their needs (Greenberg, 2010). This aligns with the current study's participants accounts of being unaware of their emotional experiences, and the consequent escalation to difficult emotional states including dysregulation and intense reactivity, worsening PP and contributing to SH.

Additionally, this suggests it would be beneficial to complete this therapy with children, who are still learning about their emotions, to prevent escalation to PP and SH behaviours. The current study could be replicated with children, to further explore this. Research into EFT for children is happening, by delivering adapted Emotionally Focused Family Therapy (Conradi et al., 2023), the goal of which is to enhance emotional bonding between caregivers and their children, reduce children's vulnerability to mental health problems and create more secure and empathic family dynamics.

Alternative intervention options may include Dialectical Behaviour Therapy (DBT)(Linehan, 1993), particularly for individuals who experience intense PP and engage in SH behaviours. This treatment is aimed at helping individuals manage emotional regulation, improve interpersonal relationships and reduce SH behaviours. The NICE (2009a), recommend the use of DBT for individuals with a diagnosis of BPD, which is characterised by marked mood instability and difficulties regulating

one's internal emotional experience, further supporting this interventions use with PP.

To support individuals with PC, NICE recommends the use of CBT to address disruptive CM, such as rumination, magnification and helplessness (NICE, 2009b). This intervention helps individuals to recognise and challenge unhelpful cognitive distortions. Current research into using CBT to manage PC, is heavily linked to chronic pain literature (Burns et al., 2012; Gilliam et al., 2021). However, results shown are modest, and researchers theorise a potential reason for this is that chronic pain treatments often fail to address important factors in patient histories that contribute to their presentation, such as CT (Yamin et al., 2024). Studies in this area have demonstrated there is a clear link between CT, pain experience and PC, with abuse predicting pain ratings and levels of catastrophising (Sansone et al., 2013). Additionally, CT heightens threat perception and negative thinking, which can lead to increased intensity of PC (Tidmarsh et al., 2022). Yamin et al. (2024) suggest that clinicians who provide therapeutic care to individuals who have experienced CT should be trained in the trauma-pain connection, and be able to adapt CBT and other interventions accordingly, especially where there is an overlap of CT, PC and chronic pain. To apply these findings to individuals who are also experiencing PP, futureresearch will need to focus on utilising this intervention with individuals experiencing PP in relation to CT, to assess its efficacy.

Wider Use of Knowledge of This Link in Community Health Programmes

Identifying the presence of CT, SH, PP and PC is frequently overlooked in routine appointments. This is often due to time constraints, stigma or a lack of practitioner awareness (McManus et al., 2016). These components should be routinely addressed in community health settings, particularly during consultations

with General Practitioners (GP) regarding mental health concerns. GP's are often the first point of contact for patients within the healthcare system, and are well positioned to build long-lasting, supportive relationships with the community they serve (Jeffers & Baker, 2016), positioning them as key stakeholders in early identification and support. Integrating routine assessments of CT, SH PP and PC could facilitate detection of distress, preventing unnecessary escalation due to unmet or unidentified needs. To facilitate this, professionals working in these environments should receive training on how to sensitively assess for the presence of these factors.

Further to this, it is important to promote Trauma Informed Care in a variety of environments. Professionals should be provided with training on delivering trauma informed care, to avoid re-traumatising individuals who are seeking support (Sweeney et al., 2018; Young et al., 2024), am issue highlighted in participants accounts of help-seeking. This training could include guidance on conducting trauma-sensitive assessments, appropriate responses to disclosures, identifying support pathways and promoting emotionally safe environments for care delivery (Young et al., 2024). Embedding these principles into national health policies could ensure consistency in care, an important aspect of maintaining integrity in the healthcare system.

Within the UK, the NHS is facing financial austerity and services are being cut extensively, affecting access to mental health support (Limiri, 2025). As a result, it may not be financially feasible for all individuals who require intensive psychological support, to receive it. To mitigate the potentially harmful impact of unmet need, community-facing professionals, such as youth workers, social workers, teachers and support workers, could all receive basic training in emotional regulation strategies. These core skills, grounded in mindfulness and DBT, and backed up by

the evidence base (Feigenbaum, 2007), can be shared widely within the community, empowering individuals to support themselves. Additionally, this approach places minimal additional burden on the healthcare system, whilst still promoting the mental wellbeing of the population.

Reflective Account

At the beginning of my thesis journey, as a somewhat idealistic first year Trainee, I was determined to develop and lead my own project, rooted in experiences of trauma, a key area of interest due to my personal and professional experiences. However, like many (potentially slightly disorganised) first years, I was unable to submit a full proposal in time, leaving me without a confirmed project. Fortunately, I was able to join an existing study, closely aligned with my area of interest. Even more fortunately, I was able to convince my supervisor that I would not thrive working with solely quantitative data. Consequently, I proposed a follow up study, incorporating a qualitative component, which was accepted and helped form this research. Beyond generating valuable insights into the relationship between CT and SH, this research also provided an opportunity for valuable reflections, some of which are discussed below.

Firstly, I was saddened (although, unfortunately unsurprised) by how many participants had poor experiences with services meant to provide them with safety and support, in relation to disclosures of their CT. Not only did these experiences delay future help-seeking, but they also had harmful effects on participants mental wellbeing, exacerbated their PP and in certain cases, increased their SH. However, I was struck by the resilience of the participants, many of whom managed to return to services and seek therapeutic support, despite these negative experiences, I believe this displays a capacity for hope, and speaks to the often forgiving nature of people

who have experienced traumatic experiences (Calhoun & Tedeschi, 2014; Tedeschi & Calhoun, 2004). Working in the NHS and healthcare system for the past 7 years, I have seen first-hand examples of amazing therapists who demonstrate a real care and commitment to supporting those in need. I have also observed the positive outcomes they have helped facilitate in individuals who had experienced horrific trauma and SH, demonstrating the effect helpful therapists could have, and providing further hope.

Secondly, I reflected on my awareness of the need to remain in a researcher role throughout qualitative data collection, considering the potential challenges, relating to my professional and personal identities. Interestingly, for the majority of participant interviews, remaining in the researcher role was relatively straightforward. I attribute this to the fact that many participants did not appear emotionally distressed while recounting their experiences of trauma or SH. The reason for this was briefly explored in certain interviews, where participants often described emotional detachment, as they had engaged with a variety of services and told their story multiple times, a narrative echoed in the literature (Van der Kolk, 2014). However, there was one interview where I found it more challenging to remain in the researcher role, due to the participants intermittent emotional distress. During this, the participant was very receptive to brief reassurance and check-ins, which helped them manage their emotional state and helped me remain in my researcher role. This interaction helped reinforce the need to remain sensitive and attuned to participants experiences, whilst preserving integrity to the research process, and how these two elements are inherently connected (Silverman, 2016).

Further to the research process, this study elucidated to me the extensive amount of work that goes into completing a Clinical Psychology Doctoral thesis. This

has, at times, been very challenging to navigate, requiring an ability to manage responsibilities in both student and trainee capacities. Despite this difficulty, I am grateful that I got to engage with this process, as it takes me one step closer to becoming qualified, where I can hopefully support people like those represented in this study. In completing this research, I have learned so much that can be translated into my role as a qualified Research-Practitioner. This includes research implications such as the process for conducting a large scale research study, and what factors should be considered when deciding on research measures and design. It has also provided me with practical implications, including how to screen for the presence of CT, SH, PP and PC, and therapeutic implications such as how to formulate clients potential presenting difficulties in the context of these experiences.

Personally, this research has also taught me about the importance of self-care, both stemming from the findings of the research, but also from my process of completing it. Throughout this process, I tried hard to ensure I remained in tune with what I needed, as it can be easy to become consumed by all things doctorate, neglecting external life events. Although this can have short-term benefits of productivity, for me, it can also contribute to burnout and stress. To remain attuned, I incorporated boundaries and allowed space for rest as well as attending to my academic duties. In ways, this mirrors the core findings of this research, where acknowledging distress and prioritising emotional regulation are key components of maintaining psychological wellbeing. These lessons will remain relevant to me, both in my future work and personal life.

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Appendices

Appendix A

Consent sheet shown at the beginning of the survey

Information Sheet

We will be grateful if you decide to take part in this survey.

What do I gain from participating in this survey?

Your contribution to the survey is very important. Many young people self-injure, for example by cutting, biting or burning themselves. Self-injury usually begins in adolescence and is surprisingly common. We are conducting a study to understand better why some people deliberately harm themselves. In addition, we are also interested in studying the relationship between emotional awareness and traumatic experiences.

Dr. Elia Valentini at the University of Essex is conducting the study [redacted]

What will I have to do?

You are invited to complete a questionnaire online. If you agree to participate, you will be asked to evaluate your feelings and attitudes according to several hypothetical situations. Please keep in mind that if, for any reason, you wish to withdraw from the survey, you can do so by closing your browser and your responses will not be analysed. There will also be questions on whether you have ever deliberately injured yourself. You are under no obligation to complete these questions. If you experience distress while completing these questions, please stop the questionnaire immediately. At the end of this page and again at the end of the questionnaire, we have included a link to a resource you might find helpful.

When answering the questions, please be as accurate as possible.

How long will it take?

It should take no longer than 15 minutes to complete. Please try to answer on the basis of your first impression without rushing.

What happens to the information I provide?

Participation in this study guarantees the confidentiality of the information you provide. Your responses will remain anonymous and there will be no information that could identify you. Data may be used for student research but individual participants will not be identifiable in such a report or thesis. Data collected will be stored safely in accordance with University regulations:

https://www1.essex.ac.uk/records_management/policies/data_protection_and_research.aspx.

Help and support

If you have further questions about self-injury here is a useful resource.

http://www.nhs.uk/conditions/Self-injury/Pages/Introduction.aspx

Where do I get questions answered?

If you have any questions about this survey or you are interested in taking part in other studies, please do not hesitate to contact the principal investigator Dr. Elia Valentini [redacted]

Do I have to participate?

No, you do not! Keep in mind that if, for any reason, you wish to withdraw from the survey, you can do so by closing your browser and your responses will not be analysed. If you wish us not to use your data and you already completed the survey then please contact Dr. Elia Valentini.

By proceeding with the study, you are consenting to the following:

1. I understand that I will be asked about self-injury. I am 18 years of age or over and agree to participate.
2. I have read the information above and have had the opportunity to ask questions via email.
3. I understand that my participation is voluntary and that I am free to withdraw from the study at any time by simply closing the browser.
4. I agree to take part in the above study.

Concerns and complaints

If you have any concerns about any aspect of the study or you have a complaint, in the first instance please contact the principal investigator of the project (see contact details below). If are still concerned or you think your complaint has not been addressed to your satisfaction, please contact the Director of Research in the principal investigator's department (see below). If you are still not satisfied, please contact the University's Research Governance and Planning Manager [redacted]

If you do not want to continue, simply exit your web browser.

If you are happy to continue please press the "arrow" button.

Appendix B

Childhood Traumatic Events Scale

For the following questions, answer each item that is relevant. Be as honest as you can. Each question refers to any event that you may have experienced **prior to the age of 17.**

1. Prior to the age of 17, did you experience a death of a very close friend or family member? ❑$_1$ Yes ❑$_0$ No

   a. If yes, how old were you? ___ ___

   b. If yes, how traumatic was this?

(using a 7-point scale, where 1 = not at all traumatic, 4 = somewhat traumatic, 7 = extremely traumatic)

Not at all traumatic			Somewhat traumatic			Extremely traumatic
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

   c. If yes, how much did you confide in others about this traumatic experience at the time?

   (1 = not at all, 7 = a great deal)

Not at all						A great deal
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

2. Prior to the age of 17, was there a major upheaval between your parents (such as divorce, separation)? ❑$_1$ Yes ❑$_0$ No

   a. If yes, how old were you? ___ ___

   b. If yes, how traumatic was this? (where 7 = extremely traumatic)

Not at all traumatic			Somewhat traumatic			Extremely traumatic
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

   c. If yes, how much did you confide in others? (7 = a great deal)

Not at all						A great deal
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

3. Prior to the age of 17, did you have a traumatic sexual experience (raped, molested, etc.)? ❑$_1$ Yes ❑$_0$ No

   a. If yes, how old were you? ___ ___

   b. If yes, how traumatic was this? (7 = extremely traumatic)

Not at all traumatic			Somewhat traumatic			Extremely traumatic
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

   c. If yes, how much did you confide in others? (7 = a great deal)

Not at all						A great deal
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

4. Prior to the age of 17, were you the victim of violence (child abuse, mugged or assaulted other than sexual)? ❑$_1$ Yes ❑$_0$ No

   a. If yes, how old were you? ___ ___

   b. If yes, how traumatic was this? (7 = extremely traumatic)

Not at all traumatic			Somewhat traumatic			Extremely traumatic
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

   c. If yes, how much did you confide in others? (7 = a great deal)

Not at all						A great deal
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

5. Prior to the age of 17, were you extremely ill or injured? ❑$_1$ Yes ❑$_0$ No

   a. If yes, how old were you? ___ ___

   b. If yes, how traumatic was this? (7 = extremely traumatic)

Not at all traumatic			Somewhat traumatic			Extremely traumatic
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

   c. If yes, how much did you confide in others? (7 = a great deal)

Not at all						A great deal
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

6. Prior to the age of 17, did you experience any other major upheaval that you think may have shaped your life or personality significantly? ❑$_1$ Yes ❑$_0$ No

   a. If yes, how old were you? ___ ___

   b. If yes, what was the event? _____

   c. If yes, how traumatic was this? (7 = extremely traumatic)

Not at all traumatic			Somewhat traumatic			Extremely traumatic
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

   d. If yes, how much did you confide in others? (7 = a great deal)

Not at all						A great deal
❑	❑	❑	❑	❑	❑	❑
1	2	3	4	5	6	7

Appendix C

Self-Harm Questionnaire

Here is a list of self-harm behaviours. Please check every behaviour you have ever done to yourself. Please do not check a behaviour if you have done it purely by accident.

- [ ] Cutting
- [ ] Burning
- [ ] Severe Scratching
- [ ] Banging or Hitting
- [ ] Binge Drinking (more than 5 units per drinking session; more than 15 per week)
- [ ] Attempted hanging/suffocation
- [ ] Binge Eating and/or severe and frequent food restriction
- [ ] Jumping from high places
- [ ] Other forms of self-poisoning (e.g. excessive amount of expired food, chemicals, drugs, non-edible matter)
- [ ] None of these

Appendix D

Emotional Reactivity Scale

Consider the following statements about your emotions. Please select the option that is most suited to you for each statement.

	Not at all like me	Somewhat like me	Mostly like me	Completely like me
When something happens that upsets me, it's all I can think about it for a long time.	○	○	○	○
My feelings get hurt easily.	○	○	○	○
When I experience emotions, I feel them very strongly/intensely	○	○	○	○
When I'm emotionally upset, my whole body gets physically upset as well	○	○	○	○
I tend to get very emotional very easily.	○	○	○	○
I experience emotions very strongly	○	○	○	○
	Not at all like me	Somewhat like me	Mostly like me	Completely like me
I often feel extremely anxious	○	○	○	○
When I feel emotional, it's hard for me to imagine feeling any other way.	○	○	○	○
Even the littlest things make me emotional.	○	○	○	○
If I have a disagreement with, someone, it takes a long time for me to get over it.	○	○	○	○
When I am angry/upset, it takes me, much longer than most people to calm down.	○	○	○	○
I get angry at people very easily.	○	○	○	○

	Not at all like me	Somewhat like me	Mostly like me	Completely like me
I am often bothered by things that other people don't react to	○	○	○	○
I am easily agitated	○	○	○	○
My emotions go from neutral to extreme in an instant	○	○	○	○
When something bad happens, my mood changes very quickly. People tell me I have a short fuse.	○	○	○	○
People tell me that my emotions are often too intense for the situation.	○	○	○	○
I am a very sensitive person	○	○	○	○

	Not at all like me	Somewhat like me	Mostly like me	Completely like me
My moods are very strong and powerful	○	○	○	○
I often get so upset it's hard for me to think straight.	○	○	○	○
Other people tell me I'm overreacting.	○	○	○	○

Appendix E

Difficulties in Emotion Regulation Scale

	Almost never	Sometimes	About half of the time	Most of the time	Almost always
When I'm upset, I believe that I'll end up feeling very depressed.	○	○	○	○	○
When I'm upset, I believe that I will remain that way for a long time.	○	○	○	○	○
When I'm upset, I believe that wallowing in it is all I can do.	○	○	○	○	○
When I'm upset, it takes me a long time to feel better.	○	○	○	○	○

	Almost never	Sometimes	About half of the time	Most of the time	Almost always
When I'm upset, I believe that there is nothing I can do to make myself feel better	○	○	○	○	○
When I'm upset, I know that I can find a way to eventually feel better.	○	○	○	○	○
When I'm upset, my emotions feel overwhelming.	○	○	○	○	○
When I'm upset, I start to feel very bad about myself.	○	○	○	○	○

	Almost never	Sometimes	About half the time	Most of the time	Almost always
I have difficulty making sense out of my feelings	○	○	○	○	○
I have no idea how I am feeling.	○	○	○	○	○
I am confused about how I feel.	○	○	○	○	○
I know exactly how I am feeling.	○	○	○	○	○
I am clear about my feelings.	○	○	○	○	○

Appendix F

Pain Catastrophising Scale

	Not at all	To a slight degree	To a moderate degree	To a great degree	All the time
I worry all the time about whether the pain will end	○	○	○	○	○
I feel I can't go on	○	○	○	○	○
It's terrible and I think it's never going to get any better	○	○	○	○	○
It's awful and I feel that it overwhelms me	○	○	○	○	○
I feel I can't stand it anymore	○	○	○	○	○
	Not at all	To a slight degree	To a moderate degree	To a great degree	All the time
I become afraid that the pain will get worse	○	○	○	○	○
I keep thinking of other painful events	○	○	○	○	○
I anxiously want the pain to go away	○	○	○	○	○
I can't seem to keep it out of my mind	○	○	○	○	○
I keep thinking about how much it hurts	○	○	○	○	○
	Not at all	To a slight degree	To a moderate degree	To a great degree	All the time
I keep thinking about how badly I want the pain to stop	○	○	○	○	○
There's nothing I can do to reduce the intensity of the pain	○	○	○	○	○
I wonder whether something serious may happen	○	○	○	○	○

Appendix G

Recruitment flyer

Appendix H

Participant information sheet

Invitation to our study
My name is Carla and I am a Trainee Clinical Psychologist in the Department of Health and Social Care at the University of Essex and I would like to invite you to participate in this research project. We are conducting research into why some people deliberately harm themselves and the relationship between this behaviour and several psychological factors .

You should only participate if you want to. Please read the following information carefully before choosing to take part in this study and discuss it with others if you wish. If anything is not clear, or you would like more information please contact Carla Long using the contact details below.

The Study
If you agree to participate, there will be two parts.

In the first part you will be asked questions about self-harm via a questionnaire. These questions will ask whether you have ever deliberately injured yourself. These questions will also ask you about childhood trauma you have experienced (what kind and when), your levels of emotional reactivity/regulation (psychological pain) and level of pain catastrophising (worsening mental pain). You are under no obligation to complete these questions. If you experience distress while completing these questions, please stop the questionnaire immediately. Completion should take no longer than 20 minutes. Please try to answer based on your first impression without rushing, and please be as accurate as possible.

In the second part of the study, you will complete a semi-structured interview where you will talk in depth about these experiences. These should last around 45 minutes to an hour. Again, if you experience distress while completing this, you can stop the interview immediately by letting the researcher know. You will be provided with links to suitable support services, information of which can be found under "Help and support" in this document.

As a thank you and token of appreciation of your time for partaking in the study, you will be provided with a £25 Amazon voucher sent to your personal email address.

Potential risks
We understand that some topics covered in this study may be distressing
to you. Please keep in mind that if, for any reason, you wish to withdraw from the study, you can do so by letting the researcher know. If you have any questions do not hesitate to contact us.

Help and support
If you have further questions about self-injury and where to get support you can visit the NHS website http://www.nhs.uk/conditions/Self-injury/Pages/Introduction.aspx

Informed consent
Should you agree to take part in this experiment, you will be asked to sign the informed consent form that will be provided to you.

Withdrawal
Your participation is voluntary and if you wish to withdraw from the study at any time, you can do so by informing the researcher. Whilst you can withdraw from the study at any time, we may not be able to exclude your data once included in the data analysis, because we

will not be able to identify them anymore due to the anonymisation procedure. In this project, data will be individually coded and grouped into themes, therefore your data will have contributed to the themes that are produced and it would not be possible for the researcher to disentangle the individual data within these themes once written.

Data gathered
Please note that:

- Our legal basis for storing your consent form is that you have consented to it.
- The data controller is the University of Essex.
- Essex University's Data Protection Officer can be contacted on dpo@essex.ac.uk.

We will collect the answers you give during the questionnaire and the interview. You will be asked to provide some demographic information about yourself, such as age and gender. Then you will be asked about whether you experienced traumatic events, and your emotional and behaviour responses to potential life situations or sensory experiences. You will also be asked to provide your email address for the compensation to be sent.

This study will be completed in two ways. Firstly, You will be provided with an Qualtrics online link to the questionnaire and will make your way through it at your own pace. Secondly, you will be answering questions within a semi-structured interview. This means that there will be set questions but that there is the opportunity to expand on these and speak about your experiences more in-depth. It will require you to speak openly and candidly about childhood trauma and experiences of self-harm, however if you wish to not answer specific questions this can be reported at any time throughout the interview.

Interviews can be completed face to face or via Microsoft teams, to prevent geographical location from impeding the chance to partake. Interviews will be recorded and transcribed using the MS teams meeting function. This is so accurate information can be collected and analysed for the project. The data collected will be anonymised and any identifiable data removed prior to write up. The data collected from this research will be stored in a password-protected computer. The email address provided will be stored separately to your data, in a password protected word document on a password protected computer.

Your data will be gathered by Carla Long (Lead Researcher/Trainee Clinical Psychologist) cl22876@essex.ac.uk

Your anonymous data may be published in scientific journal articles, and shared in permanent, publicly accessible archives accessible from any country.

Ethical approval
This project has been reviewed on behalf of the University of Essex Subcommittee 1 and had been given approval with the following Application ID: ETH2324-0184.

Concerns and complaints
If you have any concerns about any aspect of the study or have a complaint, in the first instance please contact the principal investigator of the project (see contact details below). If you are still concerned or think your complaint has not been addressed to your satisfaction, please contact the supervisors of the principal investigator (see contact details below). If you are still concerned or think your complaint has not been addressed to

your satisfaction please contact the University's Research Integrity Manager, [redacted] as per the University's guidance.

Contact details
Principal investigator
Carla Long (Lead Researcher/Trainee Clinical Psychologist) cl22876@essex.ac.uk

Supervisors of Principle Investigator
Elia Valentina (Co-Lead Researcher/Lecturer at the university) [redacted]
Claire Tyler (Secondary Researcher/Qualified Clinical Psychologist) [redacted]

University of Essex Research Integrity Manager
[redacted]

By signing the consent form you agree to participate in the research project "Determinants and mediators of non-suicidal self-injury and suicidal ideation" being carried out by Carla Long.

- This agreement has been given voluntarily and without coercion.
- I have been given full information about the study and contact details of the researcher(s).
- I have read and understood the information provided above.
- I understand that I will be asked questions about self-harm.
- I agree to have my anonymised data shared on publicly accessible repositories.
- I have had the opportunity to ask questions about the research and my participation in it.

Appendix I

Consent form

University of Essex

Consent Form

Title of the Project:	Exploring the Relationship between Self-Harm and Trauma; the Role of Pain as a Mediator
Research Team:	Carla Long, Trainee Clinical Psychologist
	Dr Elia Valentini, Senior Lecturer
	Dr Claire Tyler Qualified Clinical Psychologist

	Please initial box
1. I confirm that I have read and understand the Information Sheet dated 16/01/24 for the above study. I have had an opportunity to consider the information, ask questions and have had these questions answered satisfactorily.	☐
2. I understand that my participation is voluntary and that I am free to withdraw from the project at any time without giving any reason and without penalty. I understand that any data collected up to the point of my withdrawal will be destroyed.	☐
3. I understand that I will be asked to talk about experiences that may be upsetting, and that information regarding support resources can be shared with me if required.	☐
4. I understand that the identifiable data provided will be securely stored and accessible only to the members of the research team directly involved in the project, and that confidentiality will be maintained.	☐
5. I understand that my fully anonymised data will be written in a Thesis and given into the University of Essex marking team for assessment. The study may also be published in relevant journals.	☐
6. I agree to take part in the above study.	☐

Participant Name	Date	Participant Signature
_____	_____	_____

ERAMS: ETH2324-0184 Version Number 2 Date: 16/01/24

Appendix J

Interview schedule

Interview Schedule

Introduction

- Myself and my role
- Purpose of the interview
- Confidentiality

A bit about themselves

- Age, occupation and family background to understand their context
- Check that they are happy to proceed

SELF-HARM

What was your first experience of self-harm, what preceded this, how did you feel afterwards?

What types of self-harm did you engage in?

Do you think self-harm affected your psychological well-being? Why/Why not? In what way?

TRAUMA

What traumas did you experience?

Do you connect self-harm with these traumatic experiences? How? Why/Why not?

PSYCHOLOGICAL PAIN

How do you typically handle strong emotions?

How do you typically handle feelings of stress?

Have you noticed any challenges in regulating your emotions?

Have you noticed any challenges in controlling your emotional reactions?

Are there specific triggers or situations that intensify your emotional responses?

RELATIONSHIP BETWEEN THE 3

Do you think your ability to regulate emotions related to your self-harm behaviour following a trauma? How/How not?

Do you think your emotional reactivity is related to your self-harm behavior following a trauma? How/how not?

PAIN CATASTROPHISING

Do you ruminate on problems or things that have gone/could go wrong? Did this have any impact on your self-harm?

Do you focus on unpleasant feelings or experiences, and magnify these in your mind? Did this have any impact on your self-harm?

Do you think you can support yourself when you feel emotional or physical pain? Did this have any impact on your levels of emotional distress?

COPING MECHANISMS AND HEALING

Have you used any strategies to cope with psychological pain and trauma, besides self-harm?

Have you had any therapy for the trauma you experienced? For the self-harm you experienced? For the psychological pain you experienced?

Do you have a support system in place? Who is this? How do they support? OR how do you cope without a support system? What support can be put in place for you?

CLOSING

How do they feel at the end of the interview

Debrief about support available if required

END

Appendix K

Ethical approval

19/01/2024

Miss Carla Long, Dr Elia Valentini

Health and Social Care, Psychology

University of Essex

Dear Carla,

Ethics Committee Decision

Application: ETH2324-0184

I am pleased to inform you that the research proposal entitled "Exploring the relationship between self-harm and trauma in community samples; a focus on cognitive and emotional mediators" has been reviewed on behalf of the Ethics Sub Committee 1, and, based on the information provided, it has been awarded a favourable opinion.

The application was awarded a favourable opinion subject to the following **conditions**:

Extensions and Amendments:

If you propose to introduce an amendment to the research after approval or extend the duration of the study, an amendment should be submitted in ERAMS for further approval in advance of the expiry date listed in the ethics application form. Please note that it is not possible to make any amendments, including extending the duration of the study, once the expiry date has passed.

Covid-19:

Please note that the current Government guidelines in relation to Covid-19 must be adhered to and are subject to change and it is your responsibility to keep yourself informed and bear in mind the possibility of change when planning your research. You will be kept informed if there are any changes in the University guidelines.

Yours sincerely,

REO Research Governance Team

Appendix L

Risk management plan

Risk assessment

Description of activity / area being assessed	Semi structured interview with suitable participant over 18 exploring the relationship between self-harm and trauma	**Location**	TBC – most likely MS teams
Manager responsible	Elia Valentini Carla Long	**Signature & date**	31/10/23
Assessed by (name & role)		**Signature & assessment date**	

Hazard (H) hazardous event (HE) consequence (C)	Who might be harmed	Current controls	Current risk LxC=R	Additional controls needed to reduce risk	Residual risk LxC=R	Target Date	Date achieved
Study subject welfare. Extremely emotional participant due to recounting self-harm and trauma. Deterioration in participant welfare and increased risk to their safety. Study researcher experience emotional fatigue/own traumatic memories.	Participant Study researcher	Participants given PIS with full breakdown of what the study requires, preparing them, and helpful support website. Researcher aware of the study requirements The researcher will stop the interview if required and inform their supervisor immediately. Debriefing will be offered after the interview whether completed or not. Information will be provided on further available support from the suitable providers.	Moderate X unlikely = Low			Ongoing throughout the project	-