# ADVERSE CHILDHOOD EXPERIENCES, SELF-HARM, AND AGGRESSION: AN EMOTION-REGULATORY PATHWAY

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**Abstract**

The association between childhood adversity and negative outcomes including harm to self and others has been well established. Less is known however about the mechanisms that underlie these relationships. Harm to self and others has significant costs at an individual and societal level. Elucidating the causal pathways between adverse childhood experiences (ACEs) and harm to self and others is vital to informing clinical practice and is the focus of this thesis. Initially, a systematic review synthesises research investigating psychological mechanisms that mediate the relationship between childhood adversity and self-harm in clinical and forensic adult populations. Findings provide preliminary support for an emotion-regulatory pathway connecting childhood adversity to self-harm. Several other psychological mechanisms were also identified, albeit methodological limitations restrict the ability to draw firm inferences regarding causality and mediation effects. Moreover, there was a distinct lack of studies conducted with forensic inpatients, limiting the generalisability of findings to this population. Thereafter, an empirical study investigates the associations between ACEs, and self-harm and aggression, and the mediating role of emotion dysregulation, in a sample of male and female forensic inpatients detained in low- and medium-secure conditions. ACEs were positively correlated with self-harm and aggression, and emotion dysregulation partially mediated these relationships; an effect that remained after controlling for age and gender. Following this, a single case study of a female detained in a medium-secure unit, characterised by ACEs, emotion dysregulation, self-harm, and aggression, is presented. An evaluation of the intervention delivered to target the patient's difficulties indicated positive outcomes, evidenced by changes in pre- and post-intervention psychometric tests and observed behavioural changes. Lastly, a critical evaluation of the Difficulties in Emotion Regulation Scale (DERS) examines its psychometric properties and clinical utility. The DERS was found to be a sound measure of emotion dysregulation appropriate for use among a range of populations and cultures. However, further research is needed to evaluate its psychometric efficacy and clinical utility amongst more unique populations, such as forensic inpatients. This

thesis emphasises the importance of considering developmental perspectives and an emotion-regulatory pathway in the aetiology and maintenance of harmful behaviours, as well as the need for therapeutic interventions targeting the psychological mechanisms underpinning the relationships between childhood adversity, and self-harm and aggression.

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# Chapter One

# INTRODUCTION

## 1. INTRODUCTION

### 1.1. Self-Harm and Aggression – The Societal Impact

Conceptualisations and definitions of self-harm and aggression vary within the literature. Broadly, self-harm refers to any form of self-injurious behaviour that causes harm to the self, regardless of its motivation (National Collaborating Centre for Mental Health, 2004). Conversely, aggression can be defined as any behaviour directed towards others whereby the underlying motivation is to cause harm (Anderson and Bushman, 2002). Violence is considered a more severe form of aggression whereby extreme physical harm is the goal. Thus, all acts of violence can be considered 'aggressive' but not all acts of aggression are considered 'violent' (Bushman & Huesmann, 2010). Self-harm and aggression are significant public health concerns which have serious consequences at an individual, organisational, and societal level. Not only do these harmful behaviours have the potential to cause physical and psychological harm to both the individual and those caring for them (Beech & Leather, 2006; Flannery et al., 2001; O'Hara et al., 2022; Uppal & McMurran, 2009; Wykes & Whittington, 1991), they also give rise to a multitude of issues for service providers. These include, but are not limited to, disruptions to the therapeutic climate, low job satisfaction, staff burnout, and high rates of staff sickness and turnover (Bowers et al., 2011; Chan & Chow, 2014; Morrison et al., 2002; Needham et al., 2005; Reen et al., 2020). Moreover, self-harm and aggression can rupture therapeutic relationships, adversely affecting the quality of interventions delivered (Karman et al., 2015; Marzano et al., 2012; McGough et al., 2021) and service users' rehabilitation and recovery (Renwick et al., 2016).

In England and Wales, approximately 200,000 individuals present at hospitals for self-harm annually, resulting in significant financial implications for the National Health Service (National Institute for Health and Care Excellence, 2022). Specifically, annual hospital costs associated with self-harm have been estimated at £162 million in England (Tsiachristas et al., 2017). Alarmingly, self-harm has also been identified as the most accurate predictor of suicide attempts and suicide completion (Guan et al., 2012); acts that, aside from the tragic human

impact, cost the nation nearly £70 billion annually (Centers for Disease Control and Prevention, 2022). The financial implications of aggression are also of concern with an estimated £69 million spent annually on mental health services in the United Kingdom (UK), because of aggressive incidents (Hankin et al., 2011). Furthermore, aggression is a key predictor of violence (Farrington, 1991); a criminal act that accounted for approximately three-quarters of the £50 billion spent on crimes against individuals in England and Wales in 2015/2016 (Home Office, 2018). Given the compelling impacts of self-harm and aggression, a comprehensive understanding of the factors that contribute to and maintain these risky behaviours is paramount.

### 1.2. Adverse Childhood Experiences

Adverse childhood experiences (ACEs) are defined as highly stress-inducing and potentially traumatic events that occur in early life, prior to the age of 18 (Felitti et al., 1998). Serving as a threat to a young person's sense of security, ACEs can be either acute or chronic (Scott, 2020). The detrimental impacts of childhood adversity have been studied for decades. However, historically, research investigating this phenomenon has focused primarily on specific forms of childhood abuse, neglecting other forms of childhood adversity and the cumulative effect of ACEs. It has been posited that individuals exposed to multiple forms of childhood adversity experience more severe negative outcomes (Putnam et al., 2013). The original ACE study (Felitti et al., 1998) identified ten ACEs thought to be associated with detrimental outcomes. Five items are personal: physical, sexual, and emotional abuse, and physical and emotional neglect. The remaining five items pertain to household dysfunction and family members: mental illness, imprisonment, substance misuse, domestic violence, and parental separation. This influential study of 9,508 adults concluded that greater exposure to childhood adversity increased the risk of disease and health-harming behaviours.

A national survey of 3,885 individuals residing in the UK, revealed that approximately half had experienced at least one ACE (Bellis et al., 2014). Corroborating these findings on a

worldwide scale, a systematic review of 206 studies from 22 countries found that in a sample of 546,458 adults, 60.1% had been exposed to one or more ACEs (Madigan et al., 2023). The financial costs of ACEs are substantial. A review of five ACE studies, conducted in England and Wales between 2012 and 2017, estimated total ACE-related costs at £42.8 billion (Hughes et al., 2020). In recent years, mounting evidence has strengthened the proposition that ACEs are associated with negative outcomes. A systematic review of 96 studies evidenced associations between ACEs and a wide array of health outcomes (Petrucelli et al., 2019), including leading causes of death such as heart disease, cancer, and respiratory disease (Xu et al., 2022). For instance, adjusted odds ratios for ACEs and heart disease ranged from 1.46 for one ACE to 2.60 for four or more ACEs. Additionally, in a meta-analysis of 37 studies, higher rates of adverse health outcomes were observed in individuals who had been exposed to four or more ACEs, compared to those who had not been exposed to any (Hughes et al., 2017). An umbrella review of 68 systematic reviews and meta-analyses also confirmed that ACEs are consistently related to suicidality and mental disorders (Sahle et al., 2022). Specifically, exposure to at least one ACE was linked to increased risk of internalising disorders (OR = 1.76), depression (OR = 2.01), anxiety disorders (OR = 1.99), and suicidality (OR = 2.33), compared to those who had not been exposed to childhood adversity.

Mechanistic links between ACEs and adverse outcomes later in life have been less well studied. One potential mechanistic link is the biology of stress (Shonkoff & Philips, 2000). Childhood is a critical time for brain development. High allostatic load, that is the cumulative burden of exposure to stressful stimuli, has been found to alter epigenetic regulation and neural plasticity in regions of the brain which respond to stress, adversely impacting the immune system, hypothalamic-pituitary-adrenal axis, gene expression, and the brain (Gray et al., 2017). One systematic review of 27 meta-analyses indicated that neurobiological alterations, particularly hyper-sensitivity of the amygdala, were consistently observed in individuals exposed to childhood adversity (Hakamata et al., 2022), supporting a neurobiological contribution to negative outcomes.

### 1.3. Adverse Childhood Experiences, Self-Harm, and Aggression

Over recent decades, the evidence base for childhood adversity as a risk factor for self-harm has expanded. A systematic review of 26 studies, adopting cross-sectional and longitudinal designs, found that all studies excluding one identified childhood maltreatment as a correlate of self-harm (Serafini et al., 2017). In another systematic review of 59 studies, childhood trauma was frequently related to self-harm (Fliege et al., 2009). Moreover, a substantial body of retrospective studies have shown associations between different types of childhood adversity and self-harm in community (Di Pierro et al., 2012; Gratz, 2003; Swannell et al., 2012), clinical, and forensic populations (Dudeck et al. 2016; Grattan et al., 2019; Gunter et al., 2011; Howard et al., 2017; Laporte et al., 2023; Roe-Sepowitz, 2007; Stinson et al., 2021a); findings which have been corroborated in prospective studies (Garisch & Wilson 2015; Isohookana et al., 2013; Yates et al., 2008). A cumulative effect of ACEs on the likelihood of self-harm has also been evidenced (Cleare et al., 2018; Ford et al., 2020). Specifically, in a large sample of 1,299 adolescents, the likelihood of self-harm increased by 88% for each incremental increase in ACE score (Bunting et al., 2023). In a mixed-gender sample of 381 male and female forensic inpatients, the likelihood of adult self-harm increased by 22.4% for each additional ACE (Stinson et al., 2016). Greater odds ratios have also been observed for female-only forensic inpatients. For instance, in a sample of 66 female forensic inpatients, the likelihood of self-harm increased by 62% for each additional ACE (Holden et al., 2022).

The relationship between childhood adversity and aggression has also been well-documented across a diverse range of populations (Allen, 2011; Beck et al., 2017; Chen et al., 2012; Dambacher et al., 2022; Dyer et al., 2013; Ellenbogen et al., 2015; Ford et al., 2012; Grattan et al., 2019; Gratz, 2003; Hoeve et al., 2015; Holmes et al., 2015; King, 2021; Sarchiapone et al., 2009), with a dose-response effect of ACEs on the onset of and engagement in aggression, also being reported (Stinson et al., 2021b). For example, in a large sample of 136,549 students, the risk of aggression increased from 35% to 144% for each unit increase in ACE score (Duke et al., 2010). Incarcerated females who had been exposed to

four or more ACEs were also three times more likely to have been arrested for an aggression-related offence in comparison with those who had experienced zero to two ACEs (De Ravello et al., 2008). In a sample of 381 forensic inpatients, the likelihood of engaging in aggression as a child and adolescent increased by 13.5% and 20.6%, respectively, for each additional ACE (Stinson et al., 2016). These findings support an earlier prospective study which evidenced a relationship between childhood physical abuse and reactive aggression (Dodge et al., 1997). Conversely, other studies have failed to replicate these findings, with no significant associations being observed between childhood victimisation and aggression (Dudeck et al., 2016; Macinnes et al., 2016).

### 1.4. Mediating Factors

Whilst the relationships between childhood adversity, and self-harm and aggression, have been reasonably well studied, less is known about the mechanisms by which ACEs exert their influence on these harmful behaviours. Many children who are exposed to adversity in early life, do not go on to engage in self-harm or aggression, suggesting a complex interplay between these variables. Knowledge of the underlying processes that connect ACEs to harmful behaviours, is crucial for their effective treatment. One way to develop insight into the causal pathways from ACEs to negative outcomes is to investigate variables that mediate these relationships; that is, factors that explain the relationship between an independent and dependent variable (Baron & Kenny, 1986).

One trajectory that warrants further exploration is an emotion-regulatory pathway (Yates, 2009). Conceptualisations, definitions, and measurements of emotion regulation vary within the literature, impeding academic contributions in this field (Bridges et al., 2004). For instance, some models focus primarily on emotion regulation strategies (Gross, 1988), however, it has been argued that these fail to acknowledge broader aspects of emotion regulation (Gratz & Roemer, 2004). The definition adopted for this thesis is based on the Difficulties in Emotion Regulation Scale (DERS), developed in line with Gratz and Roemer's

(2004) functional model of emotion regulation. This model conceptualises emotion regulation as a multi-faceted construct and considers the ability to notice, make sense of, and accept emotions, as well as emotion regulation strategies, goal-directed behaviour, and willingness to experience difficult emotions. Whilst this definition of emotion regulation is thought superior to broader conceptualisations, limitations exist when considering emotion regulation as an overarching construct. For instance, considering emotion regulation according to the total DERS score provides limited insight into the unique contributions of distinct aspects of emotion regulation. Moreover, it has been argued that environmental factors should also be considered (Bridges et al., 2004).

Considering the link between childhood adversity, emotion regulation, and self-harm and aggression, developmental and attachment theorists highlight the importance of interactions with caregivers in the development of self-regulation and how emotion regulation skills are compromised by the neurobiological and psychological effects of ACEs (Bowlby, 1988; Burns et al., 2010). As a result, victims of childhood adversity are susceptible to emotion regulation difficulties characterised by either the over-regulation or under-regulation of emotions (D'Andrea et al., 2012; Roberton et al., 2014). The Self-Trauma model (Briere, 1996) posits that feelings of security in early life are also key to the development of adaptive coping strategies. When a child is exposed to stressful events, their ability to maintain a sense of safety is compromised and their capacity to develop emotion regulation skills is reduced. Subsequently, maladaptive coping mechanisms are implemented as a means of mentally surviving, resulting in the suppression of emotions and poor tolerance for frustration (Cruz et al., 2022). Similarly, the biosocial model of emotion dysregulation highlights how emotional sensitivity and an invalidating environment interact to produce pervasive emotion dysregulation, in turn, leading to maladaptive behaviours such as self-harm and aggression (Linehan, 1993). This model is supported by the experiential avoidance theory which posits that destructive behaviours arise from a desire to avoid and escape undesired emotional states and to return to a baseline emotional state (Chapman et al., 2006). Supporting the

theoretical literature, empirical research has found that harmful behaviours serve an emotion-regulatory function (Andover & Morris, 2014; Bushman et al., 2001; Cohn et al., 2010; Dixon-Gordon et al., 2012; Gratz, 2003; Gratz & Roemer, 2004; Hooley & Franklin, 2018; Klonsky & Muehlenkamp, 2007; Nock & Prinstein, 2005; Roberton et al., 2012; Röll & Petermann, 2012; Scott et al., 2014; Yates, 2004).

### 1.5. Rationale and Structure of Thesis

Whilst existing research in the field of childhood adversity, self-harm, and aggression, has contributed to this growing area of interest, further research investigating the interplay of these variables is integral for the effective prevention and treatment of these harmful behaviours. A greater understanding of these interactions also has important implications for patients' care and recovery, staff well-being, and efficient organisational functioning. This thesis aimed to develop insight into the causal pathways linking childhood adversity to negative outcomes, particularly the role of emotion dysregulation. It also aimed to assess the accessibility of a psychological intervention targeting emotion dysregulation and the psychometric qualities of a commonly used measure of difficulties in emotion regulation.

Chapter Two of this thesis adopts a systematic approach to explore all evidence for psychological mechanisms that mediate the relationships between childhood adversity and self-harm in clinical and forensic adult samples (additionally investigating the causal pathways between childhood adversity and aggression was beyond the scope of this thesis). In Chapter Three, the mediating role of emotion dysregulation on the relationships between ACEs, and self-harm and aggression, is investigated in a sample of adult forensic inpatients. Chapter Four, the related clinical case study, details the assessment, formulation, and intervention of a female detained in a medium-secure unit who was exposed to childhood adversity, presents with self-harm and aggression, and has diagnoses of emotionally unstable personality disorder and mild learning disability. This chapter evaluates the effectiveness of an intervention based on an adapted version of dialectical behavioural therapy; the I Can Feel

Good programme (Ingamells et al., 2018). Chapter Five is a psychometric critique of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) and Chapter Six is a summary discussion whereby the clinical implications of the thesis are explored, alongside its limitations and recommendations regarding future research.

## Chapter Two

## SYSTEMATIC REVIEW

***'Psychological Mediators of the Association Between Childhood Adversity and Self-Harm in Clinical and Forensic Adult Populations'***

**Abstract**

Self-harm is a global health concern. Whilst the empirical literature supports a connection between adverse childhood experiences and self-harm, less is known about the mechanisms by which childhood adversity exerts its influence on self-harm. Better understanding the psychological factors that mediate this relationship is crucial for effectively preventing and treating this adverse outcome. Over the past two decades, research examining the potential causal pathways from childhood adversity to self-harm has begun to emerge. However, to date, these findings have not been evaluated systematically. This is the first systematic review to identify and synthesise studies that have investigated psychological mediators of the relationship between childhood adversities and self-harm in clinical and forensic adult populations. A literature search yielded a total of 2,172 results. After screening and careful application of the inclusion and exclusion criteria, 17 studies were included in the review. The findings provide preliminary support for an emotion-regulatory pathway from childhood adversity to self-harm among these populations. Due to methodological limitations of the identified studies, including study design and heterogeneity of the variables investigated, measures used, and analytical approach, results must be interpreted with caution. Nonetheless, the findings have important clinical implications and recommendations for future research are discussed.

# 1. INTRODUCTION

## 1.1. Self-Harm

Definitions of self-harm vary considerably in the literature. Distinctions are often made between non-suicidal self-injury, which occurs in the absence of suicidal intent, and self-harm with suicidal intent (Nock, 2009). Self-harm can also be dichotomised into acts which cause direct damage to body tissue and indirect forms such as substance misuse (Germain & Hooley, 2012). Broadly, self-harm is defined as self-injurious behaviour which inflicts damage to oneself, irrespective of its underlying motivation (National Collaborating Centre for Mental Health, 2004). The initiation of self-harm typically occurs in adolescence (Yates, 2004); an age bracket that accounts for the majority of self-harm in community samples (Klonsky et al., 2014). Nonetheless, high rates of self-harm have also been observed in vulnerable populations, including clinical and forensic samples (Brooker et al., 2010; Fazel et al., 2016; Holden et al., 2022; Laporte et al., 2021a; Sansone et al., 2000; Sarkar, 2011). Beyond physical injuries, such as scarring and potentially life-changing consequences (De Vogel & Verstegen 2021; Tromans et al., 2019), self-harm has been linked to suicidal behaviours (Fliege et al., 2009; Hawton et al., 2014; Mars et al., 2019; Zahl & Hawton, 2004) and death (Laporte et al., 2021a). In one four-year cohort study of 7,968 people who self-harmed in the United Kingdom (UK), the risk of suicide was 30-fold compared to that of the general public (Cooper et al., 2005). In another prospective study of 1,177 older adults who self-harm, the risk of suicide was over two-thirds higher compared to older adults without a history of self-harm (Murphy et al., 2012). Self-harm is also associated with a multitude of psychosocial problems in later life ranging from substance misuse to mental health difficulties and social disadvantage (Borschmann et al., 2017).

Within clinical and forensic settings, access to items used to self-harm is often restricted in response to an incident. More hazardous methods of self-harm are therefore sought out such as ingesting and inserting, increasing the risk of serious physical harm (Runeson et al., 2010). This, in turn, can result in the need for regular medical intervention,

reducing a patient's capacity to engage in their treatment pathway. Furthermore, self-harm in clinical and forensic settings can lead to feelings of frustration and powerlessness among professionals (O'Hara et al., 2022). Burnout and feelings of disdain towards patients who self-harm are also common (Marzano et al., 2012; McGough et al., 2021), which can subsequently hinder therapeutic relationships and patients' recovery.

### 1.2. Predictors of Self-Harm

Self-harm has been associated with a range of adverse life experiences including socio-economic deprivation (Ayton et al., 2003; Gunnell et al., 2000), low education (Brunner et al., 2007), unemployment (Johnston et al., 2006; Kapur et al., 2006), poverty (Mok et al., 2018; Page et al., 2014), discrimination (Cawley et al., 2019) and war trauma (Marchi et al., 2022). One area that has been extensively studied as a precursor of self-harm is childhood adversity; that is, highly stress-inducing and potentially harmful childhood experiences (Butchart et al., 2006). For instance, several major studies have identified childhood abuse as a predictor of self-harm. In a systematic review of 59 studies, 21 investigated the link between childhood sexual abuse and self-harm (Fliege et al., 2009). All studies except for one, which lacked statistical power (Rodriguez-Srednicki, 2001), demonstrated an association between these two variables. Another systematic review, including 20 studies, investigated the link between childhood maltreatment and self-harm in adolescence and early adulthood; childhood maltreatment, particularly childhood sexual abuse, was related to self-harm (Serafini et al., 2017). Conversely, a systematic review of 53 studies with no participant restrictions, suggested a contentious link between childhood sexual abuse and self-harm, with results indicating that environmental and individual factors also play a role (Cipriano et al., 2017). Other forms of childhood adversity including neglect (Gratz et al., 2002) and stressful life events (Tang et al., 2016), have also been found to contribute to the development of self-harm.

### 1.3. Mediation Analysis

Investigating the interactions between potential predictor, mediating, and outcome variables is crucial to identifying modifiable factors that account for the effect of one variable on another. Since the seminal paper by Baron and Kenny (1986), the use of mediation analysis has become more prominent in the field of psychology, leading to the development of statistical software that detects mediation effects (Hayes, 2012; Hayes, 2013; Preacher & Hayes, 2008). In summary, mediation analysis determines whether the association between an exposure (X) and the outcome being measured (Y) can be explained by a mediating (M) variable (Hayes, 2013). Several assumptions must be met to conclude the presence of mediation effects. Firstly, X must be associated with Y in the absence of M. Secondly, X must affect M, and thirdly, M must affect Y. If a mediation effect is present, the association between X and Y decreases when the mediating variable is entered into the analysis (MacKinnon, 2008). In this instance, it can be assumed that the exposure exerts an indirect effect on the outcome via the mediating variable. Subsequently, mediation analysis not only provides insight into whether X causes Y but also *how* X affects Y (Baron & Kenny, 1986).

### 1.4. Pathways from Childhood Adversity to Self-Harm

Several pathways have been proposed to explain how childhood adversity increases the risk of self-harm. One of the most prominent is an emotion-regulatory pathway, whereby childhood adversity is thought to adversely affect emotional regulation, and self-harm is employed to manage or avoid negative emotional states (Yates, 2009). Numerous models of emotion regulation have been developed that are particularly pertinent to self-harm including the process model of emotion regulation (Gross, 1998), the difficulties in emotion regulation model (Gratz & Roemer, 2004), the experiential avoidance model (Chapman et al., 2006), and the emotional cascade model (Selby & Joiner, 2009). Whilst distinct, these models share similar components and are centred around the emotional experience. Expanding on these models, the cognitive-emotional model of self-harm (Hasking et al., 2016) acknowledges the role of cognitive processes alongside emotional experiences, particularly *outcome*

*expectancies* (the perceived consequences of behaviour) and *self-efficacy expectancies* (personal beliefs in one's ability to complete a behaviour successfully) in the reinforcement of self-harm.

Previous systematic reviews (Klonsky, 2007) and meta-analyses (Taylor et al., 2018) investigating the functions of self-harm provide support for this pathway, as have studies investigating the mediating role of emotion dysregulation. For instance, the indirect effect of emotion dysregulation on the relationship between childhood maltreatment and self-harm was supported in a sample of 397 university students (Erol & Inozu, 2023). Similar findings have been produced in adolescent clinical samples. One study investigating 108 adolescent psychiatric patients found that emotion dysregulation mediated the relationship between childhood maltreatment and self-harm (B = 0.07, $p < 0.05$, 95% CI = 0.02 – 0.16) after controlling for demographics and depression (Peh et al., 2017); findings that have been corroborated in a larger sample of 224 adolescent inpatients (Hu et al., 2023). Investigating subtypes of childhood maltreatment, one study confirmed the mediating role of emotion dysregulation on the relationships between childhood physical and emotional maltreatment, and frequency of self-harm in a smaller sample of 53 adolescent inpatients (Titelius et al., 2018). Another study consisting of 131 adolescent inpatients found that emotion dysregulation mediated the relationship between an invalidating family environment (measured via childhood emotional abuse and emotional neglect) and self-harm, albeit this effect was only evident for females (Sim et al., 2009).

Other studies investigating various components of emotion regulation have provided further support for this pathway. For instance, negative and positive affect, that is, the emotions experienced by an individual and how they are expressed, are facets of emotion regulation (Ashby et al., 1999) that have been linked to self-harm (Gratz, 2006). Additionally, in a large sample of 1,254 college students (Wang et al., 2023), experiential avoidance mediated the relationship between childhood emotional abuse and self-harm ($B = 0.62$, $p <$

0.001). Negative urgency (the tendency to act impulsively when distressed) has also been found to have a significant indirect effect (estimate = 0.25, $p$ = .038) on the association between childhood maltreatment and the frequency of self-harm in undergraduate students (Arens et al., 2014). One study investigating emotion expressivity found that this construct mediated the association between childhood emotional abuse and self-harm ($B$ = 0.114, $p$ = 0.027, 95% CI = 0.013 – 0.214), albeit emotion coping did not. Mediation effects were not evident for emotion expressivity or emotion coping when examining the relationships between childhood physical and sexual abuse, and self-harm (Thomassin et al., 2016). Alexithymia, which pertains to difficulties identifying and describing emotions, a component of emotion dysregulation, has also been found to account for the relationship between childhood maltreatment and self-harm (Gaher et al., 2013; Paivio & McCulloch, 2004; Swannell et al., 2012).

Other variables have also been identified as potential mediators of the childhood adversity-self-harm relationship. For instance, in a longitudinal study of 916 adults, childhood abuse had an indirect effect on self-harm via posttraumatic stress disorder (PTSD) symptoms (Nada-Raja & Skegg, 2011). Retrospective studies conducted with adolescents have also supported these findings. For example, one study comparing maltreated and non-maltreated female adolescents ($N$ = 211), found that PTSD symptoms mediated the relationship between childhood maltreatment and self-harm (Shenk et al., 2010). Another study of 94 adolescents, investigating discrete PTSD symptom clusters, found that ‘re-experiencing’ symptoms (e.g. flashbacks) fully mediated the association between childhood sexual abuse and self-harm and ‘avoidance/numbing’ symptoms partially mediated this relationship after controlling for depression (Weierich & Nock, 2008). Dissociation, a common feature of PTSD, has also been found to play a role. For instance, in a non-clinical sample of 11,423 adults, dissociation partially mediated the relationship between childhood maltreatment and self-harm (Swannell et al., 2012). Supporting this finding, a systematic review of 17 studies demonstrated robust

evidence that dissociation mediates the relationship between traumatic experiences and self-harm (Rossi et al., 2019).

In addition, high self-disgust and low self-compassion have both been found to mediate the relationship between emotional neglect and self-harm (Erol & Inozi, 2023), as have components of shame (Garbutt et al., 2023a) and self-blame (Swannell et al., 2012) in adult samples. In one study examining a non-clinical sample of 2,498 adults, depression and anxiety fully mediated the relationships between childhood sexual abuse and physical neglect, and self-harm, and partially mediated the relationship between childhood emotional abuse and self-harm (Brown et al., 2018). Depression has also been found to account for the association between childhood maltreatment and self-harm in a sample of 224 adolescent inpatients (Hu et al., 2023). Moreover, difficulties with mentalisation (Stagaki et al., 2022) and impairments in self-perception, interpersonal contact, and relationships (Ernst et al., 2022) have been found to account for this relationship in adult samples. These findings suggest that childhood adversity contributes to the formation of unhelpful cognitions about the self and the world, as well as personality dysfunction, which in turn increases the risk of self-harm. Whilst research to date has provided preliminary insight into the factors that might explain the childhood adversity-self-harm relationship, studies have largely adopted a cross-sectional design. For mediation to be inferred, the exposure must precede the mediator, and the mediator must precede the outcome (MacKinnon, 2008); a temporal precedence that cannot be determined in the absence of a longitudinal design.

### 1.5. Previous Systematic Reviews

Two systematic reviews have been conducted investigating variables that predict, mediate, and moderate self-harm. The first consisted of 39 longitudinal studies conducted with non-clinical samples of adolescents (Valencia-Agudo et al., 2018). Compared to predictors and moderating variables, mediating variables were relatively understudied, with only four studies investigating mediation effects; none of which investigated psychological mechanisms

mediating the relationship between childhood adversity and self-harm. The second review, consisting of 25 longitudinal studies, explored predictors and mediators of self-harm and suicide attempts in clinical and non-clinical samples under the age of 25 (Abdelraheem et al., 2019). Out of the 14 studies examining mediation effects, only one study investigated the childhood adversity-self-harm relationship. Specifically, in a community sample of 164 young adults, preoccupied attachment mediated the relationship between childhood abuse and neglect, and self-harm (Martin et al., 2017). To the author's knowledge, no systematic reviews to date have focused exclusively on the psychological factors that mediate the relationship between childhood adversity and self-harm.

### 1.6. Objectives

This systematic review aims to ascertain what psychological mechanisms mediate the relationship between childhood adversity and self-harm among clinical and forensic adult populations. Further, it will assess the quality of this evidence, including the robustness of the statistical analysis used to determine mediation effects. This work has the potential to provide relevant services with knowledge on what factors to target to prevent and treat self-harm. Additionally investigating the causal pathways between childhood adversity and aggression was beyond the scope of this thesis.

## 2. METHOD

### 2.1. Inclusion and Exclusion Criteria

The inclusion criteria are presented in Table 2.1. Clinical samples were defined as those who had been diagnosed with a mental disorder and receiving treatment as either an inpatient or an outpatient. Forensic samples were defined as those serving a custodial sentence or receiving treatment in a forensic psychiatric hospital. Only studies employing mediation analysis or other appropriate statistical approaches to determine mediation effects were included. The exclusion criteria consisted of children and adolescents (aged 17 and under), non-clinical samples, qualitative studies, single-case studies, literature reviews,

systematic reviews, and meta-analyses. Studies that did not test for mediation effects and those unavailable in English were also excluded. To ensure that the studies included in the review met the inclusion criteria, a study eligibility form was used when reviewing full texts (see Appendix A).

**Table 2.1**

*Inclusion Criteria*

| | |
|---|---|
| **Population** | Male and female adults (age 18 and over) *<br><br>Clinical and forensic samples ** |
| **Exposure** | Exposure to childhood adversity |
| **Outcome** | Quantitative measure of psychological mechanism(s) that mediate the relationship between childhood adversity and self-harm *** |
| **Study Design** | Retrospective and prospective quantitative studies<br><br>Cross-sectional design, cohort studies, case-control studies<br><br>Studies testing for mediation effects |
| **Language** | English language |

** Studies that include participants under the age of 18 will only be included if a separate analysis of participants over the age of 18 is included. ** Studies that include non-clinical/non-forensic samples will only be included if there is a separate analysis of clinical and forensic samples. ***Studies that report quantitative and qualitative findings will only be included if the extraction of quantitative data is possible.*

### 2.2. Literature Search

A scoping review was conducted between July 2023 and August 2023 to explore relevant literature and formulate the research question. Initial searches of Cochrane Collaboration, PROSPERO, Google Scholar, PsychInfo, Embase, and Medline were conducted to ensure the research question was unique. No systematic reviews investigating the psychological mechanisms that mediate the relationship between childhood adversity and self-harm were identified. A full electronic search was carried out on the 30th of September

2023 on the following databases: Web of Science, Medline, Embase, PsychInfo, and CINAHL. The search terms used for this review were developed from the relevant literature identified in the scoping review (see Table 2.2). Where appropriate, subject headings, as well as keywords, were used to enhance the search. For instance, APA terms were used for PsychInfo, MeSH terms for Medline, and Emtree terms for Embase. The search syntax for each electronic database is presented in Appendix B.

**Table 2.2**

*Search Terms*

| **Concept** | **Terms** |
|---|---|
| Childhood Adversity | "adverse child* experience*" OR "child* advers*" OR "child* maltreat*" OR "child* abuse" OR "child* trauma" OR "child* mistreat*" OR “child* neglect” |
| Mediation | mediat* OR mechan* OR pathway* OR interact* |
| Self-Harm | "self-harm" OR "self harm" OR "self-injur*" OR "self injur*" OR "non-suicial self-injur*" OR "non suicidal self injur*" OR "deliberate self-harm" OR "deliberate self harm" OR "self-inflicted injur*" OR "self inflicted injur*" OR "para-suicid*" OR "para suicid*" OR "self-injur* behavio*r" OR "self injur* behavio*r" OR "auto-mutilat*" OR "automutilat*" |

A total of 2,163 records were identified through the electronic database search and transferred to EndNote (Version 20, 2020). Two additional records were identified through a review of the grey literature. A further seven studies were identified by hand-searching the reference lists of relevant papers (see Appendix C for a breakdown of records per source). A total of 613 duplicates were identified and removed leaving 1,559 records. These were screened according to title and abstract to identify any additional duplicates and to determine relevance; a further 1,514 references were subsequently removed, leaving 45 records. The full texts of the remaining 45 records were reviewed using the study eligibility form to decipher

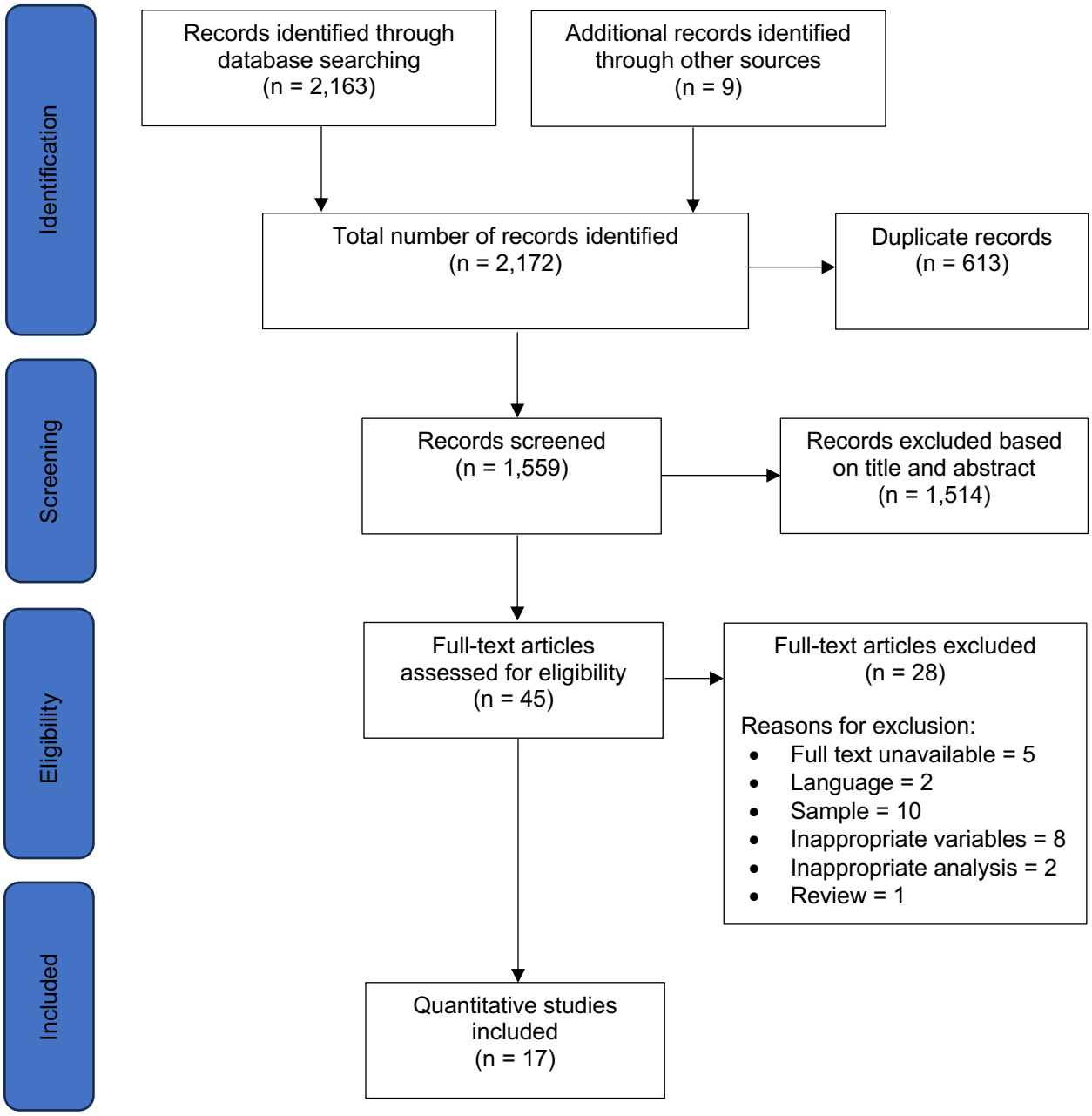
whether they met the inclusion criteria. To reduce the risk of bias, a second reviewer was consulted at this stage to assess a third of the full texts. Disagreements were resolved through discussion with no further consultation needed. Of the 45 records, five were unobtainable in full text and two were unavailable in English; one was accessible in Polish and the other in German. The sample used in ten records did not meet the inclusion criteria. Specifically, five records consisted of adult community samples, two investigated clinical and community samples and did not distinguish between the two, and three investigated clinical and forensic samples but included participants under the age of 18. Following the removal of further studies that did not meet the inclusion criteria, a total of 17 records were included in the current review (see Figure 2.1).

### 2.3. Data Extraction

The following information was extracted from the 17 included studies: author(s), year, and country; study design; sample; measure of childhood adversity, mediator(s); measure of mediator(s); measure of self-harm; analytical approach; main findings (see Table 2.3). The mediating variables investigated, and the measures used to assess these varied across studies. Due to this heterogeneity, it was not possible to use a specialist method such as meta-analysis to synthesise the findings. Instead, a narrative synthesis is provided to describe the results. This method adopts a textual approach in which findings from multiple studies are synthesised using words (Popay et al., 2006).

**Figure 2.1**

*Search and Study Selection Process Using the Preferred Flow Diagram of Systematic Reviews and Meta-Analyses (PRISMA; Moher et al., 2009)*




## 2.4. Quality Assessment

In line with PRISMA recommendations (Liberati et al., 2009) and previous systematic reviews investigating mediation effects (Li et al., 2020; Williams et al., 2018), an adapted

version of the Effective Public Health Practice Project tool (EPHPP; Thomas, 2003) was utilised to assess the quality of included studies (see Appendix D). Studies were rated as either 'weak', 'moderate', or 'strong' on the following domains: selection bias, study design, confounders, data collection methods, withdrawals and drop-outs, and analytical approach. The analytical approach domain considered the appropriateness of the method used to test for mediation effects. Studies which employed regression methods, for example, the Baron and Kenny (1986) approach where mediation is inferred as opposed to being based on statistical observation were rated as 'weak'. Studies which employed regression methods alongside further statistical analysis to test indirect effects were rated as 'moderate'. A 'strong' rating was allocated to studies whose analysis enabled an estimation of direct and indirect effects (Hayes, 2012; Hayes, 2013; MacKinnon, 2008; Preacher & Hayes, 2008). A third of the included studies were assessed by the secondary reviewer to ensure inter-rater reliability. Again, any disagreements were resolved through discussion and did not require consultation from a third reviewer. The quality assessment did not result in the removal of any studies but rather informed the discussion in terms of limitations.

## 3. RESULTS

### 3.1. Study Characteristics

A total of 17 papers were identified and included in the review (see Table 2.3). Studies were conducted in the UK (*n* = 5), USA (*n* = 4), Canada (*n* = 1), Australia (*n* = 1), China (*n* = 1), Germany (*n* = 1), Northern Ireland (*n* = 1), Poland (*n* = 1), South Korea (*n* = 1), and Sweden (*n* = 1). All studies were published between 2000 and 2023. Two studies adopted an ecological momentary assessment (EMA) design; the remaining 15 adopted a cross-sectional design. The age of participants ranged from 18 to 95 across studies, with a lowest mean score of 24.87 years and a highest mean score of 43.05 years. Only one study had a particularly wide range in sample age (Garbutt et al., 2023b). The sample sizes ranged from 44 to 1,042. Two of the included studies (Dodd et al., 2022; Gordon et al., 2016) used data from the same sample as a previous study (Smyth et al., 2007) but had separate research aims, and were

therefore considered independent of one another. Overall, the included studies comprised 2,678 participants: 1,603 males, 1,072 females, and three where sex was not disclosed. Seven studies consisted of clinical samples in the community (*n* = 747), five consisted of prisoner samples (*n* = 1,521), two consisted of clinical inpatients (*n* = 331), and one consisted of forensic inpatients (*n* = 50).

### 3.2. Overview of the Measures Used in Included Studies

#### *3.2.1. Childhood Adversity*

Of the 17 included studies, 13 used validated self-report questionnaires to measure childhood adversity. Eleven studies utilised versions of or specific items from the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998). The CTQ measures three types of childhood abuse (physical, sexual, and emotional) and two types of neglect (physical and emotional), experienced before the age of 18. One study employed the Maltreatment Abuse and Exposure Scale (MAES; Teicher & Parigger, 2015); a 52-item questionnaire assessing ten domains of childhood adversity. Interview measures were used in four of the studies. Two of these utilised reliable and valid interview measures; the Child Trauma Interview (CTI; Fink et al., 1995) which assesses emotional, physical, and sexual abuse, and the Traumatic Antecedents Interview (TAI; Herman et al., 1989) which assesses interpersonal childhood trauma. The remaining two studies used interviews to explore the presence and characteristics of physical and sexual abuse, however, no further information regarding their content was provided (Gladstone et al., 2004; Milligan & Andrews, 2005).

#### *3.2.2. Self-Harm*

Greater variation was observed in the measurement of self-harm. Seven studies utilised items from, or full versions of, validated self-report questionnaires developed to measure self-harm. These consisted of the Self-Harm Inventory (SHI; Sansone et al., 1998), the Self-Harm Behaviour Questionnaire (SHBQ; Gutierrez et al., 2001), the Inventory of Statements about Self-Injury (ISAS; Klonsky & Glenn, 2009) and the Deliberate Self-Harm

Inventory (DSHI; Gratz, 2001). Two studies utilised subscales from measures developed for purposes other than self-harm: specifically, the impulse actions subscale of the Diagnostic Interview for Borderlines – Revised (DIB-R; Zanarini et al., 1989) and relevant items from the Impulsive Behaviour Scale (IBS; Rossotto et al., 1994). Two studies utilised measures of self-harm which were developed by the authors for the study (Franzke et al., 2015; Power, 2011). Two studies adopted interview approaches; one used items from the Self-Injurious Thoughts and Behaviour Interview (SITBI; Nock et al., 2007); details regarding the format of the other interview were not provided (Gladstone et al., 2004). One study employed a dichotomous measure assessing the presence of lifetime self-harm (Howard et al., 2017) and one used incidence data of self-harm (Low et al., 2000). Finally, one study used EMA to assess experiences of self-harm in real-time.

#### *3.2.3. Mediators*

Ten studies examined multiple mediating variables with a total of 33 psychological mechanisms investigated across all included studies.

**Table 2.3**

*Study Characteristics*

| Author(s), Year, Country | Study design | Sample | Measure of childhood adversity | Mediator(s) | Measure of mediator(s) | Measure of self-harm | Analytical approach | Main findings |
|---|---|---|---|---|---|---|---|---|
| Blasczyk-Schiep et al., 2018, Poland | Cross-sectional | 64 individuals with BPD, 48 females (*M* = 27.49, *SD* = 6.43), 16 males (*M* = 27.68, SD = 6.31) | Two items from the CTQ measuring emotional neglect | State orientation decision and demand-related stress | VCQ | SHI | Serial mediation using Hayes (2012) approach | State orientation and demand-related stress together partially mediated the relationship between emotional neglect and self-harm (*B* = 0.02, 95% CI = 0.001 – 0.06). State orientation alone did not have a significant direct effect on self-harm (*B* = 0.09, 95% CI = -0.19 – 0.38). |
| Bornovalova et al., 2011, USA | Cross-sectional | 180 inpatients at a residential treatment centre for substance misuse, 130 males, 50 females (*M* = 43.05, *SD* = 9.86) | Emotional, physical, and sexual abuse subscales from the CTQ-SF | Posttraumatic stress symptoms | PCL | Four items from the SHI | Path analysis via Mplus (Muthén & Muthén, 1998–2006) for parallel mediation. | Childhood sexual abuse had a significant effect on self-harm (*B* = 1.89, *p* < .05), whereas physical abuse (*B* = 1.08, *p* > .10) and emotional abuse (*B* = -1.25, *p* > .10) did not. Childhood sexual abuse was related to posttraumatic stress symptoms and posttraumatic stress symptoms were related to self-harm. The direct effect of childhood sexual abuse on self-harm remained significant (*B* = 1.07, *p* < .05), indicating partial mediation. |
| Brick et al., 2021, USA | EMA | 133 psychiatric outpatients, 77 females, 56 males (*M* = 41, *SD* = 13) | Emotional, physical, and sexual abuse subscales from the CTQ-SF | Positive and negative affect | EMA | Two items from the SITBI | Logistic regression | Childhood emotional and physical abuse increased the risk of self-harm thoughts or behaviours in models examining positive affect. However, the effect of positive affect became non-significant after entering |

| Author(s), Year, Country | Study design | Sample | Measure of childhood adversity | Mediator(s) | Measure of mediator(s) | Measure of self-harm | Analytical approach | Main findings |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | childhood emotional and physical into the model. In models examining negative affect, only childhood physical abuse had a significant effect on self-harm thoughts and behaviours. The significant effect of negative affect remained after controlling for childhood abuse. |
| Dodd et al., 2022, USA | EMA | 130 females with bulimia nervosa (*M* = 25.4, *SD* = 7.6) | CTQ | Impulsive behaviours, negative affect, atypical cognitions, interpersonal problems | DIB-R | EMA | Path analysis via Mplus version 8.1 (Muthén & Muthén, 1998–2017) for parallel mediation. | Childhood trauma was significantly associated with impulsive behaviours (*B* = 0.036), negative affect (*B* = 0.049), atypical cognitions (*B* = 0.036), and interpersonal problems (*B* = 0.081) but had no direct association with self-harm. Only atypical cognitions significantly predicted self-harm (*B* = 0.019). The indirect path from childhood trauma to self-harm via atypical cognitions was significant (*B* = .001, *p* = .01). |
| Dyer et al., 2013, Northern Island | Cross-sectional | 44 adults attending therapy for chronic trauma, 35 males, 9 females (*M* = 43, range 24 – 63) | CTQ | Alterations in self-perception | SIDES | Self-harm subscale of the SHBQ | Baron and Kenny (1986) approach | Significant partial correlations were evident between physical neglect and self-harm, physical neglect and alterations in self-perception, and alterations in self-perception and self-harm. Physical neglect was no longer significantly related to self-harm when alterations in self-perception was controlled for (OR = 1.18, *p* = .24). |

| Author(s), Year, Country | Study design | Sample | Measure of childhood adversity | Mediator(s) | Measure of mediator(s) | Measure of self-harm | Analytical approach | Main findings |
|---|---|---|---|---|---|---|---|---|
| Franzke et al., 2015, Germany | Cross-sectional | 87 female inpatients, 42 with a history of self-harm and 45 without a history of self-harm (*M* = 41.32, *SD* = 12.08) | CTQ | Dissociative symptoms<br><br>Posttraumatic symptoms<br><br>Depressive symptoms | FDS-20<br><br>PDS<br><br>BDI | 4-item questionnaire assessing presence, onset, frequency, method, and severity of self-harm | Path analysis via Mplus V6 (Muthén & Muthén, 1998–2010) and bias-corrected bootstrapping (MacKinnon, 2008) | Childhood trauma had a significant effect on dissociative (*B* = .33), posttraumatic (*B* = .32), and depressive (*B* = .27) symptoms. Dissociative symptoms was the only variable to have a significant effect on self-harm (*B* = .42), and to mediate the relationship between childhood trauma and self-harm (*B* = .14, 95% CI = 0.01 – 0.40). |
| Garbutt et al., 2023b, UK | Cross-sectional | 250 sex offenders, 241 males, 6 females, 3 non-binary. Age range = 22 – 95 years (*M* and *SD* not provided) | MAES | Shame<br><br>Self-compassion | CoSS<br><br>SCS | SHI | Mediation analysis and bias-corrected bootstrapping (MacKinnon et al., 2004) | ACEs had a significant direct effect on self-harm (B = .107). Shame-attack-self (B = .021), shame-attack-other (B = .014), and self-compassion (B = .011) partially mediated the relationship between ACEs and self-harm. The total indirect effect (B = .047) contributed to the total effect (B = .15) of ACEs on the variance in self-harm. |
| Gladstone et al., 2004, Australia | Cross-sectional | 126 females with depressive disorders (*M* = 37.8 years, *SD* = 12.1) | Interview determining presence and characteristics of physical and sexual abuse. | Personality dysfunction | Psychiatrist-rated personality style score | Interview (no further details) | Path analysis | The association between childhood physical abuse and self-harm was less direct and seemed to be mediated by higher personality dysfunction. Childhood sexual abuse was directly associated with self-harm; high personality dysfunction did not mediate this relationship. |
| Gordon et al., 2016, USA | Cross-sectional | 125 females with bulimia nervosa (*M* = | CTI | Emotion dysregulation | DAPP-BQ | Impulse action patterns | Bootstrapped mediation analysis | Emotion dysregulation mediated the relationship between childhood sexual abuse and |

| Author(s), Year, Country | Study design | Sample | Measure of childhood adversity | Mediator(s) | Measure of mediator(s) | Measure of self-harm | Analytical approach | Main findings |
|---|---|---|---|---|---|---|---|---|
| | | 24.87, *SD* = 7.24) | | Negative affect intensity | DIB-R | subscale of the DIB-R | (Preacher & Hayes, 2008) | self-harm (B = 0.017, 95% CI = 0.001–0.048) and the relationship between childhood emotional abuse and self-harm (B = 0.045, 95% CI = 0.001–0.01). It did not mediate the relationship between childhood physical abuse and self- harm. Negative affect intensity did not mediate the relationships between any type of childhood abuse and self-harm. |
| Gu et al., 2023, China | Cross-sectional | 1,042 male prisoners (*M* = 38.45, *SD* = 10.67) | CTQ-SF | Psychopathy | Dirty Dozen | Derived from ISAS | Mediation analysis using Hayes (2013) approach | Childhood maltreatment was significantly positively associated with self-harm, and psychopathy, and psychopathy was significantly positively related to self-harm. There was a significant indirect effect of childhood maltreatment on self-harm via psychopathy (B = 0.05, 95% CI = 0.02 – 0.08). The direct effect of childhood maltreatment on self-harm remained significant (B = 0.31, $p < 0.001$), indicating that psychopathy partially mediated this relationship. |
| Howard et al., 2017, UK | Cross-sectional | 89 female prisoners (*M* = 34.52, *SD* = not provided) | CTQ | PTSD symptoms<br><br>Emotion dysregulation<br><br>Dissociation | PCL-5<br><br>DERS<br><br>DES | Dichotomous measure of 'yes' or 'no' when asked 'have you ever deliberately | Individual and multiple mediation analysis using Hayes (2013) approach and Sobel test | Emotion dysregulation mediated the relationship between childhood trauma and self-harm (B = 0.016, 95% CI = 0.005–.033, $p = 0.017$). Dissociation and total PTSD symptoms did not have a mediating effect, however, the 'alterations in |

| Author(s), Year, Country | Study design | Sample | Measure of childhood adversity | Mediator(s) | Measure of mediator(s) | Measure of self-harm | Analytical approach | Main findings |
|---|---|---|---|---|---|---|---|---|
| | | | | | | self-harmed?' | | arousal and reactivity' subscale of the PCL-5 did (B = 0.014, 95% CI = 0.004–.031, *p* = 0.021). Emotion regulation and PTSD symptoms together (B = 0.023, 95% CI = 0.008–.043) and emotion regulation and dissociation together (B = 0.015, 95% CI = 0.002–.036), mediated the relationship between childhood trauma and self-harm. Neither of the two variables had a significant independent effect, whilst controlling for the other. |
| Low et al., 2000, UK | Cross-sectional | 50 female forensic inpatients: 13 non-harmers, 22 infrequent harmers, and 15 frequent harmers (*M* = 32.04) | TAI | Dissociation<br><br>Self-Esteem | DES<br><br>RSES | Incidence of self-harm | Path analysis | Childhood sexual abuse had a significant direct effect on self-harm (B = .203, *p* < .05) and dissociation (B = .274, *p* < .05). Dissociation had a significant direct effect on self-harm (B = .596, *p* < .05). The pathway from childhood sexual abuse to self-harm was also partially explained by low self-esteem. |
| Milligan & Andrews 2005, UK | Cross-sectional | 89 female prisoners (*M* = 31.8, *SD* = 9.37) | CAI | Anger<br><br>Shame | STAXI<br><br>ESS | Four items from the IBS | Baron and Kenny (1986) approach | Bodily shame was the only variable that significantly contributed to self-harm (OR = 1.62). It was also significantly related to childhood sexual abuse. Childhood sexual abuse and bodily shame both made significant independent contributions to self-harm (OR = 5.2 for childhood sexual abuse and OR = 1.4 for bodily shame), indicating that bodily shame |

| Author(s), Year, Country | Study design | Sample | Measure of childhood adversity | Mediator(s) | Measure of mediator(s) | Measure of self-harm | Analytical approach | Main findings |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | partially mediated the relationship between childhood sexual abuse and self-harm. |
| Nilsson et al., 2022, Sweden | Cross-sectional | 94 females: 34 with psychiatric disorders and self-harm (*M* = 24.2), 31 with psychiatric disorders and no self-harm (*M* = 29.2), 29 healthy controls (*M* = 23.1) | CTQ | Negative self-concept | FSCRS | ISAS | Mediation using Hayes (2012) approach. | Childhood emotional abuse had a significant direct effect on self-harm with a logs odd coefficient of 0.157 ($p$ = 0.01). There was an indirect significant mediation effect of self-hatred on the relationship between childhood emotional abuse and self-harm (95% CI = 0.058 – 0.217). However, after controlling for depression, this mediation effect was no longer significant. |
| Power, 2011, Canada | Cross-sectional | 51 female offenders with a history of self-harm (*M* = 35.7, *SD* = 10.7) | Sexual abuse subscale from the CTQ | Depression, PTSD, borderline personality disorder | SCID | OSIBI | Path analysis | Childhood sexual abuse had a significant effect on depression, PTSD, and BPD. Depression and BPD had a significant effect on self-harm. A significant effect was not observed between PTSD and self-harm. |
| Wachter et al., 2009, UK | Cross-sectional | 58 psychiatric outpatients, 42 females, 16 males (*M* = 37.05, *SD* = 9.97) | CTQ | Dissociation | DES | DSHI | Logistic regression | Childhood maltreatment emerged as a significant predictor of self-harm (B = 0.05, $p < 0.05$), however, dissociation did not (B = 0.01). Further logistic regressions using the five subscales of the CTQ and DES score, indicated that only physical abuse emerged as a significant predictor of self-harm (B = 0.20, $p < 0.05$). |

| Author(s), Year, Country | Study design | Sample | Measure of childhood adversity | Mediator(s) | Measure of mediator(s) | Measure of self-harm | Analytical approach | Main findings |
|---|---|---|---|---|---|---|---|---|
| Yang et al., 2022, South Korea | Cross-sectional | 191 outpatients: 56 with bipolar I disorder, 104 with bipolar II disorder, 31 with major depressive disorder, 124 females, 67 males (*M* = 30.3, *SD* = 9.6) | CTQ | Emotion dysregulation | DERS | ISAS | Structural equation modelling using Markov Chain Monte Carlo with bootstrapping | Childhood trauma predicted increased levels of self-harm. Childhood trauma was related to emotion dysregulation, which in turn, had a significant effect on self-harm. Mediation analysis revealed that emotion dysregulation mediated the relationship between childhood trauma and self-harm (standardized indirect effect coefficient = 0.1086, 95% CI: 0.0332–0.1919; standardized total effect coefficient = 0.4372, 95% CI: 0.2857–0.5742). |

BPD = Borderline Personality Disorder; *M* = Mean; *SD* = Standard Deviation, CTQ = Childhood Trauma Questionnaire; VCQ = Volitional Components Questionnaire; SHI = Self-Harm Inventory; CTQ-SF = Childhood Trauma Questionnaire – Short Form; PCL = Posttraumatic Stress Disorder Checklist; EMA = Ecological Momentary Assessment; SITBI = Self-Injurious Thoughts and Behaviours Interview; DIB-R = Diagnostic Interview for Borderlines – Revised; SIDES = Structured Interview for Disorders of Extreme Stress; SHBQ = Self-Harm Behaviour Questionnaire; FDS-20 = Fragebogen für Dissoziative Symptome; PDS = Posttraumatic Stress Diagnostic Scale; BDI = Beck Depression Inventory; MAES = Maltreatment and Abuse Exposure Scale; CoSS = Compass of Shame Scale; SCS = Self Compassion Scale; ACEs = Adverse Childhood Experiences; CTI = Child Trauma Interview; DAPP-BQ = Dimensional Assessment of Personality Pathology-Basic Questionnaire; ISAS = Inventory of Statements About Self-Injury; PTSD = Posttraumatic Stress Disorder; DERS = Difficulties in Emotion Regulation Scale; DES = Dissociative Experiences Scale; TAI = Traumatic Antecedents Interview; RSES = Rosenberg Self-Esteem Scale; CAI = Childhood Abuse Interview; STAXI = State-Trait Anger Expression Inventory; ESS = Experience of Shame Scale; IBS = Impulsive Behaviour Scale; FSCRS = Forms of Self-Criticizing/Attacking and Self-Reassuring Scale; SCID = Structured Clinical Interview for DSM Disorders; OSIBI = Offender Self-Injurious Behaviour Inventory; DSHI = Deliberate Self-Harm Inventory.

### 3.3. Quality Assessment

In line with previous systematic reviews investigating mediation effects (Li et al., 2020; Williams et al., 2018), studies were assessed using the EPHPP (Thomas, 2003) according to the following domains: selection bias, study design, confounders, data collection methods, withdrawals and dropouts, and analytical approach (see Table 2.4).

#### *3.3.1. Selection Bias*

The selection bias domain of the EPHPP examines how likely the sample is to represent the target population. Six studies were rated as 'weak'; four due to the sampling methods employed and participants self-referring (Gladstone et al., 2004; Gordon et al., 2016); one due to less than 60% of participants agreeing to take part (Brick et al., 2021); one due to the sampling method not being detailed sufficiently (Dodd et al., 2022). The remaining eleven studies were rated as 'moderate'. In these instances, participants were referred from a source and had a participant uptake of over 60%, or participation rates were not described.

#### *3.3.2. Study Design*

Two studies adopted an EMA design and were rated as 'moderate' for study design (Brick et al., 2021; Dodd et al., 2022). The remaining 15 studies adopted a cross-sectional design and were therefore rated as 'weak'.

#### *3.3.3. Confounders*

The confounders section of the EPHPP considers whether there are important differences between groups and the degree to which these are controlled for. Data for 13 of the included studies came from one population and were analysed in its entirety; these studies were rated as 'moderate' in relevance. Two studies assessed whether there was a difference between groups for age and various sociodemographic variables; no significant differences were found, thus, these studies were rated as 'strong' (Franzke et al., 2015; Yang et al., 2022). Another study was rated as 'strong' after no significant difference was found for age across

groups (Low et al., 2000). One study found significant differences for age and borderline personality disorder (BPD) across groups; neither were controlled for in the analysis (Nilsson et al., 2022), thus, this study was rated as 'weak'.

### *3.3.4. Data Collection Methods*

For the measure of childhood adversity, 15 studies were rated as 'strong' due to the measure used being reliable and valid. Two studies were rated as 'weak' (Gladstone et al., 2004; Milligan & Andrews, 2005) due to the reliability and validity of the measure used not being reported. For the measure of self-harm, eleven studies were rated as 'strong'. Six studies were rated as 'weak' due to the use of inappropriate measures or a lack of information about their reliability and validity. For mediating variables, two studies obtained a 'weak' rating due to the validity and reliability of the measure used not being reported (Brick et al., 2021; Gladstone et al., 2004). The remaining 15 studies were rated as 'strong'.

### *3.3.5. Withdrawals and Dropouts*

The withdrawals and dropouts domain was not relevant for 15 out of the 17 included studies due to the data only being collected at one-time point; these were therefore rated as 'moderate' in relevance. One study had a completion rate of 80-100% (Dodd et al., 2022) and was therefore rated as 'strong'. One study was rated as 'weak' due to a completion rate of less than 60% (Brick et al., 2021). Reasons for withdrawal were not reported in either study.

### *3.3.6. Analytical Approach*

The analytical approach used to detect mediation effects was also considered. Seven studies were assessed as 'weak' due to their use of regression methods and mediation being inferred as opposed to statistically observed via indirect effects. Two studies were rated as 'moderate'; these studies utilised regression models with additional statistical analysis to identify indirect effects. Eight studies were rated as 'strong' due to their method of analysis allowing for estimations of direct and indirect effects.

**Table 2.4**

*Quality Assessment of Studies (Thomas, 2003)*

| Author(s), Year | Selection bias | Study design | Confounders | Data collection methods | | | Withdrawals and dropouts | Analytical approach |
|---|---|---|---|---|---|---|---|---|
| | | | | IV | M | DV | | |
| Blasczyk-Schiep et al., 2018 | M | W | M | S | S | S | M | S |
| Bornovalova et al., 2011 | M | W | M | S | S | S | M | M |
| Brick et al., 2021 | W | M | M | S | W | S | W | W |
| Dodd et al., 2022 | W | M | M | S | S | W | S | M |
| Dyer et al., 2013 | M | W | M | S | S | S | M | W |
| Franzke et al., 2015 | M | W | S | S | Dissociation = S<br>Posttraumatic = S<br>Depressive = S | W | M | S |
| Garbutt et al., 2023b | M | W | M | S | S | S | M | S |
| Gladstone et al., 2004 | W | W | M | W | W | W | M | W |
| Gordon et al., 2016 | W | W | M | S | Affect intensity = S<br>Emotion dysregulation = S | S | M | S |
| Gu et al., 2023 | M | W | M | S | S | S | M | S |
| Howard et al., 2017 | M | W | M | S | PTSD symptoms = S<br>Emotion dysregulation = S<br>Dissociation = S | S | M | S |
| Low et al., 2000 | M | W | S | S | Self-esteem = S<br>Dissociation = S | W | M | W |
| Milligan & Andrews, 2005 | W | W | M | W | Anger = S<br>Shame = S | W | W | W |
| Nilsson et al., 2022 | M | W | W | S | S | S | M | S |
| Power, 2011 | W | W | M | S | S | W | M | W |
| Wachter et al., 2009 | M | W | M | S | S | S | M | W |
| Yang et al., 2022 | M | W | S | S | S | S | M | S |

### 3.4. Synthesis of the Mediators of the Childhood Adversity-Self-Harm Relationship

To synthesise findings, studies were organised according to the mediating variable(s) investigated; these were then grouped according to one of the following domains: affective disturbance and dysregulation, post-traumatic sequelae, and other variables.

#### *3.4.1. Affective Disturbance and Dysregulation*

Seven studies investigated mediating variables that align with an emotion-regulatory pathway from childhood adversity to self-harm.

**Emotion Dysregulation.** Three studies examined the mediating role of emotion dysregulation; two of which used the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) and one of which used the emotion dysregulation subscale of the Dimensional Assessment of Personality Pathology-Basic Questionnaire (DAPP-BQ; Livesley & Jackson, 2009). Emotion dysregulation mediated the relationship between childhood trauma and self-harm in female prisoners (Howard et al., 2017) and individuals with a mood disorder (Yang et al., 2022). In a sample of 125 females with bulimia nervosa, emotion dysregulation mediated the relationships between childhood emotional and sexual abuse, and self-harm. However, a significant indirect effect of emotion dysregulation was not observed between childhood physical abuse and self-harm (Gordon et al., 2016). In one study of individuals with bulimia nervosa, impulsive behaviours, a component of emotion dysregulation, did not have a significant effect on self-harm (Dodd et al., 2022).

**Affect.** Five studies investigated constructs related to positive or negative affect. Two studies investigated whether positive affect mediated the relationship between childhood maltreatment and self-harm; one study found that state orientation, which is characterised by low positive affect, partially mediated the relationship between childhood emotional neglect and self-harm, albeit this indirect effect was only observed in the presence of demand-related stress (Blasczyk-Schiep et al., 2018). The other study failed to find a significant indirect effect

of positive affect on the relationships between childhood physical and emotional abuse, and self-harm (Brick et al., 2021). Three studies examined the mediating role of negative affect; one study confirmed a mediating role of negative affect on the relationship between childhood physical abuse and self-harm among psychiatric outpatients (Brick et al., 2021); in the remaining two studies, mediation effects were not observed for this construct in females with bulimia nervosa (Dodd et al., 2022; Gordon et al., 2016). The one study that investigated the mediating role of anger did not find this variable to have a significant effect on self-harm (Milligan & Andrews, 2005).

### *3.4.2. Posttraumatic Sequelae*

Six studies investigated trauma-related psychological mechanisms that are thought to arise due to childhood trauma and adversity.

**PTSD Symptoms.** Four studies investigated whether PTSD symptoms mediated the relationship between childhood trauma and self-harm. Three of the four studies utilised valid albeit different measures of PTSD symptoms; two studies used differing versions of the PTSD Checklist; the original version (PCL; Weathers et al., 1993) which is based on the diagnostic criteria for PTSD according to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM–IV), and a revised version (PCL-5; Weathers et al., 2013) based on the diagnostic criteria of PTSD according to the DSM-V. In one study investigating childhood sexual, physical, and emotional abuse, only childhood sexual abuse was found to have a significant effect on self-harm; PTSD symptoms partially mediated this relationship (Bornovalova et al., 2011). A significant mediating effect of PTSD symptoms was not observed in the remaining three studies, two of which were conducted with female prisoners (Howard et al., 2017; Power, 2011) and one of which was conducted with female inpatients (Franzke et al., 2015). One study, however, found that the ‘alterations in arousal and reactivity’ subscale of the PCL-5 (Weathers et al., 2013) significantly mediated the association between childhood trauma and self-harm (Howard et al., 2017).

**Dissociation.** Four studies investigated dissociation (specifically) as a mediating variable; all of which used versions of the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) to measure dissociative symptoms. A mediating effect of dissociation on the relationship between childhood sexual abuse and self-harm was inferred in one study of female forensic inpatients (Low et al., 2000), albeit the analytical approach in this study was deemed 'weak' due to it not observing indirect effects. Nonetheless, using a more robust methodology, dissociation mediated the relationship between childhood trauma and self-harm in a sample of female inpatients (Franzke et al., 2015). Conversely, a pathway from childhood trauma to self-harm via dissociation was not observed among female prisoners (Howard et al., 2017) and a mixed-gender sample of psychiatric outpatients (Wachter et al., 2009).

### *3.4.3. Other Variables*

Ten studies examined the role of childhood adversity in increasing the risk of self-harm via cognitive and personality variables.

**Cognitive processes.** Eight studies focused specifically on cognitive processes and the formation of negative thoughts and beliefs about the self. Three studies investigated the construct of shame; the dimensions of shame assessed, and the tools used to measure these, varied across studies. One study examined the shame-related construct of 'alterations in self-perception'. In this study, physical neglect was significantly associated with alterations in self-perception and self-harm, and alterations in self-perception were significantly associated with self-harm. Findings further indicated an indirect pathway from physical neglect to self-harm via alternations in self-perception (Dyer et al., 2013). Another study looked at three domains of shame: characterological, behavioural, and bodily shame, in a sample of female prisoners (Milligan & Andrews, 2005). The results found that bodily shame partially mediated the relationship between childhood sexual abuse and self-harm. Mediation effects were not observed for the other two dimensions of shame. Partial mediation was also evident in a sample of sex offenders for two dimensions of shame: shame-attack-self and shame-attack-

other, when entered into the mediation model alongside self-compassion (Garbutt et al., 2023b). Other variables examined were atypical cognitions, self-hatred, low self-esteem, and depression. Atypical cognitions mediated the relationship between childhood trauma and self-harm in females with bulimia nervosa (Dodd et al., 2022). A significant indirect effect of self-hatred on the relationship between childhood emotional abuse and self-harm was also observed; albeit this was no longer significant after controlling for depression (Nilsson et al., 2022). Low self-esteem also contributed to the relationship between childhood sexual abuse and self-esteem among female forensic inpatients, however, this was weak (Low et al., 2000). Two studies investigated the role of depressive symptoms in the pathway from childhood adversity to self-harm. One study found that childhood sexual abuse had a significant effect on depression and that depression, in turn, had a significant effect on self-harm among female offenders (Power, 2011). This study, however, relied solely on path analysis and was therefore rated as 'weak' for analytical approach. Conversely, using bias-corrected bootstrapping, a mediating effect of depressive symptoms was not observed for the relationship between childhood trauma and self-harm in female inpatients (Franzke et al., 2015).

**Personality.** Three studies considered personality factors when testing for mediation effects. One study (Gladstone et al., 2004), used psychiatrist-rated measures of personality to determine the degree to which a participant's personality style was 'disordered' according to eight behavioural parameters and five relationship domains (Millon, 1986). The results indicated that higher personality dysfunction mediated the relationship between childhood physical abuse and self-harm; a similar mediation effect for the relationship between childhood sexual abuse and self-harm, however, was not observed (Gladstone et al., 2004). A mediating effect of BPD was also assumed in a sample of female prisoners (Power, 2011); however, this study was restricted by its analytical approach. Using robust mediation analysis, one study found that psychopathy mediated the relationship between childhood trauma and self-harm among male prisoners, albeit this was a partial mediation (Gu et al., 2023).

**Interpersonal Style.** One study investigated the mediating effect of interpersonal difficulties on the relationship between childhood trauma and self-harm. Whilst there was a significant direct effect of childhood trauma on interpersonal problems, interpersonal problems did not have a direct effect on self-harm, indicating that this construct did not play a mediating role in the relationship between childhood trauma and self-harm (Dodd et al., 2022).

## 4. DISCUSSION

### 4.1. Summary of Findings

This review aimed to identify psychological mechanisms that mediate the relationship between childhood adversity and self-harm in clinical and forensic adult samples. In addition, it assessed the quality of this evidence. The findings provide preliminary support for an emotion-regulatory pathway from childhood adversity to self-harm among these populations. Several studies indicated that emotion dysregulation mediates the relationship between childhood trauma and self-harm (Howard et al., 2017; Gordon et al., 2016; Yang et al., 2022), aligning with previous research conducted with non-clinical samples of adolescents (Peh et al., 2017; Titelius et al., 2018) and adults (Erol & Inozu, 2003). There was no significant mediation effect for impulsive behaviours in the one study that examined this construct of emotion dysregulation (Dodd et al., 2022). This contrasts with a previous study whereby negative urgency, which is acting rashly when distressed, mediated the relationship between childhood maltreatment and self-harm in college students (Arens, 2014). The mediating role of negative affect was less substantiated in this review. Specifically, the two studies investigating the mediating role of negative affect on the relationship between childhood trauma and self-harm produced null findings (Dodd et al., 2022; Gordon et al., 2016). These studies, however, were conducted with individuals with bulimia nervosa. Behaviours associated with bulimia nervosa such as purging, often meet an emotion regulation function; thus, it is possible that individuals with bulimia nervosa who do not self-harm are just as likely as those who do self-harm to experience affect dysregulation, but that bulimia-related behaviours serve this function.

Studies investigating psychological mechanisms classified as 'posttraumatic sequelae' were mixed. One study indicated that PTSD symptoms played a mediating role in the relationship between childhood trauma and self-harm (Bornovalova et al., 2011), aligning with previous research conducted with adolescents (Shenk et al., 2010; Weierich & Nock, 2008). Moreover, 'alterations in arousal and reactivity', when investigated individually, also demonstrated a mediating effect on this relationship (Howard et al., 2017), supporting a reactive pathway from childhood adversity to self-harm (Yates, 2009). Other studies in this review, however, failed to find a mediating effect of PTSD symptoms on this relationship (Franzke et al., 2015; Howard et al., 2017; Power, 2011). This could be explained by the differences in criteria used to assess PTSD symptoms. For example, in the study conducted by Bornovalova et al. (2011), PTSD symptoms were assessed according to the DSM-IV, whereas in the study conducted by Howard et al. (2017), they were assessed according to the DSM-V, which includes three additional symptoms of PTSD and no longer considers one of the symptoms identified in the DSM-IV. Half of the studies included provided support for a mediating effect of dissociation on the relationship between childhood trauma and self-harm (Franzke et al., 2015; Low et al., 2000). These findings are consistent with previous research (Rossi et al., 2019; Swannell et al., 2012) and suggest that self-harm may possess an anti-dissociation function.

The findings broadly support some contribution from personality-related cognitive factors to the childhood adversity-self-harm relationship. These include cognitive processes that are largely engrained as part of personality. Specifically, there was evidence to suggest that alterations in self-perception (Dyer et al., 2013), shame-related variables (Garbutt et al., 2023b; Milligan & Andrews, 2005), atypical cognitions (Dodd et al., 2022), self-hatred (Nilsson et al., 2022), and low self-esteem (Low et al., 2000) mediated the relationship between differing aspects of childhood adversity and self-harm. These findings correspond with previous studies investigating the mediating role of self-disgust, (Erol & Inozi, 2023), shame (Garbutt et al., 2023a), and self-blame (Swannell et al., 2012) in non-clinical adult samples.

They further support the idea that childhood adversity contributes to self-harm via unhelpful cognitive processes. The two studies that investigated depression as a mediating variable produced conflicting results (Franzke et al., 2015; Power, 2011); a discrepancy that could have been due to variations in the analytical approach used to infer mediation. The absence of a mediating effect of depression between childhood trauma and self-harm in one study (Franzke et al., 2015), contrasts with previous research conducted with adolescent inpatients (Hu et al., 2023), indicating that age may play a role. It should be noted that depression is a clinical syndrome, linked to cognitive distortions, rather than a psychological mechanism itself. A mediating effect of personality dysfunction (rated according to eight behavioural parameters and five relationship domains; Millon, 1986) on the relationship between childhood trauma and self-harm was also supported (Gladstone et al., 2004), aligning with a previous study conducted with a non-clinical sample of adults (Ernst et al., 2022). Mediation effects were also observed for BPD (Power, 2011) and psychopathy (Gu et al., 2023). Despite previous research indicating that impairments in interpersonal effectiveness may play a role in the childhood adversity-self-harm relationship (Ernst et al., 2022), this was not supported in the current review (Dodd et al., 2022).

### 4.2. Strengths and Limitations

This review was the first to systematically investigate the psychological mechanisms that mediate the relationship between childhood adversity and self-harm, thus, addressing a pertinent question with important implications. The literature search was systematic and comprehensive, utilising a range of relevant databases. Conducting a manual search of the reference lists of included records further enhanced the robustness of the methodology. In addition, the quality assessment considered the analytical approach employed to test mediation effects.

Nonetheless, the review has some limitations regarding the studies included. Whilst two studies adopted an EMA design, fifteen were cross-sectional. Mediation is a longitudinal

process; thus, results should be deemed preliminary and interpreted with caution. Whilst two-thirds of the total participants were male, this was largely accounted for by one study which consisted of 1,042 male prisoners. Having examined studies on an individual level, there was in fact an over-representation of female samples which may impact the generalisability of findings. There was also great diversity in the mediating variables examined and the samples in which these were investigated, limiting the replicability of findings. Furthermore, many of the included studies did not distinguish between different types of childhood trauma, instead using a total score from the CTQ (Bernstein & Fink, 1998); this restricted the conclusions that could be drawn regarding subtypes of childhood abuse. In addition, it is possible that in the absence of separate analyses for individual subscales of the CTQ, specific effects for certain types of childhood trauma went undetected. There was also notable variation in the measures used to assess self-harm across studies, highlighting the ongoing difficulties around the measurement of self-harm which have previously been identified (Fliege et al., 2009). Moreover, all studies relied on the retrospective recall of childhood adversity which is prone to memory bias.

Limitations around the approach adopted within this review must also be noted. For instance, whilst efforts were made to ensure that the analytic approach used to detect mediation effects was considered in the quality assessment, the EPHPP (Thomas, 2003) was not originally developed for mediation studies and currently no such quality assessment tool exists (Vo et al., 2022b). The author was aware of A Guideline for Reporting Mediation Analyses (AGReMA) Long-Form Checklist (Lee et al., 2021); a 25-item scale which aims to enhance accuracy and consistency when reporting mediation analyses. However, the AGReMA was not developed to assess the risk of bias (Vo et al., 2022a). Using an adapted version of the EPHPP (Thomas, 2003) was therefore thought superior to assess the quality of the included studies. Additionally, whilst the current review did not exclude grey literature, thus maximising the likelihood of relevant studies being identified, the search terms used may have limited findings due to the inclusion of search terms to detect studies investigating mediation

effects. Due to the heterogeneity of mediating variables, it was also not possible to statistically combine and critically evaluate the results of included studies through a meta-analysis.

### 4.3. Implications

The current review has several implications for clinical practice. Firstly, professionals working with clinical and forensic adult populations who engage in self-harm may wish to consider using standardised tools to measure emotion dysregulation. In line with NICE guidelines, which highlight the importance of formulation in the risk assessment of self-harm, this would allow for a more robust assessment of a construct that may precipitate and perpetuate self-harm. Moreover, emotion dysregulation should be considered when making recommendations about psychological intervention. For instance, developing skills in the identification and labelling of emotions would be of benefit, as would enhancing understanding of the functions of emotions. Learning how to reduce negative emotions, increase positive emotions, and implement adaptive coping strategies would also be advantageous. Several psychological interventions have been developed to target emotion dysregulation, one of the most well-known being dialectical behaviour therapy (DBT; Linehan, 1993). Whilst some studies have found DBT to be effective in improving emotion regulation (Gratz et al., 2015; Neacsiu et al., 2014; Rozakou-Soumalia et al., 2021), its superiority over existing psychological interventions has been questioned (Harvey et al., 2019). Poorer outcomes following DBT skills interventions have also been observed (Harvey et al., 2023; Simon et al., 2022). Alternative interventions that have been developed to target emotion dysregulation include emotion regulation group therapy (Gratz & Gunderson, 2006; Gratz et al., 2014), emotion regulation skills training (Berking et al., 2008), emotion-focused therapy (Pos & Paolone, 2019), and emotion regulation therapy (ERT; Mennin, 2006). Existing therapies such as schema therapy (Stoffers et al., 2012; Zanarini, 2009), acceptance and commitment therapy (Morton et al., 2012), and cognitive behaviour therapy (Forkmann et al., 2014) have also been found to enhance emotion regulation; the latter of which is recommended in the treatment of self-harm (National Institute for Health and Care Excellence, 2022). It may also

be of benefit to consider the role of personality-related cognitive factors when treating self-harm. Specifically, self-harmers who experience self-hatred may not feel deserving of enhanced mental well-being. Moreover, factors such as low self-esteem and shame could reduce self-efficacy and willingness to engage in psychological intervention targeting emotion dysregulation. Adopting a compassion-focused approach in such instances may therefore be of benefit.

### 4.4. Conclusion and Recommendations

Findings indicate preliminary support for an emotion-regulatory pathway from childhood adversity to self-harm in clinical and forensic adult samples. The potential influence of personality-related cognitive factors is also highlighted. Consideration of these variables in the assessment and treatment of self-harm among these populations is therefore warranted. Nonetheless, due to the methodological limitations of the included studies and the heterogeneity of mediating variables examined, further research is needed to substantiate findings, particularly studies adopting a longitudinal design. In addition, the aetiology and maintenance of self-harm is multi-factorial. More complex modelling integrating biological, psychological, and social factors, would therefore provide a more nuanced understanding of the childhood adversity-self-harm relationship. Future reviews would also benefit from investigating both the mediating and moderating effects of identified variables, as well as protective factors that buffer the negative impacts of childhood adversity, thus contributing to preventative interventions. Lastly, mediation studies are prone to specific biases such as temporal order bias (VanderWeele, 2016); the development of a quality assessment tool for mediation analysis would allow for a more robust assessment of the risk of bias in studies investigating mediation effects.

# Chapter Three

## EMPIRICAL STUDY

***'Adverse Childhood Experiences, Self-Harm, and Aggression Amongst Forensic Inpatients: The Role of Emotion Dysregulation'***

## Abstract

Associations between adverse childhood experiences (ACEs), and self-harm and aggression, are well established in the literature. However, to date, research has primarily investigated distinct types of childhood abuse and neglect, dismissing other forms of childhood adversity and their cumulative effect. Moreover, research investigating these associations among forensic inpatients is limited. There is also converging evidence to suggest that emotion dysregulation explains these relationships; a mediation model that is yet to be tested in this understudied population. Research in this area is crucial given the prevalence and implications of self-harm and aggression in forensic mental health settings. This study aimed to assess the impact of multiple ACEs on self-harm and aggression amongst forensic inpatients, and the mediating role of emotion dysregulation. The study was cross-sectional in design and participants ($N$ = 72) were recruited from low- and medium-secure services in the United Kingdom. Participants completed four questionnaires: the Adverse Childhood Experiences Questionnaire (ACE-Q); the Difficulties in Emotion Regulation Scale (DERS); the Self-Harm Inventory (SHI) and the Buss-Perry Aggression Questionnaire (BPAQ). Correlation and mediation analyses were conducted to determine relationships between variables and the mediating role of emotion dysregulation. Significant positive associations were observed between cumulative ACE score and self-harm ($r$ = .570, $p$ <.001) and cumulative ACE score and aggression ($r$ = .701, $p$ <.001). Emotion dysregulation partially mediated the relationships between ACEs and self-harm ($B$ = 0.388, 95% CI = 0.211 – 0.715) and ACEs and aggression ($B$ = 3.735, 95% CI = 2.422 – 5.141), whilst controlling for age and sex. These findings support an emotion-regulatory pathway from ACEs to self-harm and aggression, whereby ACEs result in deficits in emotion regulation, and emotion regulation serves as a contributory factor to self-harm and aggression. Targeting emotion dysregulation may be of benefit in preventing and treating these harmful behaviours within forensic mental health settings.

# 1. INTRODUCTION

## 1.1. Self-Harm and Aggression - Forensic Mental Health Settings

Self-harm among forensic psychiatric patients is common with rates exceeding those observed among the general public and clinical psychiatric inpatients (Galappathie et al., 2017; James et al., 2012; Klonsky et al., 2003; McManus et al., 2019). Specifically, prevalence rates of self-harm among forensic inpatients have been found to range from 54.5% in adulthood (Holden et al., 2022) to 68.4% across the lifespan (Laporte et al., 2021a), compared to a rate of 6.4% which has been observed among adults in the general population (McManus et al., 2019). The perpetration of aggression is also problematic within forensic mental health settings (Klein Tuente et al., 2020), where rates of aggressive incidents are notably higher than those observed in general psychiatric settings (Bowers et al., 2011; Dickens et al., 2013). Prevalence studies have also indicated that over two-thirds of forensic inpatients engage in physical aggression throughout their admission (Broderick et al., 2015; Verstegen et al., 2017). The adverse consequences of self-harm and aggression in mental health settings are manifold (Beech & Leather, 2006; Bowers et al., 2011; O'Hara et al., 2022; Renwick et al., 2016; Uppal & McMurran, 2009), placing a significant financial burden on service providers (Hankin et al., 2011; Sinclair et al., 2011).

Self-harm, a behaviour directed towards the self, and aggression, a behaviour directed towards others, have largely been considered as distinct constructs due to their opposing targets. However, the empirical literature supports an overlap between the perpetration of self-harming and aggressive behaviours, characterised by similar risk and protective factors; a co-occurrence termed 'dual harm' (Slade, 2019). In a systematic review of 23 studies, approximately one-fifth of those who had self-harmed had also engaged in aggression in the majority of studies (O'Donnell et al., 2015). The prevalence of dual harm is especially high among forensic populations. For instance, in a sample of 326 male prisoners, 42% of those who had engaged in physical violence had also engaged in self-harm (Slade, 2018); findings that have been replicated in a sample of female prisoners (Kottler et al., 2018).

### 1.2. Adverse Childhood Experiences, Self-Harm, and Aggression

High levels of childhood adversity are routinely observed amongst forensic inpatients, surpassing rates observed in community samples (Beck et al., 2017; Bruce & Laporte, 2014; Dudeck et al., 2016; Karatzias et al., 2019; Laporte et al., 2023; McKenna et al., 2019; Stinson et al., 2016). For instance, in a sample of 381 forensic inpatients, three-quarters had been exposed to one adverse childhood experience (ACE), nearly half had experienced two or more ACEs, and approximately twenty per cent had experienced four or more ACEs (Stinson et al., 2016). In a recent study of 98 forensic inpatients, over two-thirds were found to have experienced between three and five ACEs (Laporte et al., 2023). The negative impact of ACEs on health-harming behaviours has been well documented in the literature. For instance, ACEs have been linked to various negative outcomes, including substance misuse (Leza et al., 2021; Schwartz et al., 2022), depression (Sahle et al., 2022), personality disorder (Crișan et al., 2023), and psychosis and anxiety (Sahle et al., 2022). Relationships between ACEs and physical health issues have also been well supported (Felitti et al., 1998; Holman et al., 2016; Hughes et al., 2017; Kalmakis & Chandler, 2014; Petrucelli et al., 2019).

In particular, exposure to childhood adversity has been associated with self-harm. A systematic review of 20 studies identified childhood maltreatment as a salient risk factor for self-harm (Serafini et al., 2017); results that corroborate findings from an earlier systematic review (Fliege et al., 2009). In a major study with a sample of 11,423 adults residing in the community, ACEs were positively correlated with self-harm (Swannell et al., 2012). Similar findings have been evidenced amongst forensic populations. For instance, in a sample of 337 offenders managed in the community, childhood trauma had a strong effect (OR = 2.34, $p<0.05$) on self-harm (Gunter et al., 2011). Significantly higher levels of physical, sexual, and emotional abuse were also observed in self-harmers compared to non-self-harmers in a sample of 256 female prisoners (Roe-Sepowitz, 2007). In a smaller sample of 89 female prisoners, emotional, physical, and sexual abuse, and emotional and physical neglect were

more prevalent in participants with a history of self-harm; albeit significant differences were limited to emotional and sexual abuse (Howard et al., 2017).

Associations between ACEs and aggression have also been identified in the empirical literature. A systematic review and meta-analysis of 18 studies found that the risk of engaging in physical aggression was nearly two-fold for individuals who had been exposed to childhood abuse (Fitton et al., 2020). In a sample of 187 adults with first-episode psychosis, participants who reported a history of childhood trauma were twice as likely to report a history of aggression; a finding that remained significant after demographics were controlled for (Grattan et al., 2019). Additionally, investigating the factors that predict aggression in adults with psychosis, one study found childhood abuse to be the strongest predictor of physical (OR = 1.02, $p<0.05$) and verbal (OR = 1.04, $p<0.05$) aggression (Spidel et al., 2010). Similar findings have been demonstrated among forensic populations. For example, in a large sample of 540 male prisoners, there was a significant moderate positive association ($r = 0.47$, $p<0.001$) between childhood trauma and lifetime history of aggression (Sarchiapone et al., 2009). In one study of 57 male forensic inpatients, reactive and appetitive aggression scores were significantly higher among participants who reported childhood abuse compared to those who did not (Dambacher et al., 2022). Higher levels of childhood abuse have also been observed among female forensic inpatients who displayed higher levels of aggression, albeit results did not reach statistical significance (Beck et al., 2017).

One limitation of existing research, however, has been the predominant use of measures which solely assess childhood abuse and neglect; thus, other forms of childhood adversity that have been associated with self-harm and aggression have been largely neglected. For instance, a systematic review of 59 studies identified parental mental illness and parental separation as independent correlates of self-harm (Fliege et al., 2009). In addition, an umbrella review of 22 meta-analyses identified witnessing domestic violence as the most influential historical risk factor for aggression (Fazel et al., 2018). Moreover, less

consideration has been given to the cumulative effect of polyvictimisation; that is, exposure to multiple forms of victimisation (Finkelhor et al., 2007).

Preliminary studies employing ACE survey methodology have provided growing support for a dose-response effect of ACEs on self-harm. For example, in a non-clinical sample of 1,299 adolescents, the odds of self-harm increased by 88% for each additional ACE (Bunting et al., 2023). Increased odds of self-harm have also been observed among adolescent inpatients (OR = 1.2, $p<0.05$); however, these findings were restricted to females (Isohookana et al., 2013). In a sample of 189 adults admitted to hospital for self-harm, participants who had experienced four or more ACEs were 2.4 times more likely to have engaged in repeated self-harm (Cleare et al., 2018). Furthermore, in a sample of 468 male prisoners, participants who had experienced four or more ACEs were over ten times more likely to have a lifetime history of self-harm (Ford et al., 2020). Similar findings have been demonstrated for a dose-response effect of ACEs on aggression. In one sample of 1,284 adolescents, the likelihood of physical aggression increased by 40% for each additional ACE (Blum et al., 2019). Comparably, in a study of 2,013 adults, higher ACE scores were positively related to a history of physical aggression (King, 2021). In a smaller sample of 36 female offenders, participants exposed to 4-5 ACEs were nearly three times more likely to have been arrested for an offence involving physical aggression compared to those exposed to 0-2 ACEs (De Ravello et al., 2008). A significant moderate positive correlation has also been observed between cumulative ACE score and aggression in female juvenile offenders (Matsuura et al., 2009).

A more limited evidence base has used ACE survey methodologies to explore the dose-response effect of ACEs on self-harm and aggression among forensic inpatients. In one study of 381 forensic inpatients, the odds of engaging in self-harm increased by approximately one-fifth for each independent increment in ACE score (Stinson et al., 2016). In a smaller sample of female forensic inpatients ($N = 66$), the odds of engaging in self-harm increased by

two-thirds for each additional ACE (Holden et al., 2022). Similar findings (OR = 1.29, $p<0.05$) were produced for a mixed sample of 98 male and female forensic inpatients (Laporte et al., 2023). Conversely, in a sample of 182 forensic inpatients, cumulative ACE score did not act as a significant predictor of self-harm following the inclusion of secondary predictors such as demographic information, number of offspring, and psychiatric and offending history (Stinson et al., 2021a). Regarding aggression, one study demonstrated a significant positive linear relationship between cumulative ACE score and physical aggression in a sample of 52 male forensic inpatients (Fosse et al., 2021). Cumulative ACE score has also been found to predict the onset of aggression in a larger sample ($N$ = 182) of male and female forensic inpatients (Stinson et al., 2021b).

Despite this evidence, less is known about the mechanistic underpinnings of *how* ACEs contribute to self-harm and aggression. Not all individuals who experience ACEs go on to engage in self-harm or aggression. Many survivors of childhood adversity experience positive change following stressful events; a concept known as Post-Traumatic Growth (PTG; Meyerson et al., 2011). Several factors have been found to promote PTG including the expression of negative emotions (Dirik & Göcek-Yorulmaz, 2018; Ogińska-Bulik & Kobylarczyk, 2015), coping strategies (Prati & Pietrantoni, 2009; Sharon & Hamama, 2013), resilience (Kong et al., 2018), and personality traits such as conscientiousness (Owens, 2016), agreeableness, openness, and extroversion (Mattson et al., 2018). Other factors including social support (Saltzman et al., 2018) and optimism (Mattson et al., 2018) have also been linked to PTG. Exploring the pathways from ACEs to self-harm and aggression has important implications for the prevention and treatment of these harmful behaviours. One factor that has been identified as a mediating variable within these relationships is emotion dysregulation.

### 1.3. Emotion Dysregulation, ACEs, Self-Harm and Aggression

Emotion regulation is a multi-faceted construct involving the effective identification, acceptance, and management of emotions (Gratz & Roemer, 2004). In contrast, emotion

dysregulation pertains to deficits in these areas. Whilst the study of emotion regulation has advanced over recent years, difficulties arise when comparing studies due to a lack of definitional clarity (Zinbarg & Mineka, 2007). Research conducted with children revealed that those exposed to childhood adversity presented with greater emotion dysregulation (Maughan & Cicchetti, 2002; Shield & Cicchetti, 1998; Shields et al., 1994); particularly, difficulties in the recognition and conceptualisation of emotions (Camras et al., 2014) and deficits in adaptive emotion regulation strategies (Shipman et al., 2005). Associations between childhood trauma and emotion dysregulation have also been evidenced among clinical samples (Cloitre et al., 2019; Peh et al., 2017) and forensic inpatients (Billen et al., 2022); findings that have been corroborated by studies utilising the ACE survey methodology (Cameron et al., 2018; Zetino et al., 2020; Zhu et al., 2023).

The role of emotion regulation in self-harm has also been supported by research. For instance, in a meta-analysis of 46 studies, emotion regulation was identified as the primary function of self-harm (Taylor et al., 2018). Another meta-analysis of 48 studies found a significant association between emotion dysregulation and self-harm whilst controlling for age and sex (Wolff et al., 2019). In studies involving undergraduate students, emotion dysregulation accounted for a significant amount of the variance in the frequency of self-harm (Gratz & Roemer, 2008; Midkiff et al., 2018). Moreover, in a sample of 97 male undergraduates, those who engaged in self-harming behaviours reported significantly greater difficulties with emotion regulation compared to those who did not (Gratz & Chapman, 2007). In one study consisting of 284 adults, emotion dysregulation was associated with self-harm, albeit this was not significant after controlling for age and diagnosis (Christoforou & Ferreira, 2022). Research investigating the association between emotion regulation and self-harm in forensic populations is limited. One study of 89 female prisoners found that those who had self-harmed had significantly greater difficulties in emotion regulation compared to those who had not (Howard et al., 2017). Significantly higher levels of emotion dysregulation have also

been observed in forensic inpatients with a history of self-harm, compared to those without (Laporte et al., 2021b).

Research additionally supports a relationship between emotional dysregulation and aggression. For instance, a review of longitudinal studies supported this association in children (Röll et al., 2012). In one influential study, which followed 1,065 adolescents over seven months, difficulties with emotion regulation predicted aggressive behaviour (McLaughlin et al., 2011); findings that have been corroborated in a prospective study of 150 individuals with features of borderline personality disorder (BPD; Scott et al., 2014). Specifically, in Scott et al.'s (2014) study, significant positive relationships were observed between emotion dysregulation and psychological ($r = .42$, $p < 0.001$) and physical ($r = .26$, $p < 0.01$) aggression. Other longitudinal studies have confirmed this relationship, albeit sex has been identified as a mediating factor, with emotion dysregulation predicting aggression in girls but not boys (Bowie, 2010; Hill et al., 2006). Retrospective studies have provided further support for this relationship among female undergraduate students (Miles et al., 2015) and a large sample of adults ($N$ = 617), consisting of both community and clinical samples (Velotti et al., 2016). Similar findings have been observed among offenders (Garofalo et al., 2016). In one study of 221 male offenders, emotion dysregulation significantly explained the incremental variance in physical aggression, anger, and hostility: 17%, 18%, and 7%, respectively (Garofalo & Velotti, 2017). Moreover, in a sample of 64 offenders attending a community corrections office, those with greater difficulties in emotion regulation had higher levels of aggression, with results indicating a large effect size (Roberton et al., 2014).

### 1.4. Emotion Regulation as a Mediating Variable

Emerging research has provided preliminary support for a pathway from childhood adversity to self-harm and aggression *via* emotion regulation. In a large sample of 3,169 adolescents, emotion dysregulation mediated the relationship between child abuse and self-harm (Andersson et al., 2022). Significant indirect effects of emotion dysregulation on the

relationship between childhood maltreatment and self-harm have also been observed in undergraduate students (Erol & Inozu, 2023) and adolescent psychiatric patients (Peh et al., 2017; Titelius et al., 2018). Similar findings have been produced for clinical and forensic adult samples. For instance, in a sample of 191 outpatients with mood disorders, emotion dysregulation mediated the relationship between childhood trauma and self-harm (Yang et al., 2022); results that corroborate earlier studies conducted with eating-disordered females (Gordon et al., 2016) and female offenders (Howard et al., 2017). Conversely, in one study of 224 incarcerated females, emotion dysregulation did not have an indirect effect on the association between childhood sexual abuse and self-harm (Johnson & Lynch, 2013). Moreover, the mediating effect of emotion dysregulation on the relationship between childhood maltreatment and self-harm has not been observed in some studies after controlling for age and depressive symptoms (Peh et al., 2017; Shenk et al., 2010). Studies investigating specific constructs of emotion regulation such as alexithymia (Gaher et al., 2013; Paivio & McCulloch, 2004; Swannell et al., 2012), experiential avoidance (Wang et al., 2023), emotion expressivity (Thomassin et al., 2016), negative urgency (Arens et al., 2014), and negative affect (Brick et al., 2021) provide further support for an emotion-regulatory pathway from childhood adversity to self-harm.

Regarding aggression, one study of 2,169 undergraduate students found that childhood emotional abuse became a weaker predictor of physical aggression within intimate relationships after emotion dysregulation was entered into the mediation model (Berzenski & Yates, 2010). In another study, emotion dysregulation was found to explain the relationship between childhood trauma, and impulsive and pre-meditated aggression in 208 healthy females (Miles et al., 2015). The measure used to examine emotion dysregulation, however, assessed features of BPD and was not specific to emotion dysregulation. Nonetheless, the role of emotion dysregulation as a mediator between childhood emotional abuse and aggression has been supported in a sample of adult volunteers (Şenkal Ertürk et al., 2020), using a validated measure of emotion dysregulation. Despite not specifically investigating

emotion regulation, other studies have also found that deficits in adaptive coping strategies act as a mechanism by which childhood adversity leads to inter-partner physical aggression (Ponce et al., 2004; Snow et al., 2006).

Whilst research in this area remains in its infancy, findings to date provide provisional support for the mediating role of emotion dysregulation on the relationships between childhood adversity, and self-harm and aggression. However, to the author's knowledge, no studies have investigated an emotion-regulatory pathway from cumulative ACEs to self-harm and aggression. Furthermore, this mediation model is yet to be tested amongst forensic inpatients. Given the over-representation of ACEs, self-harm, and aggression in forensic mental health settings, developing a greater knowledge of these relationships among forensic inpatients is of utmost importance. Whilst ACEs cannot be undone, developing greater insight into the modifiable psychological factors that mediate these relationships will enable the identification of appropriate treatment pathways for forensic inpatients engaging in these harmful behaviours. This in turn could have desirable effects on recovery, re-admission, staff well-being, and the organisational running of forensic mental health settings.

### 1.5. The Present Study

The overarching aim of the current study was to explore the impact of cumulative ACEs on self-harm and aggression and the mediating role of emotion dysregulation amongst adult forensic inpatients. Given the parallels between indirect and direct forms of self-harm (D'Agostino et al., 2020) and the prevalence of indirect forms of self-harm among forensic inpatients (Van der Kraan et al., 2014), the current study broadly defined self-harm as any self-destructive behaviour that inflicts damage to oneself on purpose, irrespective of its underlying motivation. Aggression is conceptualised as "any behaviour directed towards another individual that is carried out with the proximate (immediate) intent to cause harm" (Anderson and Bushman, 2002, p. 28). The first objective was to explore the relationships between cumulative ACEs, and self-harm and aggression, in this unique population. The

second objective was to investigate the mediating effect of emotion dysregulation on these relationships. Considering the research to date, the following hypotheses were generated:

H1: Cumulative ACE score will be positively associated with self-harm and aggression.

H2: Cumulative ACE score will be positively associated with emotion dysregulation.

H3: Emotion dysregulation will be positively associated with self-harm and aggression.

H4: Emotion dysregulation will mediate the association between cumulative ACE score and self-harm.

H5: Emotion dysregulation will mediate the association between cumulative ACE score and aggression.

## 2. METHOD

### 2.1. Study Design

The current study adopted a cross-sectional design. Variables examined included one independent variable (ACEs), two dependent variables (self-harm and aggression) and one mediating variable (emotion dysregulation).

### 2.2. Participants

The current study recruited male and female forensic inpatients from low- and medium-secure units in Essex Partnership University NHS Trust. Patients residing within these services are detained under the Mental Health Act 1983 (amended 2007) and have been admitted via the courts, from prison, or another psychiatric hospital. The inclusion criteria stipulated that participants must be 18 years old and over and able to speak and read English. Additionally, participants were required to have the capacity to consent and be deemed stable enough in their mental state to take part. Participants who had a learning disability, were

acutely psychotic, suicidal, or had self-harmed in the previous two weeks were not deemed eligible to take part.

## 2.3. Measures

### *2.3.1 Adverse Childhood Experiences*

ACEs were measured using the Adverse Childhood Experiences Questionnaire (ACE-Q; Felitti et al., 1998). The ACE-Q is a 10-item self-report instrument which measures three domains of childhood adversity occurring before the age of 18 years old: abuse (physical, emotional, and sexual), neglect (emotional and physical), and household dysfunction (parental substance use, imprisonment, separation, mental illness, and domestic violence). Items are assessed on a dichotomous scale of either 'yes' or 'no', with higher scores indicating greater levels of childhood adversity. The ACE-Q possesses satisfactory levels of internal consistency and test re-test reliability (Bruskas, 2013; Dube et al., 2003; Ford et al., 2014; Murphy et al., 2014). Internal consistency of the ACE-Q in the current sample was good ($\alpha$ = .82). The ACE-Q has also demonstrated adequate convergent validity (Wingenfeld et al., 2010).

### *2.3.2. Difficulties in Emotion Regulation*

The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) was used to assess emotion dysregulation. The DERS is a 36-item self-report measure that assesses six domains of emotion dysregulation: non-acceptance of negative emotions (NONACCEPTANCE); inability to engage in goal-directed behaviours when distressed (GOALS); difficulties controlling impulsive behaviours when experiencing negative emotions (IMPULSE); limited access to effective emotion regulation strategies (STRATEGIES); lack of emotional awareness (AWARENESS); lack of emotional clarity (CLARITY). Items are rated on a 5-point Likert scale ranging from '1 = almost never' to '5 = almost always'. Scores are summed to produce a total score ranging from 36 to 180. Domain-specific scores can also be generated. Higher scores indicate greater difficulties with emotion regulation. The DERS has excellent internal consistency ($\alpha$ = .93 - .95) and test re-test reliability (Gratz & Roemer, 2004;

Fowler et al., 2014; Laporte et al., 2021b; Ruganci & Gencoz, 2010). In the current study, the internal consistency of the DERS was excellent ($\alpha$ = .95). The DERS also possesses good construct and criterion validity (Gratz & Roemer 2004; Gratz & Roemer, 2008; Fowler et al., 2014; Laporte et al., 2021b) and has been used in research investigating clinical and forensic samples (Fowler et al., 2014; Gillespie et al., 2018; Laporte et al., 2021b).

### *2.3.3. Self-Harm*

The Self-Harm Inventory (SHI; Sansone et al., 1998) was used to measure self-harm. The SHI is a 22-item self-report instrument which measures lifetime self-harm. Each item is preceded by the sentence "Have you ever intentionally or on purpose…". A range of self-harming behaviours are explored such as cutting, burning, and head-banging. Items are rated on a dichotomous scale of 'yes' or 'no'. Higher scores are indicative of greater self-harming behaviours. The SHI has been found to possess satisfactory levels of internal consistency with Cronbach's alpha ranging from 0.80 to 0.90 (Sansone et al., 2006; Sansone et al., 2007). In the current study, the internal consistency of the SHI was good ($\alpha$ = .88). The SHI has also demonstrated adequate levels of convergent validity (Sansone et al., 1998) and is thought to be an appropriate measure of self-harm in clinical samples (Latimer et al., 2009).

### *2.3.4. Aggression*

Aggression was measured using the Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992). The BPAQ is a 29-item self-report measure assessing four dimensions of aggression: physical aggression, verbal aggression, anger, and hostility. Items are assessed on a 5-point Likert scale with responders rating how characteristic each statement is of them. Scores range from '1 = extremely uncharacteristic' to '5 = extremely characteristic'. The BPAQ produces a total score from 29 to 145, as well as scores for the four sub-domains. Higher scores are indicative of higher levels of aggression. The BPAQ possesses good to excellent internal consistency (Buss & Perry, 1992; Whale et al., 2019) and good test-retest reliability (Gerevich et al., 2007; Harris, 1995). The internal consistency of the BPAQ in the

current study was excellent ($\alpha$ = .93). The BPAQ has also demonstrated adequate validity (Buss & Perry, 1992) and has been used in research conducted in forensic settings (Karsten et al., 2019; Smith et al., 2003; Williams et al., 1996).

### 2.4. Procedure

To identify potential participants, the researcher wrote to the responsible clinicians on all wards, detailing the study and asking them to identify participants who met the inclusion criteria (Appendix E). Suitable participants were then approached and provided with a study summary sheet (Appendix F) and a participant information sheet (Appendix G) by a member of the psychology team. This was to avoid potential feelings of coercion due to possible connections to the researcher. Following this, the researcher met with all participants who expressed an interest in taking part in the study. Before meeting with potential participants, the researcher obtained a handover from nursing staff to ensure that there had been no major changes in their presentation. During the meeting, participants were provided with the opportunity to ask questions. They were reminded that their decision to take part in the study was voluntary and they were advised of their rights to withdraw from the study. Those who agreed to take part were asked to provide written informed consent (Appendix H) before completing the ACE-Q (Felitti et al., 1998), the DERS (Gratz & Roemer, 2004), the BPAQ (Buss & Perry, 1992), and the SHI (Sansone et al., 1998). After completing the questionnaires, participants were provided with a debriefing sheet (Appendix I) and reimbursed £5 for their participation. Participants' involvement in the study was documented in their medical records and their responsible clinicians were informed of their participation.

### 2.5. Ethical Considerations

Participants in the current study were deemed vulnerable due to being detained under the Mental Health Act 1983 (amended 2007); thus, ethical considerations were particularly pertinent. Before commencing the study, ethical approval was granted by the Health Research Authority and Health and Care Research Wales (Appendix J). Responsible clinicians were

consulted before any patients were informed of the study, to ensure that only those who met the inclusion criteria were approached. To mitigate potential feelings of coercion to take part, due to possible connections to the researcher, prospective participants were initially approached by a member of the psychology team. Written informed consent was obtained from participants before taking part and the monetary reward reimbursed to participants was low to ensure that this did not compromise free consent.

### 2.6. Statistical Analysis

Data were analysed using IBM SPSS Statistics Software Version 28. Correlation analyses were selected to assess the associations between ACEs, emotion dysregulation, self-harm, and aggression. To examine the mediating effect of emotion dysregulation on the relationship between ACES, and self-harm and aggression, bootstrapped mediation analyses were computed using Model 4 from the PROCESS Macro for SPSS version 4.00 (Hayes, 2017). Bootstrapping procedures are thought to be superior to other methods of mediation analysis as they reduce the likelihood of Type 1 errors when analysing data from small sample sizes. Moreover, they do not make assumptions about the sampling distribution of the indirect effect (Preacher & Hayes, 2008; Steffener, 2021). Following the initial mediation analysis, secondary mediation analyses were computed including age and sex as covariates, to account for any confounding effects of these variables.

### 2.7. Sample Size and Power Calculations

An a priori power calculation was conducted using G*Power Version 3.1 (Faul et al., 2009) to determine the minimum number of participants required to test correlations between the variables of interest. Results indicated that the required sample size to achieve 0.8 power for detecting a medium effect, at a significance criterion of $\alpha$ = .05 was *N* = 67, for Pearson's product-moment correlation. Whilst it would have been preferable to detect small effects, achieving the required sample size was not thought possible (see Table 3.1).

**Table 3.1**

*Strength of Association, Effect Sizes, and Required Sample Sizes for Pearson's R correlation (Cohen, 1998).*

| Strength of Association | Effect Size | Required Sample Size |
|---|---|---|
| Small | .1 to .3 | 616 |
| Medium | .3 to .5 | 67 |
| Large | .5 to .10 | 23 |

Unlike many statistical analyses, there is no set function to determine the sample size required for mediation analysis. Nonetheless, guidance is available. According to Fritz and MacKinnon (2007), the required sample size to achieve 0.8 power for detecting a medium effect is *N* = 71, for bootstrapped mediation analysis. To ensure an adequate sample size for all statistical analyses, the study therefore aimed to recruit 71 participants. A more recent paper, which was not available at the time of planning this empirical study, recommends a sample size of 80-90 participants to detect mediation effects (Sim et al., 2022).

## 3. RESULTS

### 3.1. Descriptive Statistics

#### *3.1.1. Participants*

The total sample consisted of 72 forensic inpatients. Participants ranged in age from 18 to 69 (*M* = 39.43, *SD* = 12.34). The sample consisted of 52 males (72.2%) and 20 females (27.8%). Information on ethnicity, educational attainment, and relationship status was also collected (see Table 3.2).

#### *3.1.2. Variables of Interest*

The mean score for ACEs for the current sample was 3.72 (*SD* = 2.88). Overall, 84.7% of participants (*n* = 61) reported experiencing at least one ACE and 69.5% (*n* = 50) reported experiencing two or more ACES. A total of 43 participants (59.7%) reported experiencing three

or more ACEs and just under half (*n* = 33; 45.7%) reported experiencing four or more ACEs. Of the 72 participants, five (6.9%) had experienced nine ACEs; none had experienced all ten ACEs. Eleven participants (15.5%) reported no exposure to ACEs. Parental separation was the most common form of ACE, reported by 58.3% of the total sample. This was followed by emotional neglect (48.6%), and emotional and physical abuse, both of which were reported by 45.8% of the total sample. The least commonly reported ACEs were physical neglect and sexual abuse, reported by 22.2% and 18.1% of participants, respectively.

**Table 3.2**

*Demographic Information: Ethnicity, Educational Attainment, and Relationship Status*

| Variable | *N* (total = 72) | % |
|---|---|---|
| Ethnicity | | |
| Asian | 5 | 6.9 |
| Black | 12 | 16.9 |
| Hispanic | 4 | 5.6 |
| White/Caucasian | 47 | 65.3 |
| Mixed | 2 | 2.8 |
| Other | 2 | 2.8 |
| Educational Attainment | | |
| No formal schooling | 0 | 0 |
| Less than primary school | 0 | 0 |
| Primary school | 26 | 36.1 |
| Secondary school | 27 | 37.5 |
| College/university | 19 | 26.4 |
| Postgraduate degree | 0 | 0 |
| Other | 0 | 0 |
| Relationship Status | | |
| Single | 60 | 83.3 |
| Married | 1 | 1.4 |
| In a relationship | 6 | 8.3 |
| Divorced | 4 | 5.6 |
| Widowed | 0 | 0 |
| Other | 1 | 1.4 |

The mean score for self-harm was 6.40 (*SD* = 4.91) and a total of 62 participants (86.1%) reported having engaged in some form of self-harm across the lifespan. This score was higher than that observed in previous studies (Laporte et al., 2021a; Stinson et al., 2021b). The current study, however, measured direct and indirect types of self-harm which could account for this finding. The most common methods of self-harm were substance misuse (*n* = 43; 59.7%), cutting (*n* = 42; 54.2%), suicide attempts (*n* = 40; 55.6%), and head-banging (*n* = 39; 54.2%). The least common methods of self-harm were driving recklessly (*n* = 5; 6.9%) and losing a job (*n* = 6; 8.3%) on purpose to hurt oneself. No participants reported abusing laxatives as a form of self-harm.

The DERS does not possess a clinical cut-off, however, scores between 75 and 80 and 100 and 105, are typical for the general population and individuals with post-traumatic stress disorder, respectively (Gratz & Tull, 2010). The average score for the current sample was 94.38 (*SD* = 35.12). The mean score for the BPAQ was 82.54 (*SD* = 28.00). See Table 3.3 for the descriptive statistics for variables of interest.

**Table 3.3**

*Descriptive Statistics for Variables of Interest*

| Variable | *M* | *SD* | Range |
|---|---|---|---|
| ACE-Q | 3.72 | 2.88 | 0 - 10 |
| DERS | 94.38 | 35.12 | 36-180 |
| SHI | 6.40 | 4.91 | 0 - 22 |
| BPAQ | 82.54 | 28.00 | 29-145 |

*Note.* ACE-Q = Adverse Childhood Experiences Questionnaire; DERS = Difficulties in Emotion Regulation Scale; SHI = Self-Harm Inventory; BPAQ = Buss-Perry Aggression Questionnaire.

### 3.2. Data Screening

Before correlation and mediation analysis, data were screened to verify whether the necessary assumptions of the relevant statistical analyses were met. All variables of interest

were measured using continuous data, meeting this assumption. Visual inspection of boxplots for each variable of interest did not indicate any significant outliers. To assess the assumption of linearity, scatterplots were generated and visual checks of these indicated that this assumption had been met. There was no evidence of multicollinearity; variables were not highly correlated (<.80) and VIF values were <10 (Vittinghoff et al., 2005). The assumption of normal distribution was assessed by examining the skewness and kurtosis of each variable. Skewness values between -3 and +3 and kurtosis values between -10 and +10 are considered acceptable (Kline, 2011). In the current study, absolute values for skewness ranged from 0.32 to 0.61, and for kurtosis they ranged from 0.42 to 1.22, indicating adequate normality.

### 3.3. Correlation Analysis

Correlation analyses were conducted to assess the associations between ACEs, emotion dysregulation, self-harm, and aggression (see Table 3.4). ACEs were significantly positively correlated with emotion dysregulation ($r$ = .662, $p$ <.001), self-harm, ($r$ = .570, $p$ < .001) and aggression ($r$ = .701, $p$ <.001). Significant positive correlations were also observed between emotion dysregulation and self-harm ($r$ = .591, $p$ <.001) and emotion dysregulation and aggression ($r$ = .775, $p$ <.001).

**Table 3.4**

*Correlations Between Variables of Interest*

| Variable | ACE-Q | DERS | SHI | BPAQ |
|---|---|---|---|---|
| 1. ACE-Q | - | | | |
| 2. DERS | .662*** | - | | |
| 3. SHI | .570*** | .591*** | - | |
| 4. BPAQ | .701*** | .775*** | - | - |

*Note.* ***$p$ < .001

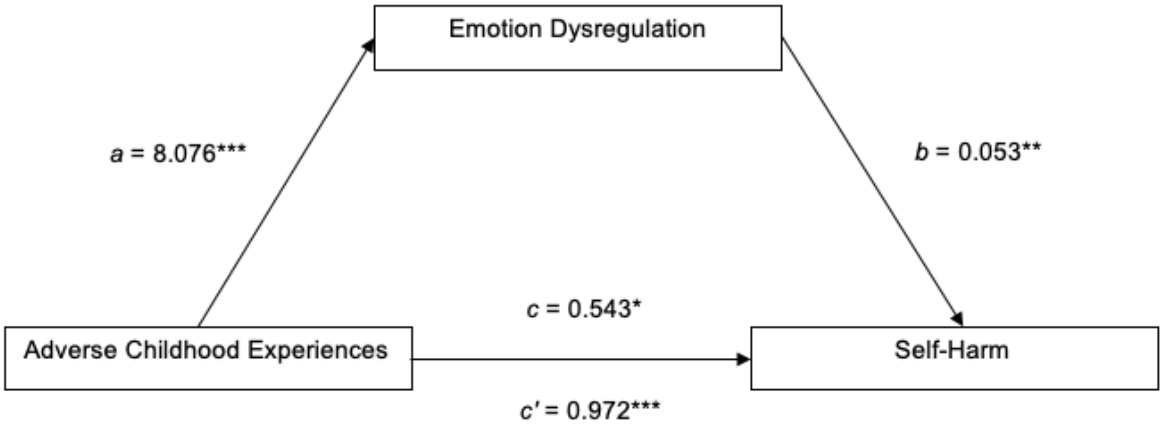
### 3.4. Mediation Analysis

To test for mediation effects of emotion dysregulation on the relationships between ACEs, and self-harm and aggression, two mediation analyses were conducted using Model 4 from the PROCESS Macro Version 4.00 for SPSS (Hayes, 2017). Indirect effects of emotion dysregulation were determined by observing bootstrapped (5000 iterations) 95% confidence levels (CIs); mediation effects are assumed if the 95% CIs do not contain zero (Preacher & Hayes, 2004). Full mediation is presumed if the direct effect of the independent variable on the dependent variable is not significant after including the mediating variable. If the direct effect between the independent variable and the dependent variable remains significant in the presence of the mediating variable, partial mediation is assumed (Preacher & Hayes, 2004).

In the first mediation model, the independent variable was ACEs, the mediating variable was emotion dysregulation, and the dependent variable was self-harm. As indicated in Figure 3.1, ACEs had a significant impact on emotion dysregulation ($B$ = 8.076, 95% CI = 5.895 – 10.256, β = 0.662, $p$ < 0.001) and emotion dysregulation had a significant impact on self-harm ($B$ = .053, 95% CI = 0.019 - 0.088, β = 0.380, $p$ = .003). The analysis indicated a significant total effect of ACEs on self-harm ($B$ = 0.972, 95% CI = 0.638 – 1.306, β = 0.570, $p$ < 0.001). When emotion dysregulation was included as a mediator in the analysis, the unstandardised regression coefficient between ACEs and self-harm reduced, however, this remained significant ($B$ = 0.543, 95% CI = 0.122 – 0.964, $p$ = .012). Approximately 33% of the variance in self-harm was accounted for by the predictors ($R^2$ = .33). Bootstrapping with 5000 samples indicated a significant indirect effect of ACEs on self-harm via emotion dysregulation ($B$ = 0.429, 95% CI = 0.054 – 0.767), indicating partial mediation. The indirect effect of emotion dysregulation remained statistically significant after controlling for age and sex ($B$ = 0.388, 95% CI = 0.211 – 0.715).

**Figure 3.1**

*Simple Mediation Model of the Mediating Effect of Emotion Dysregulation on the Relationship Between Adverse Childhood Experiences and Self-Harm*



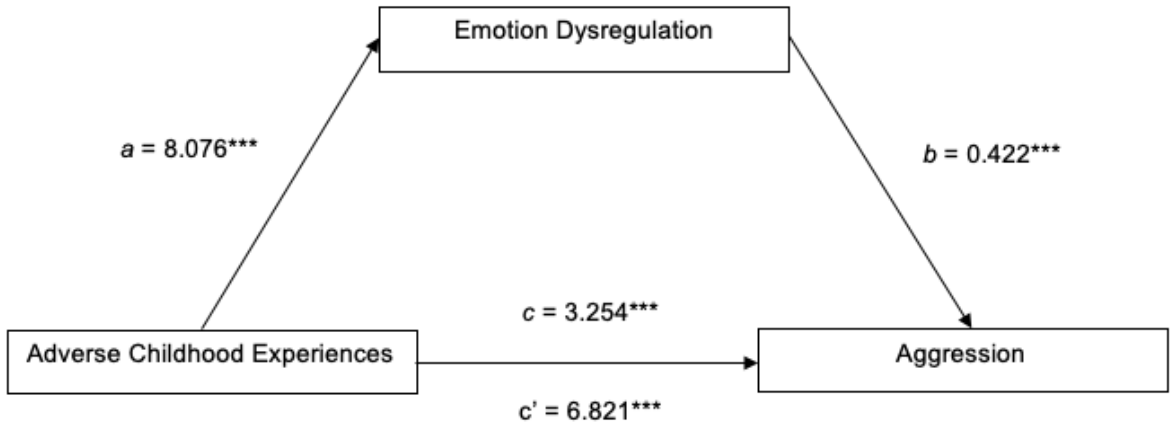

*Note.* **p* <0.05; *p* <0.01; ****p* < 0.001. *a* = effect of adverse childhood experiences on emotion dysregulation, *b* = effect of emotion dysregulation on self-harm, *c* = direct effect of adverse childhood experiences on self-harm, *c*' = total effect of adverse childhood experiences on self-harm.

In the second mediation model, aggression was entered as the dependent variable. As indicated in Figure 3.2, ACEs had a significant impact on emotion dysregulation (*B* = 8.076, 95% CI = 5.895 – 10.256, β = 0.662, *p* < 0.001) and emotion dysregulation had a significant impact on aggression (*B* = .442, 95% CI = 0.294 – 0.589, β = 0.554, *p* < 0.001). The analysis indicated a significant total effect of ACEs on aggression (*B* = 6.821, 95% CI = 5.167 – 8.474, β = 0.701, *p* < 0.001). When emotion dysregulation was entered as a mediator, the unstandardised regression coefficient between ACEs and aggression reduced, however, again this remained significant (*B* = 3.254, 95% CI = 1.447 – 5.060, *p* < 0.001). Approximately 49% of the variance in aggression was accounted for by the predictors ($R^2$ = .49). Bootstrapping indicated a significant indirect effect of ACEs on aggression via emotion dysregulation (*B* = 3.567, 95% CI = 2.246 – 4.998), indicating partial mediation. The indirect

effect of emotion dysregulation remained statistically significant after controlling for age and sex (*B* = 3.735, 95% CI = 2.422 – 5.141).

**Figure 3.2**

*Simple Mediation Model of the Mediating Effect of Emotion Dysregulation on the Relationship Between Adverse Childhood Experiences and Aggression*




*Note.* ***$p < 0.001$. *a* = effect of adverse childhood experiences on emotion dysregulation, *b* = effect of emotion dysregulation on aggression, *c* = direct effect of adverse childhood experiences on aggression, *c*' = total effect of adverse childhood experiences on aggression.

## 4. DISCUSSION

### 4.1. Summary and Interpretation of Findings

The current study aimed to explore the impact of cumulative ACEs on self-harm and aggression, and the mediating role of emotion dysregulation, in a sample of adult forensic inpatients. Analyses revealed significant positive correlations between cumulative ACE score, and self-harm and aggression, indicating support for H1. These findings align with previous studies demonstrating a dose-response effect of ACEs on self-harm (Bunting et al., 2023; Cleare et al., 2018; Ford et al., 2020; Holden et al., 2022; Isohookana et al., 2013; Laporte et al., 2023; Stinson et al., 2016) and aggression (Blum et al., 2019; De Ravello et al., 2008;

Fosse et al., 2021; King, 2021; Matsuura et al., 2009; Stinson et al., 2021b). In support of H2, a significant positive association was observed between cumulative ACE score and emotion dysregulation, strengthening the research base which has previously evidenced this relationship using ACE survey methodology (Cameron et al., 2018; Zetino et al., 2020; Zhu et al., 2023). Significant positive associations were also observed between emotion dysregulation, and self-harm and aggression, supporting H3. This was again consistent with previous research linking emotion dysregulation to self-harm (Gratz & Chapman, 2007; Gratz & Roemer, 2008; Gratz & Tull, 2010; Midkiff et al., 2018; Taylor et al., 2018; Wolff et al., 2019) and aggression (Bowie, 2010; Garofalo et al., 2016; Garofalo & Velotti, 2017; Hill et al., 2006; McLaughlin et al., 2011; Miles et al., 2015; Roberton et al., 2014; Röll et al., 2012; Scott et al., 2014; Velotti et al., 2016). These results also support an earlier study which demonstrated a relationship between emotion dysregulation and self-harm among forensic inpatients (Laporte et al., 2021b). In addition, they provide preliminary insight into the association between emotion dysregulation and aggression in this population; an area not previously explored.

Mediation analysis revealed an indirect effect of emotion dysregulation on the relationship between cumulative ACE score and self-harm, supporting H4. Whilst this is the first study to investigate the pathway from ACEs to self-harm in forensic inpatients, this finding aligns with previous studies identifying a mediating effect of emotion dysregulation on the relationship between childhood abuse and neglect, and self-harm (Andersson et al., 2022; Gordon et al., 2016; Howard et al., 2017; Titelius et al., 2018). In the current study, the indirect effect of emotion dysregulation on this relationship remained after controlling for age and sex. Whilst this finding contrasts with previous studies (Christoforou & Ferreira, 2022; Peh et al., 2017), it aligns with a previous meta-analysis which confirmed a relationship between emotion dysregulation and self-harm, irrespective of age and sex (Wolff et al., 2019). The mediating role of emotion dysregulation within the cross-sectional studies mentioned may have therefore been eliminated due to a lack of power following the inclusion of covariates.

A significant indirect effect of emotion dysregulation on the relationship between ACEs and aggression was also observed, supporting H5 and corroborating earlier findings exploring this pathway (Berzenski & Yates, 2010; Miles et al., 2015; Şenkal Ertürk et al., 2020). Similarly, the mediating effect of emotion dysregulation also remained after controlling for age and sex. This contradicts previous research which has found that emotion dysregulation predicts aggression in girls but not in boys (Bowie et al., 2010; Hill et al., 2006). These studies, however, were conducted with young children. The effect of emotion regulation on behavioural adjustment is thought to be more prominent in females in early childhood (Eisenberg et al., 2001). Since the current study was conducted with an adult sample, potential sex differences may have dissolved with age. Moreover, whilst it is a common assumption that males are more aggressive than females, research has indicated that males and females display similar levels of aggression, but males are more likely to engage in physical aggression whereas females are more prone to engaging in indirect aggression (Björkqvist, 2018). The absence of a significant effect of sex in this study may therefore be attributable to the aggression measure used which assessed physical aggression, verbal aggression, anger, and hostility.

The current findings suggest that difficulties in emotion regulation could explain individual differences in the susceptibility to engaging in self-harm and/or aggression in adult forensic inpatients. An emotion-regulatory pathway from ACEs to self-harm and aggression, whereby ACEs cause deficits in emotion regulation, and emotion regulation drives self-harm and aggression, is therefore supported. These findings are consistent with developmental perspectives of self-harm and aggression, in which ACEs are thought to compromise emotion regulation skills, resulting in internalising and externalising behaviours due to either the under-control or over-control of emotional reactions (Zarling et al., 2013). Biological and environmental explanations have been proposed to account for this trajectory. Specifically, ACEs are thought to compromise attachment security (Bowlby, 1998) and brain development (Danese & McEwan, 2012); factors that influence the effective development of adaptive emotion regulation skills and the appraisal of situations (Brumariu, 2015; Dannlowski et al.,

2013). In line with functional models of self-harm and aggression, harmful behaviours toward self and others subsequently arise from attempts to regulate unwanted emotions (Bushman et al., 2001; Gratz, 2003, Nock & Prinstein, 2005; Yates, 2004). The current findings can also be conceptualised according to diathesis-stress models, which posit that interactions between ACEs and biological factors influence personality development and information processing. Impairments in self-regulation resulting from this interaction, increase the propensity for self-harm and/or aggression when faced with a stressful event (Brodsky, 2016; Ferguson et al., 2008). The current study supports the role of ACEs as a predisposing factor for self-harm and aggression, and emotion dysregulation as a more proximal factor. It will be noted, however, that following the inclusion of emotion dysregulation in both mediation models, the direct effect of ACEs on self-harm and aggression remained statistically significant. This suggests that other variables also contribute to the pathway from ACEs to self-harm and aggression.

### 4.2. Strengths and Limitations

A key strength of this empirical study is that it contributes important information about the associations between ACEs, and self-harm and aggression, among an understudied population who are at high risk of engaging in these behaviours. Moreover, to the author's knowledge, it is the first study to examine the mediating role of emotion dysregulation on these relationships among adult forensic inpatients, thus filling a critical gap in the literature. This study also has clinical relevance in terms of informing care and treatment provided to forensic inpatients who have been exposed to ACEs and engage in self-harm and/or aggression. In addition to this, psychometrically sound measures were used to assess the variables of interest, addressing the methodological issues of previous studies. Using the ACE-Q (Felitti et al., 1998) to measure childhood adversity, allowed for the assessment of a wider variety of ACEs, as opposed to single forms of childhood abuse or neglect which is commonly seen in the literature to date. It also enables exploration of the dose-response effect of ACEs. The measure used to assess self-harm, the SHI (Sansone et al., 1998), was also superior to the

dichotomous measures often used in previous studies which only assess the presence or absence of self-harm. Lastly, all patients who met the inclusion criteria were invited to take part in the study, regardless of sex or diagnosis, enhancing the generalisability of the findings.

The current study, however, is not without limitations. The cross-sectional design means that it is not possible to draw firm conclusions regarding the temporal sequencing of variables. Temporal ordering is of importance in mediation analysis which implies change over time (Rijnhart et al., 2021). Moreover, without a prospective approach, it is impossible to rule out the effect of confounding variables without accounting for these. The use of retrospective self-report measures also poses limitations. Specifically, retrospective reports of ACEs, self-harm, and aggression are susceptible to recall bias. Nonetheless, research has found retrospective and prospective data to be equally accurate in the assessment of ACEs and associated outcomes (Hardt et al., 2010). Recall of childhood adversity is also thought to be particularly accurate (Hardt & Rutter, 2004). Self-report measures are also prone to social desirability bias (Podsakoff et al., 2003), particularly among forensic populations who may wish to portray themselves in a positive light (Hildebrand et al., 2018). Nonetheless, collecting data using this method, minimises the issues inherent to using archival data such as coding errors and missing data.

Limitations of the definitions used to operationalise variables, and the measures used to assess these, must also be considered. Whilst the ACE-Q expands on previous research through the consideration of multiple ACEs, it fails to consider further forms of childhood adversity such as peer victimisation, community violence, and authoritarian parenting (Finkelhor et al., 2013). Moreover, broad definitions of self-harm and aggression were adopted in the current study. Specifically, indirect and direct forms of self-harm were considered regardless of underlying motivation. Yet it has been suggested that the psychological functions of self-harm may differ according to intent (Claes & Vandereycken, 2007). Additionally, the operationalisation of aggression did not distinguish between reactive and pre-meditated

aggression which are thought to differ in their characteristics (Stanford et al., 2003). Albeit previous research has indicated that emotion dysregulation plays a role in both these types of aggression (Miles et al., 2015). Regarding the measurement of variables, the ACE-Q (Felitti et al., 1998) does not capture the frequency and duration of each ACE, nor does it consider the victim-perpetrator relationship in the case of abuse; factors that may affect the associations between ACEs, emotion regulation, self-harm, and aggression. Similarly, the severity and frequency of self-harm are not captured by the SHI (Sansone et al., 1998). It can therefore be argued that despite these measures being psychometrically sound, they provide a simplistic view of these variables.

Lastly, the sample itself must be considered. Despite the exclusion criteria stating that participants must not be acutely psychotic, the target population suffered serious mental illness which could have affected their capacity to conceptualise items within measures. Participation in the study was also voluntary, thus, patients who agreed to take part may differ from those who chose not to. Moreover, forensic psychiatric patients are a highly specific population thought to have more complex needs compared to general psychiatric patients and offenders (Laporte et al., 2021b); the degree to which the findings are generalisable to other clinical and forensic populations is therefore unclear.

### 4.3. Implications

The current findings have important clinical implications. Whilst ACEs cannot be removed or undone, psychological intervention addressing emotion dysregulation may prove fruitful in treating self-harm and/or aggression in adult forensic inpatients. A systematic review of 15 studies, conducted across a range of populations, concluded that psychological intervention can improve emotion regulation (Moore et al., 2022). Despite a lack of research investigating the impact of psychological therapies on emotion regulation amongst forensic inpatients, several treatment models have been identified as effective in treating emotion dysregulation in other populations. One of the most recognised is dialectical behaviour therapy

(DBT); a cognitive behavioural treatment that draws on both 'acceptance' and 'change' strategies to target pervasive emotion dysregulation (Linehan, 2015). Several studies have found DBT to be effective in improving emotion regulation (Gratz et al., 2015; Neacsiu et al., 2014; Rozakou-Soumalia et al., 2021) and reducing self-harm and aggression (Asarnow et al., 2021; Frazier & Vela, 2014). Alternatively, one systematic review of 14 studies found insufficient evidence to conclude that DBT was superior to existing psychological interventions (Harvey et al., 2019). Concerns have also been raised regarding DBT interventions having inverse consequences. For instance, in a non-randomised control trial of 1,071 adolescents, those who engaged in an eight-session DBT skills intervention demonstrated poorer outcomes post-intervention compared to class-as-usual; these included poorer emotional awareness, quality of life, and quality of parental relationships and greater levels of depression, anxiety, and emotion dysregulation (Harvey et al., 2023). In addition, one randomised clinical trial of 18,882 adults reporting frequent suicide ideation found that outreach DBT skills training increased the risk of self-harm (Simon et al., 2022). However, the intervention in this study was delivered online and limited to four DBT skills; participants did not have access to individual or group therapy, which could have accounted for these findings.

Studies delivering a 14-week intervention focusing explicitly on emotion regulation have provided promising findings. Specifically, the emotion regulation group intervention, which draws on aspects of emotion-focused therapy (Greenberg, 2004), DBT (Linehan, 1993), and acceptance and commitment therapy (Hayes et al., 2012), had a positive effect on emotion dysregulation, self-harm, and psychological well-being in two randomised control trials (Gratz & Gunderson, 2006; Gratz et al., 2014); albeit findings are preliminary due to small sample sizes. Emotion-focused therapy as a standalone treatment has also been identified as an effective treatment for emotion dysregulation (Pos & Paolone, 2019). Whilst most interventions targeting emotion dysregulation focus largely on the development of adaptive coping skills, other therapies addressing schemas (Stoffers et al., 2012; Zanarini, 2009) and cognitions (Forkmann et al., 2014; Morton et al., 2012), whereby individuals develop insight

into the link between their early life experiences and their current internal state (Mansell et al., 2007), have also been found to improve emotion regulation. Thus, it could be of benefit for professionals working in forensic mental health settings to consider these interventions when working with patients who engage in self-harm and/or aggression.

Moreover, consideration should be given to pharmacological interventions of emotion dysregulation in the treatment of self-harm and/or aggression. A meta-analysis of 29 studies investigating the effectiveness of pharmacological interventions for emotional liability identified antipsychotics and mood stabilizers as having the largest effect sizes, albeit results must be interpreted with caution due to the limited number of trials in each category (Agapoff et al., 2023). One randomised, double-blind, placebo-controlled trial involving 95 individuals with BPD, found significant reductions in the severity of BPD symptoms and verbal and physical aggression, among participants prescribed 150mg of quetiapine daily for eight weeks, compared to those who received a placebo (Black et al., 2014). Previous case series have also reported reductions in self-harm in adolescents with major depressive disorder (Good, 2006; Pathak et al., 2005) and adults with BPD (Hayes et al., 2022) when treated with quetiapine. Moreover, small improvements in affective instability have been observed in randomised control trials investigating the effectiveness of olanzapine in individuals with BPD (Stoffers et al., 2010). A randomised, double-blind placebo-controlled study consisting of 80 individuals with BPD has also provided preliminary support for a novel serotonin-dopamine activity modulator, brexpiprazole, in reducing BPD symptoms (Grant et al., 2022).

In addition to addressing emotion dysregulation, the current study supports the adoption of a trauma-informed approach when working with forensic inpatients who have experienced ACEs and engage in harm towards themselves and/or others. Creating a safe therapeutic environment and conceptualising patients' difficulties in the context of their trauma history are key components of trauma-informed practice (Willmot & Jones, 2022). Working in

this way allows professionals to assume a compassionate understanding of patients' difficulties, reducing the propensity for invalidation and inadvertent re-traumatisation (Harris & Fallot, 2001) and thus the likelihood of self-harm and/or aggression.

### 4.4. Future research

This was the first study to examine the pathway from ACEs to self-harm and aggression, via emotion dysregulation, amongst forensic inpatients. Further research conducted with this population is needed to replicate the current findings. Whilst the inclusion of all patients who met the study criteria is deemed a strength of the current study, findings may differ according to other factors such as diagnosis and security level. It would therefore be of benefit for future research to consist of larger sample sizes allowing for a greater number of covariates to be controlled for whilst maintaining appropriate power; this would provide greater insight into the unique contribution of emotion dysregulation in explaining these relationships. Longitudinal studies would also allow for inferences to be drawn regarding the temporal sequencing of variables and are considered an essential next step to corroborate the current findings.

In addition, using more comprehensive measures to assess the variables of interest would be of benefit. For example, the Adverse Childhood Experiences International Questionnaire (ACE-IQ; World Health Organisation, 2018), expands on the ACE-Q (Felitti et al., 1998) by including a greater number of ACEs such as community, collective, and peer violence. Moreover, using a measure such as the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001) would allow for information to be obtained regarding the frequency, severity, and duration of self-harming behaviours. Future research distinguishing between direct and indirect self-harm, and reactive and pre-meditated aggression, would also contribute to a more nuanced understanding of the variables studied. Given the propensity for socially desirable responding within this population, utilising a deception scale in future studies such as the Paulhus Deception Scale (PDS; Paulhus, 1998) could mitigate this.

### 4.5. Conclusion

This study provides further insight into the relationships between ACEs, emotion dysregulation, and self-harm and aggression, in forensic inpatients. Findings indicate that while ACEs may serve as a relatively distal, predisposing factor, emotion dysregulation may serve as a relatively proximal mechanism through which ACEs exert their influence on self-harm and aggression in this population. Engaging in harmful behaviours towards self and others may therefore serve as a method of managing emotion dysregulation which has arisen because of childhood adversity. These findings should be applied to the assessment and treatment of forensic inpatients engaging in self-harm and/or aggression. Psychological interventions targeting the development of adaptive emotion regulation strategies may be of benefit to forensic inpatients who have been exposed to adversity in childhood, as might the adoption of a trauma-informed approach. Pharmacological treatments reducing affective instability should also be considered.

# Chapter Four

## CASE STUDY

***"Adverse Childhood Experiences, Emotion Dysregulation, Self-Harm and Aggression: A Single Case Study"***

**Abstract**

This report details a single case study of a female forensic inpatient with emotionally unstable personality disorder and mild to borderline learning disability. The patient was exposed to multiple adverse childhood experiences and has a history of self-harm and aggression. The assessment phase consisted of a clinical interview and completion of psychometric tests. A review of historical documents and the patient's clinical records was also conducted. Drawing on the theoretical literature and the evidence base, a case formulation and functional analysis were developed to inform treatment. It was subsequently recommended that the patient engage in psychological intervention targeting emotion dysregulation, the primary factor contributing to her self-harm and aggression. It was also thought that the patient could benefit from developing skills in effective communication, coping with distress, and mindfulness. The patient presented as motivated to engage in psychological intervention and agreed to complete the 'I Can Feel Good' programme; an adapted dialectical behaviour therapy programme. The acceptability of the intervention was evaluated using self-report measures, a staff-rating scale, and behavioural data. Post-intervention data indicated that the patient made positive progress on measures assessing emotion dysregulation, interpersonal effectiveness, and distress tolerance. In addition, there were reductions in the patient's level of psychological distress and incidents of self-harm and aggression. Minimal change was observed for the mindfulness module. Recommendations regarding future psychological intervention targeting the patient's outstanding treatment needs are addressed.

## 1. INTRODUCTION

### 1.1. Ethical Considerations

This case study details the assessment, formulation, and intervention conducted with a patient detained in a medium-secure unit under Section 37/41 of the Mental Health Act 1983 (amended 2007). Whilst this piece of work was written up as a case study to fulfil the requirements of the Doctorate in Forensic Psychology, the primary aim of this intervention was to support the patient in progressing through her treatment pathway. Care was therefore taken to ensure that the intervention delivered was not influenced by expediency. All components of this case study were carried out by the author under the supervision of a clinical psychologist. They were also discussed in ward rounds with the patient's responsible clinician and other professionals in the Multi-Disciplinary Team (MDT). The patient was deemed to have the capacity to consent for her information to be utilised in this case study and written consent was obtained from the patient prior to the case study being written up (Appendix K). The information documented throughout this report was obtained through direct contact with the patient, her clinical records, and discussions with the MDT. To retain anonymity, the patient is referred to as 'Patient A' throughout this report.

### 1.2. Patient Background and Referral Details

Patient A is a 44-year-old female who is detained under Section 37/41 of the Mental Health Act 1983 (amended 2007). Patient A has a history of contact with mental health services dating back to 2004. In addition, she has a forensic history characterised by substance use, acquisitive offending, and violence. According to Patient A's Police National Computer record, she has 18 convictions for 31 offences. Patient A was first convicted at 13 years old for property damage, after which she received further convictions for theft and shoplifting. At the age of 16, Patient A was convicted of using threatening, abusive, or insulting words or behaviour likely to cause distress. She went on to receive further convictions for battery and common assault in adulthood. Patient A's index offence occurred in May 2007. This involved her setting fire to her ex-partner's home following a dispute, with full knowledge

that he was inside. Patient A was subsequently convicted of arson with intent to endanger life and sentenced to a hospital order with restrictions. Following her admission to forensic secure services in November 2007, Patient A engaged in self-harm and aggression towards staff. A diagnosis of emotionally unstable personality disorder (EUPD), impulsive and borderline type, was assumed (ICD-10, F60.30 and F60.31). In addition, a Wechsler Adult Intelligence Scale 3rd Edition (WAIS-III; Wechsler, 1997) indicated that Patient A's full scale intellectual quotient (FSIQ) fell in the *extremely low* to *borderline* range (95% CI = 68 - 76). Whilst an assessment of adaptive functioning, a prerequisite of diagnosing a learning disability (LD), was not available in Patient A's records, a diagnosis of mild to borderline LD was assumed. It was documented, however, that Patient A's mild to borderline LD was not associated with abnormally aggressive or seriously irresponsible conduct. Nor was it thought to impact her capacity to make decisions about her treatment.

During her previous admission, Patient A engaged in an initial psychological assessment and several psychological interventions: the Firesetting Intervention Programme for Mentally Disordered Offenders (FIP-MO; Gannon & Lockerbie, 2014), the Substance Use Treatment Programme (SUTP; Miles et al. 2007) and a dialectical behaviour therapy (DBT; Linehan, 2015) skills group programme. Patient A's engagement in treatment was intermittent, and it was reported that she struggled to generalise the skills learnt to her everyday life. Patient A was discharged in July 2019 and later recalled to general psychiatric services in November 2021, after breaching the conditions of her conditional discharge. Initially, Patient A displayed a period of stability following her recall. However, after the sudden death of her partner in May 2022, her mental state deteriorated, and Patient A engaged in self-harm and aggression towards staff. Subsequently, her ongoing management on an acute ward was not deemed appropriate and Patient A was transferred to forensic secure services in July 2022. Following Patient A's admission, she continued to engage in self-harm and aggression towards staff. She was subsequently referred to psychology for an assessment and treatment of her presenting difficulties.

## 2. ASSESSMENT

The assessment took place in August 2022. Given Patient A's previous admission to forensic secure services, and the information available, a comprehensive psychology assessment was not deemed necessary. Instead, a clinical interview was conducted to explore the circumstances of Patient A's recall, and her self-harm and aggression. Historical documents were also reviewed, and psychometric tests were completed. The findings of the WAIS-III were considered throughout the assessment. For instance, simplified language and visual aids were used where appropriate. In addition, Patient A was provided with longer periods of time to answer questions, and she was regularly asked to paraphrase session content to monitor her comprehension. Efforts were also made to avoid leading questions, due to the propensity for LD populations to engage in 'yessing' (Clare & Gudjonsson, 1993).

### 2.1. Clinical Interview

Initial sessions explored Patient A's time in the community, and the circumstances leading to her recall. In the first session, Patient A presented with as low in mood and she was resistant to engaging, stating that life would "never be good again". An empathic and emotionally validating approach was adopted to ensure that Patient A felt heard and valued; a method that communicates acceptance and strengthens the therapeutic alliance (Rather & Miller, 2015). This worked to good effect, and Patient A's engagement and openness within assessment sessions progressed over time. Considering Patient A's diagnosis of mild to borderline LD, a visual timeline was used when gathering information; a technique that assists individuals to organise information in chronological order (Moline, 1995). Patient A reported remaining abstinent from substances for approximately 12 months in the community. However, she relapsed after meeting her deceased partner who misused substances. Over time, Patient A spent more time at her partner's address, and her substance use increased, despite being aware that this could result in her recall to hospital.

In subsequent sessions, a review of Patient A's self-harm and aggression was conducted. Self-harm acts as a predictor of suicidality (Andover & Gibb, 2010), thus, previous suicide attempts and suicidal ideation were also explored. Patient A reported an extensive history of self-harm which commenced at 11 years old when she first engaged in cutting. Whilst most of her self-harm occurred in the absence of suicidal intent, Patient A reported one previous suicide attempt aged 19, following the removal of her daughter from her care. Patient A denied any current suicidal ideation but acknowledged that she was struggling to process the death of her partner. Patient A also reflected on her use of aggression but would at times minimise this. She reported internal motivation to engage in treatment but low self-efficacy in her ability to stop self-harming. Patient A had limited recall of the psychological treatment she completed during her previous admission.

## 2.2. Psychometric Tests

### *2.2.1. Difficulties in Emotion Regulation Scale – Modified*

The Difficulties in Emotion Regulation Scale – Modified (DERS-M; Bardeen et al., 2016) is an adapted version of the original Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS-M is a 29-item self-report measure that assesses emotion regulation problems according to five subscales: Identification, Nonacceptance, Impulse, Goals and Strategies. Items are rated on a 5-point Likert scale ranging from '1 = almost never' to '5 = almost always'. Reverse items are re-worded more simplistically. Scores are summed to generate a total DERS-M score between 29 and 145, with higher scores indicative of greater problems with emotion regulation. Scores are also generated for each distinct subscale. The total DERS-M score possesses excellent internal consistency ($\alpha$ = .97) with subscales ranging from .88 to .95 (Bardeen et al., 2016). The DERS-M also has adequate convergent, discriminant, and criterion validity (Bardeen et al., 2016). Whilst this measure has not been validated for use with LD populations, given its reduced length and increased simplicity compared to the DERS, it was deemed a more appropriate measure of difficulties with emotion

regulation. Patient A's total DERS-M score was relatively high, and difficulties were evident on all five subscales (see Table 4.1).

**Table 4.1**

*Pre-Intervention DERS-M Scores*

| DERS-M | Pre-Intervention |
|---|---|
| Identification | 25 |
| Nonacceptance | 26 |
| Impulse | 28 |
| Goals | 24 |
| Strategies | 23 |
| *Total* | 126 |

### *2.2.2. Clinical Outcomes in Routine Evaluation – Learning Disability*

The Clinical Outcomes in Routine Evaluation – Learning Disability (CORE-LD; Barton et al., 2008) is a 14-item self-report measure which assesses psychological distress. It is based on the original Clinical Outcomes in Routine Evaluation-Outcome Measure (CORE-OM; Evans et al., 2002) which assesses psychological distress according to four domains: 'well-being', 'problems', 'functioning' and 'risk'. Items are rated on a 3-point Likert scale ranging from '0 = not at all' to '3 = a lot', and visual prompts are provided to facilitate scoring. Scores are summed to generate a total CORE-LD score ranging from 0 to 28. Higher scores are indicative of greater psychological distress. The CORE-LD has good internal consistency ($\alpha$ = .80) and moderate test re-test reliability (Brooks et al., 2013). In addition, there is preliminary evidence that the CORE-LD possesses concurrent validity (Briscoe et al., 2019). Patient A obtained a score of 20 on the CORE-LD, suggesting relatively high levels of psychological distress.

## 3. FORMULATION

Formulation is a method that draws on theory and research to make inferences about the initiation and maintenance of a patient's presenting difficulties, in turn, informing person-centred treatment (Eels, 2007). In this case study, an adapted version of Ray's 5Ps formulation and core beliefs (Johnstone & Dallos, 2014) was developed in collaboration with Patient A; the purpose of which was to enhance Patient A's understanding of her self-harm and aggression, and to strengthen the therapeutic relationship (Persons et al., 2001; Westbrook et al., 2011). Moreover, according to behaviourism, the acquisition of unhealthy behaviours occurs through learning after which they are reinforced through conditioning (Bandura, 1979). Thus, as recommended in the National Institute of Care and Excellence guidelines (NICE, 2015), a functional analysis was also completed to develop insight into the factors that precede and reinforce Patient A's self-harm and aggression.

### 3.1. Case Formulation

#### *3.1.1. Predisposing Factors*

Patient A's upbringing was characterised by chronic adversity and instability in her care. She experienced physical abuse from her biological parents which resulted in her being taken into care when she was five years old. Patient A was later adopted at the age of six. Patient A experienced further adversity in the form of physical and emotional abuse from her adoptive father. If Patient A expressed or displayed emotion, for example, through crying, this was dismissed, and she was ostracised and punished further. In addition, Patient A's adoptive father was at times physically aggressive towards her adoptive mother. In line with social learning theory (Bandura, 1979), exposure to violence in Patient A's childhood could have predisposed her to using aggression. For instance, Patient A may have developed beliefs that support the use of aggression as a means of problem-solving. Furthermore, Patient A's experiences of physical abuse could have resulted in hypervigilance to perceived threats, increasing the likelihood of her responding aggressively to others when she feels her safety is

at risk. Witnessing domestic violence is also likely to have distorted Patient A's views of healthy intimate relationships.

Whilst Patient A had a more positive relationship with her adoptive mother, she reported feeling unprotected by her as she did not take action to protect Patient A from the physical abuse she suffered. Her adoptive mother also misused alcohol, inhibiting her capacity to respond to Patient A's emotional needs. Between the ages of seven and 10 years old, Patient A went "back and forth" to her adoptive parents, intertwined with periods in foster care. Patient A described this time as "unsettling", and she reported having thoughts such as "where will I get put next". Attachment theorists posit that a child's bonds with their caregivers influence their social and emotional development (Bowlby, 1988). For instance, children who do not form an appropriate bond with at least one significant caregiver are more likely to experience difficulties forming healthy relationships (Bowlby, 1997), tolerating distress (Cruz et al., 2022), and expressing and regulating their emotions (Cassidy, 1994). In addition, their interpretation of themselves, others, and the world is often distorted (Cruz et al., 2022). Thus, it is likely that Patient A's early life experiences left her feeling insecure in her caregiver attachments, adversely impacting her personality structure and her internal working model. Specifically, Patient A recalled feeling "unloved" as a child, and she formed beliefs that she was not worthy, that others did not care about her, and that the world was unsafe. It is also possible that Patient A developed a disorganised attachment style, evidenced by her poor self-image, emotion dysregulation, difficulties trusting others, and fear of rejection (Bowlby, 1988). In line with the biosocial model of emotion dysregulation (Linehan, 1993), Patient A may have learnt to internalise her feelings as a way of coping with the emotional invalidation she experienced, in turn, inhibiting her ability to effectively manage her emotions. Additionally, LD populations typically have lower levels of resilience, impairing their capacity to process and recover from childhood adversity (Scheffers et al., 2020). They are also less able to conceptualise experiences of abuse and apply adaptive coping skills (Cooper et al., 2007).

Patient A's poor self-image and beliefs about being defective are likely to have been further compounded by her experiences at school. She struggled academically, likely influenced by her mild to borderline LD, and she found it difficult to form meaningful friendships due to an inability to "get close to others", despite wanting to. Aged 10, Patient A was placed in a residential school for children with behavioural difficulties where she completed her education. It was here that she began to use substances and self-harm after associating with others who engaged in these behaviours. The influence of social learning on the acquisition of substance misuse (Ennett et al., 2008) and self-harm (Claes et al., 2010; Hasking et al., 2013), has been well established in the literature. Thus, it is likely that Patient A's substance use and self-harm occurred via observational learning and mimicking the behaviour of her peers. Patient A left school when she was 16 years old with no qualifications. At this point, she started engaging in unhealthy intimate relationships characterised by domestic violence and substance misuse. Aged 19, Patient A gave birth to a daughter who was taken into care at 5 months old. She experienced feelings of guilt and shame as a result.

### *3.1.2. Precipitating Factors*

Patient A's self-harm and aggression appear to occur largely in the context of emotion dysregulation. Her mood can be labile, and she is prone to acting on impulse to obtain immediate gratification, in the absence of being able to tolerate emotional pain. Patient A's use of self-harm to reduce aversive internal states can be explained by the experiential avoidance model (Chapman et al., 2006). This model highlights the cyclical nature of self-harm in which the acquisition of avoidant coping strategies perpetuates distressing thoughts and emotions, through the process of thought suppression (Chapman et al., 2006). Patient A has difficulties forming healthy relationships and often seeks intense closeness with others or extreme distance. She can become acutely distressed by problems in relationships, particularly in light of perceived interpersonal rejection and ostracism, resulting in feelings of anger, shame, and inferiority. Perceptions of rejection are typically triggered when her needs are not met immediately, or she does not feel listened to. Emotion dysregulation is also

triggered by self-defeating thoughts, bereavement, reminders of bereavements, and non-compliance with medication.

### *3.1.3. Perpetuating Factors*

Patient A's self-harm and aggression is perpetuated by an absence of adaptive coping strategies which she can implement to regulate her emotions and tolerate distress. In addition, Patient A reported several maladaptive beliefs about emotions such as "If I show emotion, I am weak", which are likely to hinder her willingness to notice and accept her emotions. Ongoing deficits in interpersonal effectiveness are also thought to perpetuate the risk of self-harm. For instance, when emotionally dysregulated, Patient A reported finding it difficult to communicate her needs in a healthy way. Difficulties in this area are likely to be exacerbated by her propensity to engage in unhealthy relationships and her sensitivity to rejection. Furthermore, Patient A often experiences feelings of shame following incidents of self-harm and aggression, perpetuating her core beliefs that she is not worthy. This in turn likely contributes to ongoing poor self-image and low self-esteem, further perpetuating her engagement in harmful behaviours. Other factors that may perpetuate Patient A's risk of self-harm and aggression include unresolved grief, substance misuse, and potential responsivity issues due to her mild to borderline LD. Specifically, in the absence of necessary adaptations, Patient A's propensity to benefit from psychological intervention may be limited.

### *3.1.4. Protective Factors*

Patient A is detained in a medium-secure unit under Section 37/41 of the Mental Health Act 1983 (amended 2007), where she has access to staff 24 hours a day and appropriate levels of supervision and resources for treatment. Patient A demonstrates insight into her diagnoses and the need for her ongoing detention in hospital for treatment. She is compliant with her medication regime and has insight into the benefits of this. Patient A reports internal motivation to engage in psychological therapies and despite finding it difficult to trust others, she has previously been able to build positive relationships with professionals involved in her

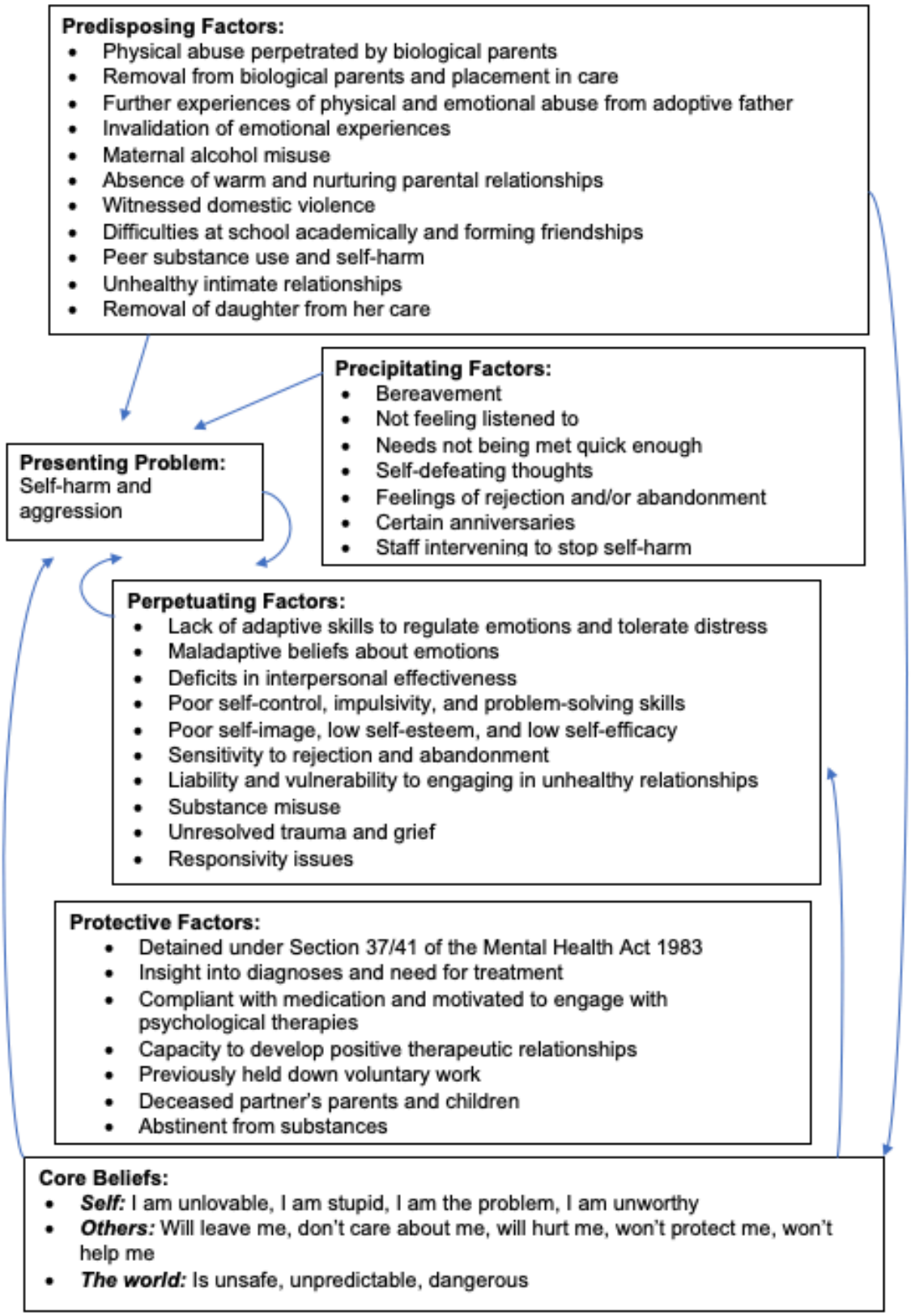
care. During her previous admission, Patient A held down voluntary work and she has expressed a desire to return to this. Patient A currently has telephone contact with her deceased partner's parents who provide her with emotional and practical support. Her deceased partner's children also act as a protective factor. Specifically, Patient A has expressed wanting to remain abstinent from substances so that she can have contact with them in the future. For a diagrammatical representation of the case formulation see Figure 4.1.

### 3.2. Functional Analysis

For the functional analysis, an ABC chart was used to generate data pertaining to antecedents, behaviours, and consequences. This exercise revealed that the functions and consequences of Patient A's self-harm vary depending on the method (see Table 4.2). For instance, Patient A reported that cutting induces a positive internal state as she finds the presence of blood relaxing. This aligns with research that suggests that cutting decreases activation of the amygdala, thus, reducing emotional arousal (Naoum et al., 2016) and having a calming effect on the brain (Reitz et al., 2015). Conversely, the physical pain associated with Patient A's head banging and punching walls acts as a distraction from emotional pain. This corresponds with the distraction hypothesis which posits that individuals with high emotional sensitivity are less likely to benefit from menial forms of distraction, resulting in the adoption of more severe techniques to distract from emotional turmoil (Briere & Gil, 1998; Selby et al., 2008). Alternatively, tying ligatures (which was in the absence of suicidal ideation) was often used to communicate distress and elicit staff care; this type of self-harm did not result in aggression when staff intervened. Verbal aggression was largely triggered when Patient A's needs were not met quickly enough, or her requests were denied.

**Figure 4.1**

*Formulation Based on Ray's 5Ps Formulation and Core Beliefs (Johnstone & Dallos, 2014)*



Patient A's self-harm was conceptualised according to a four-factor model of self-harm (Nock & Prinstein, 2004). Within this model, the functions of self-harm are considered either 'intrapersonal' or 'interpersonal': intrapersonal functions relate to emotion regulation, and interpersonal functions relate to the communication of distress. Self-harm is then perpetuated by either positive or negative reinforcement. Specifically, Patient A's self-harm appeared to be reinforced by reductions in negative internal states (intrapersonal negative reinforcement), the desire for positive internal states (intrapersonal positive reinforcement) and increased staff care (interpersonal positive reinforcement). Patient A's use of aggression could be understood in the context of interpersonal negative reinforcement (withdrawal of staff when they attempt to stop her from self-harming) and interpersonal positive reinforcement (having her needs met quicker and/or her requests granted).

**Table 4.2**

*ABC Data for Patient A's Self-Harm*

| **Antecedent (A)** | **Behaviour (B)** | **Consequence (C)** |
|---|---|---|
| - Negative thoughts about self<br>- Thinking of deceased partner<br>- Anniversaries | - Cutting | - Feelings of relief<br>- Feeling calmer |
| - Being told to wait<br>- Not feeling listened to<br>- Conflict with others<br>- Perceived rejection | - Head banging<br>- Punching walls | - Feeling less angry<br>- Less emotional pain |
| - Thinking of deceased partner<br>- Anniversaries | - Ligaturing | - Talk time with staff |

## 4. INTERVENTION

### 4.1. Theoretical Background to Treatment and Links with Formulation

The assessment and formulation provided insight into the aetiology of Patient A's self-harm and aggression, and the factors that trigger and maintain these behaviours. Largely, Patient A's self-harm appeared to be driven by emotion dysregulation and a desire to avoid unpleasant emotions. Developing skills in emotion regulation and distress tolerance were therefore identified as key treatment targets. Exploring the functions of emotions was also thought beneficial to challenge the maladaptive beliefs that Patient A held about emotions. This, in turn, could increase her willingness to notice and accept her emotions. In addition, at times there seemed to be a communicatory function to Patient A's self-harm and aggression. Thus, developing skills in interpersonal effectiveness was also thought important. In addition, given Patient A's propensity to act impulsively, it was thought that she could benefit from developing skills in self-awareness and impulse control.

Historically, interventions delivered to LD populations have been informed by behavioural approaches. However, over the past two decades, support for the use of 'talking' therapies in the treatment of LD populations has grown. For instance, research has identified cognitive behaviour therapy (CBT; Beck, 2020) as efficacious in treating psychological difficulties such as depression (Ghafoori et al., 2010; McCabe et al., 2006; McGillivray et al., 2008), anxiety (Ghafoori et al., 2010), and anger (Rose et al., 2000; Willner, 2007), amongst this population. Another psychotherapy that has received attention in the treatment of LD populations is DBT (Linehan, 2015). DBT is a 'third wave' therapy which draws on the principles of CBT and was developed for the treatment of individuals with EUPD. DBT places greater emphasis on the synthesis between 'acceptance' and 'change', and mindfulness practice, to enhance emotion regulation.

Developing literature supports the use of adapted DBT programmes to improve health and social functioning amongst LD populations (McNair et al., 2017). For instance, in a sample

of 25 forensic inpatients with intellectual disabilities (ID), significant reductions in symptomatology and distress were observed following an adapted 12-month DBT programme (Morrissey & Ingamells, 2011). Similar findings have been evidenced for shorter programmes. In one study (*N* = 6), health and social functioning improved significantly following the completion of an adapted three-week DBT programme (Sakdalan et al., 2010). Another study evaluating an 18-week programme, delivered to four individuals with ID, produced similar findings which were largely maintained four months post-intervention (Crossland et al., 2017). Treatment gains were also sustained at six-month follow-up in one study, albeit these were no longer observed two years post-intervention (Hewitt et al., 2019).

Adapted DBT programmes have also demonstrated effectiveness in reducing risky behaviours amongst LD populations. In one community study of eight females with ID, there was an overall reduction in self-harm, violence, substance use, risky sexual behaviours, and disordered eating, following a 23-week adapted DBT programme (Lew et al., 2006). Additionally, in a longitudinal study of 40 individuals with ID, there were statistically significant reductions in self-harm and aggression four years after commencing treatment (Brown et al., 2013). Research focusing specifically on the delivery of mindfulness training to LD populations has also provided promising results. One systematic review of 11 studies found that mindfulness-based interventions led to a reduction in challenging behaviours including self-harm and aggression (Chapman et al., 2013). Despite the academic literature providing preliminary support for the use of adapted DBT programmes with LD populations, studies are hindered by small sample sizes and a lack of control groups. Moreover, interventions vary according to duration and mode of delivery, making it difficult to draw firm inferences regarding their effectiveness.

### 4.2. I Can Feel Good Programme

One DBT programme that has been developed to meet the needs of LD populations is the I Can Feel Good Programme (ICFG; Ingamells & Morrissey, 2014). The ICFG

programme is based on the original DBT skills programme and consists of four modules: Mindfulness, Managing Feelings, Coping in Crisis, and People Skills. An initial evaluation of the programme was conducted in a medium-secure unit where it was delivered to male and female inpatients (Ashworth & Brotherton, 2018). Participants varied between ten and 12 across the delivery of the four modules. Results indicated statistically significant improvements in the Managing Feelings and People Skills modules in the female group. Similar findings were evident for the male group. However, for the male group, statistically significant improvements were also observed for the Coping in Crisis module. Whilst improvements were seen in the expected direction for the Mindfulness module, these did not reach statistical significance. A more recent evaluation of the Mindfulness module in a small sample of males residing on an ID rehabilitation ward ($N$ = 5), corroborated these findings (Craven & Shelton, 2020). A single case study also demonstrated some support for the effectiveness of the ICFG programme, albeit the findings were not as promising (Ashworth et al., 2017). For instance, improvements in emotion regulation were minimal and changes for the People Skills module did not occur in the expected direction.

In 2018, the ICFG manual was updated to produce a second version which was gender responsive and contained female-orientated resources as well as male ones (Ashworth et al., 2018). An evaluation of the second edition of the programme was conducted with five male forensic inpatients with mild LD detained in a low-secure ward (Ashworth et al., 2021). Statistically significant improvements were evidenced for the People Skills module. Results in the expected direction were observed for the Managing Feelings and Coping in Crisis modules, albeit these did not reach statistical significance. The sample size in this evaluation, however, was considerably smaller than in the evaluation completed by Ashworth and Brotherton (2018). In addition, the participants in this study were detained in a low-secure ward whereas in Ashworth and Brotherton's (2018) evaluation, they were detained in conditions of medium security. Thus, it is possible that participants commenced the

programme with a greater level of skill, reducing the opportunity for treatment change. Improvements in the Mindfulness module were not observed.

To the author's knowledge, no research to date has adopted a single case study design to evaluate the ICFG programme with a female forensic inpatient with an LD. However, there is preliminary evidence to suggest that this intervention is effective in improving emotion regulation, distress tolerance, and interpersonal effectiveness among this population (Ashworth & Brotherton, 2018). Considering Patient A's formulation, the ICFG programme was identified as an appropriate intervention to address her treatment needs. Whilst the ICFG programme was delivered in a group setting in the service where this case study was completed, Patient A was unable to attend the group programme due to being on Level 3 observations. Patient A also reported a preference for attending individual psychology sessions. This intervention was subsequently delivered on an individual basis. The ICFG programme was originally designed to be delivered in a group format, however, guidance is provided which supports the use of this intervention on an individual basis (Ashworth et al., 2018).

### 4.3. Outcome Measures

To measure the acceptability of the intervention, Patient A repeated the psychometric tests completed during the assessment, post-intervention: the DERS-M and the CORE-LD. Limitations of using self-report measures with LD populations have been highlighted in the literature (Vlissides et al., 2017). For instance, they may have difficulties comprehending the questions being directed to them (Finlay & Lyons, 2001), hindering their capacity to provide a valid and reliable account of their experiences (Kooijmans et al., 2022). Thus, in addition to using self-report measures, pre- and post-intervention data were also gathered via the completion of an Individual Clinical Rating Form (ICRF; Appendix L), as recommended in the ICFG manual (Ashworth et al., 2018). To minimise the risk of bias, the ICRF was completed by Patient A's keyworker who was not involved in the delivery of the intervention. To assess

the impact of the intervention on behavioural change, incident data on self-harm and aggression were also gathered; a technique previously recommended in future research evaluating the ICFG programme (Ashworth et al., 2021).

### 4.4. Presentation and Engagement

Patient A commenced the ICFG programme on an individual basis in October 2022. Sessions took place over 12 months and finished in September 2023. Overall, Patient A demonstrated positive engagement throughout the intervention. She attended all sessions offered to her except for two; one when she was being nursed in seclusion, and one when she had been admitted to a general hospital because of physical health issues. Generally, Patient A presented as motivated to learn and she routinely completed homework between sessions. In addition, she demonstrated a moderate understanding of the session content. When Patient A did not appear to have fully understood a skill, corrective feedback was provided during the homework review and time was spent recapping this. Since mindfulness is at the core of DBT, this skill was practised at the start of every session. Difficulties comprehending abstract concepts are common in LD populations (Hassiotis et al., 2012); thus, visual and sensory prompts were used to assist mindfulness practice. Initially, Patient A presented as ambivalent about practising mindfulness. However, she developed a greater understanding of this skill as the intervention progressed, and she would often volunteer to run the mindfulness exercise.

At times, when Patient A joined sessions, she presented as emotionally dysregulated. However, mindfulness practice appeared to ground Patient A, enabling her to adopt a ‘wise’ mind and reduce the intensity of her emotions. On other occasions, Patient A presented as fatigued which appeared to be associated with her use of PRN medication. Patient A was also prescribed Lithium in September 2022. Following this change to her medication regime, Patient A presented as drowsy, and her speech was at times slurred. These symptoms improved following a reduction in her dosage. Developing self-monitoring skills is crucial when treating emotion dysregulation in LD populations (Whitaker, 2001). At the start of the

intervention, Patient A was educated on and provided with adapted weekly diary cards; a self-monitoring tool that allows patients to build self-awareness (Linehan, 2015). Whilst Patient A was compliant in completing these, it became apparent early in the intervention that she tended to rate her emotions at the extreme ends of a spectrum; for example, either 0/5 or 5/5. Emotion thermometers were therefore introduced to assist Patient A in developing a greater understanding of the differing intensity of emotions.

## 5. RESULTS

Information about the DERS-M (Bardeen et al., 2016) and CORE-LD (Barton et al., 2008) was provided in the assessment section of this report (2.2) and will not be repeated here. As mentioned in Section 4.3., the ICRF (Ashworth et al., 2018) was completed by Patient A's keyworker due to the potential limitations of using self-report measures with LD populations. Behavioural data is also described. Whilst observations can be made regarding changes in Patient A's pre- and post-intervention scores, there is currently no standardised data available for forensic inpatients for the psychometric tests completed. Thus, it is not possible to determine whether scores indicate clinically significant change.

### 5.1. Outcome Measures

#### *5.1.1. Difficulties in Emotion Regulation Scale – Modified*

Post-intervention, Patient A's total DERS-M score decreased from 126 to 106 (see Table 4.3). Reductions in scores were observed on four of the five subscales suggesting fewer difficulties in these areas, post-intervention. The most notable decreases in scores were observed on the Impulse and Identification subscales. A slight increase in score was observed on the Goals subscale, indicating greater difficulties in this area.

#### *5.1.2. Clinical Outcomes in Routine Evaluation – Learning Disability*

Post-intervention, Patient A's score on the CORE-LD reduced from 20 to 13, suggesting lower levels of psychological distress on completion of the programme.

Specifically, Patient A scored lower on items pertaining to the suppression of emotion, threatening behaviour, feelings of unhappiness, bottling up anger, and self-harm.

**Table 4.3**

*Pre- and Post-Intervention DERS-M Scores*

| DERS-M | Pre-Intervention | Post-Intervention | Change |
|---|---|---|---|
| Identification | 25 | 19 | -6 |
| Nonacceptance | 26 | 22 | -4 |
| Impulse | 28 | 21 | -7 |
| Goals | 24 | 26 | +2 |
| Strategies | 23 | 18 | -5 |
| *Total* | 126 | 106 | -20 |

### *5.1.3. Individual Clinical Rating Form*

The ICRF is a goal attainment scale which assesses whether treatment goals are achieved throughout the ICFG programme (Ashworth et al., 2018). It consists of 29 items assessing a range of behaviours and attitudes according to the four modules of the programme: Mindfulness, Managing Feelings, Coping in Crisis, and People Skills. The ICRF also includes a General domain which assesses therapeutic factors such as self-esteem, motivation, and prosocial behaviours. Items are scored on a scale ranging from -2 to +2. A score of 0 represents the minimum acceptable behaviour. Less than acceptable behaviour is rated as either -2 or -1, and better than acceptable performance is rated as +1 or +2. Total scores on the General and Managing Feelings domains range from -12 to +12. Total scores on the Mindfulness and Coping in Crisis domains range from -10 to +10. Finally, total scores on the People Skills domain range from -14 to +14. All domains except for the General domain were completed before and after each respective module. The General domain was completed at the start and the end of the entire intervention. Results indicated improvements in all domains of the ICRF (see Table 4.4).

**Table 4.4**

*Pre- and Post-Module ICRF Scores*

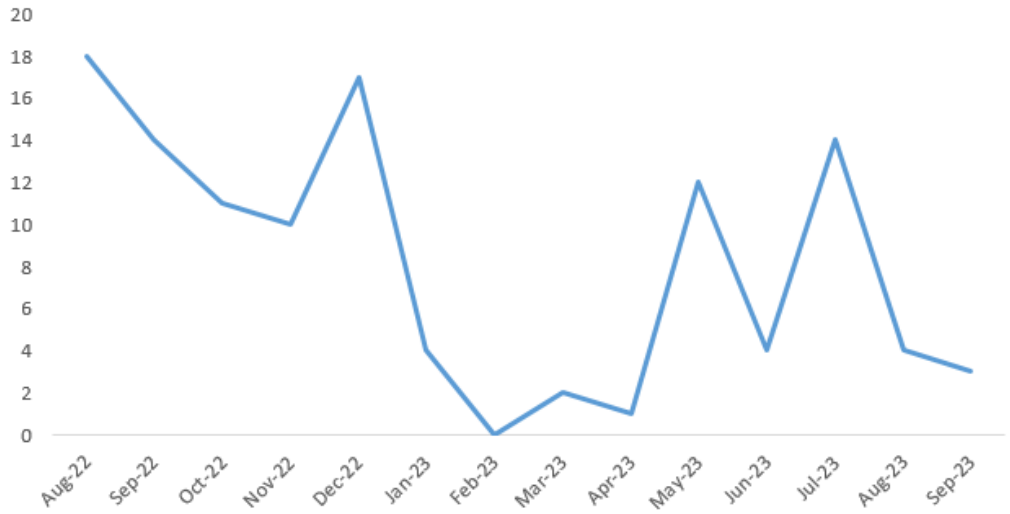
| Module | Pre-Module | Post-Module | Change |
|---|---|---|---|
| Mindfulness | -7 | -6 | +1 |
| Managing feelings | -8 | -2 | +6 |
| Coping in crisis | -7 | -3 | +4 |
| People skills | -6 | 0 | +6 |
| General | -6 | -1 | +5 |

### 5.2. Behavioural Data

Behavioural data indicated that there was a decrease in incidents of self-harm when comparing pre-and post-intervention data (see Figure 4.2). Specifically, in the two months before commencing the intervention, August 2022 and September 2022, there were 18 and 14 incidents of self-harm, respectively. During September 2023, the month the intervention was completed, there were three incidents of self-harm. Notable increases in self-harm were, however, observed in December 2022, May 2023, and July 2023.

**Figure 4.2**

*Number of Incidents of Self-Harm*



There was one incident of physical aggression throughout the assessment and intervention. This occurred in May 2023 and resulted in Patient A being nursed in seclusion for three days. For verbal aggression, again, there was an overall downward trend with the number of incidents peaking in December 2022 and May 2023 (see Figure 4.3).

**Figure 4.3**

*Number of Incidents of Verbal Aggression*


## 6. DISCUSSION

### 6.1. Summary of Findings

This single case study aimed to assess the acceptability of the ICFG programme in the treatment of a female forensic inpatient with EUPD and mild to borderline LD. It was hoped that the intervention would decrease Patient A's difficulties with emotion regulation and increase her ability to tolerate distress and adaptively communicate her needs. In addition, it was hoped that the intervention would reduce Patient A's overall level of psychological distress, and incidents of self-harm and aggression. Patient A's pre- and post-intervention scores on the DERS-M indicated fewer difficulties with emotion regulation on completion of the programme. This result corresponds with previous studies which demonstrated that the

ICFG programme is an acceptable intervention for reducing emotion dysregulation (Ashworth & Brotherton, 2018; Ashworth et al., 2021). Improvements in emotion regulation were also observed on the ICRF. This contrasts with a previous single case study that found minimal effects of the ICFG programme on emotion regulation (Ashworth et al., 2017); this case study, however, was conducted with a male. Research has indicated that females are more prone to increased amygdala activity when responding to negative emotions compared to males (Min et al., 2023). Thus, it is possible that there was a greater 'window for change' in the current case study. Moreover, Patient A had intermittently attended a DBT skills group programme during her previous admission. Whilst Patient A demonstrated limited recall of the content covered, she reported some familiarity with the concepts being taught throughout the intervention which could have facilitated her learning. The largest reductions in scores on the DERS-M were observed for the identification and impulse subscales. Throughout the intervention, mindfulness practice was completed at the beginning of every session. It is therefore possible that developing skills in this area had a positive effect on Patient A's self-awareness and self-control, reducing her propensity to act impulsively. A slight increase in score was observed on the goals subscale. Items on this subscale pertain to an individual's ability to concentrate on and fulfil tasks when emotionally distressed. It could be that Patient A's post-intervention score represents a genuine decline in this area following the intervention. Alternatively, it could be that Patient A's post-intervention score on this subscale was a more accurate reflection of her abilities in this area.

Improvements in the People Skills and Coping in Crisis modules were also observed via the ICRF, post-module. Again, these findings align with previous research (Ashworth & Brotherton, 2018; Ashworth et al., 2021). For the Mindfulness module, post-intervention change was observed in the expected direction, however, this was minimal (+1). This finding corresponds with previous studies in which post-intervention changes in this module have been small (Ashworth & Brotherton, 2018; Craven & Shelton, 2020) or absent (Ashworth et al., 2021). Patient A appeared to develop her skills in mindfulness throughout the intervention,

therefore, this result was surprising. However, improvements in mindfulness were assessed solely via staff-report. Difficulties measuring internal constructs such as mindfulness have been highlighted in the literature (Gore & Hastings, 2016). It is therefore possible that in the absence of a self-report measure assessing mindfulness, changes in Patient A's skill level in this area were not identified. Results indicated an improvement in the General domain of the ICRF post-intervention, aligning with previous research (Ashworth et al., 2021). Patient A's pre- and post-intervention scores on the CORE-LD also indicated less psychological distress, post-intervention. This finding corroborates previous research which has found that adapted DBT programmes improve emotional and social well-being (Crossland et al., 2017; Hewitt et al., 2019; Morrissey & Ingamells, 2011; Sakdalan et al., 2010).

Behavioural data demonstrated a reduction in self-harm and aggression on completion of the programme. This would suggest that the ICFG programme is an acceptable treatment for eliciting behavioural change. However, there were months when Patient A's self-harm and verbal aggression increased (December 2022, May 2023, and July 2023). During these months, Patient A reported heightened affective instability precipitated by events that reminded her of her deceased partner: Christmas, his birthday, and the anniversary of his death. Patient A reported ongoing difficulties accepting this loss. Unresolved grief can result in intense and debilitating yearning, rumination, and preoccupation with the deceased (Shear et al., 2013). It could therefore be of benefit for Patient A to engage in complicated grief therapy; an intervention that facilitates the natural adaptive processes required to process loss (Shear & Gribbin Bloom, 2015). In July 2023, a new patient was also admitted to the ward who required high levels of staff supervision and support. During this month, Patient A reported feeling envious of this patient and her self-harm primarily involved tying ligatures, the function of which was to procure staff care. Thus, it is possible that Patient A's abandonment schema was activated in this instance (Young et al., 2003). Moreover, at times, Patient A made superficial scratches to her arm after which she would hand the item she had used to self-harm to staff. She stated that staff would subsequently praise her, providing her with a sense

of self-achievement. This could be explained by an approval-seeking/recognition schema (Young et al., 2003). Further psychological intervention based on schema therapy could assist Patient A in developing greater insight into her unmet needs and the cognitions maintaining her difficulties. It could also enable her to cease self-defeating patterns in her intimate relationship. In addition, Patient A would benefit from further treatment addressing her substance misuse.

### 6.2. Strengths and Limitations

A key strength of this intervention was its duration; this allowed for all session content to be covered, maintaining the integrity of the ICFG programme. Whilst the benefits of group intervention have been highlighted in the academic literature (Yalom & Leszcz, 2005), the delivery of this intervention on an individual basis can also be viewed as a strength. Firstly, this allowed for a more detailed exploration of incidents of self-harm and aggression which may not have occurred within a group setting. Moreover, Patient A reported previously finding it difficult to trust others and talk openly about her experiences during group interventions. These difficulties were not observed throughout this case study. Positive therapeutic relationships can serve as an attachment relationship for patients due to the transactional processes that occur within therapy sessions (Dozier & Bates, 2004). Thus, it is possible that delivering the intervention on an individual basis provided Patient A with a 'safe' space, enabling her to build a positive therapeutic alliance and maximising her propensity to benefit from the intervention. In addition, this case study expands on previous evaluations of the ICFG programme by using behavioural data as a measure of change.

The limitations of this case study must also be addressed. Firstly, due to the single case study design, it is not possible to deduce whether treatment effects were statistically significant. Whilst single case studies can make valuable contributions to developing literature, additional research with larger samples is needed to generalise findings. Furthermore, other factors concerning Patient A's treatment pathway could have contributed to the findings. For

instance, in September 2022, Patient A was commenced on lithium, a mood stabiliser. Research has indicated that lithium reduces self-harm and aggression among individuals with EUPD (Mercer et al., 2009). Changes to Patient A's medication regime could have therefore reduced her propensity to engage in these behaviours. In addition, as the intervention progressed, Patient A's relationship with her keyworker strengthened. This could have increased Patient A's willingness and motivation to seek out support from nursing staff in an adaptive manner.

Whilst the DERS-M was thought to be a more appropriate measure of emotion dysregulation compared to the DERS, due to its shorter length and greater simplicity, it has not been validated with LD populations. Furthermore, there is a lack of standardised data and clinical 'cut-offs' for both the DERS-M and the CORE-LD. Subsequently, it was not possible to determine whether changes in pre- and post-intervention scores were clinically significant. Whilst a staff-report scale was used to mitigate the issues of using self-report measures in LD populations, this method of data collection also possesses limitations when measuring internal constructs which are not overtly observable (Gore & Hastings, 2016). Towards the end of the intervention, Patient A expressed a desire to be discharged from hospital. Whilst it was not thought that her responses on the post-intervention psychometric tests were unduly influenced by impression management, this cannot be ruled out. Alternatively, Patient A's responses could have been influenced by a desire to please the therapist and demonstrate that the intervention had 'worked'. Lastly, despite the results providing support for the acceptability of the ICFG programme, follow-up data from Patient A and/or her keyworker were not obtained. The longevity of the ICFG programme in this case study, and the degree to which treatment gains were sustained, is therefore unknown.

### 6.3. Implications and Conclusion

This single case study provides support for the ICFG programme as an intervention for emotion dysregulation in female forensic LD populations. Moreover, the results indicate

that the intervention is an acceptable treatment for improving interpersonal effectiveness and distress tolerance and reducing psychological distress, self-harm, and aggression. Whilst single case studies are limited in their ability to draw generalisable conclusions regarding therapeutic interventions, using this method has implications for future research and clinical practice. To date, research evaluating the effectiveness of adapted DBT programmes, and particularly the ICFG programme, remains in its infancy. Therefore, this single case study adds to the limited but growing evidence base supporting the use of adapted DBT programmes in the treatment of emotion dysregulation among LD populations.

To the author's knowledge, this is the first single case study to assess the acceptability of the ICFG programme delivered to a female forensic inpatient with mild to borderline LD. Furthermore, it is the first single case study to examine the acceptability of the programme when delivering this on an individual basis. Whilst the academic literature highlights the benefits of group programmes in maximising treatment outcomes (Yalom & Leszcz, 2005), this case study demonstrates that treatment gains can also be achieved when the ICFG programme is delivered on an individual basis. This is an important finding, especially in instances when adapted DBT group interventions are not available, or patients are unable or unwilling to attend group sessions. Nonetheless, future research involving larger sample sizes and robust methodologies is crucial in providing higher-quality evidence of the efficacy of the ICFG programme. Since this is not always possible with LD populations it could be of benefit for local services to work collaboratively to obtain larger sample sizes. Further research assessing the longevity of the ICFG programme to ensure that treatment gains are sustained is also needed. In addition, studies adopting a qualitative approach would provide insight into the underlying mechanisms that promote change or the barriers to this.

## Chapter Five

## PSYCHOMETRIC CRITIQUE

***'A Critical Evaluation of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004)'***

**Abstract**

The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a psychometric test used to examine problems with emotion regulation. The purpose of this report is to evaluate and critique the DERS. The introduction provides an overview of emotion regulation and its clinical relevance, after which information on the development of the DERS is provided, and its psychometric properties evaluated. Cronbach's alpha values indicate that the measure possesses high levels of internal consistency and intra-correlation coefficients demonstrate good test-retest reliability. Research investigating the factorial structure of the DERS has provided mixed support for the original six-factor model, with some studies questioning the validity of the Awareness subscale and its ability to effectively measure emotion dysregulation. Nevertheless, the DERS performs well regarding other types of validity, particularly convergent and concurrent validity. Good clinical utility and favourable comparisons with other measures are discussed. In conclusion, the DERS is a sound measure of emotion dysregulation which has demonstrated applicability and generalisability across a range of populations and cultures. However, further research evaluating the psychometric properties of the DERS amongst more unique populations, such as forensic inpatients, and the development of normative data, is warranted.

## 1. INTRODUCTION

Definitions of emotion regulation vary within the scientific literature. However, broadly, this construct can be defined as an individual's capacity to effectively manage and respond to emotionally provoking situations (Bardeen & Fergus, 2014). Interest in emotion regulation has grown over the past few decades (Moore et al., 2022), with studies emphasising its contributory role to emotional well-being, psychopathology, and maladaptive behaviours (Aldao et al., 2010; Aldao et al., 2014; Gross & Muñoz, 1995; Hu et al., 2014; McLean & Foa, 2017; Osborne et al., 2017a). Several models have been developed to conceptualise emotion regulation, one being the process model of emotion regulation (Gross, 1998). According to the process model, emotions result from a sequence of steps, with opportunities to apply emotion regulation strategies arising at each step. Emotion regulation strategies are dichotomised into those implemented before an emotion develops (antecedent-related strategies) and those implemented once the individual is experiencing an emotion (response-related strategies). A distinction is also made between 'reappraisal' and 'suppression' strategies, with the former being viewed as 'adaptive' emotion regulation strategies and the latter as 'maladaptive'. Whilst the process model has been praised for its utility in targeting specific emotion regulation strategies within psychological intervention, its overreliance on non-clinical samples and sole focus on emotion regulation strategies has led to criticism (Gratz et al., 2015). Addressing these limitations, Gratz and Roemer (2004) developed the functional model of emotion regulation which emphasises the importance of context in effective emotion regulation and has been more readily applied to clinical practice. Conceptualising emotion regulation as a multi-faceted construct, the functional model focuses not only on the implementation of emotion regulation strategies but also on one's ability to notice, comprehend, and accept their emotions, their capacity to engage in goal-directed behaviour, and their readiness to experience difficult emotions.

Given the contributory role of emotion regulation on adverse outcomes, measuring this construct has important implications in terms of assessment, formulation, and targeted

intervention, particularly amongst clinical samples (Moore et al., 2022). The development of instruments that enable the accurate assessment of emotion regulation is therefore paramount. Historically, psychometric tests used to examine emotion regulation have assessed distinct aspects of this construct, resulting in the utilisation of a variety of measures (Mennin et al., 2002). Recognising the need for a more comprehensive measure of emotion regulation, Gratz and Roemer (2004) developed the Difficulties in Emotion Regulation Scale (DERS), based on an integrative approach to emotion regulation. Since its development, the DERS has been frequently used to assess difficulties with emotion regulation. The current report aims to reflect on the development of the DERS and to assess its psychometric properties and suitability for clinical and research use.

## 2. DEVELOPMENT AND OVERVIEW

In line with Gratz and Roemer's (2004) functional model of emotion regulation, the DERS was developed according to four domains of emotion regulation: a) emotional awareness and comprehension, b) emotional acceptance, c) capacity to engage in goal-directed behaviour when experiencing emotional distress, and d) ability to implement adaptive emotion regulation strategies. Initially, 41 items were generated following discussions with experts in the field of emotion regulation. To assess the factorial structure of the DERS, exploratory factor analysis was conducted; a process that is integral to the development of psychometric tests (Tavakol & Wetzel, 2020). Given the DERS was based on a multi-faceted conceptualisation of emotion regulation, the identification of several factors was expected. Initial investigations resulted in the removal of one item (Item 13 – 'When I'm upset, I allow myself to feel that way') due to its limited correlation with other items in the measure and the total DERS score. Following the removal of this item, factor analysis using the Scree test (Floyd & Widaman, 1995) was computed for the remaining 40 items, with results indicating a six or seven-factor model (Gratz & Roemer, 2004).

Due to a limited number of items loading on one of the factors within the seven-factor model, and the increased interpretability of the six-factor model, subsequent analyses were based on the six-factor model. A further four items were removed from the analysis (Items 2, 11, 18, and 36) due to them either loading on more than one factor or generating factor loading scores of lower than .40; a commonly used cut-off score in factor analysis (Stevens, 1992). A second factor analysis was computed following the removal of these items. Results indicated that all items had a factor loading of above 0.40 and the overall model accounted for 55.68% of the total variance of the items measured. Despite the DERS being based on four dimensions of emotion regulation, the results of the factor analysis suggested that this construct may be better conceptualised according to six domains: failure to accept emotional responses (NONACCEPTANCE), deficits in engaging in goal-directed behaviour when experiencing difficult emotions (GOALS), difficulties in controlling behaviour when experiencing negative emotions (IMPULSE), limited awareness of one's emotions (AWARENESS), access to adaptive emotion regulation strategies (STRATEGIES), and the degree to which an individual can identify what emotions they are feeling (CLARITY). The final version of the DERS consists of 36 items, scored on a 5-point Likert scale ranging from '1 = almost never' to '5 = almost always', with higher scores indicative of greater difficulties with emotion regulation. Gratz and Roemer (2004) conducted two studies utilising the 36 items identified from the preliminary analyses. In the first study, the DERS was completed by 357 psychology students studying at the University of Massachusetts, with a mean age of 23.10 years. Over two-thirds of the sample were female (73%) and of white ethnicity (65%). The second study consisted of 194 adults recruited from public areas within the same university; the mean age of participants was 25.95 years. Again, the sample was female-heavy (62%) and 67% of participants identified as white, raising concerns regarding the generalisability of findings given emotional appraisal and expression are influenced by gender and culture (Abbruzzese et al., 2019; Kitayama & Markus, 1994). Since the development of the DERS, subsequent research has been conducted assessing its psychometric properties. Moreover, three short versions of the DERS have been developed: the DERS-16 (Bjureberg et al., 2016), the DERS-18 (Victor & Klonsky,

2016) and the DERS-SF (Kaufman et al., 2016); all of which are comparable to the DERS in terms of their psychometric properties (Hallion et al., 2018; Skutch et al., 2019).

## 3. PSYCHOMETRIC PROPERTIES

In the field of psychology, psychometrics tests are used to measure a range of psychological constructs including capabilities, personality, behaviour, and attitudes. In line with classical test theory (Novick, 1966) and item test response theory (Lord et al., 1968), being able to appraise the quality of a psychometric measure is integral to practising ethically and avoiding misinterpretation of test scores (Furr, 2021). The psychometric properties of the DERS and its applicability and generalisability to different populations and cultures will be discussed below.

### 3.1. Reliability

The term 'reliability' refers to how precise a measure is; that is, the extent to which test scores are accurate and free from measurement error (Cohen et al., 1996). The reliability of a psychometric test can be determined by evaluating its internal consistency and test re-test reliability.

#### *3.1.1. Internal Consistency*

Internal consistency examines the degree to which items in a psychometric test measure the same construct; this is achieved by assessing the correlation between items (Middleton, 2022). Cronbach's (1951) alpha ($\alpha$) is one of the most used indexes of internal consistency (Bonett & Wright, 2015), producing a score between 0 and 1; the higher the score, the higher the internal consistency. Acceptable ranges of Cronbach's alpha vary; however, a score of .70 is commonly deemed 'acceptable', and a score of .80 demonstrates 'good' internal consistency (Cortina, 1993). Initial evaluation of the DERS indicated excellent internal consistency ($\alpha$ = .93) for the total DERS score (Gratz & Roemer, 2004), implying

unidimensionality of the measure (Bland & Altman, 1997). Similar alpha coefficients of 0.95 and 0.93 have been demonstrated in retrospective studies involving psychiatric inpatients and forensic inpatients (Fowler et al., 2014; Laporte et al., 2021b), suggesting that the internal consistency of the DERS is stable across samples.

It has been argued, however, that Cronbach's alpha values of .90 and over, may indicate that certain items are inadvertently measuring the same question (Streiner, 2003). Moreover, calculating Cronbach's alpha values is deemed less informative for measures with several subscales (Adams & Wieman, 2011) and can result in the inflation of this value (Taber, 2018). Considering the alpha coefficients for the DERS subscales may therefore provide a more accurate representation of the measure's internal consistency. In Gratz and Roemer's (2004) study, Cronbach's alpha values ranged from 0.80 to 0.89, suggesting good internal consistency across all subscales; scores that have been replicated for adapted versions of the DERS in Greek (Mitsopoulou et al., 2013), Italian (Giromini et al., 2012), Turkish (Ruganci & Gencoz, 2010), Portuguese (Coutinho et al., 2010), Brazilian Portuguese (Cancian et al., 2018; Machado et al., 2020), and Brazilian Spanish (Tejeda et al., 2012). Slightly lower subscale scores ($\alpha$ = .66 - .86) were produced for an offender population (Gillespie et al., 2018), with the Awareness subscale producing the lowest Cronbach's alpha value. Similar levels of internal consistency ($\alpha$ = .60 - .89) have been demonstrated in a sample of forensic inpatients (Laporte et al., 2021b). Interestingly, Cronbach's alpha values for DERS subscales are routinely lower than the values generated for the total DERS scores. This could be explained by the fact that alpha coefficients are influenced by the number of items being evaluated, with higher numbers of items resulting in higher Cronbach's alpha values (Taber, 2018).

### *3.1.2. Test Re-Test Reliability*

Test re-test reliability assesses the stability of an instrument's scores over time and is measured by administering a psychometric test to the same set of participants at two distinct points in time (Middleton, 2022). The higher the correlation between scores, the greater the test re-test reliability. Intraclass correlation coefficients (ICC) of 0.75 and above are deemed 'excellent' and those between 0.40 and 0.75 are deemed 'good' (Fleiss, 1986). Excellent test re-test reliability ($r$ = .88) was observed for the total DERS score four to eight weeks after initial completion, with subscale scores ranging from 0.57 to 0.89 (Gratz & Roemer, 2004). Given the small sample size ($N$ = 21), further replication was recommended.

Similar results were found for the total DERS score ($r$ = .83), in a sample of 59 Turkish undergraduates, with subscale scores ranging from 0.60 to 0.85 (Ruganci & Gencoz, 2010). The time lapse between the first and second completion of the DERS, however, was not reported by the authors. Re-administering a psychometric test within one month of the initial completion can result in distorted responses due to participant recall (Hammond, 2006). Studies using larger samples, in which the DERS was repeated at least one month after initial completion, have also indicated good levels of test re-test reliability (Coutinho et al., 2010; Giromini et al., 2012). Other recommendations, however, have suggested a minimum time lapse of three months between the first and second completion of a psychometric measure when assessing test re-test reliability (Kline, 2013), indicating that further research evaluating the temporal stability of the DERS would be of benefit.

## 3.2. Validity

The validity of a psychometric test can be conceptualised as its ability to measure the desired construct (Kelley, 1927). Several types of validity should be considered when examining the validity of a measure (see Table 5.1).

### *3.2.1. Face Validity*

Face validity is the degree to which a psychometric test appears to measure what it pertains to (Nevo, 1985). Psychometric tests with high face validity have a clear purpose and items appear relevant to the underlying construct they aim to measure. Face validity for the DERS can therefore be assumed if items appear to measure emotion regulation. From visual inspection, items in the DERS are similar to those on other measures of emotion regulation including the Generalised Expectancy for Negative Mood Regulation Scale (NMR; Catanzaro & Mearns, 1990), the Emotion Dysregulation Questionnaire (EDQ; Gill et al., 2021) and the Emotion Dysregulation Scale – Short Version (EDS-Short; Powers et al., 2015). The purpose of the measure is clear, and respondents are given clear instructions to identify which response in the 5-point Likert scale they think most appropriately relates to them. The face validity of items on the impulsivity subscale, however, has been questioned (Gill et al., 2021). Specifically, this subscale includes items which pertain to one's ability to remain in control of their behaviour when emotionally aroused, as opposed to impulsivity in general, as inferred by the label of the construct.

### *3.2.2. Content Validity*

Content validity assesses the degree to which a psychometric test appears to represent all components of the construct it aims to measure (Rossiter, 2008). Thus, for the DERS, content validity would be assumed if items appear to represent the four distinct areas of emotion regulation identified by Gratz and Roemer (2004). Throughout the development of the DERS, professionals with significant knowledge of the literature on emotion regulation were consulted, implying the appropriate identification of items within the scale. Having visually inspected the DERS, items such as 'I pay attention to how I feel' and 'When I am upset, I take time to figure out what I am really feeling' seem appropriate for the measurement of emotional awareness and comprehension. Several items appear to measure emotional acceptance such as 'When I'm upset, I become angry with myself for feeling that way' and items such as 'When I'm upset, I have difficulty focusing on other things' appear relevant to

assessing one's capacity to engage in goal-directed behaviour. Items such as 'When I'm upset, I know that I can find a way to eventually feel better' and 'When I am upset, it takes me a long time to feel better' appear to appropriately measure one's capacity to implement adaptive emotion regulation strategies.

**Table 5.1**

*Types of Validity and Descriptions*

| **Type of Validity:** | **Description:** |
|---|---|
| Face Validity | The degree to which a psychometric test appears to measure what is pertains to. |
| Content Validity | The degree to which a psychometric test appears to measure all components of the construct which it aims to measure. |
| Construct Validity | The degree to which a psychometric test measures what it intends to. |
| *i. Convergent* | How closely related a psychometric test is to other measures of the same construct. |
| *ii. Discriminate* | How distinct a psychometric test is from other measures that assess different constructs. |
| Criterion Validity | The degree to which a psychometric test is related to or predicts another measure of interest. |
| *i. Concurrent* | How closely associated a psychometric test is to a related criterion, when assessed at the same point in time. |
| *ii. Predictive* | How well a psychometric test predicts scores on another measure of interest, when assessed at two distinct points in time. |

### *3.2.3. Construct Validity*

Construct validity is determined by the extent to which a psychometric test measures the construct to which it pertains (McBurney & White, 2007). It consists of two types of validity: convergent and discriminative. Convergent validity refers to how closely a psychometric test is related to other measures of the same construct, whereas discriminate validity assumes non-relatedness between measures that assess distinct constructs.

Factor analysis is a commonly used method which determines construct validity by testing whether data fits a specified factor structure (Kang, 2013). Whilst some studies have replicated Gratz and Roemer's (2004) original six-factor model in adolescent and adult samples in Europe (Coutinho et al., 2010; Neumann et al., 2010; Perez et al., 2012; Ruganci & Gencoz, 2010; Sighinolfi et al., 2010; Sörman, et al., 2022), others have failed to provide evidence for the Awareness subscale, resulting in the proposition of a five-factor model (Bardeen et al., 2012; Cho & Hong, 2013; Hallion et al., 2018; Lee et al., 2016; Osborne et al. 2017b; Snow et al., 2013). Failures to replicate the original six-factor solution also led to the development of the DERS-16 (Bjureberg et al., 2016) which excludes this subscale. This would suggest that the Awareness subscale does not measure the same construct as the other subscales in the DERS. Specifically, the Awareness subscale appears to evaluate the degree to which an individual acknowledges their emotions, whereas the other subscales in the DERS appear to evaluate how an individual responds to their emotions. The awareness subscale, however, is the only subscale in the DERS in which all items are reverse-coded. Assessing whether methodological reasons could account for this discrepancy, one study reworded all reverse-coded items; findings demonstrated potential support for this explanation (Bardeen et al., 2016).

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The construct validity of the DERS has been criticised for containing several items which are analogous in content but examine different factors in the DERS (Gill et al., 2021). For instance, the items 'When I'm upset, my emotions feel overwhelming' and 'I experience my emotions as overwhelming and out of control' are similar but belong to different subscales. The absence of items integral to emotion regulation such as maladaptive emotion regulation strategies and maladaptive beliefs about emotions, has also led to questions about the construct validity of the DERS, given their relevance in identifying appropriate psychological intervention (Gill et al., 2021). For instance, an individual who avoids experiencing their emotions may benefit from engaging in acceptance and commitment therapy (ACT; Hayes et al., 2012), whereas someone who thinks negatively about emotions may respond better to

interventions based on cognitive therapy (Leahy, 2003). Re-assessing the factor structure of emotion regulation, Gill et al. (2021) suggested an eight-factor model. Original items of the DERS were not present in three of the factors, leading to the conclusion that the DERS does not capture all aspects of emotion regulation. Moreover, the number of items in the DERS subscales varies which could influence the degree to which each subscale contributes to the total DERS score (Gill et al., 2021); a methodological limitation previously highlighted (Gill et al., 2018).

Convergent validity is examined by assessing the correlation between the test of interest and other tests designed to measure the same construct (Cohen et al., 1996). Correlation coefficients range from 0 to 1; the closer the correlation coefficient is to 1, the greater the concurrent validity. Several guidelines exist regarding the interpretation of correlation coefficients. The guidelines referred to in this report are documented in Table 5.2 (Schober et al., 2018).

**Table 5.2**

*Interpretation of Correlation Coefficients*

| Correlation Coefficient | Interpretation |
|---|---|
| 0.00 – 0.10 | Negligible correlation |
| 0.10 – 0.39 | Weak correlation |
| 0.40 – 0.69 | Moderate correlation |
| 0.70 – 0.89 | Strong correlation |
| 0.90 – 1.00 | Very strong correlation |

Examining the association between the DERS and the NMR (Catanzaro & Mearns, 1990), Pearson's correlation coefficients indicated a moderate negative association between the two scales ($r$ = -.69, $p$ <0.1) in Gratz and Roemer's (2004) study. Items on the NMR had been re-coded, thus, higher scores indicated greater confidence in alleviating negative affect. These results suggest an overlap in the constructs they measure. A moderate positive

association ($r$ = .60, $p$ <.01) was also found when testing the DERS against the Acceptance and Action Questionnaire (AAQ: Hayes et al., 2004); a self-report measure of experiential avoidance. The relationship between the DERS and the AAQ has also been tested in a clinical sample (Fowler et al., 2014) with results demonstrating a strong positive correlation between these scales ($r$ = .70, $p$ <.001). A very strong correlation ($r$ = .94, $p$ <.001) has been evidenced for the DERS and the EDQ, suggesting excellent convergent validity. Albeit significant, weaker correlations were observed in one study (Sörman et al., 2022) investigating the relationship between the DERS and the Emotion Regulation Questionnaire (ERQ; Gross & John, 2002) for both the reappraisal subscale ($r$ = -.36, $p$ <0.001) and the suppression subscale ($r$ = .31, $p$ <0.001). These measures, however, adopt different theoretical underpinnings of emotion regulation which could account for these findings. Construct validity is also evidenced by a psychometric test's sensitivity to change (Hays & Hadorn, 1992). The DERS demonstrated its ability to detect change in a randomized control trial in which subjects either received, or were on the waiting list for, an intervention targeting emotion dysregulation (Gratz & Gunderson, 2006).

Testing the discriminative validity of the DERS, one study (Ritschel et al., 2015) assessed the degree to which the DERS correlated with the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995). Results indicated a positive correlation between the two measures, failing to provide evidence for the discriminant utility of the DERS. Whilst certain components of the DASS have been identified as indicators of discriminate validity of the DERS (Gratz & Roemer, 2004), difficulties in emotion regulation have been linked to depression (Joorman & Quinn, 2014) and anxiety disorders (Cisler & Olatunji, 2012), suggesting potential overlap among these constructs. Conversely, negative correlations have been observed for the DERS and measures of self-compassion and self-esteem (Cremades et al., 2021; Roemer et al., 2009), demonstrating support for its discriminative validity. Research investigating the discriminative validity of the DERS is however limited; further

studies examining the relationship between the DERS and more distinct constructs are warranted.

### *3.2.4. Criterion Validity*

Criterion validity is the degree to which a psychometric test is associated with a related criterion (Cohen et al., 1996). Comprised of concurrent and predictive validity, criterion validity is measured by the correlation between test scores and the criterion (Murphy & Davidshofer, 1998). Concurrent validity is evidenced when a psychometric test produces similar results to a related criterion, at the same point in time. Alternatively, predictive validity refers to a measure's ability to predict future scores on a related criterion (Cohen et al., 1996).

Research has demonstrated support for the concurrent validity of the DERS, evidenced by positive correlations between DERS scores and a multitude of psychiatric disorders, including depression, anxiety, and eating disorders (Anderson et al., 2018; Sloan et al., 2017; Sörman et al., 2022). Similar findings have been reported for DERS scores and depression, anxiety, and stress in a Brazilian sample (Cancian et al., 2019), and psychiatric symptomatology in a Portuguese sample (Coutinho et al., 2010), except for the Awareness subscale. Associations between the DERS and a range of maladaptive emotion regulation strategies have also been evidenced including self-harm (Gratz & Roemer, 2004; Gratz & Roemer, 2008), substance misuse (Dvorak et al., 2014), and intimate partner violence (Gratz & Roemer, 2004). Specifically, amongst forensic inpatients, total DERS scores were positively associated with the interpersonal and intrapersonal functions of self-harm (Laporte et al., 2021b). Certain subscales, however, appear to have greater weighting within these associations and gender also seems to play a part. For example, the Awareness and Clarity subscales played a key role in the relationship between DERS score and self-harm, whereas the Nonacceptance subscale was more relevant in explaining this relationship amongst males (Gratz & Roemer, 2004). Conversely, the associations between the Awareness and Clarity

subscales and the functions of self-harm were not significant among forensic inpatients (Laporte et al., 2021b). Considering different dimensions of the DERS within the clinical realm is therefore of benefit.

Limited research has been conducted exploring the predictive validity of the DERS. The only identified study examined to what degree the DERS was able to predict treatment outcomes in a sample of adults with emotional disorders, following a cognitive behavioural therapy intervention (Hallion et al., 2018). Results indicated that lower scores on the Goals subscale were associated with poorer outcomes following treatment. This could be understood in the context that individuals scoring lower in this domain may be more likely to be non-compliant in attending sessions or completing homework. Interestingly, lower levels of baseline emotion regulation were related to greater outcomes following the intervention. The notion that individuals with lower emotion regulation baseline scores, had a greater capacity to learn and benefit from the skills being taught, could explain these findings (Hallion et al., 2018). Nonetheless, results should be interpreted with caution due to the small sample size and subsequent concerns around statistical power.

**4. NORMATIVE ASSESSMENT**

Normative assessment enables the evaluation and interpretation of psychometric test scores by comparing them with data obtained from a representative sample (Howell, 1997). This allows for the identification of test scores which deviate from the norm, enabling greater inferences to be drawn regarding an individual's performance on a specified measure (Ware & Keller, 1996). Guidelines indicate that a minimum of 300 participants is needed to provide adequate normative data for a psychometric test (Kline, 2013). In Gratz and Roemer's (2004) initial study, mean scores and standard deviations were computed for 357 psychology students studying at the University of Massachusetts. Expanding on this work, normative data were developed for a sample of 315 adults from the public in Buenos Aires (Cremades et al., 2021). Specifically, percentile rank scores were developed for three age brackets: 18-30, 31-

45 and 46-65 years old. Despite these studies providing preliminary normative data for the DERS, limitations exist in terms of their generalisability to clinical and forensic populations. Whilst DERS scores are higher amongst clinical samples (Salters-Pedneault et al., 2006), similar DERS scores have been evidenced when comparing forensic inpatients with violent offenders and community samples (Laporte et al., 2021b). This was unexpected given the comorbidity of mental illness and aggressive behaviour typically found amongst forensic inpatients. However, the sample size ($N$ = 98) was below the recommended guideline. Further research is needed to provide appropriate norms for the DERS amongst clinical and forensic samples if meaningful conclusions regarding test results are to be drawn.

## 5. COMPARISON WITH OTHER MEASURES

Several other psychometric tests exist which assess emotion regulation including the the NMR (Catanzaro & Mearns, 1990), the ERQ (Gross & John, 2003), and the EDQ (Gill et al., 2021). Comparing these measures, however, proves challenging given variations in their definitions of emotion regulation (Gross & Jazaieri, 2014) and diversity in the theoretical underpinnings on which they are based. Measures of emotion regulation also differ in the constructs they assess, limiting the ability to draw meaningful comparisons between them (Moore et al., 2022). In Gratz and Roemer's (2004) original study, the authors compared the DERS with the NMR; a measure which assesses beliefs around emotion regulation strategies and perceived capacity to create positive emotions and reduce negative emotions. One of the main criticisms of the NMR is that it considers emotion regulation strategies to be 'adaptive' irrespective of external factors, thus, overlooking the notion that an individual's ability to successfully implement adaptive coping strategies is context-dependent; a key aspect of emotion regulation (Gratz & Roemer, 2004). Moreover, whilst the NMR emphasises emotion regulation strategies, it does not assess other central components of emotion regulation. The NMR has been found to possess similar psychometric properties to the DERS (Catanzaro & Mearns, 1990). However, the DERS accounted for additional variance in clinical constructs (experiential avoidance and emotional expressivity) above and beyond that of the NMR (Gratz

& Roemer, 2004). Specifically, all DERS subscales accounted for additional variance in experiential avoidance and several of the DERS subscales (Awareness, Clarity, Goals, and Strategies) accounted for additional variance in emotional expressivity, when controlling for the NMR. There was also some evidence to suggest that the DERS accounted for additional variance in behavioural outcomes (interpersonal violence and self-harm). For example, among males, the Goals subscale accounted for a significant amount of additional variance in the frequency of inter-partner violence ($r$ = .30, $p < 0.01$) and the Nonacceptance subscale explained a greater amount of variance in self-harm ($r$ = .21, $p < 0.05$). Additional variance in the frequency of inter-partner violence amongst females was also evident for the Impulse subscale ($r$ = .22, $p < 0.01$). It is noted, however, that after controlling for the NMR, many of the associations between the DERS subscales and self-harm and partner abuse did not maintain statistical significance, indicating overlap between the measures. Nonetheless, these findings indicate that the NMR may not encapsulate all relevant facets of emotion regulation (Gratz & Roemer, 2004).

The performance of the DERS has also been compared to that of the ERQ (Gross & John, 2003); a 10-item self-report measure based on the process model of emotion regulation. The ERQ possessed lower levels of internal consistency ($\alpha$ = .76) compared to the DERS, however, the ERQ consists of two orthogonal subscales, thus, these results were not unexpected (Sörman et al., 2022). The DERS also outperformed the ERQ in terms of its association with psychiatric symptomatology and behavioural outcomes, indicating that it possesses superior concurrent validity and is a more appropriate measure of emotion regulation in clinical samples (Sörman et al., 2022). It is possible, however, that these findings may have been influenced by participants' low to moderate levels of symptomatology; a factor that has been found to moderate the relationship between emotion regulation and psychiatric symptoms (Aldao et al., 2010). In addition, comparisons between the DERS and the ERQ are restricted due to their differing theoretical foundations. Specifically, the ERQ assesses two specific types of emotion regulation strategies, whereas the DERS is based on a more

comprehensive and multi-faceted conceptualisation of emotion regulation. The context in which each measure is used also differ, with the ERQ being more readily used in college samples and the DERS being more commonly used in clinical samples (Sörman et al., 2022).

Recently, the DERS was compared with the EDQ (Gill et al., 2021). The final version of the EDQ was similar in length to the DERS (40 items), however, a key difference was that all subscales of the EDQ consisted of five items. Both measures were completed electronically by 362 adults from the Amazon Mechanical Turk programme. Regression analyses indicated that the subscales in the EDQ accounted for a greater level of variation for eight of the studied psychopathologies, compared to the DERS. Further regression analysis of the residuals indicated that the EDQ accounted for a greater level of variance for five outcomes; namely, obsessive compulsiveness disorder symptoms ($r^2$ = .41, $F$(8,353) = 3.68, $p$ < .001), narcissism ($r^2$ = .44, $F$(8,353) = 33.9, $p$ < .001), sleep disturbances ($r^2$ = .27, $F$(8,353) = 16.56, $p$ < .001), aggression ($r^2$ = .50, $F$(8,353) = 43.42, $p$ < .001), and psychopathy ($r^2$ = .24, $F$(8,353) = 14.27, $p$ < .001). Conversely, the DERS performed better than the EDQ for depression ($r^2$ = .54, $F$(6,355) = 69.84, $p$ < .001). Whilst the EDQ is a relatively new instrument, the authors argued that the measure may possess greater clinical utility than the DERS given that firstly, it addresses some of the methodological limitations of the DERS, and secondly, it assesses a broader variety of constructs thought to comprise emotion regulation. Despite the EDQ performing better than the DERS in some respects, these improvements were modest. Moreover, this study was conducted with the general public, limiting the generalisability of results to clinical samples.

## 6. CLINICAL UTILITY

Clinical utility is a broad term which lacks one singular definition within the literature. Whilst the ability to effectively influence decision-making and treatment options is often viewed as a key determinant of clinical utility, other factors such as availability, cost, and accessibility may also be considered (Smart, 2006). Conclusions drawn regarding clinical utility are

therefore subjective and influenced by context. For this report, the following elements of clinical utility will be considered: ease of use, time, format, training and qualifications, interpretation, and meaning and relevance of information obtained (Polgar et al., 2005, as cited in Smart, 2006).

The DERS is a free and easily accessible self-report measure with clear instructions regarding its use. With a completion time of approximately six minutes, it is brief and easy to administer, reducing the potential for respondent fatigue. Whilst the DERS can be completed in the presence of a clinician, where appropriate it can also be completed by the respondent in the absence of others, meaning they can take their time to consider their answers. Furthermore, they may be less likely to respond in a socially desirable manner when completing this alone. Whilst the measure does contain some reverse-coded items, scoring is facilitated with a simple hand-scoring template and takes approximately one minute. Alternatively, responses can be entered into NovoPsych which automatically generates scores. No formal training is needed to administer the DERS.

The DERS yields a total score, as well as scores for each distinct subscale, allowing clinicians to measure multiple domains of emotion regulation. Research demonstrating associations between DERS scores and a multitude of psychiatric symptoms and maladaptive behaviours indicates its utility as a screening and assessment tool in clinical samples. Specifically, the DERS allows for the measurement of distinct constructs when investigating variables that moderate quality of life and the presence of clinical symptoms. Scores from the DERS can also be used to draw inferences regarding an individual's emotion regulation capabilities, which in turn can be used to inform targeted treatment. For example, an individual who displays limited emotional awareness could benefit from mindfulness-based intervention to help develop their self-awareness. Alternatively, an individual who displays limited access to emotion regulation strategies could benefit from intervention targeting the development of adaptive emotion regulation strategies. Delivering effective intervention could subsequently

result in a reduction of maladaptive behaviours such as self-harm, substance misuse, and aggression; behaviours that have substantial financial and societal costs. The DERS can also act as an indicator of clinical severity and post-intervention outcomes. It can be repeated at different intervals, allowing for the evaluation of progress during psychological intervention and treatment outcomes. Scores can be graphed over time using NovoPsych, providing a visual depiction of progress, and facilitating the dissemination of results to the respondent, as well as other professionals involved in their care, where appropriate.

## 7. KEY LIMITATIONS

A key limitation of the DERS is its lack of normative data. Specifically, normative data were not provided during the development of the DERS (Gratz & Roemer, 2004) and limited research has been conducted in this area. A lack of appropriate norms can result in misinterpretations of test scores (Turner et al., 2001). Further research generating normative data for the DERS amongst varying populations and cultures, is therefore crucial in terms of enabling the comparison of an individual's test scores with others from the same population. This would enable clinicians to draw more meaningful inferences from test scores. There is also a lack of studies investigating the reliability and validity of the DERS amongst unique populations such as forensic inpatients. Moreover, the DERS focuses solely on negative emotional experiences. Research has suggested benefits to also assessing the experience and management of positive emotions. Completing a measure such as the Difficulties in Emotion Regulation Scale-Positive (DERS-P; Weiss et al., 2015) alongside the DERS, could therefore be beneficial in providing a more comprehensive assessment of emotion regulation. The limitations of using psychometric tests with forensic inpatients must also be acknowledged due to issues around response bias. That is, forensic inpatients may answer in a socially desirable manner, exaggerating their emotion regulation capabilities, due to beliefs that their scores on the measure may assist their progress. This should be taken into consideration when interpreting scores on the DERS amongst this population. Completing a measure of

impression management such as the Paulhus Deception Scale (PDS; Paulhus, 1998), in conjunction with the DERS, could facilitate the assessment of response reliability.

## 8. CONCLUSION

The DERS is a multi-faceted measure of emotion regulation. Despite some inconsistencies in the factorial structure of the DERS, specifically, the Awareness subscale, it has demonstrated reliability and validity across a variety of populations including clinical and non-clinical samples. The DERS has also demonstrated its cross-cultural applicability. Furthermore, the DERS possesses clinical utility and is appropriate for use within clinical practice and research, particularly in relation to assessment and the identification of targeted treatment. Whilst the DERS has been utilised amongst offender samples, the needs of forensic inpatients are thought to be more complex due to the presence of psychiatric symptomatology (Laporte et al., 2021b). Further investigation of the psychometric properties of the DERS amongst forensic inpatients is therefore warranted, as is research providing normative data for this population. The latter is particularly important given forensic inpatients may differ from other populations in their ability to consider and reflect on their emotions which in turn could lead to emotions being experienced as overwhelming (Velotti & Garafalo, 2015).

# Chapter Six

# DISCUSSION

## 1. INTRODUCTION

Childhood adversity has been associated with a wide range of detrimental outcomes (Holman et al., 2016; Hughes et al., 2017; Kalmakis & Chandler, 2014; Petrucelli et al., 2019; Sahle et al., 2022). Two outcomes that have been related to childhood adversity are self-harm (Fliege et al., 2009; Serafini et al., 2017) and aggression (Fitton et al., 2020). A dose-response effect of ACEs on self-harm (Bunting et al., 2023; Cleare et al., 2018; Ford et al., 2020; Isohookana et al., 2013) and aggression (Blum et al., 2019; De Ravello et al., 2008; King, 2021; Matsuura et al., 2009) has also been observed; findings that have been confirmed by studies using ACE survey methodology (Fosse et al., 2021; Holden et al., 2022; Laporte et al., 2023; Stinson et al., 2016; Stinson et al., 2021b). Less is known, however, about the mechanistic underpinnings of the relationships between childhood adversity and negative outcomes. A large proportion of individuals exposed to ACEs do not engage in self-harm and/or aggression; developing insight into the psychological mechanisms that account for these relationships is therefore essential for effective prevention and intervention. This thesis aimed to build on the existing literature by examining the relationships between childhood adversity, and self-harm and aggression, and the mediating variables that underlie these relationships.

## 2. SUMMARY OF FINDINGS

Two previous systematic reviews have investigated mechanisms that mediate the relationship between predictor variables and self-harm (Abdelraheem et al., 2019; Valencia-Agudo et al., 2018). Both reviews focused on longitudinal research examining adolescent samples and did not focus exclusively on childhood adversity. Given the prevalence of self-harm in clinical and forensic adult populations, the systematic review presented in Chapter Two was conducted to develop greater clarity of the psychological mechanisms that mediate the childhood adversity-self-harm relationship among these populations. After conducting a literature search and applying the inclusion criteria, 17 studies were identified and included in the review. The results provided preliminary support for a pathway from childhood adversity

to self-harm via emotion dysregulation. These findings align with developmental perspectives, an emotion-regulatory pathway, and functional models of self-harm (Nock & Prinstein, 2004; Yates, 2009). Results also demonstrated broad support for the role of cognitive and personality factors in the childhood adversity-self-harm relationship. Some discrepancies were observed between studies, however, potential explanations for these were provided. For example, studies varied according to the robustness of the analytical approach employed to test for mediation effects. Moreover, there was variation in the tools used to measure mediating variables and their reliability and validity. The clinical populations studied also differed according to mental disorders.

The findings from the systematic review assisted the development of the research question answered in Chapter Three. Specifically, most studies focused on childhood abuse and neglect and did not consider the cumulative effect of polyvictimisation on self-harm. In addition, forensic inpatients were notably understudied with only one paper investigating this population. As such, an empirical study was conducted to examine the mediating role of emotion dysregulation on the relationship between cumulative ACE score and self-harm among adult forensic inpatients, filling an important gap in the literature. Aggression was also explored as an outcome variable, given its high prevalence among this population (Klein Tuente et al., 2020). Furthermore, this study aimed to address some of the methodological limitations of previous research by using validated and comprehensive measures of childhood adversity, emotion dysregulation, self-harm, and aggression. Relationships between cumulative ACE score, and self-harm and aggression were confirmed, and emotion dysregulation was found to partially mediate these relationships. These findings provide support for an emotion-regulatory pathway from childhood adversity to self-harm and aggression among forensic inpatients. However, they also suggest that other factors may account for these relationships.

The case study presented in Chapter Four contributes further to our understanding of the relationships between childhood adversity, and self-harm and aggression. In line with attachment theory (Bowlby, 1988) and the biosocial model (Linehan, 1993), the assessment and formulation indicated how Patient A's experiences of childhood adversity and invalidation likely led to difficulties expressing and regulating emotions, forming healthy relationships, and tolerating distress. Moreover, Patient A's use of self-harm appeared to be reinforced by reductions in negative affect and increases in positive affect, as well as increased staff care. Her use of aggression appeared to serve an interpersonal function whereby her needs were met, or attempts were made to cease undesired behaviours by staff; for instance, when they intervened with Patient A's self-harm. The case study also investigated the accessibility of an adapted DBT programme, the I Can Feel Good (ICFG) Programme (Ashworth et al., 2018), in reducing self-harm and aggression. Whilst previous research has provided preliminary support for this programme amongst forensic inpatients (Ashworth & Brotherton, 2018; Ashworth et al., 2017; Ashworth et al., 2021), this was the first single case study to evaluate its acceptability when delivered to a female forensic inpatient on an individual basis. In addition, it expands on previous research evaluating the ICFG programme by using behavioural data to capture post-intervention change. Overall, findings indicated that the ICFG programme is an acceptable form of treatment for emotion dysregulation, self-harm, and aggression when working with female forensic inpatients. Moreover, they supported the delivery of this intervention on an individual basis. Nonetheless, further research is needed to determine the longevity of the programme and to increase the generalisability of the findings.

Finally, Chapter Five presented a critique of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004); the measure used to assess emotion dysregulation in Chapter Three's empirical study and several studies in Chapter Two's systematic review. The DERS assesses six domains of emotion regulation and was developed according to a functional model of emotion regulation (Gratz & Roemer, 2004). The critique revealed support for the reliability of the DERS, as evidenced by its excellent internal consistency and test-retest

reliability. Whilst there were some discrepancies around the factorial structure of the DERS, outside of this, the measure proved to be a valid measure of emotion regulation across a range of samples and cultures. Compared to other measures of emotion regulation, the DERS was largely favourable, and it was found to possess good clinical utility. Whilst normative data have been developed for adult community samples (Gratz & Roemer, 2004; Cremades et al., 2021), the critique revealed an absence of such data for clinical and forensic samples. Studies examining the psychometric properties of the DERS when used with forensic inpatients were also limited.

## 3. IMPLICATIONS

This thesis provides valuable insight into the psychological mechanisms that mediate the relationships between childhood adversity and negative outcomes in clinical and forensic adult populations. This in turn has important clinical implications. For instance, when working with individuals from these populations who self-harm, assessments should be robust and comprehensive to ensure that modifiable factors that may account for this behaviour are being identified. Specifically, this should include assessments of emotion dysregulation and potentially personality-related cognitive factors. Whilst childhood adversity cannot be undone, therapeutic interventions targeting these variables should also be considered when developing treatment recommendations. For instance, interventions should seek to enhance emotion regulation by improving skills in the identification and acceptance of emotions and equipping individuals with knowledge of how to adaptively regulate these. Several programmes have been developed to enhance emotion regulation strategies; for example, dialectical behaviour therapy (DBT; Linehan, 1993) and other emotion regulation interventions (Berking et al., 2008; Gratz & Gunderson, 2006; Gratz et al., 2014; Mennin, 2006). Consideration should also be given to existing psychological interventions such as schema therapy (Stoffers et al., 2012; Zanarini, 2009), cognitive behaviour therapy (Forkmann et al., 2014; National Institute for Health and Care Excellence, 2022), and acceptance commitment therapy (Morton et al., 2012), whereby emotion dysregulation is addressed by targeting the

factors that underlie this; for example, maladaptive cognitions about the self and personality factors that may contribute to and perpetuate self-harm (Young et al., 2003). As evidenced in Chapter Three, difficulties with emotion regulation should also be considered when assessing and treating aggression in adult forensic inpatients.

The findings from the current thesis also support the development of trauma-informed care; a person-centred approach that accentuates the importance of therapeutic relationships (Beckett et al., 2017). Many victims of childhood adversity have experienced shaming, disbelief, restrictions in movement, and coercion; factors that are often replayed in mental health and forensic settings via mandated treatment, seclusion, and physical restraint (Care Quality Commission, 2017). Not only can these practices increase the propensity for harmful behaviours as a means of coping, but re-traumatisation may also hinder recovery due to feelings of hopelessness. This has important implications for services concerning practice, training, and service delivery. For instance, training staff in trauma-informed care can assist them in conceptualising harmful behaviours in the context of an individual's past trauma (Knight, 2015). Moreover, it can provide staff with the necessary skills to create a non-threatening and trusting environment, thus, minimising the potential for re-traumatisation and harmful behaviours (Miller & Najavits, 2012), and instead promoting healing (Livingston et al., 2012). This is particularly important in forensic mental health settings where staff must strive to build a positive therapeutic alliance whilst also maintaining security (Quinn & Happell, 2015).

Effectively treating self-harm and aggression has benefits at both an individual and organisational level. Specifically, this could assist patients in their overall rehabilitation and recovery (Renwick et al., 2016), decreasing their length of hospital admission. Interpersonal relationships with staff and other patients may strengthen, particularly in the case of patients who engage in aggression, whereby staff may otherwise be inclined to avoid patient interactions out of fear (Luckhoff et al., 2013). Reducing harmful behaviours also has the propensity to improve the therapeutic climate (Chan & Chow, 2014) and patient-staff

relationships, enhancing the quality of care delivered (Karman et al., 2015; Marzano et al., 2012; McGough et al., 2021). In addition, staff may be less prone to feelings of frustration, hopelessness, and powerlessness (O'Hara et al., 2022), and their risk of suffering psychological harm and physical harm in the workplace would likely decrease (Uppal & McMurran, 2009). This, in turn, could improve job satisfaction (Needham et al., 2005) and reduce burnout (Marzano et al., 2012), staff sickness, and staff turnover (Bowers et al., 2011; Morrison et al., 2002); organisational issues that likely perpetuate self-harm and aggression. Moreover, patients who engage in self-harm and/or aggression are placed on increased observations. Reducing these behaviours could positively impact staff resources thereby enhancing service provision (Reen et al., 2020).

This thesis further highlights the importance of the effective prevention, identification, and management of ACEs. In the first instance, the identification of risk factors pertaining to household dysfunction (e.g., parental substance misuse, parental mental illness, and domestic violence) in the ante-natal period could allow for early intervention to reduce and/or resolve these risks. Where ACEs occur in childhood, prevention strategies should be implemented promptly to mitigate the short and long-term effects of childhood adversity (Oral et al., 2016). To allow for this, professionals who work with children must be educated in ACEs to enable their timely identification. Research, however, has indicated that many clinicians do not routinely enquire about ACEs due to a lack of confidence in this area (Esden, 2018), highlighting the need for further training and access to appropriate screening tools. Where appropriate, caregivers should be provided with psychoeducation around the impact of ACEs and evidence-based support. Specifically, primary care programmes which screen for ACEs have demonstrated positive findings whereby reports to child protection services are lower than those for families not exposed to these interventions (Centers for Disease Control and Prevention, 2019). Furthermore, parenting programmes have been found to have a positive impact on childhood well-being (Gershoff et al., 2017). Given the transgenerational effect of ACEs, screening parents for ACEs could also be of benefit. This would allow for early

intervention whereby preventative measures are implemented to prevent the transmission of ACEs across generations (Jones et al., 2019). In addition, emerging research supports the use of community-based interventions to foster community resilience and social bonds; factors known to prevent and mitigate the negative effects of ACEs (Addis et al., 2021).

## 4. LIMITATIONS AND FUTURE RESEARCH

Whilst this thesis has important clinical implications and suggests possible therapeutic approaches to treat self-harm and aggression in clinical and forensic adult populations, it is not without its limitations. The limitations of each chapter included in this thesis are discussed throughout, thus, an overview will be provided here.

Despite the biological plausibility of the impact of ACEs, the limitations of current mainstream approaches using an ACE framework, which largely consists of studies demonstrating correlations between ACEs and adverse outcomes, must be considered (Turner, 2019). For instance, all studies included in Chapter Two, except for two, adopted a cross-sectional design, as did the empirical study presented in Chapter Three. Whilst correlation can be deduced from this approach, it is not possible to draw firm conclusions regarding mediation effects as the temporal sequencing of variables is unknown. This highlights a pressing need for further research adopting a longitudinal design. In addition, methodological limitations hinder the generalisability of findings. For instance, six of the studies in Chapter Two's systematic review were rated as 'weak' for selection bias, suggesting that the samples being investigated were not highly representative of the population. Moreover, whilst the systematic review investigated clinical and forensic adult populations, due to the heterogeneity of samples studied, it is difficult to determine the generalisability of findings.

Furthermore, the empirical study in Chapter Three focused solely on adult forensic inpatients detained in low- and medium-secure conditions and diagnoses were also not

accounted for. Future research should strive to achieve larger sample sizes, across various security settings, so that greater consideration can be given to a range of covariates. Challenges associated with the commission of research within forensic populations must also be considered. For instance, forensic samples are prone to answering in a socially desirable manner (Hildebrand et al., 2018) which could have influenced the findings in Chapter Three's empirical study and Chapter Four's case study. Where possible, future research conducted with forensic populations should attempt to mitigate this through the use of deception scales. The definition and measurement of variables studied throughout this thesis also varied. For childhood adversity, the majority of studies included in Chapter Two focused specifically on childhood abuse and neglect with only one study considering other forms of childhood adversity such as witnessing domestic violence and peer victimisation (Garbutt et al., 2023b). Whilst the empirical study in Chapter Three captured a greater range of adverse childhood experiences by using the ACE-Q (Felitti et al., 1998), future research utilising even more robust measures of childhood adversity such as the ACE-IQ (World Health Organisation, 2018) would be of benefit. Moreover, conclusions drawn from ACE data do not account for variations in the timing of which ACEs occur. The frequency, severity, and duration of childhood adversity are also overlooked. Instead, conclusions are drawn based on the assumption that ACE-related outcomes are the same for all individuals with an identical score (Kelly-Irving & Delpierre, 2019). Examining the age of onset, duration, and frequency of ACEs would therefore provide a more nuanced understanding of the impact of childhood adversity on negative outcomes. Moreover, whilst studies using a measure's total score to assess childhood adversity provide insight into the effect of ACEs, this restricts the conclusions that can be drawn regarding specific subtypes of childhood adversity.

Measures used to assess self-harm throughout this thesis also varied notably. Whilst some studies in Chapter Two's systematic review and the empirical study in Chapter Three utilised validated measures of self-harm, others did not. Furthermore, some measures solely assessed the presence of self-harm, whereas others considered additional factors such as

the frequency, severity, and duration of self-harm. Greater consistency amongst studies would allow for firmer conclusions to be drawn. With regards to mediating variables, there was significant heterogeneity in the variables studied and the measures used to assess these in Chapter Two's systematic review. Statistically combining and critically evaluating the findings of included studies through a meta-analysis was therefore not possible. The DERS was the most commonly used measure of emotion dysregulation throughout the thesis; specifically, this was used in two of the studies included in Chapter Two's systematic review and the empirical study in Chapter Three. Whilst the critique presented in Chapter Five revealed that the DERS is a psychometrically sound measure of emotion dysregulation, further research is needed to determine its applicability to forensic inpatients.

Limitations of using ACE survey methodologies must also be noted. For instance, viewing ACEs as a fixed determinant of future outcomes and the implementation of ACE-related policies runs the risk of an unduly deterministic model. It has also been argued that the ACE framework conflates childhood adversity and childhood trauma. Moreover, whilst findings indicate that those exposed to ACEs are more at risk of negative outcomes, the ACE framework does not account for why a large proportion of individuals exposed to ACEs do not experience negative outcomes. Elucidating which particular individuals, exposed to ACEs, are more likely to engage in health-harming behaviours, is crucial. For instance, structural and social inequalities are often overlooked in the study of ACEs (Kelly-Irving & Delpierre, 2019). Subsequently, future research should also consider biological and social factors that account for the relationships between ACEs and harmful behaviours; this would provide valuable insight into the complex interplay between different mediating variables. Additionally, the relationship between ACEs and personality warrants further attention (Grusnick et al., 2020). Developing greater insight into the factors that may protect individuals against the detrimental impacts of childhood adversity would contribute to the development of effective preventative interventions.

Several recommendations have been made throughout this thesis about the treatment of emotion dysregulation, self-harm, and aggression. Whilst the case study presented in Chapter Four provided preliminary support for the ICFG programme (Ashworth et al., 2018) in targeting these areas, the single case study design inhibits the ability to determine whether changes in pre- and post-intervention scores were statistically significant. Further research, with larger sample sizes, is needed to replicate findings and to increase their generalisability. Moreover, whilst the findings were promising, no follow-up data was collected, thus, it is not possible to determine whether treatment effects were sustained following the completion of the intervention. Future research should therefore aim to assess the longevity of the ICFG programme.

## 5. CONCLUSION

This thesis aimed to increase understanding of the psychological mechanisms that mediate the relationship between childhood adversity and self-harm. The findings provide support for an emotion-regulatory pathway from childhood adversity to self-harm, as well as the potential role of personality-related cognitive variables. In addition, this thesis aimed to investigate the mediating role of emotion dysregulation on the relationships between ACEs, and self-harm and aggression in an understudied population, adult forensic inpatients. The results supported the hypothesis that emotion dysregulation would mediate these relationships, indicating that childhood adversity disrupts emotion regulation and that self-harm and aggression serve an emotion regulation function. These findings have important implications for the assessment and treatment of harmful behaviours in clinical and forensic adult populations. This is relevant not only to improve patient outcomes but also to maximise the well-being of staff working in forensic mental health settings. There remains a need to replicate findings, and studies adopting a longitudinal design would allow firmer conclusions to be drawn regarding the mediation effects detected in this thesis. Nonetheless, this thesis has provided valuable insight into an important area within an understudied population and informs future directions for research in this area.

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# APPENDICES

## Appendix A

Author(s): _____

Study name: _____

_____

| Study Characteristics | Eligibility criteria | Criteria present? | | |
|---|---|---|---|---|
| | | Yes | No | Unclear |
| **1. Publication Type** | Peer-reviewed journals, theses, reports, book chapters, conference abstracts | ☐ | ☐ | ☐ |
| **2. Study Design** | A. Cross-sectional, case-control studies and cohort studies (retrospective and prospective) | ☐ | ☐ | ☐ |
| | B. Studies testing mediation effects | ☐ | ☐ | ☐ |
| **3. Participants - Inclusion** | A. Adults (aged 18 or over) | ☐ | ☐ | ☐ |
| | B. Clinical and/or forensic sample | ☐ | ☐ | ☐ |
| **4. Variables of interest** | A. Childhood adversity | ☐ | ☐ | ☐ |
| | B. Psychological mechanism(s) | ☐ | ☐ | ☐ |
| | C. Self-harm | ☐ | ☐ | ☐ |
| **5. Language** | English | ☐ | ☐ | ☐ |
| **INCLUDE** ☐ | | **EXCLUDE** ☐ | | |
| **6. Reason for exclusion** | | | | |
| **7. Notes:** | | | | |

## Appendix B

| Database | No. of References | Search Syntax |
|---|---|---|
| Web of Science | 790 | TS=("adverse child* experience*" OR "child* advers*" OR "child* maltreat*" OR "child* abuse" OR "child* trauma" OR "child* mistreat*" OR “child* neglect”)) AND TS=( mediat* OR mechan* OR pathway* OR interact* )) AND TS=("self-harm" OR "self harm" OR "self-injur*" OR "self injur*" OR "non-suicial self-injur*" OR "non suicidal self injur*" OR "deliberate self-harm" OR "deliberate self harm" OR "self-inflicted injur*" OR "self inflicted injur*" OR "para-suicid*" OR "para suicid*" OR "self-injur* behavio*r" OR "self injur* behavio*r" OR "auto-mutilat*" OR "automutilat*" ) |
| Medline | 582 | 1. exp Adverse Childhood Experiences/<br>2. exp Child Abuse/<br>3. exp Child Development/<br>4. ("adverse child* experience*" OR "child* advers*" OR "child* maltreat*" OR "child* abuse" OR "child* trauma" OR "child* mistreat*" OR “child* neglect”).mp.<br>5. (mediat* OR mechan* OR pathway* OR interact*).mp.<br>6. exp Self-Injurious Behavior/<br>7. ("self-harm" OR "self-injur*" OR "non-suicidal self-injur*" OR "deliberate self-harm" OR "self-inflicted injur*" OR "para-suicid*" OR "self-injur* behavio*r" OR "auto-mutilat*").mp.<br>8. 1 or 2 or 3 or 4<br>9. 6 of 7<br>10. 5 and 8 and 9 |
| Embase | 371 | 1. exp childhood adversity/<br>2. exp child abuse/<br>3. exp child development/ |

| | | |
|---|---|---|
| | | 4. (''adverse child* experience*'' OR ''child* advers*'' OR ''child* maltreat*'' OR ''child* abuse'' OR ''child* trauma'' OR ''child* mistreat*'' OR child* neglect").mp.<br>5. exp mediation analysis/<br>6. (mediat* OR mechan* OR pathway* OR interact*).mp.<br>7. exp automutilation/<br>8. (''self-harm'' OR ''self-injur*'' OR ''non-suicidal self-injur*'' OR ''deliberate self-harm'' OR ''self-inflicted injur*'' OR ''para-suicid*'' OR ''self-injur* behavio*r'' OR ''auto-mutilat*'').mp.<br>9. 1 or 2 or 3 or 4<br>10. 5 or 6<br>11. 7 or 8<br>12. 9 and 10 and 11 |
| PsychInfo | 304 | 1. exp childhood adversity/<br>2. exp child abuse/<br>3. exp child development/<br>4. (''adverse child* experience*'' OR ''child* advers*'' OR ''child* maltreat*'' OR ''child* abuse'' OR ''child* trauma'' OR ''child* mistreat*'' OR "child* neglect").mp.<br>5. exp Mediation/<br>6. (mediat* OR mechan* OR pathway* OR interact*).mp.<br>7. self harm.mp.<br>8. (''self-harm'' OR ''self-injur*'' OR ''non-suicidal self-injur*'' OR ''deliberate self-harm'' OR ''self-inflicted injur*'' OR ''para-suicid*'' OR ''self-injur* behavio*r'' OR ''auto-mutilat*'').mp.<br>9. 1 or 2 or 3 or 4<br>10. 5 or 6<br>11. 7 or 8<br>12. 9 and 10 and 11 |

| | | |
|---|---|---|
| CINAHL | 116 | "( "adverse child* experience*" OR "child* advers*" OR "child* maltreat*" OR "child* abuse" OR "child* trauma" OR "child* mistreat*" OR “child* neglect” ) AND ( mediat* OR mechan* OR pathway* OR interact* ) AND ( "self-harm" OR "self harm" OR "self-injur*" OR "self injur*" OR "non-suicial self-injur*" OR "non suicidal self injur*" OR "deliberate self-harm" OR "deliberate self harm" OR "self-inflicted injur*" OR "self inflicted injur*" OR "para-suicid*" OR "para suicid*" OR "self-injur* behavio*r" OR "self injur* behavio*r" OR "auto-mutilat*" OR "automutilat*" ) |

## Appendix C

| | | |
|---|---|---|
| **Electronic databases** | Cochrane Library | 0 |
| | Prospero | 0 |
| | Web of Science | 790 |
| | Medline | 582 |
| | Embase | 371 |
| | PsychInfo | 304 |
| | CINAHL | 116 |
| **Websites** | Google scholar | 0 |
| **Other methods:**<br>• **Grey Literature**<br>• **References** | ProQuest Dissertations & Theses | 0 |
| | Open Grey Portal | 0 |
| | Open Access Theses and Dissertations | 0 |
| | University of Nottingham E-Thesis Portal | 0 |
| | University of Birmingham E-Thesis Portal | 2 |
| | EThOS | 0 |
| | Canadian E-Thesis Portal | 0 |
| | Hand searching of reference lists | 7 |

## Appendix D

# QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES


## COMPONENT RATINGS

### A) SELECTION BIAS

**(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?**

1 Very likely
2 Somewhat likely
3 Not likely
4 Can't tell

**(Q2) What percentage of selected individuals agreed to participate?**

1 80 - 100% agreement
2 60 – 79% agreement
3 less than 60% agreement
4 Not applicable
5 Can't tell

| RATE THIS SECTION | STRONG | MODERATE | WEAK |
|---|---|---|---|
| See dictionary | 1 | 2 | 3 |

### B) STUDY DESIGN

**Indicate the study design**

1 Randomized controlled trial
2 Controlled clinical trial
3 Cohort analytic (two group pre + post)
4 Case-control
5 Cohort (one group pre + post (before and after))
6 Interrupted time series
7 Other specify _____
8 Can't tell

**Was the study described as randomized? If NO, go to Component C.**

No Yes

**If Yes, was the method of randomization described? (See dictionary)**

No Yes

**If Yes, was the method appropriate? (See dictionary)**

No Yes

| RATE THIS SECTION | STRONG | MODERATE | WEAK |
|---|---|---|---|
| See dictionary | 1 | 2 | 3 |

1

## C) CONFOUNDERS

**(Q1) Were there important differences between groups prior to the intervention?**

1 Yes
2 No
3 Can't tell

**The following are examples of confounders:**

1 Race
2 Sex
3 Marital status/family
4 Age
5 SES (income or class)
6 Education
7 Health status
8 Pre-intervention score on outcome measure

**(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?**

1 80 – 100% (most)
2 60 – 79% (some)
3 Less than 60% (few or none)
4 Can't Tell

| RATE THIS SECTION | STRONG | MODERATE | WEAK |
|---|---|---|---|
| See dictionary | 1 | 2 | 3 |

## D) BLINDING

**(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?**

1 Yes
2 No
3 Can't tell

**(Q2) Were the study participants aware of the research question?**

1 Yes
2 No
3 Can't tell

| RATE THIS SECTION | STRONG | MODERATE | WEAK |
|---|---|---|---|
| See dictionary | 1 | 2 | 3 |

## E) DATA COLLECTION METHODS

**(Q1) Were data collection tools shown to be valid?**

1 Yes
2 No
3 Can't tell

**(Q2) Were data collection tools shown to be reliable?**

1 Yes
2 No
3 Can't tell

| RATE THIS SECTION | STRONG | MODERATE | WEAK |
|---|---|---|---|
| See dictionary | 1 | 2 | 3 |

## F) WITHDRAWALS AND DROP-OUTS

**(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?**

1 Yes
2 No
3 Can't tell
4 Not Applicable (i.e. one time surveys or interviews)

**(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).**

1 80 -100%
2 60 - 79%
3 less than 60%
4 Can't tell
5 Not Applicable (i.e. Retrospective case-control)

| RATE THIS SECTION | STRONG | MODERATE | WEAK | |
|---|---|---|---|---|
| See dictionary | 1 | 2 | 3 | Not Applicable |

## G) INTERVENTION INTEGRITY

**(Q1) What percentage of participants received the allocated intervention or exposure of interest?**

1 80 -100%
2 60 - 79%
3 less than 60%
4 Can't tell

**(Q2) Was the consistency of the intervention measured?**

1 Yes
2 No
3 Can't tell

**(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?**

4 Yes
5 No
6 Can't tell

## H) ANALYSES

**(Q1) Indicate the unit of allocation (circle one)**

community organization/institution practice/office individual

**(Q2) Indicate the unit of analysis (circle one)**

community organization/institution practice/office individual

**(Q3) Are the statistical methods appropriate for the study design?**

1 Yes
2 No
3 Can't tell

**(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?**

1 Yes
2 No
3 Can't tell

**GLOBAL RATING**

**COMPONENT RATINGS**

Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

| | | | | | |
|---|---|---|---|---|---|
| **A** | **SELECTION BIAS** | **STRONG** | **MODERATE** | **WEAK** | |
| | | 1 | 2 | 3 | |
| **B** | **STUDY DESIGN** | **STRONG** | **MODERATE** | **WEAK** | |
| | | 1 | 2 | 3 | |
| **C** | **CONFOUNDERS** | **STRONG** | **MODERATE** | **WEAK** | |
| | | 1 | 2 | 3 | |
| **D** | **BLINDING** | **STRONG** | **MODERATE** | **WEAK** | |
| | | 1 | 2 | 3 | |
| **E** | **DATA COLLECTION METHOD** | **STRONG** | **MODERATE** | **WEAK** | |
| | | 1 | 2 | 3 | |
| **F** | **WITHDRAWALS AND DROPOUTS** | **STRONG** | **MODERATE** | **WEAK** | |
| | | 1 | 2 | 3 | Not Applicable |

**GLOBAL RATING FOR THIS PAPER (circle one):**

| | | |
|---|---|---|
| 1 | STRONG | (no WEAK ratings) |
| 2 | MODERATE | (one WEAK rating) |
| 3 | WEAK | (two or more WEAK ratings) |

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No Yes

If yes, indicate the reason for the discrepancy

| | |
|---|---|
| 1 | Oversight |
| 2 | Differences in interpretation of criteria |
| 3 | Differences in interpretation of study |

**Final decision of both reviewers (circle one):**

| | |
|---|---|
| **1** | **STRONG** |
| **2** | **MODERATE** |
| **3** | **WEAK** |

**Appendix E**

University of Nottingham
Nottingham
NG7 2RD
[Insert date]

Final Version 1.0 23/05/2022

Dr [insert name]
[insert address]

Dear Dr [insert name]

I am currently conducting research across Brockfield House, Edward House, and the Robin Pinto Unit, entitled:

**'Adverse Childhood Experiences, Aggression, and Self-Harm amongst Forensic Inpatients: The Role of Emotion Dysregulation'.**

The aim of the research is to explore the relationships between adverse childhood experiences and aggression and self-harm amongst forensic inpatients. It also aims to investigate whether emotion dysregulation mediates these relationships. It is hoped that the results will provide greater insight into these relationships and the mechanism(s) underlying them, which in turn will inform risk assessment, formulation and treatment for patients.

Participants who agree to take part in the research will be required to provide demographic information and to complete the following questionnaires:

- The Adverse Childhood Experiences Questionnaire (ACE-Q)
- The Difficulties in Emotion Regulation Scale (DERS)
- The Buss Perry Aggression Questionnaire (BPAQ)
- The Self Harm Inventory (SHI)

Completion of all four measures should take approximately 15-20 minutes.

The inclusion criteria for participants are that they are aged 18-years-old or over, can speak and read English, and are an inpatient at either medium or low secure forensic inpatient units within EPUT. They must have capacity to consent and be deemed stable enough in mental state to participate. Participants do not need to have a history of adverse childhood experiences, aggression, or self-harm. The exclusion criteria include participants with a diagnosed learning disability, and participants who are acutely psychotic, suicidal, or have been self-harming in the previous two weeks.

I would be grateful if you could provide a list of your patients who meet the inclusion criteria and return this to [insert name of member of psychology team]. They will then provide the patients with an information sheet about the study. If patients show an interest in taking part in the study, I will then meet with them to answer any questions they may have, before obtaining informed consent and completing the questionnaires mentioned above.

| **Patients who meet the inclusion criteria** |
| --- |
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If you require any further information about the research, please do not hesitate to contact me or my research supervisor, Dr John Tully.

Yours sincerely,

Kirsty Taunton

Trainee Forensic Psychologist
Brockfield House
Kemble Way
Wickford
Essex
SS11 7FE
Telephone: 01268 568037
Email: kirsty.taunton@nottingham.ac.uk

Dr John Tully
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University of Nottingham
Yang Fujia Building
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Wollaton Road
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NG8 1BB
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**Appendix F**

University of Nottingham
UK | CHINA | MALAYSIA

NHS
Essex Partnership University
NHS Foundation Trust

Study Summary Sheet
(Final Version 2.0: 23/09/2022)

IRAS Project ID: 314400

Title of Study: ACEs, Aggression and Self-Harm: The Role of Emotion Dysregulation

Name of Chief Investigator: Dr John Tully
Local Researcher(s): Kirsty Taunton

We would like to invite you to take part in our research study. The purpose of the study is to look at the relationships between adverse childhood experiences (ACEs), difficulties managing emotions, and aggression and self-harm, amongst forensic inpatients. ACEs are stressful and/or traumatic events that occur in childhood.

Participants will be required to complete four questionnaires which will take approximately 20-30 minutes. Participants do not need to have a history of ACEs, aggression, or self-harm to take part and they will be compensated £5 for their time. We hope that this study could help develop better treatment for forensic inpatients.

In this research study we will use information from you and your medical records. We will only use information that we need for the research study. We will let very few people know your name or contact details, and only if they really need it for this study. Everyone involved in this study will keep your data safe and secure. We will also follow all privacy rules.

At the end of the study, we will save some of the data in case we need to check it. We will make sure no-one can work out who you are from the reports we write.

The full participant information sheet tells you more about this. If you require any further information about the research, please contact the researchers:

Kirsty Taunton
Trainee Forensic Psychologist
Brockfield House
Kemble Way
Wickford
Essex
SS11 7FE

Telephone: 01268 568037
Email: kirsty.taunton@nottingham.ac.uk

Dr John Tully
Consultant Psychiatrist and Clinical Associate Professor in Forensic Psychiatry
University of Nottingham
Yang Fujia Building, Jubilee Campus
Wollaton Road
Lenton
Nottingham
NG8 1BB
Email: john.tully@nottingham.ac.uk

**Appendix G**

University of Nottingham
UK | CHINA | MALAYSIA

NHS
Essex Partnership University
NHS Foundation Trust

Participant Information Sheet
(Final Version 2.0: 23/09/2022)

IRAS Project ID: 314400

Title of Study: ACEs, Aggression and Self-Harm: The Role of Emotion Dysregulation

Name of Chief Investigator: Dr John Tully
Local Researcher(s): Kirsty Taunton

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. One of our team will go through the information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear. This study is being sponsored by the University of Nottingham. Any reference to "we" throughout this document is, therefore referring to the sponsor.

**What is the purpose of the study?**

This study is being carried out as part of a doctorate thesis; therefore, the data is being collected for student research. The purpose of this study is to examine the relationship between adverse childhood experiences (ACEs), and aggression and self-harm, amongst forensic inpatients. ACEs are stressful and/or traumatic events that occur in childhood. The study also aims to investigate whether difficulties managing emotions explains the relationships between ACEs, aggression and self-harm. Participants do not need to have a history of ACEs, aggression, or self-harm to take part. It is hoped that the results of the study can be used to develop better psychological treatment for patients.

**Why have I been invited?**

You are being invited to take part because you are currently residing in a forensic inpatient unit and your Responsible Clinician (RC) has identified you as a potential participant. This study is looking to recruit patients from Brockfield House, Edward House, and the Robin Pinto Unit.

**Do I have to take part?**

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. This would not affect your legal rights or your medical care.

**What will happen to me if I take part?**

If you are interested in taking part in the research, the researcher, Kirsty Taunton, Trainee Forensic Psychologist, will meet with you at your hospital to answer any further questions you may have. If you agree to participate, you will be asked to complete a consent form, a brief demographic questionnaire, and the following questionnaires:

- The Adverse Childhood Experiences Questionnaire (ACE-Q).
- The Difficulties in Emotion Regulation Scale (DERS).
- The Buss Perry Aggression Questionnaire (BPAQ).
- The Self Harm Inventory (SHI).

This should take approximately 20-30 minutes.

**Expenses and payments**

Participants will receive £5 for participating in the study to compensate them for their time.

**What are the possible disadvantages and risks of taking part?**

Participants who have experienced ACEs or engaged in self-harming behaviours, may find it more difficult to complete these questionnaires. If at any point, you become distressed, the completion of the questionnaires will be stopped immediately, and you will have access to support from your clinical team. You will subsequently be asked if you wish to resume your involvement in the study or withdraw.

**What are the possible benefits of taking part?**

We cannot promise the study will help you but the information we get from this study could help develop better psychological treatment for forensic inpatients.

**What happens when the research study stops?**

Your involvement in the study will end following completion of the questionnaires. After the study is completed, the data will be analysed. If participants wish to request for a summary of the findings, they can contact the researcher using the contact details provided.

**What if there is a problem?**

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. The researchers' contact details are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you can do this by contacting the Patient Advice and Liaison Service on 0800 0857935.

In the event that something does go wrong and you are harmed during the research and this is due to someone's negligence then you may have grounds for a legal action for compensation against the University of Nottingham but you may have to pay your legal costs. The normal National Health Service complaints mechanisms will still be available to you.

**How will my data be collected?**

The data that you provide will be collected on paper copies of the questionnaires, which you will complete face-to-face with the researcher. Your data will then be inputted into a secure electronic database which is password protected.

**Will my taking part in the study be kept confidential?**

We will follow ethical and legal practice and all information about you will be handled in confidence.

If you join the study, we will use information collected from you during the course of the research. This information will be kept **strictly confidential**, stored in a secure and locked office, and on a password protected database at the University of Nottingham. Under UK Data Protection laws the University is the Data Controller (legally responsible for the data security) and the Chief Investigator of this study (named above) is the Data Custodian (manages access to the data). This means we are responsible for looking after your information and using it properly. Your rights to access, change or move your information are limited as we need to manage your information in specific ways to comply with certain laws and for the research to be reliable and accurate. To safeguard your rights we will use the minimum personally – identifiable information possible.

You can find out more about how we use your information and to read our privacy notice at:

https://www.nottingham.ac.uk/utilities/privacy.aspx.

We will need to use information from you and your medical records for this research project. This information will include your name, initials, date of birth and NHS number. People will use this information to do the research or to check your records to make sure that the research is being done properly.

The data collected for the study will be looked at and stored by authorised persons from the University of Nottingham who are organising the research. They may also be looked at by authorised people from regulatory organisations to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

Your contact information will be kept by the University of Nottingham for less that 3 months for this purpose. This information will be kept separately from the research data collected and only those who need to will have access to it. All research data will be kept securely for 7 years. After this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality, only members of the research team given permission by the data custodian will have access to your personal data.

In accordance with the University of Nottingham's, the Government's and our funders' policies we may share our research data with researchers in other Universities and organisations, including those in other countries, for research in health and social care. Sharing research data is important to allow peer scrutiny, re-use (and therefore avoiding duplication of research) and to understand the bigger picture in particular areas of research. Data sharing in this way is usually anonymised (so that you could not be identified) but if we need to share identifiable information, we will seek your consent for this and ensure it is secure. You will be made aware

then if the data is to be shared with countries whose data protection laws differ to those of the UK and how we will protect your confidentiality.

Although what you say to us is confidential, should you disclose anything to us which we feel puts you or anyone else at any risk, we may feel it necessary to report this to the appropriate persons.

**What will happen if I don't want to carry on with the study?**

Your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without your legal rights being affected. If you withdraw we will no longer collect any information about you or from you but we will keep the information about you that we have already obtained as we are not allowed to tamper with study records and this information may have already been used in some analyses and may still be used in the final study analyses. To safeguard your rights, we will use the minimum personally-identifiable information possible.

**Involvement of the Responsible Clinician/GP/Clinical Team**

If you decide to take part in the research, your responsible clinician and GP will be informed of your participation. They will not be provided with any of your data, they will just be informed that you are taking part in the study. Nursing staff will also be informed of your participation, following completion of the questionnaires, and this will be documented in your medical notes. Again, none of your data, will be shared, just that you have taken part in the study.

**What will happen to the results of the research study?**

The results will be submitted as a thesis to the University of Nottingham. A shorter summary will be written for Brockfield House, Edward House and the Robin Pinto Unit. There may also be an option of submitting the results for publication following this. In all cases, your identity will not be disclosed.

**Who is organising and funding the research?**

This research is being organised and funded by the University of Nottingham. It will be carried out by Kirsty Taunton, Trainee Forensic Psychologist, to fulfil part of her Doctorate in Forensic Psychology. The research is being supervised by Dr John Tully, Consultant Psychiatrist and Clinical Associate Professor in Forensic Psychiatry.

**Who has reviewed the study?**

All research in healthcare is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by NHS Research Ethics Committee.

**Further information and contact details**

Kirsty Taunton
Trainee Forensic Psychologist

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Kemble Way
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Telephone: 01268 568037
Email: kirsty.taunton@nottingham.ac.uk

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**Appendix H**

University of Nottingham
UK | CHINA | MALAYSIA

NHS
Essex Partnership University
NHS Foundation Trust

**CONSENT FORM**
**(Final Version 2.0: 23/09/2022)**

Title of Study: **Adverse Childhood Experiences, Aggression and Self-Harm, amongst Forensic Inpatients: The Role of Emotion Dysregulation**

**IRAS Project ID:** 314400
**Name of Researcher**: Kirsty Taunton
**Participant ID:**

**Please initial box**

1. I confirm that I have read and understand the information sheet final version 2.0 dated 23/09/2022 for the above study and have had the opportunity to ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my medical care or legal rights being affected. I understand that should I withdraw then the information collected so far cannot be erased and that this information may still be used in the project analysis. ☐
3. I understand that relevant sections of my medical notes and data collected in the study may be looked at by authorised individuals from the University of Nottingham, the research group and regulatory authorities where it is relevant to my taking part in this study. I give permission for these individuals to have access to these records and to collect, store, analyse and publish information obtained from my participation in this study. I understand that my personal details will be kept confidential. ☐
4. I understand that the information I provide will be allocated a number to anonymise it and make it non-identifiable. That information will be kept confidential, unless I tell the researcher something that makes them concerned for my or someone else's safety. I understand in those circumstances that they will contact my clinical team. ☐
5. I agree to my clinical team and GP being informed of my participation in the study ☐
6. I agree to take part in the above study. ☐

| _____ | _____ | _____ |
|---|---|---|
| Participant ID: | Date | Signature |
| _____ | _____ | _____ |
| Name of Person taking consent | Date | Signature |

3 copies: 1 for participant, 1 for the project notes and 1 for the medical notes

**Appendix I**

University of Nottingham
UK | CHINA | MALAYSIA

NHS
Essex Partnership University
NHS Foundation Trust

**Debriefing Statement**

(Final Version 2.0: 23/09/2022)

IRAS Project ID: 314400

**Title of Project: Adverse Childhood Experiences, Aggression, and Self-Harm amongst Forensic Inpatients: The Role of Emotion Dysregulation**

Previous research has found high levels of trauma amongst forensic inpatients which have been linked to multiple negative outcomes; for example, aggression, violence, self-harm and suicide ideation, and psychological distress. However, the majority of this research has focused solely on experiences of childhood physical and sexual abuse, neglecting other types of childhood adversity.

Addressing this, research has started to explore other types of childhood adversity, such as household dysfunction and neglect, through use of the Adverse Childhood Experiences (ACE) survey. However, to date, little research has been conducted using the ACE survey to explore the impact of ACEs amongst forensic inpatients. Of the research that has been conducted, it has been found that forensic inpatients experience a significantly higher number of ACEs compared to that of the general population. ACE scores amongst this population have been linked to onset of aggression, psychiatric hospitalisation, psychological distress, and criminal behaviour. Despite these associations, further research is needed to explore these relationships and to understand the factors that underlie these associations.

The purpose of this research is to examine the relationship between ACEs and aggression and self-harm, amongst forensic inpatients, an understudied population. The research also aims to investigate whether difficulties with emotion regulation explains the associations between ACEs and aggression and self-harm amongst forensic inpatients.

Gaining a greater insight into these relationships and the factors underlying these associations, will have important implications regarding the care and treatment for forensic inpatients who have experienced ACEs.

If you have any questions about the research, please do not hesitate to contact the researcher or the researcher's supervisor:

Kirsty Taunton
Trainee Forensic Psychologist
Brockfield House

Kemble Way
Wickford
Essex
SS11 7FE
Telephone: 01268 568037
Email: kirsty.taunton@nottingham.ac.uk

Dr John Tully
Consultant Psychiatrist and Clinical Associate Professor in Forensic Psychiatry
University of Nottingham
Yang Fujia Building
Jubilee Campus
Wollaton Road
Lenton
Nottingham
NG8 1BB
Email: john.tully@nottingham.ac.uk

If you feel you have been affected by this study, please speak to your responsible clinician or a member of your clinical team.

**Appendix J**

Ymchwil Iechyd a Gofal Cymru
Health and Care Research Wales

NHS
Health Research Authority

Dr John Tully
University of Nottingham
Yang Fujia Building, Jubilee Campus
Wollaton Road, Lenton, Nottingham
NG8 1BB

Email: HCRW.approvals@wales.nhs.uk

27 September 2022

Dear Dr Tully

**HRA and Health and Care Research Wales (HCRW) Approval Letter**

| | |
|---|---|
| **Study title:** | **Adverse Childhood Experiences, Aggression and Self-Harm amongst Forensic Inpatients: The Role of Emotion Dysregulation** |
| **IRAS project ID:** | **314400** |
| **Protocol number:** | **22014** |
| **REC reference:** | **22/WA/0235** |
| **Sponsor** | **University of Nottingham** |

I am pleased to confirm that **HRA and Health and Care Research Wales (HCRW) Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the "Information to support study set up" section towards the end of this letter.

**How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?**
HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating centre of each participating nation. The relevant national coordinating function/s will contact you as appropriate.

Please see IRAS Help for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

**How should I work with participating non-NHS organisations?**
HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

**What are my notification responsibilities during the study?**

The standard conditions document "*After Ethical Review – guidance for sponsors and investigators*", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

**Who should I contact for further information?**
Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **314400**. Please quote this on all correspondence.

Yours sincerely,
Sue Byng

Approvals Specialist

Email: HCRW.approvals@wales.nhs.uk

*Copy to:* *Ms Angela Shone*

## Appendix K

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

**THE UNIVERSITY OF NOTTINGHAM**

**DOCTORATE IN FORENSIC PSYCHOLOGY (D.FOREN.PSY)**

**CLIENT CONSENT TO COURSE WORK ASSIGNMENTS**

I understand that Kirsty Taunton, hereafter referred to as 'the trainee' would like my permission to use information about me to complete a course work assignment (oral case presentation and/or written case report).

I understand that the work will not contain any information that would reveal my personal identity, i.e. my name or address; rather I will be referred to via a pseudonym or case number.

The work may be discussed in the trainee's supervision and personal development group or looked at by other trainees to help their learning.

I understand that the work will be checked by the trainee's supervisor and The University of Nottingham to see that my anonymity and confidentiality have been safeguarded.

I understand that course work assignments (and material relating to these) are kept in securely locked premises and are not available for public access.

I understand that I do not have to allow information about me to be used in this way. I can change my mind and refuse my consent at any stage and this will have no effect on the treatment offered to me.

Name of client: [redacted]

Client's signature: [signature]

Date: 14.11.22

**Appendix L**

# Individual Clinical Rating Form:

# I Can Feel Good Programme

| | |
|---|---|
| **Patient Name:** | |
| **Rater Name:** | |
| **Rater Role:** | |
| **Date:** | |

Use the guidelines below to rate the behaviour and attitudes of the patient.

Please circle the description which best describes the individual currently.

Remember that a middle score of '0' represents the minimum acceptable behaviour/attitudes.

Less than acceptable behaviour should be rated -2 or -1; better than acceptable performance should be rated +1 or +2.

Not to be used without reference to: Ashworth, Brotherton, Ingamells & Morrissey (2018). I Can Feel Good Second Edition. Pavilion Publishing. Hove, UK

| GENERAL | -2<br>Absence of (appropriate) skill in attitude or behaviour Or Extremely unskilled | -1<br>Lacking of skill in attitude or behaviour | 0<br>Skilled behaviour, some insight | +1<br>Skilled behaviour on most occasions, displaying insight and appropriate attitudes | +2<br>Extremely skilled behaviour consistently, displaying insight and appropriate attitudes |
|---|---|---|---|---|---|
| **1. Self-esteem and confidence** | Actively demonstrates a negative self-evaluation and low self-esteem across most domains. Impacts negatively upon engagement and confidence. | Generally negative self-evaluation although can demonstrate an ability to think positively about self in some situations with significant prompts. | Generally positive self-evaluation across domains although can fluctuate depending upon by external factors. Awareness of impact of external factors which may impact upon stability. | Regularly demonstrates healthy self-esteem and confidence in own ability and knowledge. Is aware of potential triggers which may impact upon stability of self-esteem and is able to regulate their effect. | Regularly demonstrates healthy self-esteem and confidence in own ability and knowledge or ability to perform outside of the group situation. |
| **2. Motivation and willingness** | Actively demonstrates lack of motivation to attend the group. Prompts and encouragement to attend has little or no effect. Never brings relevant materials or completed out of session work. Refuses to engage in activities, feedback and answer questions despite prompts. Very low attendance rate/leaves sessions disruptively. | Requires significant prompts and encouragement to attend. Infrequently brings relevant materials and out of session work is generally not completed without significant support. Unwilling engage in activities, feedback and answer questions despite prompts. Poor attendance rate/partial attendance. | Requires small prompts or some encouragement to attend at times but is receptive. Generally brings necessary materials and out of session work is completed with some supported. Will engage in activities, feedback and answer questions with prompting. Good attendance rate although has some absences/at times leaves session at break. | Regularly demonstrates motivation to attend the group (e.g. ready with necessary materials, out of session work completed). Requires no prompts or encouragement to attend. Is regularly willing within the group to engage in activities, feedback and answer questions. Very high attendance rate. | Regularly demonstrates motivation to attend other sessions and activities (e.g. ready with necessary materials). Requires no prompts or encouragement to attend. Is regularly willing to engage in activities, feedback and answer questions outside of the group. Very high attendance rates regarding other groups/activities. |
| **3. Pro social behaviour and attitudes** | Actively demonstrates negative, anti-social attitudes towards rehabilitation, therapeutic engagement and life style (e.g. future goals, occupation and self-care) through negative comments or disruptive behaviours within the group. | Mostly demonstrates negative attitudes towards rehabilitation, therapeutic engagement and life style (e.g. future goals, occupation and self-care) and demonstrates some negative behaviours such as rudeness, and non-completion of out of session work. | Mostly demonstrates positive attitudes towards rehabilitation, therapeutic engagement and life style (e.g. future goals, occupation and self-care) and models positive behaviours such as politeness, manners, out of session work completion and skill application etc. | Regularly demonstrates positive attitudes towards rehabilitation, therapeutic engagement and life style (e.g. future goals, occupation and self-care) and models positive behaviours such as politeness, manners, out of session work completion and skill application etc. | Regularly demonstrates positive attitudes towards rehabilitation, therapeutic engagement and life style (e.g. future goals, occupation and self-care) and models positive behaviours such as politeness, manners outside of the group. |
| **4. Social skills and appropriate group behaviour** | Interrupts, does not follow group structure or processes, distractible and distracts others. Reminders to apply group rules and adhere to processes are ineffective. | Requires regular reminding to apply group rules and adhere to processes (e.g. remaining focused and attentive, turn taking, hand raising). When distracted requires significant support to refocus. | Can demonstrate ability to apply group rules and can adhere to processes (e.g. turn taking, hand raising) with some reminding. Can refocus attention when distracted. | Regularly demonstrates an ability to apply the group rules and adheres to processes (e.g. remaining focused and attentive, turn taking, hand raising), within the group with no reminding. | Regularly demonstrates an ability to follow rules and adhere to processes outside of the group with no reminding. Shows an ability to adapt behaviour and social interaction to suit different situations. |

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| **5. Positive relationships and appropriate peer support** | Actively demonstrates negative behaviour towards others (e.g. name calling, bullying) makes derogatory comments about peers. Demonstrates behaviour which intimidates or demeans others. Is unwilling to work as a team, perspective take or act in a respectful, kind way. | Mostly demonstrates negative behaviour towards others, requires prompts and encouragement to work as a team, perspective take or act in a respectful, kind way. | Mostly demonstrates an ability and willingness to work as a team within the group, demonstrates some steps to create group cohesion, shows some ability to empathise, respect others, perspective take and at times can act in a kind manner. | Regularly demonstrates an ability and willingness to work as a team within the group, takes steps to ensure group cohesion, regularly shows ability to empathise, respect others, perspective take and act in a kind manner. | Regularly demonstrates an ability and willingness to work as a team, takes steps to ensure social cohesion, regularly shows ability to empathise, respect others, perspective take and act in a kind manner in everyday life. |
| **6. Insight and psychological thinking** | Actively demonstrates a lack of psychological thinking. Denies the relationship of thoughts, feelings and behaviour. Refuses to think about personal examples. | Lack of psychological thinking; support or guidance has little effect. Does not understand the link between thoughts, feelings and behaviour. Does not consider personal examples. | Can demonstrate psychological thinking with support, ability to identify and connect thoughts feeling and behaviour with guidance. Offers personal examples at times when asked. | Regularly demonstrates self-directed psychological thinking, ability to identify and connect thoughts feeling and behaviour. Volunteers relevant personal examples appropriately. | Regularly demonstrates spontaneous psychological thinking in everyday life, ability to identify and connect thoughts feeling and behaviour. Is able to reflect relatively unguided upon own behaviour outside of group. |

| **MINDFULNESS** | **-2**<br>**Absence of (appropriate) skill in attitude or behaviour Or Extremely unskilled** | **-1**<br>**Lacking of skill in attitude or behaviour** | **0**<br>**Skilled behaviour, some insight** | **+1**<br>**Skilled behaviour on most occasions, displaying insight and appropriate attitudes** | **+2**<br>**Extremely skilled behaviour consistently, displaying insight and appropriate attitudes** |
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| **1. Judging thought processes** | No awareness of judgements made or the impact of these | Limited awareness of judgements. Is able to recognise judgements with prompting | Is aware of judgements and consequences they may have | Able to identify judgements made and actively works to reduce impact of these | Awareness of thought processes and able to identify judgements. Able to adopt a non-judgemental stance |
| **2. Evidencing judgements-behaviourally** | Sees everything in a negative way and is not willing to change this perception even when prompting | Sees most things in a negative way, but is able to accept alternative explanations | Can recognise that he is thinking negatively | Can recognise that he is thinking negatively and that this can affect the way he responds | Evaluates situations as they are, and show that by being able to verbalise comparable or alternative interpretations and shows positive behavioural responses |
| **3. Attention span** | Experiences great difficulty attending to one task at a time. Is easily distracted | Is able to attend to a task for short periods of time, often requiring prompting to refocus | Is able to attend to activities | Attends to activities demonstrating an awareness of difficulties focusing and maintaining attention | Completely focused and is able to maintain attendance to all activities |
| **4. Impulsive behaviour** | Is unaware of impulsive behaviour. States that it is not under control | Has some awareness of impulsive behaviour, but this reduces with the presence of increasing emotion | Shows awareness of impulsive behaviour and actively engages to reduce this | Is aware of impulsive behaviour and has good insight into the likelihood of behaving impulsively | Is able to identify urges to behave impulsively and uses skills to avoid an impulsive response |
| **5. Awareness of emotion mind states** | No recognition of when in high emotional arousal | Recognising when in high emotional arousal but unable | Recognise the impact of behaviour when in high | Recognise the impact of behaviour when in high | Notices when moving in to high arousal and actively works to reduce this by |

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| | | to effect change or apply skills to moderate arousal level | arousal and able to moderate this with prompting | arousal and able to moderate this without prompting | employing mindfulness and other skills |

| **MANAGING FEELINGS** | **-2**<br>**Absence of (appropriate) skill in attitude or behaviour Or Extremely unskilled** | **-1**<br>**Lacking of skill in attitude or behaviour** | **0**<br>**Skilled behaviour, some insight** | **+1**<br>**Skilled behaviour on most occasions, displaying insight and appropriate attitudes** | **+2**<br>**Extremely skilled behaviour consistently, displaying insight and appropriate attitudes** |
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| **1. Emotional intensity and lability** | Experiences rapid shifts in intensity of emotion and describes having no control over this or their behavioural responses | Experiences intense emotions and describes difficulty managing these and their behavioural responses | Demonstrates ability to tolerate intense emotions and is able to regulate emotions and behavioural responses in most situations | Is able to tolerate intense emotion and uses skills to reduce the problematic consequences | Is able to tolerate intense emotions and use skills to regulate these. Is effective in maintaining balanced experience of emotion and regulating their behavioural responses accordingly |
| **2. Label emotional experience** | Inability to identify emotion, only able to identify/differentiate between 1-3 emotions | Ability to name emotion on some occasions | Recognises and labels their own emotion and that of others | Labels own emotion and those of others in a variety of situations | Consistently recognises own emotion and that of others responding accordingly |
| **3. Communicate emotional experience** | Inability to communicate emotion or showing under/over controlled displays of emotion | Some effective communication of emotional experience but this is reduced during times of stress | Communicates emotional experience to others in an effective manner | Is able to manage own emotion and responds to others' displays of emotion with positive effect | Communicates emotional experiences of self and others in an effective manner, using skills to moderate emotional experience |
| **4. Emotion control** | Poor emotion control, characterised by impulsive and/or violent displays<br>Or<br>Presents as "over-controlled" expressing little or no emotion | Limited emotional control, able to manage emotion of lower intensity, but unable to control strong or extreme emotions as characterised by continuing impulsive and/or violent displays | Displays skill at managing emotions that are potentially problematic for self or others and has an understanding of the significance of this | Individual is able to recognise vulnerability factors and triggers which decrease ability to control emotion and utilise skills accordingly to manage emotions | Displays and is well versed in skills to effectively manage emotions, and can reflect on the difficulties previously experienced regarding lack of control, or over-control |
| **5. Emotional experiencing** | Unable to identify the primary emotion, may use one emotion (e.g. anger to label a range of emotions | Acknowledges primary emotion with prompting but has poor insight into the links between thoughts, feelings and behaviour | Is able to identify a range of primary and secondary emotions but encounters difficulty experiencing primary emotion at times | Displays and describes emotions appropriate to the context within which they are being experienced | Displays and describes emotions appropriate to the context within which they are being experienced. Individual is able to recognise and relate to emotional experiencing of others |
| **6. Explosive/ impulsive behaviour** | Tendency to (over-) react explosively to situations and/or individuals, becoming violent to self or others, with apparently little or no control | Has limited insight into the difficulties that impulsive/explosive behaviour creates for self and others, but continues to behave impulsively | Recognises the consequences of acting impulsively and is able to choose alternative methods of coping. Skilfully exerts control over impulsive urges in most situations | Skilfully exerts control over impulsive urges in most situations and is able to identify vulnerability factors and triggers, working toward reducing these | Controls impulsive urges in most situations and id able to identify vulnerability factors and triggers, working toward reducing these. Ability to reflect independently on previous impulsive/explosive |

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| | | | | | behaviours and identify and reduce vulnerability factors and triggers |

| **COPING IN CRISIS** | **-2**<br>**Absence of (appropriate) skill in attitude or behaviour Or Extremely unskilled** | **-1**<br>**Lacking of skill in attitude or behaviour** | **0**<br>**Skilled behaviour, some insight** | **+1**<br>**Skilled behaviour on most occasions, displaying insight and appropriate attitudes** | **+2**<br>**Extremely skilled behaviour consistently, displaying insight and appropriate attitudes** |
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| **1. Tolerance of distress** | Unable to tolerate distress demonstrating impulsive behaviour as a means of managing this | Difficulty tolerating distress in some situations | Able to tolerate distress, asking for help, without resorting to maladaptive coping | Able to tolerate distress independently and appropriately | Identifies distress and is pro-active in skills use to manage this effectively |
| **2. Acceptance of reality** | Refusal to accept reality of self and situation | Difficulty accepting reality perceiving this as condoning or agreeing with the situation | Able to accept reality in the 'here and now' | Able to accept reality and has some insight into why things are as they are | Able to accept reality and sees reason and rationale for situation |
| **3. Explosive or impulsive outbursts** | Is unaware of precipitating factors in explosive or impulsive behaviour and states it happens without warning | Is aware of urges to respond in an explosive or impulsive manner but is reluctant to change the response | Does not display explosive outbursts or impulsive behaviour | Is able to recognise urges to behave in an explosive or impulsive manner and expresses these in a more adaptive/pro-social manner | Able to identify situations that are likely to cause urges to respond in an impulsive manner and problem solves |
| **4. Finding meaning for distress** | Is unable to find any meaning for distress, blaming self or others for the situation | Difficulty finding meaning for distress without prompting from an objective perspective | Is able to find meaning for distress | Able to find meaning for distress, identifying causal factors | Able to identify meaning for distress, identifying causal factors and problem solving potential future difficulties |
| **5. Using skills to cope** | Actively avoids situations and emotions that may be distressing | Can tolerate distress in some situations, but continues to avoid if able to | Able to recognise urges to avoid, but accepts need to tolerate and experience the situation/emotion | Insight into previous avoidant behaviours and consequences of these | Recognises the potential h arm of avoidant behaviour and seeks to use skills to experience and manage distress as a learning experience |

| **PEOPLE SKILLS** | **-2**<br>**Absence of (appropriate) skill in attitude or behaviour Or Extremely unskilled** | **-1**<br>**Lacking of skill in attitude or behaviour** | **0**<br>**Skilled behaviour, some insight** | **+1**<br>**Skilled behaviour on most occasions, displaying insight and appropriate attitudes** | **+2**<br>**Extremely skilled behaviour consistently, displaying insight and appropriate attitudes** |
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| **1. Recognition of appropriate personal space** | No awareness of appropriate personal space, often invades others' personal space and does not respond to requests to stop. | Limited awareness of personal space, seems to recognise issues where pointed out by others, but continues to invade others' personal space. | Some insight into appropriate personal space, occasional invasion of others' space. Listens and responds to instruction not to, but still engages in this behaviour on occasion. | Good insight into personal space, generally abides by social norms. Only occasional invasion of others' personal space. | Fully aware of appropriate personal space and abides by social norms. Asks if wanting to get closer and only does so in exceptional circumstances. |

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| **2. Appropriate use of eye contact and facial expression** | Very poor observation of appropriate eye contact and facial expression. Stares and/or avoids others' gaze, displays facial expressions inappropriate to the situation and fails to interpret others' facial expressions, or does so incorrectly. | Limited recognition of appropriate eye contact and facial expression. Struggles to identify all but the most basic facial expressions. May struggle to understand why eye contact is important. | Good understanding of appropriate eye contact and facial expression, but evident problems applying this all the time. May misinterpret facial expressions and apply skills inconsistently across situations. | Generally good use of eye contact and facial expression. Able to correctly interpret others' facial expressions most of the time. May struggle to interpret more complex facial expressions. | Good insight into how to use eye contact and facial expression in social situations. Does not stare or avoid others' gaze. Facial expression is appropriate to the situation, and the person can interpret others' expressions well. |
| **3. Appropriate use and recognition of body language** | No awareness of social norms regarding body language. Consistently interprets body language of others incorrectly, and fails to understand why own body language may be misinterpreted. | Limited understanding and use of appropriate body language. Requires input from others to maintain appropriate body language, which is responded to but almost immediately forgotten. | Some understanding and use of appropriate body language, and shows improvements with input from others. Can recognise potential meanings behind simpler body language with assistance. | Good recognition and use of body language, though can still require prompts to maintain this. May need more input to recognise and display more complex body language. | Very good understanding of appropriate body language, with good ability to think about what a person's body language might mean. Uses own body language appropriately to convey mental state. |
| **4. Recognition and observance of different relationships and their boundaries** | Does not observe different types of relationships. Shares and asks for information indiscriminately, and uses similar body language with everyone, seemingly not understanding why this is inappropriate and ineffective. | Limited recognition and observance of different relationships. Requires prompting to maintain boundaries and shows poor understanding of the reasons for this, immediately reverting to previous behaviour. | Some recognition of boundaries between relationships. May apply understanding to physical but not verbal domains, or vice versa. Can apply skills more consistently with prompting. | Generally consistent maintenance of boundaries between relationships. Occasional inappropriate disclosures or physical behaviour, but this can be reflected on. | Appropriately maintains boundaries between relationships. Shares and asks for personal information only in the expected personal and professional relationships. |
| **5. Awareness of, and appropriate response to, how others might be feeling** | Complete lack of awareness of others' mental states. Fails to recognise why this is important and that it is possible to guess others' feelings. Fails to consider others even when it might benefit them personally. | Limited consideration of how others might be feeling. Can consider basic emotions in others but generally thinks about themselves. Needs lots of support to apply basic skills. | Able to consider, with assistance, how others might feel. Tends to do this only with regards to how it can benefit themselves. | Often thinks about how others might be feeling and generally responds sensitively. There may some occasions where they struggle to either interpret or respond appropriately. | Very good understanding of how others might feel in certain situations. Responds to this sensitively and can reflect on the benefits of considering others, both personally and morally. |
| **6. Awareness of, and appropriate use of, verbal communication skills** | Poor verbal communication. Either does not communicate verbally, or does so without skill, e.g. monotone, speaks over others, starts or ends conversations in socially unconventional manners. | Limited evidence of verbal communication skills. For example, may follow conversational norms regarding starting conversations, taking turns, and ending the conversation, but fails to appropriately use their voice within this (or vice versa). | Evidence of verbal communication skills but these are not applied consistently. Shows improvement based on feedback from others but still requires reminders of how to communicate. | Shows ability to acknowledge problems and seek support from others with minimal encouragement | Consistently appropriate use of verbal skills, including pitch, tone, speed etc., and conversational norms such as turn-taking, expressing interest, and starting and ending conversations appropriately. |
| **7. Appropriate response to conflict** | Deals with conflict. Poor emotional and behavioural response (e.g. anger, extreme negativity). Unable to reflect on reasons for conflict. Externalises blame and is overwhelmed by the conflict. | Limited ability to deal with conflict. Can overcome minor conflict with lots of support. Little evidence of improvement in this area. | Inconsistent application of skills to respond appropriately to conflict. Can reflect on this once the situation has calmed. Some evidence that they are able to learn new techniques. | Generally good response to conflict. Can struggle with situations where acceptance is very important to them. Can apply a range of skills to move on from the situation. | Handles conflict well. Able to reflect on causes, including personal contributions to a problem. Does not dwell on negative aspects. |