Childhood trauma and suicidal behaviour: Exploring psychological mediators

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A thesis submitted in partial fulfilment of the requirements of Edinburgh Napier University, for the award of Doctor of Philosophy

May 2019

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Acknowledgements

To all who helped – You know who you are and you know how important you've been.

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List of Abbreviations

AHRQ: Agency for Healthcare Research and Quality

BPD: Borderline Personality Disorder

BTT: Betrayal Trauma Theory

CBT: Cognitive Behavioural Therapy

CEA: Childhood Emotional Abuse

CEN: Childhood Emotional Neglect

CERQ: Cognitive Emotion Regulation Questionnaire

CEVQ-SF: Childhood Experiences of Violence Questionnaire-short form

CFT: Compassion Focused Therapy

CPA: Childhood Physical Abuse

CPN: Childhood Physical Neglect

CSA: Childhood Sexual Abuse

CPTSD: Complex Posttraumatic Stress Disorder

CTQ: Childhood Trauma Questionnaire

DDIS: Dissociative Disorders Interview Schedule

DERS: Difficulties in Emotion Regulation Scale

DESNOS: Disorders of Extreme Stress Not Otherwise Specified

DPI: Disorganising Poverty Interview

DSM-5: Diagnostic and Statistical Manual of Mental Disorders

DSO: Disorders of Self-Organisation

ICD-10: International Classification of Diseases 10th Revision

ICD-11: International Classification of Diseases 11th Revision

IMV: Integrated Motivation Volitional Model

IPT: Interpersonal Psychological Theory

ITQ: International Trauma Questionnaire

NHS: National Health Service

NIH: National Institute of Health

PTSD: Posttraumatic Stress disorder

RQ: Relationship Questionnaire

SI-SDB: Structured Interview for Self-Destructive Behaviours

SIGN: Scottish Intercollegiate Guidelines Network

SPD: Schizotypal Personality Disorder

SPSS: Statistical Package for the Social Sciences

VIF: Variance Inflation Factor

WHO: World Health Organisation

Student Declaration

The work in this thesis has not been submitted for any other degree or professional qualification, it is the result of my own independent work and is not part of a collaboration.

Abstract

Background:

Childhood trauma is an oft cited risk factor for suicidal behaviour, however, the reasons behind this relationship are not well understood. This project aimed to uncover psychological factors which may mediate the relationship between childhood trauma and suicidal behaviour. Based on previous theoretical perspectives and empirical findings, psychological factors within the domains of self-perception, relational functioning, and emotion regulation were focused on. Understanding such mediating factors is essential in developing interventions aimed at minimising suicide risk within the childhood trauma population.

Methods:

Study 1: Previously identified theoretical pathways between childhood trauma and Non-Suicidal Self-Injury (NSSI), in addition to demographic features, were tested for their association with suicidality in a sample of traumatised adults (N=113). Data were gathered through self-report questionnaires, with relationships explored through logistic regression analyses.

Study 2: Mediating pathways between childhood trauma and suicide attempt through attachment style, Complex Posttraumatic Stress Disorder symptomatology, and cognitive emotion regulation strategies were explored in a sample of traumatised adults (N=330). Mediating relationships were examined through bias-corrected bootstrapped mediation models.

Results

Study 1: Results did not support the ability of the NSSI theory tested to predict the presence of suicidality. Childhood emotional abuse and unemployment were found to be associated with lifetime experiences of suicidality.

Study 2: The relationship between childhood trauma and suicidal behaviour was found to be mediated by disturbances of self-organisation (DSO) in the areas of self-concept, relational disturbances, and emotion dysregulation. The relationship between childhood trauma and DSO was mediated by insecure attachment, internal attributions of blame, a sense of current threat, and intrusive thoughts or memories.

Discussion

A theoretical framework is proposed whereby disturbances of self-organisation in the areas of emotional dysregulation, negative self-concept, and disturbed relationships operate in combination to mediate the relationship between childhood trauma and suicide risk. This framework could be used to inform clinical interventions aimed at reducing suicide risk following childhood trauma by treating disturbances of self-organisation. Further implications for trauma-informed training for health and social care professionals are discussed.

Chapter 1: Introduction

1.1 Thesis Structure

The introduction chapter will introduce the concepts of childhood trauma and suicide. Common risk factors for suicide will be introduced and discussed, followed by an evaluation of current psychosocial models for understanding the development of suicide. Childhood trauma will then be discussed, along with a review of developmental outcomes of this. The second chapter will present a systematic literature review, synthesising existing evidence for psychological factors mediating the relationship between childhood trauma and suicidal behaviour. Following this, a methodology chapter will describe the approaches to be taken in the two subsequent empirical studies. These empirical studies are presented in chapters four and five. Chapter four will describe a study exploring potential predictors of suicidality in the trauma population, while chapter five will describe a study exploring potential psychological mediators of the relationship between childhood trauma and suicidal behaviour. The final discussion chapter will position the findings of the two empirical study within the extant literature, and will present a theoretical model of pathways from childhood trauma to suicidal behaviour, based on the findings of the included studies.

1.2 Chapter Overview

The purpose of the current thesis is to explore psychological factors which may provide insight into why those with a history of childhood trauma are at increased risk for suicide attempts. The current chapter will introduce factors understood to increase suicide risk, as well as contextualising suicide risk within current theoretical perspectives. A description of childhood trauma will be presented, along with an overview of some developmental sequelae occurring following

childhood trauma which may then increase suicide risk. The chapter will conclude by introducing a systematic literature review aimed at synthesising existing evidence of psychological factors which may mediate the relationship between childhood trauma and suicide.

1.3 Rationale for Current Project

Approximately every forty seconds someone, somewhere will die by suicide, equating to approximately 800,000 suicide deaths per year (World Health Organisation, 2018). The positioning of suicide prevention as a global health priority was ratified by the World Health Organisation (WHO) in 2013 when an aim of reducing global suicide rates by 10% by 2020 was included in its Mental Health Action Plan (WHO, 2013). Mental disorders (e.g., anxiety and depression) are an important precursor to suicide, with studies suggesting the presence of psychiatric disorders in upwards of 85% of suicides (Arsenault-Lapierre, Kim & Turecki, 2004). It may, however, be argued that the act of suicide in itself is indicative of a psychiatric disturbance of some kind, such that an individual of sound mind, so to speak, would be averse to the act of ending their life. The fact that the results stated suggest that in around 15% of cases no psychiatric disorder is present may instead simply represent a population who have not sought out psychiatric support, or who possess some form of mental health disturbance which does not fulfil criteria for a formal psychiatric disorder. Psychological trauma has been found to significantly increase the risk of developing suicidal ideation and making a suicide attempt (Krysinska & Lester, 2010). In particular, repeated or long-lasting traumatic events such as childhood trauma have been found to be of pertinence in suicide risk (Zatti, Rosa, Barros, Valdivia, Calegaro et al., 2017), however the mechanisms through which this relationship operates are not well understood.

In subsequent sections of this chapter, a range of theoretical perspectives on suicide will be presented, as well as empirically-derived social and personal risk factors for suicide being discussed. Through these, the complex and multifaceted nature of suicide will be highlighted. This chapter will also highlight the spectrum of suicide risk factors which warrant exploration (e.g., reduced social support, negative self-perception, and impaired coping skills). For the current project, the decision was taken to focus on the role of childhood trauma in the development of suicide risk. As will be discussed through the remainder of this chapter, the decision to focus on childhood trauma in relation to suicide was taken for both empirical and theoretical reasons.

The theoretical justification for focusing on childhood trauma is supported by a body of empirical evidence which has found experiences of childhood trauma to be associated with increased suicide risk (Zatti et al., 2017). Beyond this, a number of the risk factors for suicide (as will be summarised in sections 1.3 and 1.4) have additionally been found to be of increased prevalence among those with a childhood trauma history. Personality traits of neuroticism and psychoticism, as well as impulsive and aggressive tendencies have been found to be associated with histories of childhood trauma (Evren, Cinar, Evren, Ulku, Karabulut & Umut, 2013; Li, Wang, Hou, Wang, Liu & Wang, 2014). In addition, mental health concerns such as depression, anxiety, and Posttraumatic Stress Disorder (PTSD) are all common outcomes of childhood trauma (Hovens, Giltay, Wiersma, Spinhoven, Penninx & Zitman, 2012; Suliman, Mkabile, Fincham, Ahmed, Stein & Seedat, 2009). The manner in which life stressors are handled may also be influenced as a result of childhood trauma, for example diminished social support options, increased perceptions of life stress, and the use of maladaptive coping strategies in response to stress are all associated with

experiences of childhood trauma (Hyman, Paliwal & Sinha, 2008; Stevens et al., 2013). Each of these factors are highlighted below as being associated with increased suicide risk. The overlap between childhood trauma sequelae and suicidal behaviour antecedents suggested a need to look beyond simple vulnerability factors for suicide and instead explore the potential source of these vulnerability factors. For this reason, childhood trauma became the focal point of the current project. At this point, it should be noted that, while suicide vulnerability and risk for suicide may be considered vaguely synonymous terms, in the current project there are slight differences in their meanings. Suicide risk is being used as an overarching term to describe direct increase in likelihood of a suicide attempt being made. Vulnerability for suicide is being taken to describe underlying residual elements which again may enhance the likelihood of suicide attempts being made, but do so as one component of the over-arching suicide risk.

1.4 Epidemiology of Suicide

The 800,000 annual suicide deaths stated above equates to around 10.5 suicide deaths per 100,000 of the population worldwide (WHO, 2018). Suicide deaths are proportionally more prevalent within high-income countries than middle or low-income ones, although any disparity here may result from a greater availability of systems for registering suicide deaths within higher-income countries (WHO, 2014). In Scotland there are on average around 700 suicide deaths per year, equating to approximately 14 deaths per 100,000 of the population (Office for National Statistics, 2018). This can be contrasted to a UK average of approximately 10 suicide deaths per 100,000 of the population (Office for National Statistics, 2018). A number of explanations for the increased rate in Scotland have been put forward, such as increased prescribing of psychotropic drugs, increased drug and alcohol use, and increased levels of socioeconomic

deprivation (Mok, Leyland, Kapur, Windfuhr, Appleby et al., 2013). In 2017, almost three quarters of suicides in Scotland were male, while adults aged 40-49 represented the highest risk age group, accounting for 25% of all suicides (National Records for Scotland, 2018).

In addition to age and gender differences, a number of societal trends have been noted in relation to suicide deaths in Scotland. Those living in rural areas represent a higher proportion of suicides than those in urban areas (Platt, Boyle, Crombie, Feng & Exeter, 2007). Additionally, an inverse relationship has been identified between social class and suicide, with those considered to be in higher social classes at lower risk of suicide (Platt et al., 2007). Similarly, those who experience higher levels of social deprivation are more likely to die by suicide than those experiencing low levels of deprivation (Platt et al., 2007).

The epidemiological findings noted above are useful in identifying subgroups within the population who appear to be at the highest vulnerability for dying by suicide. However, they offer no insight into the specific factors present within these groups which are directly responsible for people dying by suicide. In order to better understand why certain populations are at increased risk for suicide, research needs to focus on how factors manifest into suicide risk within the individual rather than simply identifying general risk factors. Doing so may allow for understandings of the development of suicide risk to be established. Such understanding could then be used to devise intervention programmes aimed at mitigating the risk associated with the identified factors.

It has been proposed that the single most significant risk factor for a suicide death is the presence of at least one prior suicide attempt (WHO, 2014). Exact suicide attempt figures cannot be gathered due to reporting inconsistencies and

inadequacies, with moral, legal, and medical objections commonly leading to an under reporting of deaths as suicide (WHO, 2014). However, estimates suggest that for every person who dies by suicide, there will be around 20 more who make a suicide attempt (WHO, 2014). Recent data from America highlights the extreme disparity between the prevalence of suicide deaths and the prevalence of suicide attempts, with suggestions that a person will die by suicide on average every 12.3 minutes, while one suicide attempt will be made on average every 30 seconds (Drapeau & McIntosh, 2015). As mentioned, suicide rates among males are consistently reported as being significantly higher than suicide rates among females (WHO, 2014). However, gender rates for suicide attempts tell a different story. Estimates from the World Health Organisation's World Mental Health surveys suggest that in high-income and low-income regions, male and female suicide attempt rates are equal, while in middle-income regions female attempts rates are double the male rates (WHO, 2014).

The epidemiological data described above points to the presence of societal groups which can be considered high-risk for dying by suicide. Further to this, clear discrepancies are evident between the likelihood of making a suicide attempt, and the likelihood of said attempt resulting in death. While every suicide death occurs following a suicide attempt, a relatively low proportion of suicide attempts are fatal. In order, then, to understand the reasons why people die by suicide, and thereby potentially decrease the number of suicide deaths, factors related to suicide attempts must be better understood. It has been proposed that suicide risk factors may generally be subdivided into social factors and personal factors (Yoshimasu, Kiyohara & Miyashita, 2008). These will now be discussed in turn.

1.5 Social Factors

A number of life events have been identified as representing a risk for suicide attempts. As will now be discussed, there may be a complexity surrounding the ways in which such events exert their influence. Childhood abuse, neglect, and separation from parents have all been identified as representing significant risk factors for making suicide attempts in adulthood (Seguin, Beauchamp, Robert, DiMambro & Turecki, 2014; Yang & Clum, 2000). Similarly, lifetime experiences of sexual or physical abuse or assault have been found to be significantly related to suicide attempts (Waldrop et al., 2007). Additionally, childhood experiences of family violence and conflict, as well as family histories of completed suicide, have been found to increase the risk for making suicide attempts (Borges, Nock, Abad, Hwang, Sampson et al., 2010; Chapman et al., 2005; Yang & Clum, 2000). More generally, an increasing number of stressful or traumatic life events experienced correlate with the risk of making a suicide attempt (Christensen, Butterham, Mackinnon, Donker & Soubelet, 2014). Abusive or neglectful experiences in childhood are understood to result in impairments to self-perception, interpersonal functioning, affect regulation, and behavioural regulation (Herman, 1992). Such impairments may all be expected to limit one's ability to adaptively respond to stressful experiences throughout life, thereby increasing suicide risk. Similarly, childhood experiences of separation from the family violates expectations for stable, protective environments considered vital for developing positive perceptions of others (Ford & Courtois, 2013). Failure to develop such perceptions may then inhibit the use of social support when faced with life difficulties. Being exposed to violence or conflict during childhood may habituate the individual to violence, rendering such expression to be normal outlets for emotional expression. Similarly, experiencing the suicide of a family member

could potentially diminish a degree of natural aversion to such behaviours. Any form of habituation to violent or suicidal acts may be expected to increase an individual's potential for making a suicide attempt.

Higher levels of current life stress and lower levels of social support have both been found to relate to increased suicidal ideation in adulthood (Yang & Clum, 2000). Increased levels of life stress would be expected to place an individual closer to an upper threshold for stress. As such, they may be more likely to be pushed beyond their coping capacity in the face of stressful events. Moreover, lacking social support would inhibit the ability to gain external assistance in times of stress or distress. It has been suggested that social support brings with it latent benefits related to beliefs that one is cared for, valued, and part of a network of people who both look out for, and are looked out for by, others in the network (Kleiman & Liu, 2013). In addition, social support is understood to bring with it aid in the form of information or assistance in decision-making, and emotional affirmation such as legitimising subjective experiences of distress (Hirsch & Barton, 2011). Each of these factors may be of particular relevance to suicide risk in times of stress or distress. For example, feeling valued or cared for by others may enhance self-esteem, thereby externalising distressing experiences, and minimising their psychological impact. Furthermore, the impact of life stressors or distressors may be reduced through the emotional support of others, or through suggestions for how to overcome these stressors. The complexity of social support in relation to suicide has been further exemplified in findings reported by Christensen and colleagues (2014), who, consistent with the above, found the presence of positive social support, such as feeling cared for, by both friends and family, was a protective factor against suicide attempts (Christensen et al., 2014). Conversely, the presence of negative social support, such as close friends or

family members instigating tension or arguments, was identified as increasing suicide risk (Christensen et al., 2014). This would suggest that social support which may portray the individual in a negative light, or which lacks reciprocal support, could be as detrimental as the absence of social support.

Of note is the fact that none of these factors are uniquely associated with suicide, each may confer risk for a number of maladaptive psychosocial and psychiatric outcomes. For example, trauma in childhood has been found to be associated with anxiety, depression, impaired self-esteem, and impaired social functioning (Kuo, Goldin, Werner, Heimberg & Gross, 2011; Palmer-Claus, Berry, Darrell-Berry, Emsley, Parker et al., 2016), in addition to suicide. As such, suicide may be thought of as one of a number of possible outcomes for each of these. However, due to its finality, it is the one outcome which cannot be resolved, as such, understanding the mechanisms through which it develops is essential.

1.6 Personal Factors

Further to the social factors described earlier, numerous mood-disorders, anxiety-disorders, and personality factors have been implicated in suicide attempts. One study, for example, found at least one mental disorder to be present in more than 88% of suicide deaths (Fleischmann, Bertolote, Belfer & Beautrais, 2005). Anxiety disorders, lifetime depression, and lifetime posttraumatic stress disorder are all considered significant risk factors for suicide (McGirr, Renaud, Bureau, Seguin, Lesage & Turecki, 2008; Waldrop et al., 2007). All of these may be considered relatively pervasive conditions which may lead to feeling trapped and in need of escape from life stressors. Impulsive and aggressive traits have both been identified as risk factors for making suicide attempts (McGirr, Alda, Seguin, Cabot, Lesage & Turecki, 2009). Impulsive and

aggressive traits, particularly in combination, could be expected to result in extreme reactions to stressors, with suicide one such potential reaction. Personality traits of high neuroticism, high psychoticism, and low extraversion have also been found to relate to increased suicide risk (Brezo, Paris, Tremblay, Vitaro, Zoccolillo et al., 2006; Christensen et al., 2014). Extraversion is defined by characteristics such as sociability and assertiveness, while neuroticism is characterised by facets such as anxiety, depression, anger, and insecurity (Barrick & Mount, 1991). Psychoticism contains characteristics such as impulsive, aggressive, criminal, hostile, depressive, and affective-disorder traits (Acar & Runco, 2012). Those displaying low extraversion may be less adept at garnering the support of others when faced with difficult life experiences. High levels of neuroticism or psychoticism may be implicated in the production of a pervasive sense of inescapability through the formation of anxious and depressive episodes. They may also render the person at increased risk of translating suicide ideation into suicide attempts through increased anger levels.

Suicide may be considered theoretically to emerge in the face of faulty or maladaptive perceptions (Johnson, Gooding & Tarrier, 2008). Such perceptions are directed both towards the individual and the situation they find themselves in. Maladaptive self-perceptions, or perceiving oneself as being incapable of rectifying a negative situation, have been demonstrated as increasing suicide risk (Chapman, Specht & Cellucci, 2005). Those who identify themselves as possessing inadequate coping skills have been shown to be at increased risk of suicide (Speckens & Hawton, 2005), as have those who possess low levels of survival beliefs (Chapman et al., 2005). Here, inadequate coping skills refer to an inability to effectively overcome or tolerate problems or stressors (Gooding et al., 2015). In each case, it is not that the person is incapable of overcoming a situation

which makes them vulnerable to suicide; rather that they believe themselves to be unable of overcoming it. It has also been demonstrated that a lack of specificity in autobiographical memory represents a risk factor for making suicide attempts (Arie, Apter, Orbach, Yefet & Zalzman, 2008). Similarly, those who believe there is no means of escaping a situation are at increased risk for suicide. Individuals who possess high levels of hopelessness, or low levels of hopefulness, for example, have been found to be at increased risk for suicide attempts (Chapman et al., 2005; Meadows, Kaslow, Thompson & Jurkovic, 2005). In this instance though, it is not that the individual believes that they are incapable of overcoming the situation, but that they view the situation as inherently insurmountable.

1.7 Psychosocial Models of Suicide

The above social and personal factors suggest the presence of, and interaction between, multiple factors in the process of suicide risk development. In order to best collate the available empirical findings, and posit potential interacting mechanisms, a number of psycho-social models have been proposed. Each of these provides additional nuances to the theoretical understanding of suicide risk. These models will now be discussed in turn, alongside a presentation of empirical evidence in support of each. Throughout this section, and indeed others in this thesis, a number of terms will be used to describe different suicidal features, such as suicidal ideation or suicidal behaviour. Definitions for these terms are presented in table 1.

Table 1: Definitions for Suicide-related Terms

Suicide	Fatal self-injurious act with evidence of intent to die[1]
Suicide attempt/Suicidal behaviour	Potentially self-injurious behaviour associated with some intent to die[1]
Suicidal ideation	Include both active and passive
Parasuicide	Intentional, non-fatal self-injurious behaviour, irrespective of intent to die[2]
Non-suicidal self-injury (NSSI)	Self-injurious behaviour with no intent to die[1]
Self-directed violence	Intentional use of force or power against oneself, including both suicide attempts and NSSI[3]
[1]Turecki and Brent (2016); [2]Coleman, Newman, Schopflocher, Bland & Dyck (2004); [3]Corso, Mercy, Simon, Finkelstein & Miller (2007)	

1.7.1 Stress-Diathesis

The stress-diathesis perspective on suicide posits that suicide attempts result from an interaction between distal diatheses and proximal stressors (van Heeringen, 2012). A diathesis is a pre-existing vulnerability for suicide, containing various biological or experiential factors (Mann, 2002). This vulnerability is then activated in response to life stressors, causing the individual to respond to seemingly ordinary events in an extreme or abnormal manner. It has been suggested that the diathesis for suicide contains factors such as genetic predispositions, familial characteristics, and childhood experiences (Mann, 2002). From this perspective, it may be understood that previously discussed suicide risk factors such as childhood abuse or neglect, family violence, and impulsive or aggressive personality traits may act in combination to influence responses to stressful life experiences.

Schotte and Clum (1982) suggested that the impact of a diathesis emerges through its impairment of flexible problem-solving abilities, such that an inability to generate solutions in stressful situations intensifies a sense of hopelessness

in relation to said situation. This hopelessness is understood to then manifest into suicidal ideation (Schotte & Clum, 1982). A small number of studies have presented evidence in support of this perspective. For example, both Schotte and Clum (1987) and Pollock and Williams (2004) found individuals experiencing suicidal ideation were less able to generate potential solutions in a problem-solving task when compared to non-suicidal controls (Pollock & Williams, 2004; Schotte & Clum, 1987).

An alternative stress-diathesis perspective was proposed by Mann and colleagues (1999), whereby psychiatric illness acts as the stressor. Under this conceptualisation, the diathesis factors are considered to be genetic in nature, with their phenotypic expression coming through impulsive-aggressive traits (Mann, Waternaux, Haas & Malone, 1999). The notion here is that the presence of impulsive-aggressive traits, passed on through familial transition, strengthen the potential for psychiatric illnesses leading to suicide attempts (Mann et al., 1999). As with Schotte and Clum's cognitive stress-diathesis model, Mann et al.'s conceptualisation has been supported empirically. For example, Mann et al. (1999) found increased severity of acute psychopathology (stress) among suicide attempters than non-attempters, as well as elevated levels of impulsivity and aggression (diathesis) (Mann et al., 1999).

The stress-diathesis perspective on suicide provides an explanation for why suicide attempts are made by some but not others when faced with similar life stress. It takes something of an external perspective in doing so, however. It acknowledges the influence of factors such as early-life experiences, genetic pre-dispositions, or psychiatric disorders in explaining suicide. It seems to view these as somewhat separate to the individual, almost as if the suicidal individual represents an individual plus a parasitic suicide diathesis. Under this

conceptualisation, the individual may be considered to control the mind during times of low stress, but when faced with heightened stress the diathesis takes control, increasing the likelihood of a suicidal outcome. An alternative perspective to take may consider the suicidal mind as one whereby the diathesis has become so entwined with the psyche that they are in fact one and the same. In so doing, it may be possible to better understand not only the factors which combine within a suicide diathesis, but also the ways in which these factors exert an influence over the individual.

As a method for understanding the development of suicide risk in those with a history of childhood trauma, the stress-diathesis perspective is somewhat lacking. A diathesis for suicide is understood as being an entity existing, or more precisely, developing, within those who have a childhood trauma history. It is composed of, among other things, the psychological remnants of maladaptive experiences. It cannot be removed, and one cannot retroactively prevent its production. All that can be done is for its impact to be minimized by understanding some of the cognitive process which emerge as a result of its being there. However, from the stress-diathesis perspective this is not possible. This model provides only a descriptive overview of factors involved in the development of something which subsequently increases the risk of a life developing towards suicide. It lacks a discursive examination of how and why these factors lead towards suicidal outcomes. In terms of understanding the place of childhood trauma within the milieu of the suicidal mind, and the influence it exerts over subsequent psychological development, little is offered from the diathesis-stress perspective.

1.7.2 Escape from Self

As described above, the stress-diathesis perspective on suicide focuses on the involvement of factors outwith the control of the individual, which exert an influence over reactions to external stressors. An alternative perspective, one in which the focus is on conscious, responsive processes, comes from Baumeister's Escape from Self theory (Baumeister, 1990). According to the Escape from Self theory, suicide is used as an attempt to escape from aversive self-awareness. According to Baumeister (1990), the process towards making a suicide attempt begins when, as a result of unrealistically high standards, the outcome of a given situation does not fulfil the expectation of the individual. This lack of expectation-fulfilment is attributed to an internal locus of blame, leading the individual to feel inadequate. Such a negative self-perception results in negative affect, which the individual attempts to escape through cognitive deconstruction. This deconstruction is said to reduce inhibition, and potentially reduce aversion to making a suicide attempt (Baumeister, 1990). Suicidal outcomes would be averted, says Baumeister, when any of these stages engenders an outcome different to those described above (Baumeister, 1990). For example, if the failure to meet expectations is attributed to external failures, the subsequent negative self-perception would not develop. Figure 1, below, displays the pathways present in the Escape from Self model.

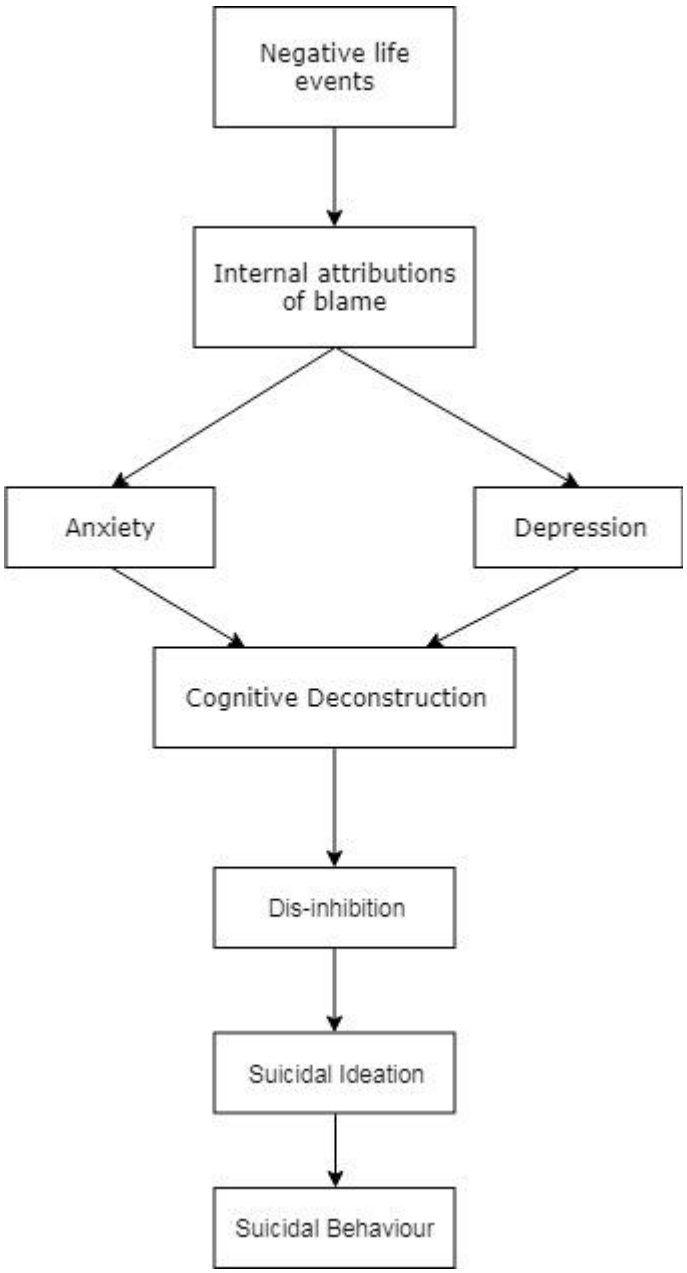


Figure 1: Escape from Self (adapted from Baumeister, 1990)

Baumeister (1990) suggests that when individuals fall short of their own ideals, depressed affect emerges. When they fail to complete duties or obligations to others, anxious affect is the likely outcome. An attempted removal of these affective states occurs through cognitive deconstruction, a reduction in self-awareness and removal of meaningful interpretations in favour of concrete, short-term understandings (Baumeister, 1990). When deconstruction fails, negative affect, negative self-perception, and internal attributions of blame once again

begin to infiltrate. Maintaining deconstruction, on the other hand, involves a certain cognitive and experiential passivity, with meaningful thoughts and events being avoided for fear of interpretation (Baumeister, 1990). There is an alternation between the passivity of deconstruction and the negativity of awareness, which in combination may lead to a pervasive sense of hopelessness. This hopelessness occurs alongside an ambivalence to long-term outcomes, and a reduction in inhibitions in relation to impulsive behaviours.

The Escape from Self theory begins to open up the role of negative perceptions in the development of suicide. It acknowledges that the individual's perception of a situation may be the catalyst for a subsequent suicide attempt, and that, perhaps more pertinently, it triggers a process of mechanisms as opposed to simply an extreme reaction. In so doing it allows us to begin to develop an understanding of temporal processes which interact to lead to a suicidal outcome. For example, the previously discussed diathesis may lead to an extreme response, while maladaptive self-perceptions may engender an internal locus of blame for this stress. The Escape from Self model provides a framework within which to understand the role of these, and other antecedent factors. Crucially though, it offers an insight into the development of a process from life-stress to suicide attempts. Such insight is lacking within the stress-diathesis perspective, but may be considered invaluable in the reduction of suicide risk.

The Escape from Self theory maintains an element of stress-diathesis by acknowledging that those with high levels of perfectionism or self-blame, for example, may have an increased predispositional vulnerability towards suicide. It develops on the preceding theory however, by focusing in on some of the cognitive processes which might be involved in developing proximal stressors into acute suicide risk factors. That being said, it does so in a fairly self-centric

way. The initial catalyst for negative affect, and by proxy, suicidality, is considered to be a response to an external situation. However, the subsequently tumbling cognitive dominoes relate primarily to internally focussed processes. There is almost an active pursuit of tacit existence through cognitive deconstruction, suggesting a near self-imposed sense of isolation. As such, it suggests that suicide occurs ostensibly irrespective of input, or lack thereof, from others.

The linear pathways through the Escape from Self model (Baumeister, 1990) have been tested, with empirical support being garnered (Dean & Range, 1999; Dean, Range and Goggin, 1996). Using path analysis to examine the full process outlined by Baumeister (1990), Dean and Range (1999) found perfectionism, indicative of unrealistically high standards, to be associated with increased depression, increased depression was itself associated with increased hopelessness and decreased reasons for living. Reasons for living here may be taken as a marker for the ambivalence to life which Baumeister theorised as emerging following cognitive deconstruction, which then interacts with hopelessness to ignite suicidal ideation. In Dean and Range's (1999) study, both hopelessness and reduced reasons for living were associated with increased suicidal ideation. The key instigators of suicidal ideation within the Escape from Self formulation – perfectionistic attitudes, anxious affect, and depressed affect – have all been identified through a plethora of studies to be associated with suicidal ideation (Castellanos & Pettit, 2011; Chesney, Goodwin & Fazel, 2014; Smith, Sherry, Saklofske, Mushquash, Flett & Hewitt, 2018). A recent meta-analysis found both perfectionistic concerns and perfectionistic strivings to be associated with small to moderate increases in suicidal ideation (Smith et al., 2018). Similarly, reviews of the extant literature have presented consistent

evidence for the role of anxiety and depression in the development of suicidal ideation (Chesney et al., 2014; Hill et al., 2011).

Self-blame for negative events commonly emerges following childhood trauma (Swannell, Martin, Page, Hasking, Hazell et al., 2012). As such, it may be expected that those with a childhood trauma history are at increased likelihood of internally attributing failings in life, which according to the Escape from Self elicits the onset of negative affect. This in turn sets off a continuation of cognitive processes which ultimately lead to a suicide attempt (Baumeister, 1990). Features such as self-hatred, low self-esteem, or a negative self-concept may lead the individual to inflate the level of failing which has occurred, strengthening the subsequent negative affect. They may also render the individual as more adept at blaming themselves for failing to live up to expected standards, or setting themselves higher standards to which to achieve.

While the Escape from Self proffers cognitive reasoning behind the development of suicidality, it does not provide anything to set apart those with and those without childhood trauma histories. It describes processes which are proximally focussed, without much of an incorporation of distal risk factors such as childhood trauma being brought into the equation. It could be argued that those with a history of childhood trauma may be more likely to respond to situations with an internal locus of blame, and with a heightened sense of not living up to expected standards. Each of these, according to Baumeister, renders the individual more likely to then go down the psychological path towards suicide. However, left out are the psychological processes which render the individual with a childhood trauma history at increased likelihood of responding with an internal locus of blame, or with a heightened sense of not living up to expected standards. These are the portions which set apart those with and those without childhood traumas

history. As such, these are the points of particular pertinence in the prediction and prevention of suicidal outcomes within this population.

In addition to these theoretical limitations, perhaps a more pressing concern in regards to the Escape from Self theory is its inability to be effectively tested cross-sectionally. Its components, such as anxious or depressed affect, and perfectionistic attitudes, can be tested for their presence, with comparisons made between those experiencing suicidal ideation and those not. However, the sequential impact of one on another cannot be determined definitively. This criticism can perhaps be levied at each of the psychosocial models to be critiqued herein, due to the longitudinal nature of the components each describes.

1.7.3 Cry of Pain

An alternative escape perspective to that proposed by Baumeister comes from the Cry of Pain model (Williams, 1997). Similar to Baumeister's Escape from Self theory, the Cry of Pain posits that suicide attempts are an attempt to escape from an unbearable situation. In this instance, however, it is the defeating and entrapping nature of the situation which triggers a suicide response (Williams & Pollock, 2001). From this perspective, the suicide process involves three key aspects: the presence of defeat, the perception of no escape, and the perception of no potential rescue (Rasmussen, Fraser, Gotz, McHale, Mackie et al., 2010). The sense of defeat may occur in response to external forces such as job stress or poor interpersonal relationships, or internal factors such as inescapable emotional pain (Williams & Pollock, 2001). The sense of defeat triggers a primal need to escape; when this is conceived as impossible, suicide risk emerges (Williams & Pollock, 2001). The severity of self-harm or suicidal behaviour displayed by an individual experiencing defeat is said to be determined by the

degree of escape potential they perceive in the situation (Williams & Pollock, 2001). In the case of suicide attempts, defeat coexists with a complete lack of perceived escape potential. Perceiving a situation as inescapable involves a cognitive appraisal of the self within that situation. Such an appraisal may be biased by factors such as dichotomous thinking, problem-solving deficits, over-general autobiographical memory, and hopelessness (Williams & Pollock, 2001).

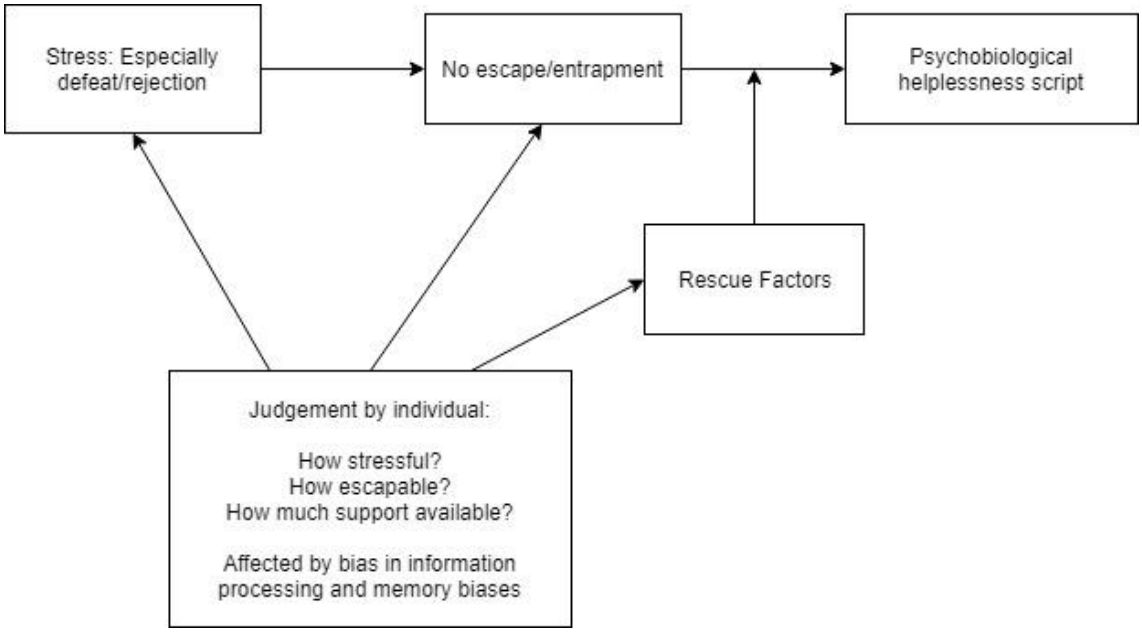


Figure 2: Cry of Pain model (adapted from Williams & Pollock, 2001)

The Cry of Pain's key elements of defeat, entrapment, and restricted rescue potential have been empirically supported for their role in the onset of suicidal ideations and behaviours. In a sample of parasuicidal adults, O'Connor (2003) found higher levels of defeat and lower levels of entrapment, when compared to a hospital control group (O'Connor, 2003). Crucially for providing support of the Cry of Pain, the effects of entrapment were moderated by perceived rescue potential, such that entrapment was only significantly elevated in the absence of social support (O'Connor, 2003). Expanding on these findings, Rasmussen and colleagues (2010) found both defeat and entrapment to correlate with suicidal

ideation (Rasmussen et al., 2010). Further, they found that the relationship between defeat and suicidal ideation was mediated by the presence of entrapment. This suggests that an individual experiencing defeat is at increased risk for developing suicidal ideation when they also feel trapped by the defeating situation, consistent with William's theory. The mediating role of entrapment was found to be moderated by the presence of social support (Rasmussen et al., 2010), again suggesting that the impact of entrapment is reduced when one has a perception of rescue potential.

A further element of the Cry of Pain, in addition to the roles of defeat, entrapment and rescue potential, which has been empirically supported is the proposition that those with overly-general autobiographical memory biases are at increased likelihood for feeling defeated by a situation. The suggestion is that, when faced with a difficult situation there is a requirement to bring to mind potential solutions to this situation in order to prevent a sense of defeat emerging (Williams, 1997). Where there is an inability to draw on examples of past successes the likelihood of defeat setting in increases. The involvement of poor problem-solving perceptions in the suicidal process has been investigated by Taylor et al. (2010). It was found that negative appraisals of problem-solving capabilities increased the likelihood of experiencing suicidal outcomes (Taylor, Wood, Gooding & Tarrier, 2010). This relationship was found to be mediated by a composite defeat and entrapment variable. These findings suggest that, consistent with the Cry of Pain model, an inability to identify solutions to difficult situations increases the likelihood that one will feel defeated and entrapped by said situation, subsequently increasing the likelihood of becoming suicidal.

There is an overlap between the Cry of Pain and the Escape from Self models, such that each posits suicide emerging in response to negative perceptions of a

situation. The Escape from Self model suggests that this perception relates to excessively high standards, self-blame, and failed attempts at affect regulation. In the Cry of Pain, the focus is on the perceived inescapability of an unbearable situation. The Escape from Self proposes that cognitive deconstruction is used as an attempt at affect regulation, and that this sets in motion the process towards a suicide attempt. As mentioned earlier, this would suggest the presence of a single event or experience, which if responded to ineffectively will progress towards suicide. Through the Cry of Pain there is a clearer sense that suicidal ideation, and resultant suicide attempts occur following an ongoing back-and-forth between internal emotional experiences and perceptions of external experiences. These perceptions are considered to be reinforced or diminished through continual evaluations of escape potential. Where attempts to escape an unbearable emotional experience fail, escape potential is understood to decrease. With a decrease in escape potential comes an increase in suicide risk. Under the Cry of Pain conceptualisation, the individual remains open to support from external sources in order to increase escape potential, seemingly at odds with the closed-off nature of the process of cognitive deconstruction proposed by Baumeister (1990).

The Cry of Pain model highlights the importance of responses to life stressors in setting in motion suicidal processes. In doing so it acknowledges ongoing appraisals of a stressful situation, appraisals based on attempts to overcome the situation. Conceptualising suicidal ideation as the end point of a journey through defeat and entrapment opens up the importance of being able to draw on the resources of both the self and others in order to inhibit the progression through these stops. The Cry of Pain model further elaborates on previous temporal positioning of integrated suicide risk factors. It positions previously identified

diathesis factors as stop-offs on a journey from stressor to suicide, rather than viewing their impact as a cumulative response-generator. That being said, the Cry of Pain is very proximally-focused in its explanation of suicide. It may be possible to explain the influence of distal factors within it using the previous, stress-diathesis conceptualisation. However, within the confines of the Cry of Pain model, such factors, and such influences are overlooked. Therefore, using it to attempt to identify individuals most at risk for making a suicide attempt may omit many salient factors associated with this risk.

Interpersonal defeat might be expected to be more prevalent, or more impactful among those with a childhood trauma history. Those with a childhood trauma history may be less likely to have the social resources to rescue them from entrapping situations, or to use the parlance of the model, to increase their perceived escape potential (Herman, 1992). It is known that disruptive upbringings, particularly those encapsulated by fearful interactions, are likely to lead to negative cognitions in relation to other people, making the utilisation of social support in times of extreme stress difficult (Young, Klosko & Weishaar, 2003). As will be evidenced in the following literature review, childhood trauma, and its lifelong influence, operates across a number of psychological levels. The Cry of Pain only focuses on one of these levels, that of perceptual understanding. In order to fully understand why childhood trauma is such a significant risk factor for suicide, this must be considered within a more broad-ranging psychosocial model.

In addition, the Cry of Pain describes the development of suicide risk through its description of the factors involved in the development of suicidal ideation. As such it does not differentiate between variables associated with suicidal ideation from those associated with suicide attempts. And so, while the elements of defeat and

entrapment can give insight into why people make suicide attempts, they do so by proxy through elucidating the development of suicidal ideation. The final two theoretical perspectives to be discussed in this section provide a greater insight into the factors uniquely associated with suicidal ideation, and those uniquely associated with suicide attempts.

1.7.4 Interpersonal Psychological Theory

The theoretical perspectives on suicide discussed up until now have sought to amalgamate risk for suicidal ideation and risk for suicide attempts within the same processes. Given that lifetime suicidal ideation rates are significantly higher than lifetime suicide attempt rates (Drapeau & McIntosh, 2015), it seems efficacious to attempt to separate factors implicated in the development of suicidal ideation from those implicated in the development of suicide attempts. Such a separation is described within the Interpersonal Psychological Theory of suicide (IPT) (Joiner, 2007). Within the IPT it is suggested that in order for someone to make a suicide attempt they must both want to attempt suicide and be capable of attempting suicide (Van Orden, Witte, Cukrowicz, Braithwaite, Selby & Joiner, 2010). The development of a desire for suicide is described as an interaction between thwarted belongingness and perceived burdensomeness (Joiner, 2007), while the development of the ability to attempt suicide is described in terms of an acquired capability for suicide (Joiner, 2007). The interactions between thwarted belonging, perceived burdensomeness, and acquired capability are displayed in figure 3.

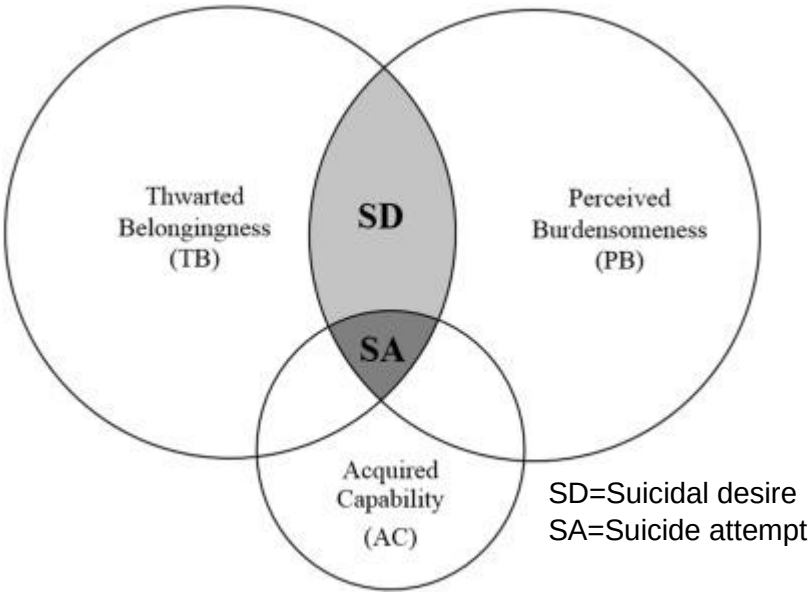


Figure 3: Interpersonal Psychological Theory (adapted from Joiner, 2007)

A central tenet of the IPT is that the need to belong is a fundamental necessity of the human experience (van Orden et al., 2010). The fulfilment of this need is interrupted both by a sense of social isolation, and an absence of reciprocal relationships (van Orden et al., 2010). In order to inhibit the perception of thwarted belongingness, the person must experience a degree of social connection, and positive, mutually supportive relationships. Perceived burdensomeness is also considered to contain two dimensions: the belief that one is a liability to others, and self-hatred (van Orden et al., 2010). Experiences such as serious physical illness, and its resultant self-beliefs, feeling expendable, or feeling like a burden to one's family are all considered indicators of perceived liability (van Orden et al., 2010). Indicators of self-hatred include low self-esteem, self-blame, and agitation (van Orden et al., 2010).

Previously discussed risk factors for suicide (e.g., lacking social support, having a negative self-perception) may be understood through the IPT model. Low levels of social support would be related to feelings of social isolation, and thereby enhancing a sense of thwarted belonging. Not being married or cohabiting may

also potentially endorse a sense of social isolation. However, this may be better understood to promote thwarted belonging through the absence of supportive relationships. In a similar vein, it may be expected that high levels of negative social support from friends or family, such as perceiving oneself as being the source of tension or arguments, may promote the belief that one is a liability to others, with this sense of being a liability leading to perceptions of burdensomeness. Perceived burdensomeness may also arise in response to negative self-perceptions, which would be expected to be intertwined with constructs of low self-esteem and self-blame.

While presenting a nominatively simplified conceptualisation of the development of suicidal desire compared to the Cry of Pain model, the IPT in fact expands upon this previous perspective. Both thwarted belonging and perceived burdensomeness may be expected to inhibit escape potential, through the diminishment of perceived external support options. What is further highlighted within this portion of the IPT is the fundamentality of perceptions in relation to the self, the self in relation to others, and others in relation to the self, in the onset of suicidal ideation. Perceived burdensomeness appears to put the onus on the individual for failing to escape from the unbearable situation. The lack of interpersonal support which comes with perceptions of thwarted belonging are likely to increase the perception of a defeating situation as being inescapable.

According to the IPT, suicidal ideations are experienced when both thwarted belongingness and perceived burdensomeness are present in elevated levels (Joiner, 2007). In most cases however, these ideations will never translate into suicide attempts. As mentioned above, for a suicide attempt to be made the person must possess the ability to make such an attempt. This ability is conceptualised as an acquired capability for suicide (Joiner, 2007). This

capability is described as resulting from a combination of increased pain tolerance and decreased fear of death (van Orden et al., 2010). It is suggested that habituation towards harmful behaviours occurs, with initial expectations of painful or fearful outcomes being replaced with expectations of positive outcomes (van Orden et al., 2010). Described as 'Opponent theory', Joiner (2007) suggests that through exposure, the initial response to an extreme stimulus fades and an opposite response emerges (Joiner, 2007). For example, a person cutting themselves may initially fear the resultant pain, but this fear may overtime be superseded by a sense of relief or emotional analgesia which follows their self-harm. A tolerance for pain, or self-destruction, need not result exclusively from self-directed aggression, however. Experiencing violence or abuse from others is also expected to habituate the person to painful experiences (van Orden et al., 2010).

As has been discussed earlier, previous suicide attempts have been identified as one of the strongest risk factors for future suicide death (O'Connor & Kirtley, 2018). This would appear to provide support for Joiner's assertion that an acquired capability for suicide may develop through habituation to pain or self-injury. The suggestion here is that subsequent suicide attempts will involve increasingly lethal methods, making death a more likely outcome. An alternative explanation may be that a non-fatal suicide attempt does not serve to eradicate the suicidal ideation which elicited the attempt. As such the individual still possesses both the desire to die, and the capacity to inflict lethal self-injury, which Joiner considers to be fundamental to making a suicide attempt. They further possess an acquired awareness of the severity of methods required for a suicide attempt to be fatal. It may be this newfound awareness which leads to the employment of increasingly lethal methods across subsequent attempts.

The central components of the IPT, namely that thwarted belonging and perceived burdensomeness converge to bring about suicidal ideation, and that the addition of acquired capability brings with it risk for suicidal behaviours, has been tested empirically (Christensen et al., 2014; Joiner, Van Orden, Witte, Selby, Ribiero et al., 2009; Monteith, Menefee, Pettit, Leopoulos & Vincent, 2013; Van Orden, Witte, Gordon, Bender & Joiner, 2008). In relation to the involvement of thwarted belonging and perceived burdensomeness, Joiner and colleagues (2009) found each of these constructs to be independently predictive of suicidal ideation (Joiner et al., 2009). The involvement of these two concepts in the development of suicidal ideation has been empirically supported with relative consistency (e.g., Christensen et al., 2014; Monteith et al., 2013; van Orden et al., 2008). In addition to the independent roles of thwarted belonging and perceived burdensomeness in suicidal ideation, the interaction between the two has consistently been shown to independently increase suicidal ideation risk (e.g., Anestis, Khazem & Mohn, 2015). This further supports the IPT's assertion that it is the combination of these two features which brings about suicidal ideation.

The second hypothesis of the IPT is that the addition of acquired capability for suicide alongside suicidal ideation, brings with it the risk for suicidal behaviours. The evidence in relation to this hypothesis is somewhat ambivalent. Anestis et al. (2015) present evidence for the interaction between perceived burdensomeness, thwarted belonging, and acquired capability being predictive of suicide attempt status (Anestis et al., 2015), in line with assumptions of the IPT. Similarly, Christensen and colleagues (2014) found the three constructs of perceived burdensomeness, thwarted belonging, and acquired capability to each increase the likelihood of suicidal behaviours (Christensen et al., 2014). However, in this

case, the interaction between the three was not tested for, limiting the supportive claims their findings could make in relation to the IPT. A further study aiming to provide evidence in support of the IPT found interactions between both thwarted belonging and acquired capability, and between perceived burdensomeness and acquired capability, were significantly different between those who had never made a suicide attempts and those who had made multiple attempts (Monteith et al., 2013). However, these interactions were not significantly different when comparing those with no suicide attempts to those who had previously made a single attempt. Furthermore, when examining the interaction between the three constructs, as present within the IPT, there were no significant differences found between those who had previously made no suicide attempts, one suicide attempt, or multiple suicide attempts (Monteith et al., 2013). Therefore, while the claims made by the IPT in relation to the development of suicidal ideation seem empirically sound, those relating to suicidal behaviours are in need of greater supportive evidence.

By subdividing factors related to suicidal ideation and factors associated with suicide attempts, the IPT adds a further dimension to our understanding of the suicidal mind. It offers an explanation for why most people who experience suicidal ideations will not go on to make a suicide attempt. Further to this, the suggestion that the acquired capability for suicide is a habituated response provides a potential understanding for previous suicide attempts representing a stark risk for future suicide completion.

In terms of expounding an explanation for why childhood trauma would lead to suicide under this conceptualisation, there are a few possibilities, but none that carry with them any great exploratory weight. Childhood trauma may be expected to increase the likelihood of experiencing both thwarted belonging and perceived

burdensomeness. Thwarted belonging is characterised by the absence, or perceived absence, of reciprocally meaningful interactions with others, while perceived burdensomeness is characterised in part by a sense that one is underserving of such reciprocity. Such relational and self-perception impairments are common outcomes of childhood trauma (Cook, Spinazzola, Ford, Lanktree, Blaustein et al., 2005). Acquired capability includes the ability to enact self-injury, and to lose the fear of causing oneself pain, or losing a fear of death. It could be argued that where trauma in childhood is physically violent in nature, that the aversion to pain that may come to be expected as a natural facet of life, would be lowered through the exposure. However, trauma is equally likely to be psychological or emotional in nature as it is physical. This would not be related to such a diminution of pain avoidance. As such, the link from childhood trauma to acquired capability is tenuous at best. Beyond that though, in terms of elucidating the progression from childhood trauma to suicide, the IPT lacks any real descriptive depth. As has been the case with previous models, it describes certain features which might increase the risk for suicide in those with a childhood trauma history without providing any real explanation for how these features unfold and interact.

1.7.5 Integrated Motivational Volitional Model

A number of theoretical models have been brought together within the Integrated Motivational Model (IMV) (O'Connor, 2011) to provide the most comprehensive overview of the processes involved in suicide to date (figure 4). It breaks vulnerability factors for suicide down into three connected stages: the pre-motivational stage, the motivational stage, and the volitional stage. The pre-motivational stage represents a stress-diathesis process which begins the movement towards suicide, with these processes being detailed through the

motivational and volitional stages (O'Connor, 2011). This pre-motivational stage incorporates both diathesis factors and life events which may trigger processes resulting in both suicidal ideation and suicide attempts (O'Connor, 2011).

Within the IMV, the pre-motivational stage is followed by a motivational stage, modelled on the Cry of Pain. It is suggested that the sensitivity to experiencing defeat in a given situation is influenced by pre-motivational factors (O'Connor, 2011). The likelihood of escape from a defeating situation is appraised through threats-to-self moderators, loosely defined as any factor which has the potential to strengthen the relationship between defeat and entrapment (O'Connor, 2011). Perceived deficiencies in social problem solving, over-general autobiographical memory bias, and ruminative processes would all be considered threats-to-self moderators (O'Connor, 2011). Each is likely to focus the mind on previous failed attempts at escaping stressful situations. Where a sense of entrapment has been developed, the prospect of suicidal ideation developing is influenced by the presence or absence of motivational moderators. Motivational moderators are considered to be factors which inhibit escape from the situation (O'Connor, 2011). Such factors include absent positive future thinking, goal re-engagement, and social support.

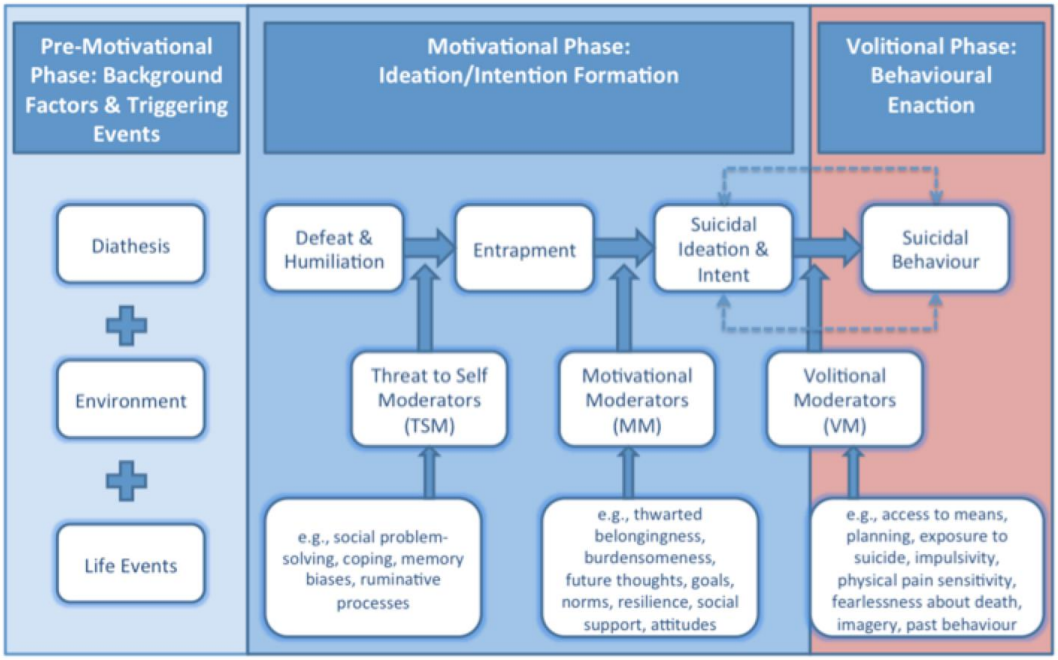


*Figure 4: Integrated Motivational Volitional Model (O'Connor and Kirtley, 2018)**

*In the above figure, the pre-motivational phase can be considered akin to a stress-diathesis model, the motivational phase is based on the Cry of Pain Model, and the Volitional phase is similar to the acquired capability element of the Interpersonal Psychological Theory, with additional influencing factors included.

Similar to the IPT, the IMV differentiates between risk factors for suicidal ideation, and risk factors for suicide attempts (O'Connor, 2011). In the IMV, the probability of suicidal ideations being acted upon is considered to be governed by the presence or absence of volitional moderators (O'Connor, Smyth, Ferguson, Ryan & Williams, 2013). These moderators expand on Joiner's (2007) acquired capability factors to include additional risks such as exposure to suicide attempts by others, impulsive traits, and having access to the means by which a suicide attempt may be made (O'Connor & Nock, 2014). The expanded understanding of risk factors for suicide attempts provided by the IMV point to a degree of passivity present in the conversion of suicidal ideations into suicidal behaviours. Inherent traits such as impulsivity, and exposure to the behaviours of others are

not governed by the individual. From the perspective of the IMV then, the risk of suicide attempts is governed by a fine balance of active appraisal and passive experiential factors occurring and interacting across the lifetime.

The pre-motivational phase of the IMV model may be considered analogous to a stress-diathesis perspective of suicidal behaviour Similarly, the motivational phase is based upon the Cry of Pain model. As such, the evidence previously presented in support of these two perspectives can be considered, by proxy, to also provide support for underlying mechanisms within the IMV model. Unique to the IMV model is the inclusion of factors considered to operate as moderating factors increasing or decreasing suicide risk across the three phases. Support has been presented for the involvement of the threat-to-self, motivational, and volitional moderators described through the IMV model. Tucker et al. (2016) found brooding to operate as a threat-to-self moderator, exerting an influence over the role of defeat in the development of entrapment. They also found hope, or the absence of, to act as a motivational moderator, influencing the impact of entrapment on subsequent suicidal ideation (Tucker, O'Connor & Wingate, 2016). Similar to this, Dhingra and colleagues (2015) have presented evidence supporting the involvement of both motivational moderators, influencing the development of suicidal ideation, and volitional moderators, influencing the presence of suicide attempts (Dhingra, Boduszek & O'Connor., 2015). In this instance, motivational moderators of brooding rumination, burdensomeness, and belongingness were found to significantly differ between those experiencing suicidal ideation and a control group. Volitional moderators of family imitation, friend imitation, fearlessness about death, and impulsive personality traits were found to significantly differ between those experiencing suicidal ideation with no

suicide attempt history, and those who had made one or more suicide attempts (Dhingra et al., 2015).

The IMV contains within it a pre-motivational phase, consisting of distal factors which may be latent up to the point of a defeating situation unfolding. One such factor is the presence of maladaptive life experiences. The presence of childhood trauma can be incorporated as a background experience which increases the risk of crises becoming suicidal in nature, from the perspective of the IMV. The biggest limitation, in terms of explaining childhood trauma's influence in suicidality, is the temporal distance between the pre-motivational and motivational stages of the model. This blank space is where the psychological maladaptations resultant from childhood trauma enact their influence. By the time the motivational phase is reached, you could say that those with a history of childhood trauma may be more likely to be lacking the resources required to overcome defeating situations, or to avoid feeling trapped by such situations. There are then elements within the motivational phase which may place those with a childhood trauma history at increased risk of suicide. Elements such as impaired social problem solving, autobiographical memory bias, or social support utilisation may develop differentially in response to maladaptive early life interactions. However, as has been noted in relation to previous models, absent from the IMV is a procedural level underpinning of how this differential development occurs following childhood trauma, which subsequently increases suicide risk.

Further, in relation to the volitional phase, there is an inability to explain increased risk for suicide among those with a history of childhood trauma. There may be psychological factors present which act as volitional moderators, and which have carried over from experiences of childhood trauma. However, again the temporal

distance between the traumatic experiences and the volitional enactment, makes it difficult to ascertain a procedural explanation for the development of suicidality in those with a history of childhood trauma.

1.7.6 Evaluation of Theoretical Perspectives

All of the psychosocial models discussed start with an unnamed stressor which begins the suicide process. In most cases they work forward from here and explain a process towards a suicide attempt. In the case of stress-diathesis and the IMV, consideration is given to factors antecedent to the stressor, and how these influence subsequent suicide risk. Taking the discussed models in conjunction, a broad spectrum of potential risk factors for making a suicide attempt are highlighted. In addition, some potential psychological processing of risk factors is postulated. However, they largely operate on a fairly similar psychological level, with a reasonably causal understanding put forward of appraisals in response to stressors leading to suicide through the presence or absence of additional factors. Lacking, for the main, is any real understanding of how risk factors interact at a cognitive level to determine situation appraisals. For example, childhood abuse is considered to represent a pre-existing vulnerability factor for suicide (O'Connor, 2011). Similarly, a lack of positive social support in adulthood has been shown to increase suicide risk (Christensen et al., 2014). What remains lacking, is an understanding of potential connections between seemingly disparate factors such as these. It may be the case that abusive childhood experiences inhibit the ability to form supportive relationships, with the individual developing an expectation of ill-treatment in interpersonal relationships. This inhibition may then prevent the formation of close bonds which would represent the sort of positive social support identified as protecting against suicide. This depth of understanding is lacking in the current models of suicide,

but it is this level of understanding which may be necessary in intervening to reduce suicide potential in those with experiences of common risk factors. In order to do so, any future models should seek to recognise pervasive psychological developments occurring in response to risk factors.

The psychosocial models of suicidal behaviour described above all allow for the positioning of childhood trauma as a vulnerability factor within their parameters. Each provides scope for understanding where some of the developmental outcomes following childhood trauma exist on the road towards suicide. Childhood trauma, or maltreatment, is for the most part understood to represent a distal risk factor. There are elements which exist in some models as proximal risk factors which may theoretically be related back to childhood trauma, but there is no depth present within any of the models discussed allowing for the step by step progression from childhood trauma to suicidal outcomes to be fully determined. What is required is a theoretical model which provides an explanation of some of the developmental outcomes of childhood trauma in the immediacy, as well as demonstrating how these outcomes may exert influence as proximal antecedents to suicide. Childhood trauma has an all-encompassing effect on psychosocial development (Herman, 1992), and any model aiming to explain its journey to suicide should acknowledge that. The developing complexity demonstrated across the psychosocial models evaluated here provide greater width to our understanding of factors potentially relating childhood trauma to suicidal behaviour. Future progression in the field requires greater depth of understanding in psychosocial domains. To this end, the current project will focus the risk for suicide emerging following childhood trauma. Specifically, pathways will be investigated through attachment style, emotion regulation strategies, and

PTSD symptomatology. An overview of these variables will now be provided, beginning with childhood trauma.

1.8 Childhood Trauma

Traumatic life events such as combat exposure, natural disasters, and sexual and physical assault are known to commonly lead to the formation of post-traumatic symptoms such as those present within posttraumatic stress disorder (PTSD) (WHO, 2018). PTSD is characterised by symptoms of re-experiencing the traumatic event, avoidance of reminders of the traumatic event, and a perception of current threat manifesting as hypervigilance or hyperarousal (WHO, 2018). These symptoms occur through a fear that similar traumatic events will be experienced in the future (American Psychiatric Society, 2013). It has been noted that when traumatic events are particularly pervasive or long lasting, multiple, complex psychological impairments can emerge in addition to PTSD symptoms (Herman, 1992). In its latest revision, the International Classification of Diseases (ICD-11) includes Complex PTSD (CPTSD) as a sister diagnosis to PTSD to account for these more complex posttraumatic outcomes following these complex trauma experiences (WHO, 2018). CPTSD contains the PTSD symptoms described above in addition to disturbances in three domains of self-organisation: self-concept, relational functioning, and emotion regulation (WHO, 2018). Abusive or neglectful relationships experienced in childhood, have been identified as a common antecedent to the development of CPTSD (Karatzias, Shevlin, Fyvie, Hyland, Efthymiadou et al., 2017).

Experiencing prolonged trauma has been said to lead to the loss of a sense of self among survivors (Herman, 1992). With childhood trauma the sense of self is not lost, instead the individual considers themselves to be defective, helpless,

and unlovable (Cook et al., 2005). This sense of self is said to lead the person to blame themselves for negative life experiences (Cook et al., 2005), with a preponderance for blaming the self found to be common among those with a childhood trauma history (Swannell et al., 2012). It is also understood to lead to difficulties in seeking, maintaining, and responding to social support (Cook et al., 2005). Indeed, empirical evidence suggests that those with histories of childhood trauma perceive themselves as having diminished perceptions of the social support available to them, when compared to those without such a history (Stevens et al., 2012). Experiences of childhood trauma have been shown to be associated with the formation of an insecure attachment style (Cloitre, Stovall-McClough, Zorbas & Charuvastra, 2008). As a result, the child does not learn to seek out the support of others to help facilitate the navigation of difficult experiences (Cook et al., 2005). Further to this, it has been suggested that maltreated children often have difficulties with interpreting and differentiating between affective states. They also consistently demonstrate impaired abilities to regulate and express emotional states (Vettese, Dyer, Li & Wekerle, 2011). Prolonged trauma survivors are said to carry with them unexpressed anger; anger which is directed both towards the source of their trauma as well as towards those who they feel failed to help them (Herman, 1992). Efforts made to control outbursts of anger may lead to social withdrawal, while any outbursts towards others may lead to social ostracism (Herman, 1992). Where anger is internalised it is believed to strengthen any lingering sense of self-hatred the traumatised individual may be experiencing (Herman, 1992). As has been previously discussed, difficulties regulating aggressive outbursts has been found to increase the risk of making suicide attempts (Swogger, You, Cashman-Brown & Connor, 2011). Similarly, negative perceptions of the self, and difficulties in utilising social

support each represent significant risk factors for suicide attempts (Joiner, 2007). The prevalence of these factors within those with a history of childhood trauma warrants further investigation. The investigation of factors common to both childhood trauma and suicide attempts, as well as interactions between them may be the most effective method for determining why childhood trauma represents a significant risk factor for suicide attempts.

As discussed above, current theoretical positions on suicide are inadequate for establishing specific developmental sequelae following childhood trauma which increase suicide risk. The closest facsimile to a theoretical understanding of the emergence of suicide risk following childhood trauma comes from a three pathways model proposed by Yates to explain the development of self-harming behaviours following childhood trauma. Yates (2009) proposes that childhood trauma impairs perceptions of the self and other people (representational pathway), inhibits connections between affect and cognition (regulatory pathway), and leads to difficulties in regulating physiological arousal (reactive pathway) (Yates, 2009). The representational path operates such that blame for experiences of trauma in childhood is internalised leading to a negative perception of the self, or is externalised leading to a negative perception of other people, with self-harm functioning as a mechanism for self-punishment or self-soothing (Yates, 2009). The regulatory pathway operates such that maltreating caregiving impairs the ability to access affectively generated information, with cognitively-generated information relied upon instead. In this way, those experiencing traumatic caregiving may have difficulty in understanding their emotions, with self-harming behaviours representing a mode of impulsive emotional expression (Yates, 2009). The reactive pathway operates such that biological responses to stress are modified due to the maltreatment experienced.

Under usual circumstances, short- and long-term stress-regulatory systems will modulate behavioural, affective, cognitive, or somatic responses to stress (Yates, 2009). Following early-life maltreatment, these systems are altered, with subsequent self-harming behaviours being understood as attempts to alter states of arousal (Yates, 2009). To summarise then, Yates posits that self-harming behaviours function as punitive or soothing behaviours, attempts at emotional expression, and a method of moderating affective arousal.

While Yates' theory relates specifically to non-suicidal self-harming behaviour, chapter four of the current thesis will test the efficacy of elements of his three pathways in the prediction of suicidal behaviours. Suicidal behaviours are generally taken to function as attempts to escape unbearable emotional pain (Shneidman, 1993). This pain may be brought on by feeling disconnected from others, or from impaired perceptions about one's ability to escape from their pain through other means (O'Connor & Kirtley, 2018). Suicide as an escape from emotional pain may then overlap with the regulatory and reactive pathways, where suicidal behaviours may represent the expression of, or attempts at regulation of, affective arousal, while the exacerbation of emotional pain through the absence of connectedness to others and impaired perceptions of the self may position suicide as functioning as somewhat akin to the representational pathway. The exploration of these pathways in relation to suicide may be used as a foundation upon which to base a theoretical perspective of the emergence of suicide risk following childhood trauma.

1.9 Attachment

It was discussed earlier that negative experiences in childhood may heavily impact upon a person's suicide risk in later life. Caregiving experiences in early

life are understood to impact upon the attachment style which one develops (Wu, 2009). In this context, attachment style refers to the manner in which an individual will attempt to reduce affective arousal in times of distress (Mikulincer, Shaver & Pereg, 2003). The primary attachment system, considered the most effective mechanism for affective arousal, is one of proximity seeking, where support or comfort from trusted others is actively sought (Bowlby, 1988). Demonstrating such a behaviour pattern is considered to be indicative of a secure attachment style, with this being understood to form in a caregiving milieu where parents or other caregivers are consistently available, supportive, and responsive to the emotional needs of the person in distress (Browne & Winkelman, 2007). Given the focus on caregiver interactions, it is clear that attachment style is generally considered to form in early life, during a period where the individual is both developmentally sensitive, but also emotionally vulnerable. The consistency of these early-life bonds, however, engenders a sense of trust in others, facilitating the formation of adaptive relationships throughout life (Bowlby, 1988). The ability to form intimate emotional connections with others was considered by Bowlby (1988) to be a fundamental aspect in attaining positive mental health. By proxy then, the formation of an insecure attachment style may be expected to open up a vulnerability to poor mental health.

As stated, the formation of a secure attachment style is reliant on consistent, supportive caregiving. Where caregivers are not consistently responsive to the needs of the person, an insecure attachment style may develop in place of the secure process described above. These insecure attachment styles, which represent secondary attachment styles, develop as a result of either inconsistent or unpredictable caregiving, or they may come from absent or rejecting caregiving (Tasca, Ritchie, Zachariades, Proulx, Trinneer et al., 2013). These two

experiential strands lead to two distinct patterns of attachment behaviours. Inconsistent or unpredictable caregiving is understood to lead to the development of a near-pathological desire for closeness to others (Mikulincer, Shaver, Gillath & Nizberg, 2005). This comes about when the option of seeking others to alleviate distress is perceived as being available, but where the person has doubts over the consistency of this availability, leading to their emotional clinging to attachment figures. This attachment pattern is referred to as attachment anxiety, where the anxiety is focused on the availability of others in times of distress (Mikulincer et al., 2005). By proxy, this anxiety demonstrates impairments in the development of positive attributions about the self as being capable of regulating affect without the support of others, given the compulsive need for closeness displayed. Due to this absence, attachment anxiety is alternatively termed a negative model of the self. In contrast to the secondary attachment system of attachment anxiety, neglectful or absent caregiving is understood to lead to the development of attachment avoidance (Tasca et al., 2013). This comes about through the perception that attachment figures are unavailable in times of distress, resulting in the need to regulate arousal independently. Attachment avoidance is also considered to represent a negative model of others, such that other people are considered to represent a threat to attempts at regulating affect (Bartholomew & Horowitz, 1991).

A four-category typology for defining attachment style was put forward by Bartholomew and Horowitz (Bartholomew & Horowitz, 1991), with these categories positioned along interacting axes of attachment anxiety and attachment avoidance. By considering attachment styles to exist along these interacting axes of anxiety and avoidance, it is possible to categorise people as displaying one of four attachment styles. Those displaying low levels of both

anxiety and avoidance are considered to have a secure attachment style. In contrast, those who score highly for both anxiety and avoidance are considered to have a fearful attachment style (Bartholomew & Horowitz, 1991). Those displaying high levels of anxiety and low levels of avoidance are considered to have a preoccupied attachment style, and finally those displaying low anxiety and high avoidance have a dismissing attachment style (Bartholomew & Horowitz, 1991).

As mentioned above attachment refers to attempts at regulating affect in times of distress, with the primary attachment system of proximity-seeking considered the adaptive method for doing so. When secondary systems of anxiety and avoidance are activated, the goal of the attachment process shifts from being aimed at regulating distress, to maintaining either a hyperactivating or deactivating system (Mikulincer et al., 2003). Anxiety is considered to represent a process of hyperactivaiton, with its aim being to retain maximum closeness to others through the chronic fear of being incapable of dealing with threats to self on your own (Simpson & Rholes, 2002). Avoidance is considered to represent a process of deactivation, aimed at avoiding attachment activation by avoiding the closeness so craved through hyperactivation (Simpson & Rholes, 2002). The hyperactivation strategy of anxiety has been found to be associated with heightened perceptions of threats, negative perceptions of the self, and extreme negative beliefs surrounding potential interactions with others. The deactivation strategy of avoidance has been found to be associated with reduced intimacy in close relationships, the suppression of painful thoughts or memories, and both the repression of negative cognitions about the self, and the projection of negative self-cognitions onto others (Mikulincer et al., 2003 for review).

In relation to childhood trauma then, it is anticipated that the formation of a secure attachment style would be inhibited, or disrupted, through the experience of abusive or neglectful caregiving. It is expected that attachment anxiety, or avoidance, or both will develop in response to unpredictable patterns of abusive experiences, and the continued rejection present within neglectful experiences. Attachment avoidance and anxiety are both considered risk factors for suicide attempts, while the inhibition of proximity seeking which they represent may be considered a risk factor for the development of maladaptive emotion regulation strategies.

1.10 Emotion Regulation

Emotion regulation refers to the processes a person enacts in order to nullify a negative emotional state (Koole, 2009). Such processes may lead to the reduction, maintenance, or increase of this emotional state (Koole, 2009). Where regulation strategies are ineffective in reducing the physiological experience of negative emotions, behavioural attempts at regulation such as self-harming behaviours may be enlisted (Koole, 2009). It has been suggested that emotion regulation strategies occur across a time and focus-based continuum (Gross, 2014). Within this process model of emotion regulation, it is proposed that initial attempts at avoiding negative emotional states involve avoiding situations which are expected to lead to such states (Gross, 1998). Subsequent attempts are made to alter a given situation to minimise its emotional impact, to deploy attention towards non-emotive aspect of a situation, and to reappraise the situation to attach positive meanings to emotional aspects (Webb, Miles & Sheeran, 2012). These strategies are considered antecedent-focused, with attempts being made to manage the situation to minimise the emotion it elicits (Webb et al., 2012). One final strategy is said to be employed when these

antecedent-focused strategies have failed, response modulation, which determines how emotions are dealt with once they have been elicited (Gross, 2001). Response modulation is considered a response-focused strategy, with its focus being the already generated emotional experience (Gross, 2001).

A clinically and empirically valid framework of emotion regulation difficulties has been provided by Gratz and Roemer (2004). In this framework, emotion regulation difficulties are understood to exist within the areas of non-acceptance of emotional responses, difficulty engaging in goal-directed behaviour, impulse control difficulties, limited awareness of emotions, limited access to strategies for regulating emotions, and lack of emotional clarity (Gratz & Roemer, 2004). Impairments in impulse control, in addition to difficulties engaging in goal-directed behaviours are categorised as attitudinal or behavioural impairments, with the remaining regulation difficulties being understood as relating to cognitive reactions or abilities (Kranzler, Fehling, Anestis & Selby, 2016). Impairments across all of the emotion regulation difficulties mentioned have been found to be of increased prevalence among those with experiences of suicidal ideation and behaviours (Neacsiu, Fang, Rodriguez & Rozenthal, 2018).

Based on the theoretical understanding of suicide provided above, it may be concluded that suicidal ideations develop when situations which produce negative emotional states are unavoidable. As such, strategies like situation selection, situation modification, attentional deployment, and cognitive reappraisal have either already failed, or have been bypassed altogether prior to ideation onset. Garnefski Kraaij and Spinhoven (2001) have proposed an additional set of cognitive strategies, occurring before behavioural modification. Cognitive response strategies are said to be used in order to manage emotional experiences in order to avoid being overwhelmed by such experiences (Garnefski

et al., 2001). These emotion-focused cognitive strategies can be considered a buffer between emotional experiences and behavioural responses. Where adaptive strategies are used negative emotions will diminish, while the use of maladaptive strategies will strengthen the experienced negativity (Garnefski et al., 2001). Nine cognitive emotion regulation strategies have been identified by Garnefski et al. (2001): self-blame, blaming others, rumination, catastrophizing, acceptance, refocus on planning, positive refocusing, positive reappraisal, and putting into perspective. The first four listed are considered maladaptive, while the remaining five are considered adaptive strategies (Garnefski et al., 2001).

Strategies of self-blame and catastrophizing would be expected to be utilised by those who go on to develop suicidal ideations. As discussed previously, those with a negative perception of their own abilities, as well as negative perceptions of their situation, are at increased risk of making suicide attempts. Where the person negatively perceives their own abilities, it may be expected that they would blame themselves for the situation they are in. Similarly, those who perceive situations as being inescapable may be expected to catastrophize the situation. Alternatively, those who employ a catastrophizing response may strengthen their belief that a situation is inescapable by doing so. Individuals who experience thwarted belongingness may come to blame others for the negative situation they find themselves in, as a result of the lack of support they feel they are experiencing. They may enter into a cycle of blame where they blame others due to their lack of support, but subsequently feel less able to enlist the support of others whom they feel are to blame for their predicament. Such a cycle may serve to reinforce the individual's sense of lacking belongingness while simultaneously narrowing their perceived escape potential. Finally, those who ruminate on a problem situation may reinforce negative aspects of a situation by

doing so. If a situation is considered to be primarily defeating or entrapping, ruminating on it may be expected to involve focusing on these elements. Such an elevated focus would serve to strengthen the defeating and entrapping nature of the situation, minimising perceived escape potential.

1.11 Chapter Summary

The current chapter has provided an overview of some of the factors associated with suicide risk, as well as some of the maladaptive developmental factors which emerge following childhood trauma. The role of childhood trauma in suicide risk was discussed, along with theoretical reasoning for psychological factors which may mediate this relationship. This chapter has identified a gap in understanding for the specific psychological processes which increase suicide risk following childhood trauma. The following chapter will describe a systematic literature review aiming to identify and synthesise existing evidence for psychological factors which may mediate the relationship between childhood trauma and suicidal behaviour. The findings of this review will then inform two subsequent chapters (chapters 4 and 5) which present separate empirical studies aiming to investigate *how* childhood trauma is related to suicidal behaviour.

Chapter 2: Systematic Literature Review

2.1 Introduction

The previous chapter highlighted the role of childhood trauma as a risk factor for suicidal behaviours. In addition, an overview was provided for some of the potentially salient psychological domains which may explain *why* childhood trauma might be a risk factor for suicidal behaviour. In the following literature review, a synthesis of the current evidence for psychological factors mediating the relationship between childhood trauma and suicidal behaviour in adulthood will be provided.

2.2 Methods

2.2.1 Protocol registration

The protocol for this review was registered in advance with PROSPERO international prospective register of systematic reviews (CRD42017076520).

2.2.2 Research aim

Identifying and synthesising evidence for psychological factors which mediate the relationship between childhood trauma and suicidal behaviour.

2.2.3 Research questions

1) What psychological factors have been examined in previous literature for their mediating role between childhood trauma and suicidal behaviour?

2) Which of these have been found to significantly mediate the relationship between childhood trauma and suicidal behaviour?

2.2.4 Rationale for approach

A systematic literature review was conducted in order to answer the above research questions. For a literature review to be considered systematic, it must first propose a clear research question, and then identify and appraise the quality of all relevant literature pertaining to this question (Khan, Kunz, Kleijnen, & Antes, 2003). The evidence presented through the identified studies is then summarised and interpreted in order to answer the research question(s) posed (Khan et al., 2003). The reason such an approach to literature reviewing is taken is to allow for an accurate, transparent overview of all the literature addressing the research question to be presented (Nightingale, 2009). It has previously been noted that taking a systematic approach to reviewing literature allows for large quantities of evidence to be broken down and refined into justifiable research hypotheses (Murlow, 1994). In addition, the systematic literature review involves the use of a stringent, replicable methodology, limiting the risk of researcher bias influencing its outcome (Murlow, 1994). Each of these points was key to ensuring the research aims of this review were achieved in an efficient and transparent manner. The decision to conduct a systematic literature review was made for two reasons. First, to ensure that the empirical studies it would inform (chapters 4 and 5) were sufficiently original, and second, to ensure that they were built on current evidence. The heterogeneity of psychological variables present in the studies included in the present review precluded the conducting of a meta-analysis. Instead, findings are presented in a narrative synthesis.

This review focuses specifically on mediated effects between childhood trauma and suicide, rather than direct or moderated effects. The direct relationship between childhood trauma and suicidal behaviour has been well established within the literature, with at least three meta-analyses having been published to

reflect this (Angelakis, Gillespie & Panagioti, 2019; Liu, Fang, Gong, Cui, Meng et al., 2017; Zatti, Rosa, Barros, Valdivia, Calegaro et al., 2017). The mechanisms of change underpinning this relationship have not been synthesised previously, hence the decision to focus exclusively on mediated effects. Moderated effects were also excluded from the current review, with the aim being to first identify the internal elements driving the progression towards suicide, rather than attempting to add a further layer of understanding through the exploration of factors influencing these influencers.

2.2.5 Search strategies

Electronic databases (PsycINFO, Medline, CINAHL plus with full text, and Psychology and Behavioural Sciences Collection) were searched from their inception to January 2018 for published studies, which examined psychological factors in relation to both childhood trauma and suicidal behaviour. These databases were selected in accordance with the advice of a highly experienced subject librarian. In addition, they were selected as it felt that they best covered the relevant psychological and mental health literature. They were searched from inception as no concrete rational could be provided to set an adequate cut-off date, in terms of policy changes or seminal publications in this area. Grey literature/reports were not included due to the requirement for mediation analyses to have been reported on – it was anticipated that no such big data or admin data sets would exist where such analyses had been conducted. Using each database's thesaurus, search terms were customised to each database, containing a combination of key word searches for terms related to childhood trauma and terms related to suicidal behaviour (see Table 2). The presence of psychological factors was examined through manually searching the resultant

studies. The selection process of studies included in the current review is summarised in the PRISMA flowchart presented in figure 5.

Table 2: Sample Search Strategy for PsycINFO database

Childhood Trauma	MM ”Child Abuse” OR MM “Emotional Abuse” OR MM ”Sexual Abuse” OR MM “Physical Abuse” OR MM “Child Neglect” OR child* trauma OR child* neglect OR child* abuse
Suicide	MM “Suicide” OR MM “Attempted Suicide” OR MM “Suicidal Ideation” OR MM “Suicidology”

2.2.6 Selection criteria

Studies were included if they met the following criteria: 1) Published, empirical, quantitative research; 2) examined the role of one or more psychological factors in relation to at least one type of childhood trauma and suicidal behaviour; 3) conducted mediation analysis of psychological factors between childhood trauma and suicidal behaviour; 4) population consisted of adults aged over 18 years; 5) full texts available in English.

Studies were excluded for the following reasons: 1) No significant relationship between childhood trauma variable(s) and suicidal outcome was explored; 2) outcome variable of self-harm or suicidal ideation, as opposed to specifically defined suicidal behaviour (based on current theoretical directions differentiating between risk factors for suicidal ideation and behaviours (Joiner, 2007; O’Connor, 2011); 3) no psychological factors were examined for their mediating role between childhood trauma and suicidal variables.

2.2.7 Quality and Bias Assessment

The quality of included studies was determined by the presence of bias in a number of key domains. Selection bias, attrition bias, measurement bias, bias through confounders, statistical analyses, and outcome and reporting bias were all assessed (see table 3). A number of potential quality appraisal tools were considered for use in the current review, however, no existing appraisal tool could be identified which contained items broad enough in their scope for the current review, while also not containing any redundant items. A brief overview of those considered and the reasons for not using each of these will now be provided. The Tool for Cross-sectional, Case-control and Cohort Studies (Cho et al., 1994) was rejected partly as a result of it containing redundant items, such as questions related to the blinding of participants. In addition, the focus of its items was primarily on intervention studies, which was not relevant to my review. The Tool to Assess the Risk of Bias in Prevalence Studies (Hoy et al., 2012) was rejected mainly due to it being designed for prevalence studies. As such, it was not felt to be broad enough to capture everything required from the reviewed studies. The SIGN 50 Checklist for Cohort Studies (2012) was also not used in its entirety due to a number of redundant items, as was the case with the Tool for Cross-sectional, Case-control and Cohort Studies some of these related to the blinding of exposure status in assessment. In addition, items relating to funders, comparisons with alternative treatments, and follow-up periods, were also present, which were not deemed relevant for the current review. The Newcastle-Ottowa Scale (NOS) for case-control and cohort studies (Wells et al., 2009) was rejected as it was felt it was too vague with regards to categorising in different levels of bias.

Due to no adequate existing quality appraisal tool being identified, an eleven-item quality assessment checklist was devised based on items present within three pre-existing and commonly used quality appraisal tools, namely 1) the National Institute of Health (NIH) Quality Assessment Tool for observational cohort and cross-sectional studies (U.S. Department of Health and Human Services National Institute of Health, 2014), 2) the Agency for Healthcare Research and Quality (AHRQ) item bank for assessing risk of bias and confounding for observational studies of interventions or exposures (Viswanathan, Berkman, Dryden & Hartling, 2013), and 3) the Scottish Intercollegiate Guidelines Network (SIGN) checklist for cohort studies (Scottish Intercollegiate Guidelines Network, 2012). Two additional criteria were included in the checklist, applicable only to longitudinal studies. Items in the final checklist were selected and modified in order to meet the specific requirements of the current review, as well as to fit the content of the included studies. Table 3, below, presents the items used to assess the quality/risk of bias of each study within these categories. Each item on the checklist was coded as low, medium, or high, to denote the risk of bias. Where sources of bias for a given criterion could not be determined based on the information provided in the studies, a score of 'high' was awarded. No studies were excluded based on quality. Due to the inclusion of published studies only, it was assumed that all included studies would be of an adequate quality. Rather than removing any which did not achieve a designated level of quality, it was considered more appropriate to instead highlight where quality or bias issues were present which may nullify the utility of results. In practice, no studies were identified which were of low quality across the board.

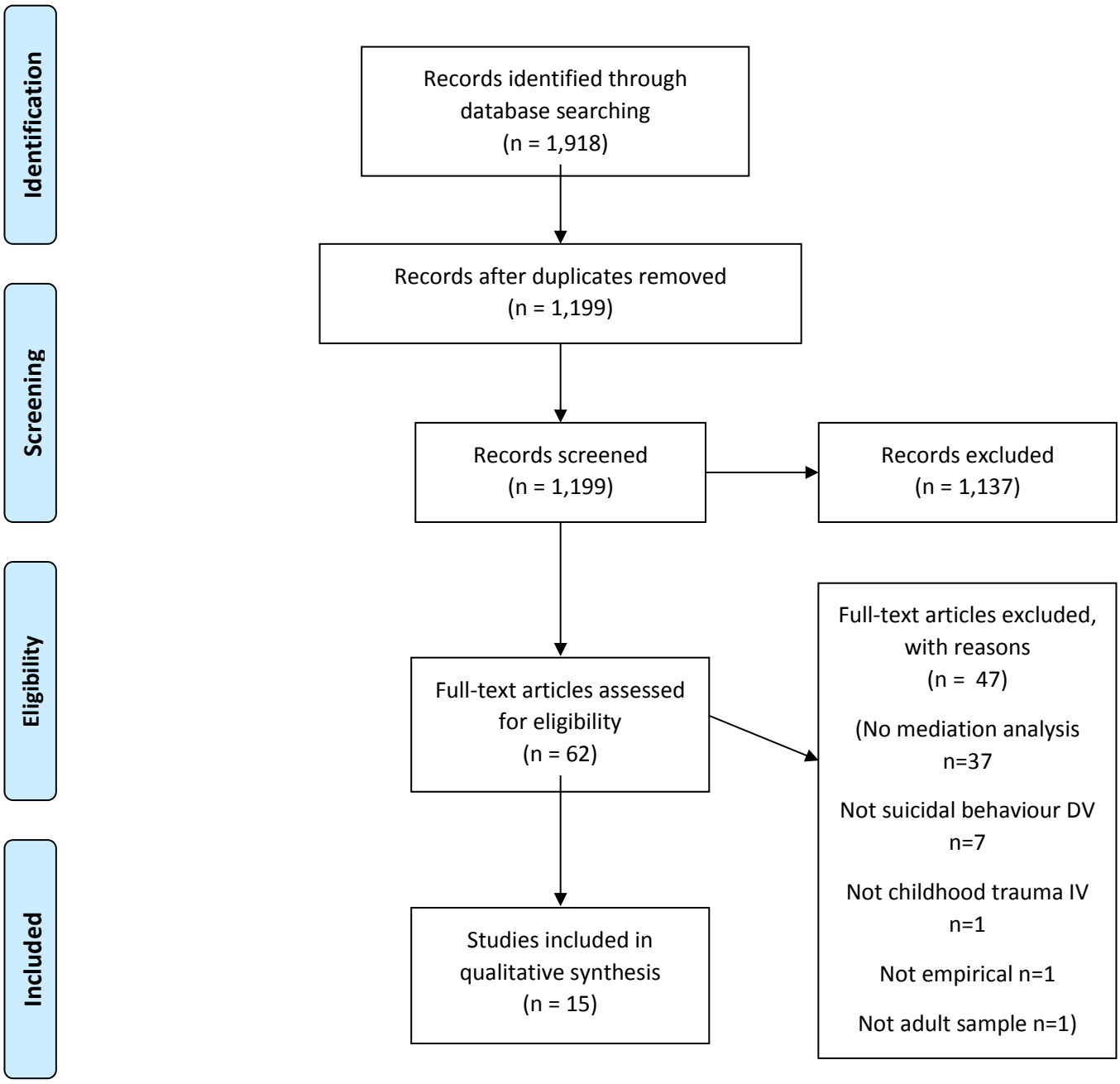


Figure 5: PRISMA Flow Diagram

Table 3: Quality/Bias appraisal items

Selection bias	1) Sampling and recruitment strategy was clearly defined. 2) Selection and recruitment strategy was consistent across all participants. 3) The final sample size was adequate and justified.
Attrition bias	1) A clearly defined and adequate procedure for handling missing data were used. 2) The participation rate/drop-out rate was reported, and acceptable. 3) The drop-out rate at follow-up reported. (Longitudinal studies only) 4) Comparisons were made between those lost and retained at follow-up reported. (longitudinal studies only)
Measurement bias	1) All predictor, mediator, and outcome variables were clearly defined? 2) Valid and reliable measures were used to assess predictor, mediator, and outcome variables. 3) Measures were implemented consistently across participants.
Bias through confounders	Potential confounding variables were clearly defined and controlled for.
Statistical analyses	What analytic strategy was taken to determine the presence of mediation?
Outcome/reporting bias	All primary outcomes were fully reported in the results.

2.2.8 Statistical quality

Statistical quality was determined by both the method of mediation analysis used, and the design of the study, be it cross-sectional or longitudinal. It has been previously discussed that cross-sectional analyses of longitudinal mediation brings with it inherent biases (Maxwell & Cole, 2008). For this reason, cross-

sectional studies were given lower quality/higher bias scores than equivalent longitudinal designs. Cross-sectional designs using Baron and Kenny's (1986) regression-based mediation steps received high scores for their potential bias,, as did those supplementing this with the Sobel test. Cross-sectional designs using more robust methods, such as bootstrapping or structural equation modelling, were given medium scores for their potential bias, reflecting the higher quality of these mediation types. Longitudinal studies using the Baron and Kenny steps or Sobel's test were awarded a medium score for bias, given the inherent reduction in bias which comes with using a longitudinal design in longitudinal mediation. Similarly, studies using the more robust methods of bootstrapping or structural equation modelling were awarded low scores for bias potential.

Baron and Kenny's causal pathways procedure has been demonstrated to have low statistical power, except in cases with either very large samples, or very large effect sizes (MacKinnon et al., 2002). Additionally, the magnitude of the indirect or mediating effect is not calculated through the causal pathways approach. The causal pathways approach is often used in conjunction with the Sobel test, in order to provide the magnitude of the indirect effect (Hayes, 2009). However, an often-reported flaw with the Sobel test is that its validity is dependent on the sample under investigation being normally distributed (Hayes, 2009). For these reasons, studies employing causal pathways methods such as the Baron and Kenny procedure, supplemented or not with a Sobel test, received lower scores for quality than the more robust methods discussed below, due to their bringing with them the higher risk of bias in this domain.

In contrast to those described above, techniques such as bootstrapped mediation and structural equation modelling are not reliant on any specific sampling distribution, and have also been demonstrated to contain greater statistical power

than either the causal pathways approach or the Sobel test (Hayes, 2009). In addition, these more advanced techniques allow for multiple mediators to be tested in combination (Hayes, 2009). Studies employing these techniques for mediation testing therefore received the higher scores for quality, and conversely the lower score for bias.

As stated, appraisal of bias/quality of statistical analyses was based, in part, on the study design. By definition, each of the included studies was exploring the effects of longitudinal mediation processes, given the assessment in adulthood of experiences beginning in childhood and spanning the life course. It has been previously identified that exploring such longitudinal mediation through a cross-sectional design is always problematic (Maxwell & Cole, 2007). In such studies, estimates of both direct and indirect effects are understood to be biased by the stability of the independent, mediating, and dependent variables. Greater stability in the independent variable compared to the mediating variable results in a positive bias in the estimation of the direct effect from independent to dependent variables. Similarly, relative stability in the independent and mediating variables increase the likelihood of a positive bias in the estimation of the indirect effect through the mediating variable (Maxwell & Cole, 2007). Based on this, studies using a cross-sectional design were given higher bias scores than equivalent longitudinal designs.

2.2.9 Data Extraction and Synthesis

A data extraction table was created in advance (see table 4), containing study elements deemed most salient to the current review. This table was then populated with the relevant information from each study. Studies were then examined with regards to the magnitude of effect for their mediator under

investigation. Due to the brevity of reporting on effect sizes, as brief overview of these included in the narrative synthesis, as opposed to including this in the data extraction table.

In order to develop conceptually related themes, I made a list of the mediating variables present across the studies, along with a working definition of each mediator. Based on these, the three themes of negative self-concept, disturbed relationships, and effect dysregulation, were developed. While a stringent attempt was made to base these, bottom-up, on themes present across the reviewed studies, the themes which were used overlap almost exactly with those present in CPTSD.

2.2.10 Second reviewer process

For the purposes of transparency, a second reviewer was involved at a number of points to provide checks and balances on decisions made. At the full-text screening stage, a subset of 15% of these was independently reviewed for eligibility by a second reviewer. These studies were selected at random from the list of those retrieved for full text screening using a random number generator (https://www.random.org/). Having determined the final set of included studies, data were extracted independently by two reviewers. A standardised form was used, with extracted data providing information on study design, participant demographics, recruitment methods, participation rates, measures used to assess childhood trauma history, suicidal behaviour history, and the presence of any mediating variables, mediation methods used, and study outcomes.

Risk of bias was also assessed independently by two reviewers, with both assessing 100% of included studies. Again, a standardised form was used to assess the risk of bias in each study within the following domains: selection bias;

attrition bias; measurement bias; bias through confounders; statistical analysis; outcome and reporting bias. The second reviewer was an Assistant psychologist from an NHS trauma service. At the full-text selection phase there was 100% agreement between the two reviewers for the 15% reviewed by reviewer 2. At the bias assessment phase, there were slight discrepancies between the first and second reviewer in the assessment of statistical quality, although exact figures were not recorded. The primary area of disagreement related to statistical quality, with the second reviewer awarding higher quality scores here. Resolution was reached by consulting literature such as Fritz and Mackinnon's (2007) work.

Table 4: Risk of bias appraised for reviewed studies

STUDY	Selection Bias			Attrition bias				Measurement bias			Bias through confounders	Statistical Analyses	Outcome/ reporting bias
	1	2	3	1	2	3	4	1	2	3			
Twomey et al. (2000)	Low	Low	High	High	High	N/A	N/A	Low	Low	Low	Medium	High	Low
Johnson et al. (2002)	Low	Low	High	High	High	Low	Low	Medium	High	Low	Low	Medium	Low
Meadows & Kaslow (2002)	Medium	Low	High	High	Low	N/A	N/A	Low	Low	Low	Low	High	Low
Soloff et al. (2008)	High	Medium	High	High	High	N/A	N/A	Medium	Medium	High	Low	High	High
Bebbington et al. (2009)	Low	Low	High	High	Medium	N/A	N/A	Low	Medium	Low	Medium	High	Low
Kimonis et al. (2010)	Low	Low	High	High	High	N/A	N/A	Low	Low	Low	High	Medium	Medium
Godet-Mardirossian et al. (2011)	Low	Low	Medium	Medium	High	N/A	N/A	Low	Low	Low	High	Medium	Medium
Swogger et al. (2011)	Medium	Low	High	High	Medium	N/A	N/A	Low	Medium	Low	Low	High	Low
Wanner et al. (2012)	Low	Low	High	Medium	High	Medium	Medium	Low	Low	Low	Low	Medium	Low
Daray et al. (2016)	Low	Low	Low	High	Low	N/A	N/A	Low	Medium	Low	Low	Medium	Low
Fuller-Thompson et al. (2016)	Low	Low	Medium	Medium	Medium	N/A	N/A	Low	Medium	Low	Low	High	Low
Gordon et al. (2016)	Low	Low	High	High	Low	N/A	N/A	Low	Low	Low	High	Medium	Low

Aaltonen et al. (2017)	Low	Low	High	Medium	High	N/A	N/A	Low	Low	Low	Sex, Age	Medium	Low
Aas et al. (2017)	Low	Low	Medium	High	High	N/A	N/A	Low	Low	Low	High	Medium	Low
Sachs-Ericsson et al. (2017)	Low	Low	Low	High	Low	Low	Low	Low	Medium	Low	Low	Low	Low

2.3 Results

2.3.1 Search Results and Overview of Included Studies

A total of 15 studies met eligibility criteria and were included in the current review- outlined in table 5, below. Of the 15 studies, 12 reported the mean age of participants (Aaltonen, Rosenstrom, Baryshnikov, Karpov, Melartin et al., 2017; Aas, Henry, Bellivier, Lajnef, Gard et al., 2017; Daray, Rojas, Bridges, Badour, Grendas et al., 2016; Fuller-Thompson, Baird, Dhrodia & Brennenstuhl, 2016; Gordon, Simonich, Wonderlich, Dhankikar, Crosby et al., 2016; Johnson, Cohen, Gould, Kasen, Brown & Brook, 2002; Meadows & Kaslow, 2002; Sachs-Ericsson, Stanley, Sheffler, Selby & Joiner, 2017; Soloff, Feske & Fabio, 2008; Swogger et al., 2011; Wanner, Vitaro, Tremblay & Turecki, 2012; Twomey, Kaslow & Croft, 2000;), with these ranging from 21.4 years to 47 years. One study instead reported the median age of participants (Godet-Mardirossian, Jehel & Falissard, 2011), with this being 37 years. Only the studies by Bebbington et al. (2009) and Kimonis et al. (2010) reported no measure of central tendency for the age of participants. Across the nine studies which reported age ranges, participants were aged between 14 and 84 years. Six of the studies did not provide information on the age range of participants (Aaltonen et al., 2017; Bebbington, Cooper, Minot, Brugha, Jenkins et al., 2009; Fuller-Thompson et al., 2016; Johnson et al., 2002; Kimonis, Skeem, Edens, Douglas, Lilienfeld & Poythress, 2010; Sachs-Ericsson et al., 2017).

A third of the included studies (5/15) contained samples of females only (Twomey et al., 2000; Meadows & Kaslow, 2002; Kimonis et al., 2010; Daray et al., 2016; Gordon et al., 2016). Only one study used an entirely male sample (Godet-Mardirossian et al., 2011). Of the nine remaining studies, three used

predominantly female samples (Aaltonen et al., 2017; Aas et al., 2017; Soloff et al., 2008), with one using a predominantly male sample (Swogger et al., 2011). Of the remaining four studies, three were close to a fifty-fifty split of female and male participants, containing 55% (Bebbington et al., 2009), 47% (Wanner et al., 2012) and 51% (Fuller-Thompson et al., 2016) females respectively. The final study (Sachs-Ericsson et al., 2017) report having recruited an even division of male and female participants, but do not specify percentages in their final sample.

The study by Wanner et al. (2012) found stark differences between males and females with regard to the mediating effect of their psychological variables, with a mediating effect found only for females. Findings such as this point to the specificity of their generalisable potential. There was an over-representation of females across the studies reviewed here, potentially limiting the external validity of the presented findings.

Eleven of the included studies reported on ethnicities of their samples (Aas et al., 2017; Daray et al., 2016; Fuller-Thompson et al., 2016; Gordon et al., 2016; Johnson et al., 2002; Kimonis et al., 2010; Meadows & Kaslow, 2002; Sachs-Ericsson et al., 2017; Swogger et al., 2011; Twomey et al., 2000; Wanner et al., 2012). Of these, seven used predominantly Caucasian samples (Aas et al., 2017; Fuller-Thompson et al., 2016; Gordon et al., 2016; Johnson et al., 2002; Kimonis et al., 2010; Sachs-Ericsson et al., 2017; Wanner et al., 2012) with the proportion of Caucasian participants ranging from 66.54% (Kimonis et al., 2010) to 98.6% (Gordon et al., 2016) among these. Of these six, only Kimonis et al. (2010) reported on the ethnic make-up of the remainder of the sample, with 33.08% of their sample being reported as African American. Three studies reported using samples predominantly consisting of African Americans (Meadows & Kaslow, 2002; Swogger et al., 2011; Twomey et al., 2000), with these containing 91%

(Twomey et al., 2000), 82% (Meadows & Kaslow, 2002), and 51.5% (Swogger et al., 2011) African American individuals. The remaining study (Daray et al., 2016) used a sample comprised 100% of South Americans.

2.3.2 Childhood Trauma Measure and Subtypes

Prior to describing the measures used to assess childhood trauma in the reviewed studies, the reason for focusing on childhood trauma, at the preclusion of adult trauma, will be commented on. This review aimed to develop an understanding of the long-term outcomes associated with childhood trauma which may increase a person's risk of making a suicide attempt. It sought to understand global, long-term alterations to an individual which may arise in response to experiences of childhood trauma. This can be considered in contrast to more specific response-based, or response-focused, effects of trauma in adulthood.

Of the 15 included studies, six acquired information on childhood trauma histories through valid and reliable self-report measures (Aaltonen et al., 2017; Aas et al., 2017; Kimonis et al., 2010; Meadows & Kaslow, 2002; Twomey et al., 2000; Wanner et al., 2012). Three of these used the Childhood Trauma Questionnaire (Aas et al., 2017; Meadows & Kaslow, 2002; Twomey et al., 2000), with one each using the Child Abuse and Trauma Scale (Kimonis et al., 2010), the Adverse Childhood Experiences Study Questionnaire (Wanner et al., 2012), and the Trauma and Distress Scale (Aaltonen et al., 2017). In the study by Johnson et al. (2002) it is reported that information on childhood maltreatment was derived through the Disorganising Poverty Interview, in addition to scales assessing parental maltreatment and abuse, and through accessing state records. The scales used, however, are not specified (Johnson et al., 2002). A further six

garnered such information through single questions (Bebbington et al., 2009; Daray et al., 2016; Fuller-Thompson et al., 2016; Godet-Mardirossian et al., 2011; Sachs-Ericsson et al., 2017; Swogger et al., 2011). Of the remaining two studies, one assessed childhood trauma history through a structured interview, with demonstrated solid psychometric qualities (Gordon et al., 2016). The final study adapted items from a valid and reliable structured interview to gather childhood trauma history information, however, details of the adapted items, or their psychometric properties are not presented (Kimonis et al., 2010).

Three of the included studies investigated only a single childhood trauma subtype, with two investigating childhood sexual abuse (Bebbington et al., 2009; Daray et al., 2016), and one investigating childhood physical abuse (Swogger et al., 2011). Eight of the remaining 12 studies each investigated both childhood sexual abuse and childhood physical abuse (Fuller-Thompson et al., 2016; Gordon et al., 2016; Johnson et al., 2002; Kimonis et al., 2010; Meadows & Kaslow, 2002; Soloff et al., 2008; Twomey et al., 2000; Wanner et al., 2012). In all but two of these (Soloff et al., 2008; Wanner et al., 2012), at least one additional childhood trauma variable was explored. Childhood emotional abuse was examined in three studies (Gordon et al., 2016; Meadows & Kaslow, 2002; Twomey et al., 2000). Physical neglect and emotional neglect were investigated in two studies (Meadows & Kaslow, 2002; Twomey et al., 2000), with a more general neglect variable investigated in one study (Kimonis et al., 2010). Verbal or psychological abuse were additionally investigated in one study (Kimonis et al., 2010), while exposure to parental maltreatment was included in two studies (Fuller-Thompson et al., 2016; Johnson et al., 2002). Two of the included studies collected information on childhood physical abuse (CPA), childhood sexual abuse (CSA), childhood emotional abuse (CEA), childhood physical neglect (CPN), and

childhood emotional neglect (CEN) (Aaltonen et al., 2017; Aas et al., 2017). In both cases, it was a total trauma score used in mediation analyses. In the case of Aas et al.'s (2017) study, CEA was additionally included at this stage, as it had demonstrated particularly strong correlations with outcome variables. Finally, variables of ill-treatment, containing physical, psychological, or sexual abuse, placement in a host family, and separation from parents, were included in one study (Godet-Mardirossian et al., 2011).

2.3.3 Measure of Suicidal Outcome

Fourteen of the 15 studies compared those with a suicide attempt history to those without a suicide attempt history. In one of these, the timeframe for having made an attempt was limited to the preceding month (Godet-Mardirossian et al., 2011), with another study limiting this to the preceding 10 years (Sachs-Ericsson et al., 2017). The other 12 considered a lifetime suicide attempt history (Aaltonen et al., 2017; Aas et al., 2017; Bebbington et al., 2009; Fuller-Thompson et al., 2016; Gordon et al., 2016; Johnson et al., 2002; Kimonis et al., 2010; Meadows & Kaslow, 2002; Soloff et al., 2008; Swogger et al., 2011; Twomey et al., 2000; Wanner et al., 2012). Of these 14 studies, one (Soloff et al., 2008) examined the number of suicide attempts in addition to the presence of lifetime suicide attempts. The final study recruited participants based on their having a suicide attempt history, instead comparing across the number of past attempts (Daray et al., 2016). In this instance, number of previous suicide attempts was determined at baseline evaluation on admission to hospital. Two studies recruited individuals who had been hospitalised following a suicide attempt, in addition to control participants with no suicide attempt history admitted to the same hospital (Meadows & Kaslow, 2002; Twomey et al., 2000). The remaining 12 studies determined suicide attempt history through single, dichotomous questions

(Aaltonen et al., 2017; Aas et al., 2017; Bebbington et al., 2009; Fuller-Thompson et al., 2016; Godet-Mardirossian et al., 2011; Gordon et al., 2016; Johnson et al., 2002; Kimonis et al., 2010; Sachs-Ericsson et al., 2017; Soloff et al., 2008; Swogger et al., 2011; Wanner et al., 2012).

2.3.4 Study Quality

The 15 included studies were appraised for their scientific quality and risk of bias (table 4). The following section provides a descriptive overview of risk of bias in the domains of selection bias, attrition bias, measurement bias, bias through confounders, statistical quality, and outcome and reporting bias.

2.3.4.1 Selection bias

Around half (n=8) of the included studies reported employing either a random or consecutive sampling strategy. Recruiting through either of these methods allows for a representative sample of the target population to be gathered. In particular, consecutive samples of hospital admissions were used in three of the included studies, meaning every individual coming through the research site, and who met eligibility criteria could conceivably have taken part. The use of a demonstrably representative sample allows for findings to be legitimately generalised to the population of interest.

With the exception of one study (Daray et al., 2016), all of the included studies introduced a high risk of bias through not reporting on a priori power analyses. The only included study to justify their sample size used a sample larger than the minimum required to detect a small effect in their mediation analysis (Daray et al., 2016). In order to detect a small effect with .8 power through the Baron and Kenny (1986) method, a sample of 20,886 is estimated to be required (Fritz & MacKinnon, 2007). Of the seven studies to employ the Baron and Kenny method,

only one met this minimum sample requirement (Fuller-Thompson et al., 2016). When using the Sobel test in conjunction with Baron and Kenny's steps, the minimum sample required to detect a small effect reduces to 667 (Fritz & MacKinnon, 2007). Of the two studies to employ the Sobel test, one included a sample less than half this size (Swogger et al., 2011), while the other contained a sample more than double the size required (Wanner et al., 2012).

When inadequately powered samples are used, the likelihood of a type 2 error occurring is increased. In this situation, the null hypothesis would be incorrectly rejected, leading to an effect being reported as significant when in fact it was not. By failing to report the findings of a priori power analyses, and thereby not justifying the sample size used, the legitimacy of the reported findings is called into question.

2.3.4.2 Attrition bias

It has been proposed that it is best practice that the amount of missing data, and the procedure employed for handling missing data should be reported within psychology research (Schlomer, Bauman & Card, 2010). Further to this, potential patterns present within missing data should also be given consideration, as the randomness of missing data will determine the most appropriate method for its handling (Schlomer et al., 2010). In spite of this, only five of the included studies make any mention of missing data. In three of these the amount of missing data is reported (Aaltonen et al., 2017; Fuller Thompson et al., 2016; Godet-Mardirossian et al., 2011), although none reports on how this missing data were handled. This is particularly problematic for the study by Godet-Mardirossian et al. (2011), who report 11.25% missing data on their mediating variable. This level

of missing data would require a robust strategy for being dealt with, as well as being tested for randomness prior to selecting an imputation method.

The description of missing data makes an appearance in two further studies (Swogger et al., 2011; Wanner et al., 2012), however, levels and handling methods are not mentioned. In the Swogger et al. (2011) study it is mentioned that self-report measures were checked for missing responses on submission. However, no elucidation is provided with regards to amount or handling procedures (Swogger et al., 2011). Wanner et al. (2012) do not directly reference missing data within their study, however, they make mention to the maximum likelihood estimation when discussing their analytic strategy (Wanner et al., 2012). Maximum likelihood imputation methods are considered to be among the most robust methods for handling missing data (Schafer and Graham, 2002).

None of the remaining studies make reference to missing data, in spite of its reported ubiquity within social and behavioural research (Enders, 2010). There exists a plethora of statistical techniques for handling missing data, each of whose robustness is dependent on the context of the data upon which it is being used (Enders, 2010). Although commonly implemented, deletion methods are considered to be of low quality, while the validity of imputation methods will depend on the pattern of the missing data (Enders, 2010). Not treating missing data appropriately can impact upon the validity of results, for example using deletion techniques will reduce statistical power due to the diminished sample size (Schafer and Graham, 2002). Further to this, inappropriate imputation or deletion methods can potentially lead to biased parameter estimations, impacting upon the generalisability of findings (Schafer and Graham, 2002). Therefore, not reporting amounts of missing data, or the technique employed for its handling effects the ability for results to be accurately interpreted.

Half of the included studies were considered to have introduced a potential source of bias by not reporting participation or drop-out rates (Godet-Mardirossian et al., 2011; Kimonis et al., 2010; Soloff et al., 2008; Twomey et al., 2000; Wanner et al., 2012). As was the case for missing data, an appreciation of the level of participation from the target population is key to generalising the study findings. By failing to report on participation rates, as well as not comparing demographic characteristics of those retained and those lost, the external validity of reported findings is limited.

2.3.4.3 Measurement bias

A total of 13 out of the 15 studies were considered to have provided adequate descriptive information of the measures used for childhood trauma, potential mediators, and suicidal behaviour. The two exceptions were the studies by Johnson et al. (2002) and Soloff et al. (2008). The measure used to examine childhood trauma history used in the study by Soloff et al. (2008) is defined as "The abuse History", and is described as having been adapted from the Dissociative Disorders Interview Schedule (DDIS) (Ross, Heber, Norton, Anderson, Anderson & Barchet, 1989). Although the DDIS is a valid and reliable measure, there is no detail provided for what items were contained within this adaptation, meaning the psychometric properties of the measure cannot be determined. In the case of Johnson et al. (2002), it is reported that some childhood adversities were recorded through the Disorganising Poverty Interview (DPI), with adequate validity and reliability for this measure being reported. However, in addition to this, they report the use of further scales and inventories to assess other aspects of childhood trauma as well as for measuring their mediating variable However, it is not mentioned what these were, or their psychometric properties.

In general, the measures used across the studies were considered to have adequate psychometric properties. The primary issues here come from the occasional investigation of childhood trauma variables through single-item questions. These were used in five of the 15 studies (Bebbington et al., 2009; Daray et al., 2016; Fuller-Thompson et al., 2016; Sachs-Ericsson et al., 2017; Swogger et al. 2011). One of these used a single item which appears to be adapted from an item in the childhood trauma questionnaire, as their childhood trauma variable (Swogger et al., 2011). They report that a previous study by Dube and colleagues (2001) used this item, reporting it to be valid and reliable. However, the study referenced used this item in tandem with a second measure of childhood trauma, reporting on the validity of the two combined (Dube, Anda, Felitti, Chapman, Williamson & Giles, 2001).

With the above noted exceptions in relation to childhood trauma, measures used across the included studies were considered to be at low risk for introducing bias. Other than that of Johnson et al. (2002), discussed above, all potential mediating variables were examined through psychometrically robust measures. Suicidal outcomes were uniformly assessed through the use of single-item, dichotomous questions. Although the validity or reliability of such a technique is not reported, this is a standard method within the suicidality research field. In addition to the demonstrated psychometric properties of the included measures, all but one study was found to have implemented research measures consistently across all participants. In doing so, the probability of introducing risk of measurement bias is minimised.

2.3.4.4 Confounders

The majority of studies (n=10) mentioned having controlled for confounding demographic variables (Aaltonen et al., 2017; Daray et al., 2016; Johnson et al., 2002; Meadows and Kaslow, 2002; Sachs-Ericsson et al., 2017; Soloff et al., 2008; Swogger et al., 2011; Twomey et al., 2000; Wanner et al., 2012). Doing so allows for greater isolation of the experimental variables under investigation, resulting in more reliable findings. As a minimum, it might be expected that age and gender would be controlled for. Failing that, where comparisons have identified significant differences across genders, separate analyses may be conducted. Eight of the ten studies which reported having controlled for confounders did so for both age and gender (Daray et al., 2016; Fuller-Thompson et al., 2016; Johnson et al., 2002; Meadows and Kaslow, 2002; Sachs-Ericsson et al., 2017; Soloff et al., 2008; Swogger et al., 2011; Wanner et al., 2012), with one controlling only for education (Twomey et al., 2000) and one controlling only for depression score (Aaltonen et al., 2017).

2.3.4.5 Statistical Analysis

Historically, the most commonly adopted method of mediation in psychology research has tended to be the Baron and Kenny (1986) causal steps approach (MacKinnon & Fairchild, 2009). This method involves determining the significance of pathways between predictor and mediator, predictor and outcome, and mediator and outcome. In addition, for mediation to be determined, the pathway between predictor and outcome must reduce to a non-significant level when adjusting for the mediating variable. Seven of the included studies used Baron and Kenny's causal steps approach to determine mediatory relationships (Bebbington et al., 2009; Fuller-Thompson et al., 2016; Johnson et al., 2002;

Meadows & Kaslow, 2002; Swogger et al., 2011; Twomey et al., 2000; Wanner et al., 2012). Baron and Kenny's approach has been criticised for requiring very large sample sizes. Fritz and MacKinnon (2008) report the requirement for a sample of around 21,000 to carry the statistical power required to detect a small effect. In addition to this, it is limited by its failure to produce a value for the strength of the indirect effect. In its place, more robust methods of mediation, such as bootstrapping, and structural equation modelling have been introduced in recent years. Further to this, and as described in section 2.2.8, the use of cross-sectional designs to test for longitudinal mediation is inherently biased. Therefore, studies testing for mediation through Baron and Kenny's steps in a cross-sectional design were given a high score for risk of bias in relation to this (Bebbington et al., 2009; Fuller-Thompson et al., 2016; Meadows & Kaslow, 2002; Soloff et al., 2008; Swogger et al., 2011; Twomey et al., 2000. Studies using Baron and Kenny's steps to assess mediation in longitudinal designs were given a medium score for risk of bias here, due to the reduction in bias associated with longitudinal designs (Johnson et al., 2002; Wanner et al., 2012).

In one of the studies using the Baron and Kenny approach, this was supplemented with Sobel's test, providing an indirect effect size (Swogger et al., 2011). Sobel's test has been criticised for its assumption of the normality of data distribution, deemed inappropriate in testing for mediated effects (Cheung & Lau, 2008). As such, this study was also given a high score for risk of bias.

As previously mentioned, in recent years more robust mediation methods, such as bootstrapping and structural equation modelling have grown in favour. These methods bring the ability to report on indirect effect sizes (the mediation pathway), as well as not requiring assumptions about data distribution to be met, and holding greater statistical power, particularly when used with smaller samples

(Fritz & MacKinnon, 2008). Three of the included studies used structural equation modelling (Daray et al., 2016; Godet-Mardirossian et al., 2011; Kimonis et al., 2010), while a further four used bootstrapped mediation (Aaltonen et al., 2017; Aas et al., 2017; Gordon et al., 2016; Sachs-Ericsson et al., 2017). Six of these were considered to be at medium risk for bias due to their use in cross-sectional designs (Aaltonen et al., 2017; Aas et al., 2017; Daray et al., 2016; Godet-Mardirossian et al., 2011; Gordon et al., 2016; Kimonis et al., 2010). The remaining study (Sachs-Erikson et al., 2017) was considered to be at low risk of bias, due it's use of bootstrapped mediation in a longitudinal design.

The final study employed a method of mediation proposed by Freedman and Schatzkin (1992), with mediation being determined through the comparison of regression coefficients before and after adjusting for the mediating variable (Freedman & Schatzkin, 1992). It has been reported that this method has the statistical power to detect small, medium, and large effects with samples of 500, 100, and 50, respectively (MacKinnon, Lockwood, Hofmann, West & Sheets, 2002). Given that Soloff et al. (2008) did not report the magnitude of any effect sizes, it cannot be determined whether their sample of 151 would be adequate; as such this study as given a score of high for potential risk of bias in this category, again this decision came, in part, from it's use in a cross-sectional design.

2.3.4.6 Outcome and Reporting

In the majority of the studies (n=14), bias through inadequate outcome reporting was avoided (Aaltonen et al., 2017; Aas et al., 2017; Bebbington et al., 2009; Daray et al., 2016; Fuller-Thompson et al., 2016; Godet-Mardirossian et al., 2011; Gordon et al., 2016; Johnson et al., 2002; Kimonis et a, 2010; Meadows &

Kaslow, 2002; Sachs-Ericsson et al., 2017; Swogger et al., 2011; Twomey et al., 2000; Wanner et al., 2012). This was achieved by reporting comprehensively on all statistical testing conducted. The only study to introduce risk of bias here was that of Soloff et al. (2008). In this case, only significant mediation results were reported upon, in addition to some basic descriptive statistics.

2.3.5 Psychological Mediating Variables

An overview of the psychological mediating variables identified through the systematic review, as well as key design features of the included studies, are presented in table 5. As described in section 2.2.9, a narrative synthesis was conducted to describe the mediating variables identified in the review. These were organised into themes of negative self-concept and disturbed relationships, and affective dysregulation.

2.3.5.1 Negative Self-Concept and Disturbed Relationships

Across two of the included studies, psychological factors related to the formation of a negative self-concept were examined for their mediating role between childhood trauma and suicidal behaviour (Godet-Mardirossian et al., 2011; Twomey et al., 2000). In a sample of hospitalised women, a negative self-description was found to have significant indirect effects on the pathways from CSA, CPA, and CPN, and suicidal behaviours (Twomey et al., 2000).

Twomey et al. (2000) further studied the role of a number of psychological factors which bridge the gap between perceptions of the self, and relationships with others. They found that, in addition to negative self-description, the pathway from CSA to suicidal behaviour was mediated by alienation, insecure attachment, egocentricity, and social incompetence, the pathway from CPN to suicidal behaviour was mediated by alienation, insecure attachment, egocentricity, and

social incompetence, and the pathway from CPA to suicidal behaviours was mediated by alienation (Twomey et al., 2000). Further to these, they found the pathway from CEA to suicidal behaviour to be mediated by alienation and insecure attachment, and that from CEN to suicidal behaviour to be mediated by alienation (Twomey et al., 2000).

These findings should be interpreted in light of the study limitations. No justification is provided for the sample size used by Twomey et al., casting doubt over the statistical power of their reported results. Coupled with this, Twomey et al. examined mediating relationships using Baron and Kenny's (1986) causal pathways approach. As has been reported in a previous section, this method requires substantial samples in excess of 20,000 to detect a small effect. While the sample requirement reduces to under a hundred when detecting the largest effects (Fritz & MacKinnon, 2007), it cannot be determined whether or not Twomey et al. have used a large enough sample to detect their findings given their lack of reporting of effect sizes.

Similar to the findings of Twomey et al., the studies by both Johnson et al. (2002), and Godet-Mardirossian et al. (2011) found evidence for the mediating role of factors which relate to both self-perception and interpersonal functioning. Johnson et al. (2002), in a community sample of young adults, investigated the mediating role of having experienced severe interpersonal difficulties in adolescence. Their interpersonal difficulties variable contained cruelty towards peers, difficulty making new friends, frequent arguments with adults or peers, loneliness and interpersonal isolation, lack of close friends, poor relationships with friends and peers, and refusal to share with others (Johnson et al., 2002). This conglomerate of interpersonal difficulties was found to mediate the relationship between having experienced either maladaptive parenting or abuse

in childhood, and having made a suicide attempt by early adulthood (Johnson et al., 2002).

This finding should be interpreted with caution, however, due to a lack of reporting on the measures used to assess interpersonal difficulties, as well as their validity and reliability. It is reported that a number of interpersonal difficulties were assessed during interviews with participants, no mention is made however, to the content of these interviews, or whether this was a demonstrated valid and reliable process. The failure to garner information through valid methods calls into question whether the reported relationships are accurate.

Godet-Mardirossian et al. (2011), investigating temperament and character personality dimensions in French prisoners, found the relationship between childhood adversity and suicidal behaviour to be mediated by both poor self-transcendence and poor cooperativeness (Godet-Mardirossian et al., 2011). Self-transcendence describes the extent to which the individual perceives themselves as attached to a wider universe, while cooperativeness describes the extent to which an individual is accepting of others (Gillespie, Cloninger, Heath, & Martin, 2003). As such, each may be considered a marker for difficulties in relating well to others, at a perceptual level.

The interpersonal features examined up to now have operated at a perceptual level, two of the included studies developed on this by investigating the mediating roles of behavioural-level interpersonal impairments (Kimonis et al., 2010; Soloff et al., 2008). In a sample of incarcerated adult females, an externalising problems variable, including antisocial features as well as alcohol problems, and drug problems, was found to fully mediate the relationship between amalgamated childhood trauma and suicidal behaviours (Kimonis et al., 2010). Similarly, in a

sample of individuals meeting diagnostic criteria for Borderline Personality Disorder (BPD), impaired functioning in social and leisure activities was found to mediate the relationship between CSA and suicidal behaviour (Soloff et al., 2008). Soloff et al. (2008) additionally investigated the involvement of a number of personality disorders, as defined by the International Classification of Diseases – tenth revision (ICD-10). Of these, severity of psychosis symptoms, assessed through the Diagnostic Interview for Borderline Patients (Gunderson, Kolb & Austin, 1981), and schizotypal personality disorder (SPD) emerged significant mediators (Soloff et al., 2008). Both psychosis and SPD can contain elements of isolation, or social withdrawal, in addition to pathologically-problematic symptom clusters.

The study by Soloff et al. (2008) investigated a large number of potential mediators, but only provide reporting on those with significant mediating relationships. They also used Baron and Kenny's mediation procedure, one of the issues with which is that it only allows for models containing a single mediator to be tested. It may be that there were numerous multivariate relationships which could have been identified through a more robust method of analysis. They examined primarily clinical diagnostic features of personality disorders, which are often underpinned by similar features. Rather than excluding the majority of these from their reporting, the more prudent move may have been to highlight where the correlations lie, or even which are significant, at a predictive level, of suicide, or indeed which may have been predicted by childhood trauma. So doing would allow for these findings to be built upon with larger samples, and more appropriate analytical strategies.

2.3.5.2 Affect dysregulation

Gordon et al. (2016) found emotion dysregulation to act as a significant mediator between CSA, and CEA, and suicidal behaviour. They also found these pathways to be mediated by negative affective stability, as was the pathway from CPA to suicidal behaviour. Negative affective stability was also investigated in the study by Godet-Mardirossian (2011), with it being found to mediate the relationship between childhood adversity and suicidal behaviours. In their study, involving adults with bipolar disorder, Aas et al. (2017) found affective lability to mediate relationships between both CEA and total accumulated childhood trauma, and suicidal behaviour. On a similar vein, Bebbington et al. (2009) found, in a nationally-representative community sample, that the relationship between CSA and suicidal behaviour was mediated by affective disturbance. In this instance, only sexual abuse was investigated as a predictor variable, with affective disturbance being the only mediatory variable examined. The presence of a history of sexual abuse was identified through presenting a card with a number of victimization events, including childhood sexual abuse, on it and asking them whether they had experienced these event types. The authors do not report on the psychometric properties of taking such an approach.

Neither Godet-Mardirossian et al. (2011), nor Gordon et al. (2016) report controlling for any potential confounding variables, while Aas et al. (2017), who recruited from two distinct sites, report including recruitment site as a covariate in analyses where appropriate, but make no mention to other potential confounders. Failing to control for confounding variables would mean that relationships generated in relation to specific variables cannot be attributed definitively to those variables. It would be equally possible that external factors which have not been operationalised are responsible for any observed effect.

Wanner et al. (2012) investigated the roles of both emotional and behavioural regulation between childhood adversity and suicidal behaviour. Anxiousness traits were taken as a marker for emotion regulation, with disruptiveness traits being taken as a marker for behavioural regulation. Both were found to act as mediators between childhood adversity and suicidal behaviours, although for disruptiveness traits, this was only the case for females (Wanner et al., 2012). Elements of behavioural-level outputs of dysregulated affect were also examined in the studies by Swogger et al. (2011) and Daray et al. (2016). Swogger et al. (2011) found aggression to mediate the relationship between CPA and suicidal behaviour in a sample of prisoners. In contrast, Daray et al. (2016) found no mediating role of impulsivity between CPA and suicidal behaviour in a sample of hospitalised women.

As was the case in previous studies, the findings of Swogger et al. (2011) should be interpreted with caution due to the lack of justification for their sample size (n=266), coupled with the use of Baron and Kenny's mediation steps. While this may be a sufficient number to detect a large effect, it might be difficult to detect smaller effects. Neither Wanner et al. (2012), nor Daray et al. (2016) report on procedures for handling missing data. Both gathered data through self-report measures, which has previously been reported as a common source of missing data (Fox-Wasylyshyn & El-Masri, 2005). As has been mentioned in section 2.3.4.2, above, levels and patterns of missing data influence how it is best dealt with. Missing data has the potential to reduce statistical power (Fox-Wasylyshyn & El-Masri, 2005), and so decisions made on how to handle it may impact upon the reliability of the final dataset.

Three of the included studies investigated mediating roles of disordered moods between childhood trauma and suicidal behaviour (Fuller-Thompson et al., 2016;

Meadows & Kaslow, 2002; Sachs-Ericsson et al., 2017). The depressive feature of hopelessness was found by Meadows and Kaslow to play a mediating role between childhood trauma and suicidal behaviour. They found a full mediating effect for hopelessness in relation to CSA, and partial mediating effects in relation to CPA, CEA, and CEN (Meadows & Kaslow, 2002). Fuller-Thompson et al. (2016), found depression, anxiety, substance use disorder, and chronic pain to each play a mediating role between childhood abuse and suicidal behaviour among a large-scale community sample (Fuller-Thompson et al., 2016). Similarly, Sachs-Ericsson et al. (2017) found substance use disorder, generalised anxiety disorder, panic disorder, major depressive disorder, and posttraumatic stress disorder to each be involved in mediating the relationship between non-violent childhood abuse and suicidal behaviour. In this study, it was an increased number of these disorder which mediated the relationship (Sachs-Ericsson et al., 2017). In contrast to these findings, the study of Kimonis et al. (2010) found no significant relationship between an internalising disorders variable, containing anxiety, depression, and anxiety-related disorders, and suicidal behaviour. As such, it was not included in subsequent mediation analyses (Kimonis et al., 2010).

The findings of Meadows and Kaslow should be considered within the bounds of a potentially insufficient sample size, while those of both Meadows and Kaslow and Sachs-Ericsson may be limited by the lack of an appropriate procedure for handling missing data. In the case of Fuller-Thompson et al. (2016) there is a potential issue with the validity of information they collected on experiences of childhood trauma. Three domains of traumatic experiences were assessed: childhood sexual abuse, childhood physical abuse, and exposure to severe parental violence. The authors report that the questions used to asses each trauma type (one question each) were adapted from the Childhood Experiences

of Violence Questionnaire-short form (CEVQ-SF). The CEVQ-SF is a validated self-report questionnaire for measuring experiences of CSA and CPA. The items used in the study by Fuller-Thompson et al. (2016) are modified items, similar in presentation to those in the CEVQ-SF, as such the validity of the original measure does not necessarily translate to the items used here.

In the final study, a sample of psychiatric inpatients with a diagnosis of one or more mood disorder, bootstrapped mediation was used to examine whether or not borderline personality disorder (BPD) acted as a mediator between childhood trauma history and suicidal behaviours (Aaltonen et al., 2017). BPD contains symptom clusters of fears of abandonment, unstable relationships, unstable sense of self, impulsiveness, suicidal or self-harming features, mood changes, emptiness, temper outbursts, and dissociation (Leichsenring, Leibing, Kruse, New & Leweke, 2011) and as such encompasses the three domains of affective dysregulation, negative self-concept, and disturbed relationships. BPD was indeed found to mediate the relationship between childhood trauma and suicidal behaviour. The trauma variable here was a pooled variable containing physical, sexual, and emotional abuse, and physical and emotional neglect. No justification for their sample was provided by Aaltonen et al. (2017), limiting the interpretability of their results.

2.3.5.3 Indirect Effects and Statistical Power

Of the 15 included studies, all reported on the significance of indirect pathways, however, only five reported the magnitude of indirect effects through their mediating variables (Aaltonen et al., 2017; Daray et al., 2016; Godet-Mardirossian et al., 2011; Gordon et al., 2016; Kimonis et al., 2010). Cut offs of 0.01, 0.09, and 0.25 have been proposed to represent small, medium, and large

effects of indirect pathways in mediation analyses (Preacher & Hayes, 2011). Based on this, small effects were reported by Gordon et al. (2016) in relation to both emotion dysregulation (0.017 for CSA, 0.046 for CEA) and negative affective intensity (0.015 for CSA, 0.018 for CPA, 0.016 for CEA). Further to these, a non-significant effect of 0.013 was reported in relation to CPA and emotion dysregulation (Gordon et al., 2016). A non-significant small effect (β=.02) was also report by Daray et al. (2016) for the role of impulsivity. A medium effect (β=0.10) was reported by Kimoins et al. (2010) for the role of externalising disorders between childhood abuse and suicidal behaviours (Kimonis et al., 2010). The remaining two studies reporting indirect effects each found large effects in relation to their mediating variables (Aaltonen et al., 2017; Godet-Mardirossian et al., 2011). Godet-Mardirossian et al. (2011) found significant mediating effects for poor affective stability, poor self-transcendence, and poor self-cooperativeness, with effect sizes of .28, .24, and .267, respectively. Aaltonen et al. (2017) found a large effect of .316 for the mediating role of borderline personality disorder between childhood maltreatment and suicidal behaviour.

2.4 Discussion

2.4.1 Summary of Main Findings

The aim of this review was to identify and synthesise evidence for psychological factors which mediate the relationship between childhood trauma and suicidal behaviour. Out of this, two research questions were posed: 1) what psychological factors have been examined for their mediating role between childhood trauma and suicidal behaviour? 2) what factors have been identified which significantly mediate the relationship between childhood trauma and suicidal behaviour? A

total of 15 studies meeting eligibility criteria were identified and reviewed. Doing so identified a number of psychological variables which mediated the relationships between childhood trauma and suicidal behaviour.

The psychological factors found to mediate the relationship between childhood trauma and suicidal behaviour can be broadly grouped into three themes, representing the disorders of self-organisation (DSO) present within complex posttraumatic stress disorder (CPTSD) (Karatzias et al., 2017). The DSOs present with CPTSD are affective dysregulation, negative self-concept, and disturbed relationships. From an attachment perspective, the domains of self-concept and interpersonal functioning capabilities are intrinsically linked, with an intertwining of the two determining one's strategies for regulating affect in times of distress (Griffin and Bartholomew, 1994). The current review identified the absence of a stable and positive self-perception to play a mediating role in the relationship between childhood trauma and suicidal behaviour (Godet-Mardirossian et al., 2011; Twomey et al., 2000). Such a relationship was found to exist for childhood sexual abuse, childhood physical abuse, and childhood physical neglect, as well as in response to a holistic adverse childhood environment (Godet-Mardirossian et al., 2011; Twomey et al., 2000). Expanding upon this, perceiving oneself to be socially incompetent, or to mistrust the intentions of others were also found to act as mediators in this relationship (Twomey et al., 2000). While emanating from a self-directed position, such impaired perceptions can be expected to impact upon one's ability to form meaningful, reciprocal relationships with others. Indeed, it was found that the presence of severe interpersonal difficulties in adolescence mediate the relationship between abuse or maltreatment in childhood and suicidal behaviour in early adulthood (Johnson et al., 2002). Similarly, impairments in the ability to

form and maintain meaningful relationships, as well as in coping with their demise, was found to mediate the relationship from childhood trauma to suicidal behaviour (Twomey et al., 2000). Further to this, behavioural level interpersonal impairments were found to mediate the relationship between childhood trauma and suicidal behaviour (Kimonis et al., 2010; Soloff et al., 2008). These range from impaired functioning in day-to-day activities (Soloff et al., 2008), to the enactment of overtly antisocial behaviours (Kimonis et al., 2010).

Previous theory posits that when an individual fails to develop a positive self-identity, particularly when they feel they are undeserving of care and attention, or when they fail to develop a positive and trusting perception of others, this will inhibit their utilisation of the support of others in times of emotional distress (Mikulincer & Shaver, 2003). Such proximity-seeking behaviour is considered to be the most effective affective regulation strategy (Mikulincer & Shaver, 2003). Where the confidence or ability to seek external support is lacking, it may be expected that difficulties will emerge in the domain of affective regulation. Impaired ability to regulate emotions, as well as behavioural traits associated with increased levels of affect, such as aggression and disruptive behaviours, were found to mediate the relationship between childhood trauma and suicidal behaviour within the current review (Aas et al., 2017; Bebbington et al., 2009; Godet-Mardirossian et al., 2011; Gordon et al., 2016; Swogger et al., 2011; Wanner et al., 2012). Further to this, evidence was presented for the role of more pervasive affective states such as anxious and depressive moods mediating the relationship between childhood trauma and suicidal behaviour (Fuller-Thompson et al., 2016; Gordon et al., 2016; Meadows & Kaslow, 2002; Wanner et al., 2012; Sachs-Ericsson et al., 2017).

The above evidence would suggest that exposure to childhood trauma impacts upon the ability to utilise the most adaptive strategies for regulating affective arousal. Where such strategies are lacking, it may be expected that alternative, less adaptive alternates are adopted. Evidence was presented through the current review for the use of external devices which may be considered to be methods for regulating otherwise unmanageable affective states. Alcohol and substance use were consistently found to take on this external mediating role (Fuller-Thompson et al., 2016; Kimonis et al., 2010; Sachs-Ericsson et al., 2017).

Finally, psychiatric features of borderline personality disorder (BPD) were investigated for their involvement between childhood trauma and suicidal behaviours (Aaltonen et al., 2017). Here, the presence of BPD was found to mediate the relationship between childhood trauma and suicidal behaviours (Aaltonen et al., 2017). BPD contains symptom clusters including fear of abandonment, unstable relationships, unstable sense of self, impulsiveness, tendency for mood changes, and temper outbursts (Leichsenring et al., 2011). Each of these features fits neatly within the domains of self-organisation present within CPTSD.

2.4.2 Main Findings Positioned Within Suicide Theory

The findings of the current literature review highlight some of the shortcomings of current theoretical perspectives on suicide in explaining the increased suicide risk associated with childhood trauma. The mediating variables identified through the review are perhaps best considered in three separate groups: those directly present in existing suicide theories; those not directly present in any theories but whose influence can be seen in said theories; and those which are not present in either form in existing suicide theories. These will be discussed in turn.

Three of the mediating variables identified through the systematic review can be considered direct correlates to elements present within existing theoretical perspectives on suicide. Alienation - centred as it is around an inability to establish basic, satisfying, and reciprocal relationships – can be considered akin to the notion of thwarted belonging proposed within the IPT (Joiner, 2007) as being fundamental to the development of suicidal ideation and subsequent suicidal behaviours. Similarly, depression and anxiety, as found by Fuller-Thompson et al. (2016) to mediate the relationship between childhood trauma and suicidal behaviour, are central tenets of Baumeister's (1990) Escape from Self Theory. Here, Baumeister proposes that depressed or anxious affect emerge in response to situations where an individual feels they have either failed themselves or others. These affective states are then understood to form the basis of the desire to escape which eventually leads towards suicidal desires and behaviours.

The majority of the mediating variables identified through the current literature review are not directly present within any existing theoretical perspectives on suicide, however, they may be considered analogous to certain elements therein. Factors such as insecure attachment and egocentricity – based as they are in perceptions of one's position in regards to others – may go on to become influencing factors in perceptions of thwarted belonging, or social rejection, as present within the IPT (Joiner, 2007) and IMV (O'Connor, 2011) respectively. Both insecure attachment and egocentricity underpin a disrupted ability to form meaningful connections with others, hence increasing the likelihood that those experiencing these features may go on to develop the absence of connectedness present in these theoretical perspectives.

Similar to the case with egocentricity and insecure attachment, the mediating variables of social incompetence, interpersonal difficulties, and poor cooperativeness can all be considered off-shoots, or influencers, of feelings of thwarted belonging. Thwarted belonging is defined by feelings of isolation and a lack of reciprocity of care (van Orden et al., 2010). Each of these features may be expected to be strengthened by difficulties or incompetencies in interpersonal situations. Similarly, low levels of the personality trait of cooperativeness, characterised by intolerance or disinterest in social situations, as well as diminished compassion or consideration towards others (Cloninger, Przybeck, Syrakic & Wetzel, 1994) could be expected to inhibit the type of connectedness which antithesises thwarted belonging. Finally, poor self-transcendence, whose mediating effect was found by Godet-Mardirossian et al. (2011), can be considered emblematic of the lack of social connectedness highlighted through both the IPT (Joiner, 2007) and the IMV (O'Connor, 2011; O'Connor & Kirtley, 2018), as well as the cognitive deconstruction described through the Escape from Self model (Baumeister, 1990). Self-transcendence, or more importantly, the lack thereof, involves tending towards independence or isolation over identifying as a part of something larger (Cloninger et al., 1994). In addition, poor self-transcendence involves favouring objective and rational or pragmatic interpretations of experiences over adding any deeper meaning to these (Cloninger et al., 1994), similar to the manner in which Baumeister suggests cognitive deconstruction operates in the lead up to the development of suicidality (Baumeister, 1990).

The remaining mediating variables to be discussed in this section contain elements which may be understood as derivatives of features present within current theoretical perspectives on suicide, but also contain elements not present

within these perspectives. For example, schizotypal personality disorder (SPD) and psychosis symptoms, as found by Soloff et al. (2008) to mediate the relationship between childhood trauma and suicidal behaviour, each contain elements of social withdrawal which could be likened to experiences of thwarted belonging. However, they each also contain a number of pathological symptoms which cannot be explained away through current suicide theories.

The final set of mediating variables identified through the review do not feature in any theoretical perspective on suicide. The majority of these variables (emotion dysregulation, negative affective stability, affective lability, affective disturbance) relate to impairments in affective regulation, while the remainder are psychiatric disorders. Suicide has long been understood to emerge in response to situations characterised by unbearable emotional pain (Shneidman, 1993). The Escape from Self model and the Cry of Pain model each consider suicide to be a mechanism for escaping an affectively-laden situation (Baumeister, 1990; Williams, 1997). Finally, both the Cry of Pain and the IMV models propose that sensitivity to perceptions of defeat and entrapment – key features of each model – will be exacerbated by, among other things, negative affect (O'Connor & Kirtley, 2018). As such, it is noteworthy that affective dysregulation is omitted from suicide theory. Additionally, it has been reported that mental disorders may be present in more than 85% of suicide deaths (Arsenault-Lapierre, Kim & Turecki, 2004), as such some theoretical appreciation of these factors may be anticipated.

2.4.3 Methodological Strengths and Limitations

The major strength of this review is the use of a robust, transparent, and replicable methodology. This allows for the minimisation of bias in the searching, screening, and selection processes. In addition, the literature identified covers a

wide range of psychological constructs, across a number of theoretical or experiential domains. This brings the benefit of allowing for a holistic overview of psychological correlates between childhood trauma and suicidal behaviour to be generated. As well as covering a broad range of factors, the themes which emerged through reviewing this specific literature set fit conceptually within the framework for CPTSD in the ICD-11 (WHO, 2018). This allows for its integration into the wider contemporary trauma literature.

The findings presented within this review must be understood within the limited bounds of current evidence. As was reported in the results section above, common issues across the reviewed studies included a general lack of justification for sample size, the omission of reporting on how much missing data had been present within studies, and more crucially, how missing data were handled. In addition, a minority of studies reported having a high participation rate among the targeted population, while a similar minority of studies used a method of mediation considered to be contemporarily robust. Beyond these, there was a relative lack of longitudinal studies (3/15) available for inclusion, limiting the interpretation of the temporal ordering of predictor and mediating variables. When taken in combination, these limitations hold the potential to invalidate the presented findings.

2.4.4 Research Implications

Given the temporal distance between experiences of childhood trauma and adult suicidal behaviours, it would not be ethically possible to investigate prospectively the long-term impact of untreated childhood trauma. As such, future research aiming to identify causal factors in this relationship should be conducted cross-sectionally. It is through the methods of statistical analysis employed that

potentially causal, or mediatory relationships may be identified. Future research should therefore seek to employ robust mediation analytic strategies such as bootstrapping or structural equation modelling, which will allow for these relationships to be more reliably demonstrated.

In terms of which psychological factors warrant subsequent investigation, the findings of this review highlight the need for complex models containing a broad range of constructs to be generated and tested. The factors found to relate to both childhood trauma and suicidal behaviours, and their wider themes, fit conceptually within the framework of current complex PTSD criterion. One direction for future research to take would involve testing the elements of CPTSD in models containing childhood trauma and suicidal behaviour. In addition, the interpersonal impairments identified in the existing literature operates at both functional and perceptual levels. From an attachment perspective, it is understood that negative caregiving experiences in childhood can lead to lifelong difficulties in forming meaningful relationships with others, based on an interplay between how one perceives themselves and how they perceive others (Mikulincer et al., 2003). Future research would benefit from identifying which dominant attachment style tends to emerge following childhood trauma, and how this affects the development of subsequent posttraumatic symptomatology and suicidal behaviours.

In order to conduct the level of analysis required for inferring causal relationships, large enough samples will be required to produce well-powered statistical analyses. In addition, samples should contain both those with, and those without, a childhood trauma history. This would allow for between group comparisons, further highlighting the psychological factors most salient to explaining the relationship between childhood trauma and suicidal behaviour.

Based on the above, a model containing childhood trauma, attachment, CPTSD, emotion regulation and suicidal behaviours is proposed, to be tested through multiple mediation modelling. This will allow for a holistic overview to be presented of the interplay between the dominant themes present within the current literature. The following chapter will present the methodological underpinnings of the two studies which follow (chapters 4 and 5). The first of these (chapter 4) will be a preliminary study exploring psychological predictors of suicidality within the trauma population. A second study will then be presented (chapter 5) testing the full model containing childhood trauma, attachment, CPTSD, emotion regulation strategies, and suicidal behaviour.

Table 5: Study characteristics

Study	Design	Participants (N)	Gender - % female	Mean age	Ethnic background	Predictor (measure used)	Mediator (measure used)	Outcome (measure used)	Analysis
Twomey et al., 2000	Cross sectional	Hospital patients (159)	100%	30.49	African American – 91%	CSA, CPA, CEA, CPN, CEN (Childhood trauma questionnaire)	Object relations (Bell Object Relations Inventory; Object Relations Inventory)	Group membership (suicide attempt or control)	Baron and Kenny mediation
Johnson et al., 2002	Longitudinal	Community sample (659)	-	22	White – 91%	Maladaptive parenting or abuse (not reported)	Interpersonal difficulties (not reported)	Suicide attempt status (Diagnostic Interview Schedule)	Baron and Kenny mediation
Meadows & Kaslow, 2002	Cross sectional	African-American hospital patients (361)	100%	30.5 (suicide attempt) 33.8 (control)	African American – 82% Caucasian – 9%	CSA, CP/EA, CPN, CEN, Childhood trauma total (Childhood trauma questionnaire)	Hopelessness (Beck Hopelessness Scale)	Suicide attempt status (dichotomous question)	Baron and Kenny mediation
Soloff et al., 2008	Cross sectional	Adults with borderline personality disorder (151)	76.16%	28.3	-	CSA (The Abuse History)	MDD, PTSD, SUD, antisocial personality disorder, schizotypal personality disorder, severity of BPD, severity of IPDE PDs, impulsivity (Barratt Impulsiveness Scale), aggression	Suicide attempt status, and number of lifetime suicide attempts (Columbia Suicide History form)	Freedman and Schatzkin mediation

							(Brown-Goodwin Lifetime History of Aggression), antisocial traits (MMPI-Psychopathic Deviate subscale), Psychosocial functioning (Social adjustment scale-self report)		
Bebbington et al. (2009)	Cross sectional	National community sample (8580)	55%	-	-	Sexual abuse (dichotomous question)	Affective disturbance (Clinical interview schedule – revised)	Suicide attempts status (dichotomous question)	Baron and Kenny mediation
Kimonis et al., 2010	Cross sectional	In prison, or in a substance abuse treatment facility (266)	100%	-	Caucasian – 66.54% African American – 33.08% Other – <1%	CPA, CSA, verbal or psychological abuse, neglect, negative home environment (Child abuse and trauma scale)	Externalising and Internalising problems (Personality Assessment Inventory)	Suicide related behaviour (dichotomous question)	Structural equation modelling
Godet-Mardirossian et al., 2011	Cross sectional	In prison (900)	0%	- (Median age=37)	-	Physical, psychological, or sexual abuse, placement with host family, separation from	Personality dimensions (Cloninger's Personality and character inventory)	Recent suicidal behaviour (Mini international neuropsychiatric interview)	Structural equation modelling

						parents (dichotomous questions for each)			
Swogger et al., 2011	Cross sectional	Pre-trial supervision (266)	25.18%	33.7	African America – 51.5% European American – 29.3% Hispanic – 11.3% Other – 7.9%	Frequency of CPA (Single question)	Aggression (Life history of aggression questionnaire)	Suicide attempt history (Dichotomous question)	Baron and Kenny mediation, Sobel test
Wanner et al., 2012	Longitudinal	Community sample (?) (1176)	47%	21.4 (T3 follow up)	White – 88%	CSA, CPA (Adverse childhood experiences study questionnaire)	Disruptiveness and anxiousness behavioural traits (Social behaviour questionnaire)	Suicide attempt status (Dichotomous question)	Baron and Kenny mediation
Daray et al., 2016	Cross sectional	Suicidal hospital admissions (177)	100%	37.6	Argentinian – 88.2% Peruvian – 2.8% Paraguayan – 2.2% Bolivian – 1.7% Chilean – 1.1% Columbian – 1.1% Brazilian - .6% Italian - .6%	CSA (dichotomous question)	Impulsivity (Barratt impulsiveness scale)	History of suicidal behaviour	Structural equation modelling

					Ukrainian - .6%				
Fuller-Thompson et al., 2016	Cross sectional	Community survey sample (22,559)	51%	47	White – 77.3%	CSA, CPA, Parental domestic violence (Childhood adversities section of the Canadian Community Health Survey – mental health)	Depression, anxiety, substance abuse, chronic pain (World Health Organisation – Composite International Diagnostic Interview)	Suicide attempt history (dichotomous question)	Baron and Kenny mediation
Gordon et al., 2016	Cross sectional	Women with Bulimia Nervosa (125)	100%	24.8	Caucasian – 96.8%	CSA, CPA, CEA (Child Trauma Interview)	Affective intensity (Diagnostic interview for borderlines-revised) Emotion dysregulation (Dimensional assessment of personality pathology- Basic questionnaire)	Suicide attempt history (dichotomous question)	Bootstrapped mediation
Aaltonen et al. (2017)	Cross sectional	Psychiatric inpatients with mood disorders (287)	72.8%	39.9	-	CPA, CSA, CEA, CPN, CEN (Trauma and Distress Scale)	Borderline personality disorder (McLean Screening instrument for Borderline Personality	Suicide attempt status (dichotomous question)	Bootstrapped mediation

							Disorder (MSI-BPD)		
Aas et al. (2017)	Cross sectional	Adults with bipolar disorder (342)	60%	41.4	Caucasian – 85.5%	CEA, CTQ-total (childhood trauma questionnaire)	Affective lability (Affective Lability Score)	Suicide attempt status (Dichotomous question)	Bootstrapped mediation
Sachs-Ericsson et al. (2017)	Longitudinal	Nationally representative sample (5001)	-	44	Caucasian – 75.5%	Verbal abuse, physical abuse, rape, violent abuse (single questions)	Substance use disorder, general anxiety disorder, panic disorder, major depressive disorder, PTSD	Suicide attempt in preceding 10 years (single question)	Bootstrapped mediation

CSA: childhood sexual abuse; CPA: childhood physical abuse; CEA: childhood emotional abuse; CPN: childhood physical neglect; CEN: childhood emotional neglect

Chapter 3: Methodology

3.1 Chapter Overview

The previous two chapters have identified both the theoretical and empirical backdrop to the present thesis, as well as presenting the aims for the current project. This chapter will now present the methodology adopted in the subsequent empirical studies. More specifically, this chapter will explore the key decision-making processes in relation to the research population, research measures, and statistical analyses. An overview of the research philosophy underpinning these decisions will also be provided.

3.2 Research Philosophy

The aim of this thesis is to examine relationships between traumatic experiences in childhood and suicidal behaviour. More specifically, the aim is to explore whether or not those who have experienced abuse or neglect in childhood will be more likely to become suicidal or make suicide attempts than those without such experiences. Moving beyond this, the further aim of this thesis is to identify factors which may increase or decrease suicide risk either resulting from, or in addition to, these abuse or neglect histories. Experiences in childhood, be they positive or malevolent in nature, will impact upon the psychological development of the person experiencing them, while suicide attempts are born out of suicidal desires, which are by nature, psychological. The prudent move towards an understanding of relationships between childhood experiences and suicide is to focus on psychological variables which may emerge following traumatic experiences in childhood, and which subsequently increase suicide risk. For this reason, psychological factors were examined in relation to both trauma histories and suicide attempts. In chapter four, specific types of childhood trauma are assessed

for their relationship with suicidal threats and suicidal behaviours. In addition, psychological variables which may increase suicide risk were examined, alongside sociodemographic features which may protect against these suicidal features. In chapter five, the effects of experiences of childhood trauma on subsequent suicide attempts are examined. In addition, a number of theoretically informed psychological variables are examined in order to determine if any of these could explain why suicide risk is elevated following childhood trauma.

In order to achieve the research aims discussed above, an appropriate methodology must be adopted, one which will allow for the testing of both causal and mediating relationships between childhood trauma, psychological variables, and suicidal outcomes. Testing for these potentially causal relationships is predicated on the assumption that, first, there are causal relationships which may be identified, and second, that it is possible to identify these relationships. The first of these assumptions is an ontological one, where ontology describes the assumed nature of reality. A number of ontological positions exist, but these can largely be categorised into two broad groups- realist ontologies and relativist ontologies (Easterby-Smith, Thorpe & Jackson, 2015). Realist ontologies posit the presence of a single, knowable, discoverable, reality, one which is experienced similarly by all, and one about which general rules exist and can be discovered (Williams, 2016). The rules about this reality, which for now will be called ‘scientific laws’ are stable constructs which can be examined and will remain unaffected by this examination (Williams, 2016). Relativist ontologies, in contrast, are based on the view that reality is subjective, and that experiences of it may differ between different people (Williams, 2016). From this perspective then, it would follow that there are no consistent scientific laws to be discovered.

Instead, research should aim to focus on the specific manner in which individual people experience their individual reality.

As mentioned, this project aimed to provide evidence which may point to the presence of causal relationships between a set of disparate factors. Of note here is that the current project is concerned with evidence suggesting causal relationships may exist between these factors, as opposed to determining conclusively that causal associations exist. Long-utilised criteria state that in order to determine causality between variables one must consider the strength, consistency, temporality, biological gradient, plausibility, coherence, experiment, and analogy of the association (Bradford-Hill, 1965). As such, conclusively demonstrating causal associations is outwith the bounds of the current project. Instead, the purpose is to provide exploratory evidence for where such cause and effect relationships may or may not be present. The ability to develop this evidence therefore based within a realist ontology. The second assumption underpinning any research project is based on whether knowledge can be devised about reality, irrespective of its nature. This assumption is a question of epistemology, where epistemology describes the nature of knowledge (Allison & Pomeroy, 2000). As with ontology, there are numerous epistemological positions, with the most prominent being positivism, based within a realist ontology, and constructivism, based within a relativist ontology (Ponterotto, 2005). The central tenets of positivism involve objectively testing hypotheses in order to generate generalisable principles. These principles are such that they can be subsequently tested, refined, and so on. In this way it is assumed that general rules or patterns within reality can be uncovered (Ponterotto, 2005). In contrast, constructivism, which works on the basis that, since reality is subjective, it is best understood in relation to individuals subjective perception of it. In this way, the knowledge that

is generated is focused on the meaning which is attached to experience (Ponterotto, 2005).

The current project is concerned with general patterns between traumatic experiences in childhood, psychological process, and suicidal behaviours. As such, it exists within a realist ontology, and comes from a positivist epistemological position. The importance of these two positions comes through their informing of the methodology used. Here, methodology is concerned with ensuring that the methods or procedures undertaken are appropriate for fulfilling the research aim. As mentioned previously, within a positivistic epistemology, it is expected that generalisable rules can be uncovered. In order to derive such knowledge, valid and reliable research methods are needed, through which cause-and-effect relationships may be explored. Within the two empirical studies described within this thesis, cross-sectional, questionnaire-based designs were used. This allowed for participants to report upon their experiences of the variables under investigation. Due to the unobservable nature of psychological processes such as those being investigated herein, self-report questionnaires were used to gather information on participants experiences of these. The following sections describing the research populations, questionnaire measures, and methods of statistical analyses, describe methods chosen specifically for their ability to achieve the aims of this project.

An alternative methodological stance to that discussed above would have been to adopt a qualitative approach. In broad terms, qualitative research methodologies aim present or interpret the experiences of individuals, in a contextualised manner (Ponterotto, 2005). Taking a qualitative approach in the current project would have allowed for the depth of experience of participants to be explored. Such an approach may have involved the researcher conducting

semi-structured interviews or focus groups with adult participants who had experienced childhood trauma and who had attempted suicide. These approaches would be compatible with the realist ontological position this project was conducted within, where such methods are considered as appropriate for knowledge generation as statistical analyses (Krauss, 2005). The reasons for not adopting a qualitative methodology in the current instance did not come from the philosophical stance of such approaches, but due to their divergence from the aims of this project. This project was undertaken with the aim of producing findings which may be generalised to the wider population of individuals with experiences of childhood trauma. These nomothetic underpinnings require the use of valid and reliable methods and techniques which have been demonstrated to contain generalisablle qualities. Analysing data qualitatively is a subjective approach, with meaning and understanding being imparted to and extracted from data by both the researcher and the participant (Ponterotto, 2005). This form of analysis would be incompatible with the aim to produce objective, generalizable findings. For this reason, qualitative methodologies were precluded from consideration when designing the current project.

3.3 Participants

The studies reported in this thesis focused on issues pertinent to clinical populations, namely experiences of childhood trauma and their developmental sequelae. Samples for each study were therefore drawn from a population experiencing psychological trauma. Due to the sensitive nature of some of the questionnaire topics the decision was made to only recruit people who were currently involved with a mental health service who could provide them with support and guidance, should any distress occur in either during the completion of the questionnaires, or as a result of their completion. In relation to the age

group of participants, figures suggest suicide is more prevalent across all stages of adulthood than either childhood or adolescence (Office for National Statistics, 2017) and so it was decided to recruit only adults (aged 18 years and over).

Due to the requirement to recruit samples with experiences of psychological trauma, and the importance of ensuring the mental well-being of participants, participants for each of the studies were recruited from a National Health Service (NHS) trauma centre located in Edinburgh. Participants completed all questionnaire measures as part of their baseline assessment with the trauma centre, with this data primarily being recorded for the purposes of two separate service evaluation audits being run by the trauma service. Utilising this routinely collected clinical data minimised the impact of its collection on participants by ensuring they were not asked to do anything specifically for the purposes of this research project which they would not have ordinarily done as part of their registration with the centre. Eligibility criteria for participation in each study was as follows: Being aged 18 years or over; Having been referred or having self-referred to the trauma centre for treatment for psychological trauma; Possessing sufficient proficiency in written English to allow for the completion of self-report questionnaires; Providing written consent for information to be recorded and used for clinical audit purposes. Potential participants were excluded if they required an interpreter to aid in the completion of the questionnaires, as all questionnaires used were validated English language versions. Further, anyone who had requested their information not be used for audit purposes were excluded. The procedures used in each study are described below.

3.4 Ethical Considerations

The data for each of the two studies discussed in this thesis was collected as part of two separate service evaluation audits conducted by an NHS trauma service. Ethical approval for the collection of this data were provided by NHS Lothian clinical governance, who also provided approval for anonymous audit data to be used for research purposes in the current study. Institutional approval was provided by the Edinburgh Napier University research ethics committee for the use of this data for research purposes.

During their time with the trauma service, participants provided written consent for psychometric information about them to be collected from them. Anonymised subsets of this information has been used in the two studies forming the current project. Permission for anonymised information being used for clinical and research purposes was provided at the time of questionnaire completion.

3.5 Procedure

In each study, all new referrals to the NHS trauma service during the recruitment periods were asked to complete a battery of psychometric measures. The questionnaires completed assessed childhood trauma history, posttraumatic symptoms, attachment style, emotion regulation, and suicidal behaviour history, in addition to sociodemographic information. Questionnaires were completed by participants on site at the trauma service. All questionnaires were self-report measures and were completed in the presence of an Assistant Psychologist from the trauma service. This was done in order to attain the highest rate of completed data as possible by offering explanations for any items not understood, as well as to monitor and respond to any distress being experienced by participants.

3.6 Research Measures

The following is a description of all measures used across the two studies to be discussed, with indications given in parentheses as to which study each was used in. The psychometric properties of measures will be described in the current chapter, as well as information on their internal consistency within the specific samples under investigation in each of the two studies.

3.6.1 Childhood Trauma Questionnaire (Chapters 4 and 5)

Each of the two studies sought to examine histories of childhood trauma. Childhood trauma histories were measured using the Childhood Trauma Questionnaire (CTQ, Bernstein & Fink, 1998). The CTQ is a 28-item self-report questionnaire assessing histories of five abuse types: childhood emotional abuse, childhood physical abuse, childhood sexual abuse, childhood emotional neglect, and childhood physical neglect. Each abuse type is measured across a subscale containing five items, with items scored on a 5-point Likert scale ranging from “never true” (1) to “very often true” (5). The CTQ contains an additional 3-item Minimisation/Denial scale designed to identify the potential underreporting of maltreatment experiences, however, this scale was not used in the current study as it was not deemed relevant to the research questions under investigation. The CTQ was validated across four distinct samples, an adult psychiatric sample, an adolescent psychiatric sample, an adult substance using community sample, and a normative adult community sample (Bernstein and Fink, 2003). It demonstrated good convergent and discriminant validity in each of these. The CTQ has also shown excellent test-retest reliability over 2-6 month intervals (Bernstein Stein, Newcomb, Walker, Pogge et al., 1994). In the sample

used in chapter 4, the CTQ demonstrated acceptable internal consistency for all five subscales (CEA, α = .852; CPA, α = .798; CSA, α = .962; CEN, α = .886; CPN, α = .687). In the sample used in chapter 5, internal consistency was good for all subscales of the CTQ, ranging from α =.825 for CPN to α =.962 for CSA.

3.6.2 International Trauma Questionnaire (Chapters 4 and 5)

As discussed in the introduction chapter, the latest revision of the World Health Organisation's (WHO) International Classification of Diseases (ICD-11) includes two sister diagnoses of Posttraumatic Stress Disorder (PTSD) and Complex PTSD (CPTSD). CPTSD symptom groups were explored within each of the studies to be discussed. CPTSD symptomatology was measured using the International Trauma Questionnaire (ITQ, Cloitre, Roberts, Bison & Brewin, 2015). CPTSD contains symptoms of posttraumatic stress disorder (PTSD) as well as impairments in three domains of self-organisation (DSO). The ITQ is a 45 item self-report questionnaire which can be used to assess posttraumatic stress disorder (PTSD), complex posttraumatic stress disorder (CPTSD), and borderline personality disorder (BPD). For the purposes of the current study, subscales pertaining to PTSD symptoms of avoidance (two items), re-experiencing (eight items), and hyperarousal (two items), and CPTSD symptoms of emotion regulation – hyperactivation (five items), emotion regulation – deactivation (four items), negative self-concept (four items), and disturbed relationships (three items) were used. Items are scored on a 5-point Likert scale ranging from "not at all" (0) to "Extremely" (4). Although a relatively new measure, the ITQ has been previously validated in a clinical population similar to that used in the current studies –recruited from the same trauma service and having been subject to the same eligibility criteria (Karatzias et al., 2016). In the sample used in chapter 4, internal consistency was acceptable for all symptom clusters,

ranging from α = .691 for emotion deactivation to α = .905 for negative self-concept. In the sample used in chapter 5, internal consistency was relatively low for the avoidance cluster (α =.617) but was acceptable for the remaining clusters, ranging from α =.721 for emotion hyper-activation to α =.902 for negative self-concept.

3.6.3 Difficulties in Emotion Regulation Scale (Chapter 4)

The study described in chapter 4 explores difficulties in emotion regulation. A framework for difficulties in emotion regulation has been provided by Gratz and Roemer (2004), with these being measured using the Difficulties in Emotion Regulation Scale (DERS, Gratz & Roemer, 2004). The DERS is a 36-item self-report questionnaire assessing emotion regulation difficulties across six subscales: nonacceptance of emotional responses (six items), difficulties in engaging in goal-directed behaviour (five items), impulse control difficulties (6 items), lack of emotional awareness (six items), limited access to emotion regulation strategies (eight items), and lack of emotional clarity (five items). The DERS was validated within two samples of adult undergraduate students, demonstrating adequate construct and predictive validities, as well as good test-retest properties (Gratz & Roemer, 2004). In the sample used in chapter 4, the DERS demonstrated good internal consistency, ranging from α = .772 for lack of emotional clarity, to α = .905 for impulse control difficulties.

3.6.4 Cognitive Emotion Regulation Questionnaire (Chapter 5)

The study which will be described in chapter 5 explores a different aspect of emotion regulation to that included in chapter 4, with cognitive elements of emotion regulation being focused on. Cognitive emotion regulation strategies were measured using the cognitive emotion regulation questionnaire Short

(CERQ-S, Garnefski & Kraaij, 2006). The CERQ-S is an 18 item self-report questionnaire measuring cognitive response style and regulation strategies across nine scales, based on a 36-item scale devised by the same authors (CERQ, Garnefski, Kraaij & Spinhoven, 2002). These scales are self-blame, blaming others, acceptance, refocus on planning, positive refocusing, rumination, positive reappraisal, putting into perspective, and catastrophizing. Each item is rated on a 5-point Likert scale from “almost never” (1) to “almost always” (5). The strategies contained within the CERQ-s can be categorised into adaptive (acceptance, refocus on planning, positive refocussing, positive reappraisal, putting into perspective) or maladaptive (self-blame, blaming others, rumination, catastrophizing) regulation strategies, as such cumulative scores for these were calculated. The 36-item version of the CERQ has been demonstrated as being a valid and reliable measure across both adolescent and adult samples (Garnefski et al., 2002; Garnefski & Kraaij, 2007). The short-form of the CERQ has demonstrated to have marginally lower reliability than its 36-item counterpart, however, it has also been shown as containing greater validity (Garnefski & Kraaij, (2006) for each of the nine scales. In the sample used in chapter 5, internal consistency for the cumulative maladaptive strategies score was relatively low (α =.667), however, the adaptive cumulative score had adequate internal consistency of α =.789. Internal consistency for the nine subscales ranged from α =.694 (refocus on planning) to α =.865 (others blame).

3.6.5 Relationship Questionnaire (Chapter 5)

Attachment style was measured using the relationship questionnaire (RQ, Bartholomew & Horowitz, 1991). The RQ is a five item self-report questionnaire which can be used to determine which category of attachment style a respondent is closest to matching, or the extent to which each of the four attachment styles

is endorsed by the respondent. Four paragraphs are presented, each one representing one of four attachment styles, with these styles being based on a combination of the model of the self and the model of others. Paragraph one describes a secure attachment style, with statements relating to positive models of the self and others, paragraph two describes a fearful attachment style, with statements relating to negative models of the self and others, paragraph three describes a preoccupied attachment style with statements relating to a negative model of the self and a positive model of others, and, finally, paragraph 4 describes a dismissing attachment style, with statements relating to a positive model of the self and a negative model of others. In the first item, participants are asked to select the statement which best describes them and the way they generally are in close relationships. The same paragraphs are then presented again with participants asked to rate each on a 7-point Likert scale based on the extent to which each describes them. In completing both sections, a categorical attachment style is determined, along with dimensions of this style. In the current project, only the dimensional score for attachment styles was used, this was done in order to explore the strength of relationships between attachment styles and other variables under investigation. The relationship questionnaire was validated across two samples of undergraduate students, demonstrating good convergent and discriminant validities (Griffin & Bartholomew, 1994), meaning where there is expected to be agreement between positive perceptions of the self and other, this agreement is present, and where there is expected to be disagreement, between positive and negative models of the self and others, this disagreement is present. The RQ has also been demonstrated as having moderately good reliability properties, meaning it has been shown to record relatively stable scores for attachment style over time (Sharfe & Bartholomew, 1994).

3.6.6 Outcome Variables (Chapters 4 and 5)

3.6.6.1 History of Suicidality (Chapter 4)

The presence of lifetime suicidality was measured using a single item from the Borderline Personality Disorder (BPD) portion of the ITQ. This section of the ITQ (not used in the primary analysis) contains 14 questions relating to BPD symptoms. Suicidality is assessed using a single item, with respondents asked to answer yes or no to, “Have you tried to hurt or kill yourself or threatened to do so?”. As mentioned above, the ITQ is a psychometrically sound measure, with solid scores for both validity and reliability. This item was chosen for its covering of both suicidal thoughts and actions, as well as its identification of both historic and current suicidal episodes.

3.6.6.2 History of Suicide Attempts (Chapter 5)

The presence of lifetime suicide attempts was investigated through the use of a single, dichotomous item included in a health behaviours questionnaire devised for the purposes of the service audit through which the current data were collected. This measure is based on the Structured Interview of Self-Destructive Behaviours (SI-SDB) (Carlson, McDade-Montez, Armstrong, Dalenberg & Loewenstein, 2013). Items on this measure covered areas of self-harm, suicidality, substance use, disordered eating, and disordered sexual behaviour. The presence of lifetime suicide attempts was identified through a single question asking, “Have you ever attempted to end your life?”.

3.7 Statistical Analyses

3.7.1 Univariate Analyses

In each of the studies in the following two chapters, the first stage of analysis involved identifying differences between two distinct groups on a number of research variables. In the first (chapter 4), these groups were those who had a history of suicidality and those who had no history of suicidality. In the second (chapter 5), these two group were those who had made a suicide attempt at some point in their life and those who had never made a suicide attempt. In both studies, differences between the two groups under investigation were calculated for continuous variables, as in those scored across a scale, using independent samples t-tests. Here, independent samples refers to the fact that the two groups being compared contained a different subset of the sample which are then compared. This can be understood in contrast to a paired-samples t-test, where two observations are compared within the same group if people, for example when the same information is gathered at two time-points. The t-test calculates a mean score for each of the two groups, determining whether any difference is statistically significant. The presence of a statistically significant difference is represented by a probability, or '*p*' value, below .05, with this indicating less than a five percent chance that the difference observed is down to chance.

In the study described in chapter 4, demographic variables were investigated for their difference between the two groups under investigation. These variables (marital status, employment status, educational attainment, and living arrangements) were all coded into binary variables, meaning all participants were placed in one of two categories for each of these. Marital status was coded as "in

a relationship" and "not in a relationship", employment status was coded as "in employment" and "not in employment", educational attainment was coded as "standard education" and "further education", and living arrangements was coded as "live with others" and "live alone". Given these variables were representative only of group membership, as opposed to presenting a severity of score as is used in the t-tests, comparisons were made using Chi-squared statistics. Chi-squared is a measure of frequency which compares associations between membership of two groups within a single sample of people, for example, comparing whether those who live alone more often have a history of suicide attempts than those who live with others. As with t-tests, the significant of associations investigated through Chi-squared statistics is determined by a *p*-value below .05.

3.7.2 Multivariate Analyses

The statistical testing described above allows for significant differences between two groups to be identified for a single variable. In both studies to be discussed through this thesis, any variable which demonstrated statistical significance within univariate testing was taken forward and included within multivariate analyses. Multivariate analyses are simply those which allow for the testing of multiple variables simultaneously. Study 1, described in chapter 4, aimed to identify predictors of suicidality status, with binary logistic regression being used for this. In study 2, described in chapter 5, mediation analyses were conducted.

3.7.2.1 Binary Logistic Regression

The aim of the study described in chapter 4 was to identify variables which could predict whether someone was likely to have a history of suicidality or not, with binary logistic regression used. The purpose of a regression is to attempt to

predict a person's score on an outcome variable, based on their score for one or more predictor variables (Pallant, 2007). When the outcome variable in question is categorical, logistic regression is used. Combining the predictor variables under investigation represents a regression model, with the ability of this model to predict which outcome category a person is in compared to a "constant only" model (Pallant, 2007). This constant only model essentially categorises everyone into the same category. The prediction is made by each of these two models for participant scores on the outcome variables being compared against the actual scores recorded on this variable, with the difference between the two models being represented by two R^2 values. An R^2 value represents the amount of variance in the outcome which can be attributed to the variables in the regression model. To put that simply, R^2 denotes increases or decreases in the accuracy of the scores from the regression model compared to those predicted by the constant only model. In a logistic regression, these values are indicative of the proportion of times the model correctly predicted which of the two categories a person was in for the outcome variable (Pallant, 2007). As noted, two R^2 values are provided for logistic regression effect sizes: Cox and Snell's R^2 and Nagelkerke's R^2. Each of these values is presented as a proportion of 1, which can then be converted into the percentage of variance resulting from the model (Pallant, 2007). For example, an R^2 value of .50 would be representative of 50% variance accounted for by the model.

The utility of the logistic regression described thus far relates to the overall predictive ability of the model. A second function present within this type of analysis is to determine the individual contribution of each of the predictor variables within the model. This is done by calculating an odds ratio for each variable, which represents the change occurring in the outcome based on

changes on this predictor variable, while the scores for the remaining variables in the model remain constant (Pallant, 2007). When interpreting an odds ratio, the number provided is compared to a reference point of 1, where any value above this represents an increase in the likelihood of the person being in a given category based on increasing scores on the predictor variable, and values below 1 represent decreases in the likelihood of their being in this category based on increased scores on the predictor variable. In chapter 4, all variables identified through the univariate analyses described previously as being significantly different between those with and those without suicidality histories were entered into a binary logistic regression model. This model, as outlined above, was used to determine whether this collection of variables could be used to predict whether someone had a suicidality history or not, as well as determining which of the variables included within was significantly contributing to this prediction.

3.7.2.2 Mediation Analysis

In study 2 (chapter 5), mediation analysis was conducted in order to examine the indirect effects of childhood trauma types on suicide attempt history through a number of psychological variables. A number of methods for testing indirect, or mediating effects exist (see MacKinnon, Fairchild & Fritz, 2007 for overview), of which the causal steps approach proposed by Baron and Kenny (1986) has traditionally been the most common (Preacher & Hayes, 2008). Within this approach, mediating effects are inferred through the results of a series of regression analyses (Baron & Kenny, 1986). In order to determine mediation through these, the independent variable must be significantly related to the dependent variables, the independent variable must be significantly related to the mediating variables, and the mediating variable must be significantly related to the dependent variable. Finally, when entering the mediator into the model

containing independent and dependent variables, the previously significant relationship between the two must no longer be significant (Baron & Kenny, 1986). Although retaining popularity within the psychology literature, there exists a body of technical literature which has suggested the use of alternate methods for testing mediating effects.

The use of the causal steps in testing for mediating effects has been criticised for a number of reasons. First, the causal steps approach predicates the presence of a mediating effect on there being a significant direct pathway from the independent variable to the dependent variable. This is based on the assumption that for there to be a mediating effect there must first be a relationship to mediate. However, this assumption has been widely criticised within the literature (e.g., Zhao, Lynch & Chen, 2010). The effect on a dependent variable is understood to be the combination of two separate effects- the direct effect from independent to dependent variables, and the indirect effect from the independent to dependent variables through the mediating variable. When these two are of opposing signs, for example if increased IV scores related to decreased mediator score, and then on to increased DV scores, the direct and indirect pathways could theoretically cancel each other out, producing the appearance of there being no effect of the IV on the DV (Zhao et al., 2010). This type of competitive mediation may lead to the premature assumption that there is no mediating effect (Zhao et al., 2010).

The causal steps approach has been further criticised due to its failure to quantify the indirect effect (Hayes, 2009). As described above, the causal steps approach does not provide an effect size for the indirect effect, but rather infers mediation through the interpretation of a collection of alternate statistics (Baron & Kenny, 1986). The reliance on testing four hypotheses to determine the significance of a single relationship, as Baron and Kenny (1986) propose, has been criticised due

to the increased likelihood of failing to reject a null hypothesis which comes with the increase in the number of null hypotheses being tested (Hayes, 2009). Instead, approaches using a single test to determine the significance of indirect effects have been recommended (Zhao et al., 2010).

An alternative to the causal steps approach which features prominently within the psychological literature is Sobel's products of coefficients test. Here, the indirect effect is calculated by multiplying the coefficient of the pathways between the independent variable and the mediator and the coefficient of the pathway form the mediator to the dependent variable. The significance of the indirect effect is then determined by dividing the product of the coefficients by its standard error and comparing this against a normal distribution (Fritz & MacKinnon, 2007). While this approach provides both a magnitude of the indirect effect as well as a significance test for this effect, it has too been criticised.

Sobel's test is based on the assumption that the product of the coefficients is normally distributed (Preacher & Selig, 2012). However, the product of two normally distributed variables will usually not itself be normally distributed (Fritz & MacKinnnon, 2007). This leads to inaccurate confidence intervals being generated, due to their inaccurate representation of where the middle 95% of the data lies. Simulation studies have found both the causal steps approach, and the product of coefficients test to have low statistical power and high type 1 error rates (Hayes, 2009), these, coupled with the limitations already discussed, led these methods to be rejected when designing the current study.

Consistently, through simulation studies, two methods of mediation have emerged as containing the greatest degree of statistical power, while also adjusting for non-normal distribution, these being bootstrapping and distribution

of product tests (Hayes, 2009). The distribution of products approach involves estimating confidence intervals by referring to tables of critical values which estimate the distribution of product based on the values of the coefficients between the predictor and mediator variable and between the mediator and the outcome (MacKinnon et al., 2007). Doing so rectifies the inaccuracies of confidence intervals generated through the product of coefficients test described above.

Bootstrapping is a resampling technique, whereby bootstrapped samples are generated through the removal and replacement of random cases from within the data set (Hayes, 2013). This resampling procedure is repeated, generally either 1,000, 5,000, or 10,000 times, with effect sizes computed for each bootstrapped sample. Percentile confidence intervals are then generated by excluding the smallest 2.5% and the largest 2.5% of these effect sizes and using the upper and lower values of the remaining 95% as the upper and lower confidence intervals (Hayes, 2013). Bias or skewness in the distribution of the resampled data can be adjusted for using bias corrected confidence intervals, with these being recommended for use with small samples (Hayes & Sharkow, 2013).

Both bootstrapping and distribution of products have emerged as superior to the other methods discussed herein (Hayes, 2009). Of these, bootstrapping has been demonstrated as providing the most accurate confidence intervals, through the bias corrected method, when using small sample sizes (Hayes & Sharkow, 2013). In addition to these theoretical advantages to the bootstrapping method, a more pragmatic advantage to its use come through the PROCESS macro (Hayes, 2013) written for SPSS. This macro allows for all necessary direct and indirect effects to be estimated across thousands of bootstrapped samples through a

simple point and click interface. With all the above taken into account, the current project conducted mediation analyses using the bootstrap method.

As mentioned, in the current project the PROCESS macro for SPSS was used to run mediation analyses. PROCESS allows for the testing of models containing a single mediator, multiple mediators in parallel, or multiple mediators in series. Testing multiple mediators in parallel examines the unique indirect effect through each mediator while controlling for the effect of all other mediators in the model, somewhat akin to running a multiple regression analysis. By using this method, the direct effect between the predictor and outcome variables is calculated along with the total indirect effect resulting from the included mediators. In addition to this, indirect effect sizes are calculated for each of the included mediators. Confidence intervals are generated for all effect sizes reported, allowing for the significance of these to be determined. This procedure was used in chapter 5 in order to determine both collections of mediators through which an indirect effect is present, as well as identifying whether included mediators are having an independent effect on the outcome, or whether it may be an interaction between several variables which is impacting on the outcome.

3.7.3 Analytic Strategies

All statistical analyses were run using the Statistical Package for the Social Sciences (SPSS) version 23. Means and standard deviations (SDs) were calculated for continuous variables and frequencies for categorical variables. In each study, group differences were explored through a series of independent samples t-tests, comparing those with and without suicidality (chapter 4) or suicide attempt (chapter 5) histories across all experimental variables. Chi square

analyses were run to explore associations between categorical demographic variables and suicide outcome variables.

In the study described in chapter four, subsequent logistic regression analyses were conducted to determine the factors which uniquely predict the presence of lifetime suicidality within a multivariate framework. The dependent variable in this was the presence of lifetime suicidality and the reference group was no lifetime suicidality (0=no suicidality, 1=suicidality). A model was tested containing variables found through univariate analyses to be associated with lifetime suicidality. In the study described in chapter five, bootstrapped mediation models were run using the PROCESS macro for SPSS (Hayes, 2013). All variables identified as being significantly different among those with and without suicide attempt histories were tested as mediators between childhood trauma and suicide attempts. Examination of the bias corrected bootstrapped (10,000 iterations) confidence intervals allowed for the identification of the presence of indirect effects.

Multivariate analyses in both studies was conducted using regression-based approaches, as such the logistic regression assumption of linearity was tested for and met. Multicollinearity of variables was tested for using Variance Inflation Factor (VIF) statistics. VIF scores of over ten are considered by some authors to represent a problematic level of multicollinearity (O'Brien, 2007), while others propose more conservative values of between five and ten to be problematic (Craney & Surles, 2002). In the data used in chapter four, VIF statistics ranged from 1.06-2.12, while in the data used in chapter five, they ranged from 1.17-3.22 across all included variables, indicating multicollinearity was not present at a problematic level.

PROCESS handles missing data through listwise deletion, as has been discussed in chapter two, this method may lead to the data being biased, reduced in statistical power, and potentially unreliable (Schafer & Graham, 2002). In order to overcome this, and as is covered in chapter five, missing continuous variables were imputed, where possible. For the dichotomous outcome variable, listwise deletion was used. Two relatively simple methods for imputing missing data have been proposed for binary variables elsewhere. First, it has been suggested that where two discrete values are present as possible for responses (e.g. yes=1, no=0), that the mean score is calculated and then either rounded up to the upper value or rounded down to the lower, with this value being imputed in all missing cases (Schafer & Graham, 2002). Alternatively, it has been suggested that in instances where one of the response choices indicates that the event in question has not occurred, that missing responses be taken to be the same as responding in the negative. In this way, all missing values would be imputed with the value indicating the event had not occurred (Dube, Anda, Felitti, Edwards & Croft, 2002). The first of these methods was not used as it was considered that an outcome such as suicidality or suicide attempts was too sensitive to risk imputing potentially unreliable values. The second method was also rejected as it was felt that, due to the outcome variable inquiring about behaviours which may be considered stigmatised, that it would be inaccurate to assume non-response equated to non-occurrence.

A number of more advanced statistical methods for imputing missing binary values have been proposed by Shafer and Graham (2002). Each of the methods suggested, however, comes with fairly stringent assumptions which must be met by the data they are used on, in order for them to retain their validity. I did not have the confidence to guarantee categorically that the data being used in the

current project met these assumptions, and so these methods were also avoided (for overview of methods, see Shafer and Graham, 2002).

3.8 Chapter Summary

The current chapter has provided an overview of the design and methods of the two empirical studies to be presented in the subsequent two chapters. The philosophical underpinnings of the methodological choices made, as well as the participants who took part in the studies and the research measures and statistical analyses used, have been described. The following two chapters (4 and 5) will present the two empirical studies conducted for this project, each will refer back to this methodology chapter where appropriate for methodological information.

Chapter 4: Study 1

4.1 Chapter Overview

A cross-sectional, questionnaire-based study was conducted, investigating relationships between childhood trauma, demographic features, posttraumatic symptomatology, emotion regulation difficulties, and suicidality. The overarching aim of the study was to identify potential predictors of suicidality in relation to childhood trauma. The current chapter will present the research aims and hypotheses before providing a description of the methods used to achieve these aims and test these hypotheses. Following this, results of the study will be presented followed by a brief summary of the main findings.

4.2 Research aims and hypotheses

A relationship between childhood trauma and suicidal outcomes has been established within the extant literature, however, there is disparity in findings related to specific forms of childhood trauma, with emotional abuse, emotional neglect, and sexual abuse each have been suggested as the strongest predictor of suicidal thoughts and behaviours (Miller, Esposito-Smythers & Weismoore, 2013; Zatti et al., 2017). Based on these findings, the first hypothesis of the current study was that childhood emotional abuse, childhood emotional neglect, and childhood sexual abuse would each demonstrate significant independent relationships with lifetime suicidality.

The theoretical models discussed in chapter 1 provide insight into some potential ways in which the influence of childhood trauma leads to suicide. Supporting this, previous research suggests a potential overlap between outcomes following childhood trauma, and vulnerability factors for suicide, and the preceding literature review chapter identified the domains of self-concept, relational

functioning, and affect regulation as being of particular importance in understanding suicide risk among those with a history of childhood trauma. Further to this, three pathways out of childhood trauma have been posited as leading to subsequent non-suicidal self-harming behaviour, with these pathways containing elements of self-concept, relational functioning, and affect regulation (Yates, 2009). The current study sought to explore whether these pathways may be of relevance to suicidal outcomes as they are to self-harming. To recap, this model suggests self-harming operates as either a method of self-soothing or self-punishment based on negative perceptions of the self and others (representative pathway), as a mode of impulsive emotional expression in the absence of an understanding of emotional experiences (regulatory pathway), or a method of modulating affective arousal following the alteration of regulatory systems (reactive pathway) (Yates, 2009). In the current study, CPTSD symptoms of negative self-concept and disturbed relationships were taken to signify the representative pathway, impulse control difficulties and limited access to regulation strategies were taken to represent the regulatory pathway, and emotion hyperactivation and deactivation were taken to represent the reactive pathway. The second hypothesis was that each of these would predict the presence of a suicidality history.

In addition to factors which may increase suicide risk, the current study sought to explore sociodemographic factors which may act as protective factors against suicidality. Those experiencing psychological trauma are at increased risk for suicide compared to the general population (Krysinska & Lester, 2010), as such, identifying factors which may protect against suicide risk is of equal utility to identifying factors which increase suicide risk. In their seminal review of the protective factors literature, McLean et al. (2008) identified psychosocial-level

factors including good family relationships, such as having children living at home, marriage and partnership, and employment to all be protective against suicidal behaviour (McLean, Maxwell, Platt, Harris and Jepson, 2008). In relation to children living at home, it is suggested that the protective effect relates to their being dependent on the individual, suggesting this relates to social supports role of being valued or needed by others. It is also suggested that marriage or partnership may, in-part, mitigate suicide risk related to socio-economic inequalities, as well as reducing the likelihood of displaying problematic behaviours such as substance use or gambling, each of which are associated with increased suicide risk (McLean et al., 2008). Employment is understood to bring with it latent benefits such as increased self-esteem, perceived respect from others (Bartley, 1994), with the absence of these understood to enhance suicide risk (van Orden et al., 2010). The current study therefore examined the protective role of living with other people, being in employment, and being in a relationship. It was hypothesised that living alone, not being in employment, and not being in a relationship will all be significantly related to the presence of lifetime suicidality.

4.3 Methods

A description of the methods adopted for the current study was provided in chapter 3.

4.4 Results

4.4.1 Missing Data

The original sample consisted of 113 participants. In the first instance, participants missing more than 50% of responses for any subscale under investigation were removed from further analyses (n=13). Participants with missing data for the dichotomous outcome variable were also removed (n=7). It

has previously been reported that the use of imputation methods for dichotomous variables are troublesome (Berkowitz, Stover and Marans, 2011), and so these were avoided. Removal of these cases left a dataset of 93 participants. Descriptive statistics demonstrated that for no research item was the level of missing data above 5%, as such missing values were replaced with their series means.

4.4.2 Descriptive Statistics

All statistical analyses were run through the Statistical Package for the Social Sciences (SPSS) version 23. Descriptive statistics were run for demographic factors, the results of which are presented in table 6. The majority of the sample were female (n=89, 95.7%). Ages ranged from 19-62 years (mean=38.24, SD=10.856). Just over half of the participants were unemployed at the time of participation (n=50, 53.8%), with around a third in either full- or part-time employment (n=29, 31.2%). The most common highest level of educational attainment was secondary school (n=37, 39.8%), followed by university (n=31, 33.3%), and college (n=25, 26.9%). A little over half of the sample were single (n=52, 55.9%), with all but four of the remainder either married (n=10, 10.8%), divorced (n=16, 17.2%), or cohabiting (n=11, 11.8%).

Table 6: Demographic characteristics

Demographic	Number	Percent
Gender		
Female	89	95.7
Male	4	4.3
Employment type		
Full-time	16	17.2
Part-time	13	14.0
Unemployed	50	53.8
Retired	2	2.2
Other	10	10.8
Education level		
School	37	39.8
College	25	26.9
University	31	33.3
Marital status		
Married	10	10.8
Divorced	16	17.2
Cohabiting	11	11.8
Single	52	55.9
Other	4	4.3
Living arrangement		
Alone	31	33.3
With partner only	18	19.4
With family	14	15.1
Other	30	32.3

4.4.3 Demographic Variables Compared for Suicidality

Chi-square analyses were run to examine associations between categorical demographic variables and lifetime suicidality. Maximum level of education, current employment status, marital status, and living arrangements were coded into binary categories (table 7). A significant association was found between employment status and suicidality with those not in work more likely to have experienced suicidality (X^2 (1, n=93) = 4.755, *p*=.029). No associations were found between suicidality and education attainment (X^2 (1, n=93) = .141, *p*=.707), relationship status (X^2 (1, n=93) = .746, *p*=.388), or living arrangements (X^2 (1, n=93) = .049, *p*=.825). These results suggest that, within the current sample,

those in employment were less likely to have experienced lifetime suicidality, while there was no increase in the likelihood of experiencing lifetime suicidality based on living arrangements, educational attainment, or relationship status.

Table 7: Chi-square statistics for associations between demographic variables and suicidality history

	Chi-square (df)	Sig.	Odds ratio	C.I. for odds ratio	
				Lower	Upper
Standard education	.141 (1)	.707	.828	.308	2.225
Not working	4.755 (1)	.029*	.340	.126	.916
Not in relationship	.746 (1)	.388	1.629	.535	4.964
Live alone	.049 (1)	.825	1.119	.412	3.036

*Significant association at .05 level

4.4.4 Continuous Variables Compared for Suicidality

Independent samples t-tests were run to compare mean scores on all CTQ and DERS subscales as well as CPTSD symptom scales of emotion hyperactivation, emotion deactivation, negative self-concept, and disturbed relationships for those with and without suicidality histories. Comparing mean differences for those with and without experiences of lifetime suicidality, significant differences were found for CEA (t (91) = -2.768, *p*=.026), CEN (t (91) = -2.632, *p*=.010), CTQ-total (t (91) = -2.535, *p*=.013), DERS lack of emotional awareness (t (91) = -2.361, *p*=.020), and CPTSD emotion deactivation (t (91) = -2.050, *p*=.043). These results show that, on average, those with a lifetime history of suicidality have more severe histories of childhood trauma, CEA, and CEN, as well as experiencing a greater degree of emotion deactivation and impaired emotional awareness. Results of the t-tests comparing those with and without lifetime suicidality are presented in table 8 (Means, standard deviations, and ranges for each experimental variable across the full sample are presented in appendix 7).

Table 8: T-Test results comparing those with and without lifetime suicidality

	Suicidality Mean (SD)	No Suicidality Mean (SD)	Significance	Cohen's d
CTQ-total	78.77 (18.288)	66.96 (21.580)	.013*	.590
CEA	19.29 (4.780)	15.76 (6.508)	.026*	.618
CPA	12.71 (5.238)	11.23 (5.300)	.252	.281
CSA	16.36 (7.443)	14.19 (8.258)	.248	.276
CEN	17.99 (4.924)	14.64 (6.091)	.010**	.604
CPN	12.42 (4.420)	11.14 (5.092)	.253	.268
Emotion hyperactivation	12.53 (4.177)	11.13 (3.356)	.156	.369
Emotion deactivation	10.97 (3.588)	9.18 (3.500)	.043*	.505
Negative self-concept	12.90 (3.721)	11.86 (4.324)	.273	.258
Disturbed relationships	9.21 (2.693)	8.68 (2.476)	.415	.205
Non-accept	22.37 (5.929)	21.82 (5.877)	.701	.093
Goals	20.24 (4.429)	19.36 (4.637)	.422	.194
Impulse	18.26 (6.146)	15.91 (5.967)	.118	.388
Awareness	22.07 (5.431)	18.82 (6.307)	.020*	.552
Strategies	27.42 (6.965)	26.91 (7.237)	.767	.072
Clarity	16.64 (4.602)	15.14 (4.167)	.174	.342

*Significant differences between means at .05 level, ** Significant difference between means at .01 level

4.4.5 Multivariate Analyses

Childhood emotional abuse, emotional neglect, deactivated emotion regulation, lack of emotional awareness, and employment status all emerged from the univariate analyses as being significantly associated with lifetime history of suicidality. A binary logistic regression analysis was performed testing the unique predictive validity of each of these variables on the likelihood of having experienced lifetime suicidality compared to no suicidality. The logistic regression assumption of linearity was tested for and met. Multicollinearity of variables was tested for using variance inflation factor (VIF) statistics. As reported in chapter 3, VIF statistics in the current data ranged from 1.06 to 2.12 across all included variables, indicating acceptably low levels of multicollinearity.

A test of the full model containing CEA, CEN, emotion deactivation, lack of emotional awareness, and employment status, against a constant only model was statistically significant (X^2 (5, n=93) = 18.707, p=.002). This indicates that the model was able to distinguish between those with and without a history of suicidality. The model as a whole explained between 18.2% (cox & Snell R^2) and 27.4% (Nagelkerke R^2) of variance in suicidality status, and correctly classified 77.4% of cases. As shown in table 9, results suggest that employment status (OR=3.767, p=.031) and childhood emotional abuse (OR=1.140, p=.034) were significantly related to suicidality status.

Table 9: Binary logistic regression predicting likelihood of experiencing lifetime suicidality

Predictor	*B*	Wald X^2	*P*	Odds Ratio	C.I for Odds ratio	
CEA	.131	4.517	.034*	1.140	1.010	1.285
CEN	.048	.722	.396	1.049	.939	1.173
Emotion deactivation	.030	.128	.721	1.031	.874	1.216
Lack of awareness	.081	2.639	.104	1.084	.983	1.195
Employment status	1.326	4.641	.031*	3.767	1.127	12.589

*Significant association at .05 level

4.5 Summary of Main Findings

The current study examined variables within emotion dysregulation, complex PTSD symptomatology, and demographic domains for their relationship with lifetime suicidality. In univariate analyses, five variables were found to be significantly associated with a lifetime history of suicide attempts, namely childhood emotional abuse, childhood emotional neglect, emotion deactivation, lack of emotional awareness, and employment status. The first four of these were measured continuously, with those with a history of suicidality scoring, on average, significantly higher for each. The final variable, employment status, was

measured dichotomously with those with a suicidality history were being likely to not be in employment than those without such a history.

Given their significant associations with lifetime suicidality, childhood emotional abuse, emotional neglect, emotion deactivation, lack of emotional awareness, and employment status were included in subsequent multivariate analyses. All five variables were entered into a binary logistic regression model, allowing for the examination of the unique predictive power of each on lifetime suicidality. The five variables were found, in combination, to be predictive of lifetime suicidality. Examining each of the variables individually, while controlling for the effects of the remaining four, identified childhood emotional abuse and employment status as being significantly, and independently, predictive of lifetime suicidality status. As was the case in the univariate analyses, higher scores for childhood emotional abuse history and not currently being in employment were each significantly related to the presence of lifetime suicidality.

Overall, results indicate that within the trauma population, those who have experienced childhood emotional abuse are at significantly increased likelihood of having experienced suicidality. In addition to this, they suggest that those who are not in employment are almost four times as likely to have experienced suicidality. Beyond these key findings, the results of the current study suggest that the pathways between childhood trauma and non-suicidal self-injury are not sufficient for explaining the development of suicidal behaviours following childhood trauma.

Chapter 5: Study 2

5.1 Chapter Overview

A second questionnaire-based study was conducted, this time aiming to examine mediating effects of attachment style, CPTSD symptomatology, and cognitive emotion regulation strategies between childhood trauma and suicide attempts. The current chapter will present the research aims and hypotheses before providing a description of the methods used to achieve these aims and test these hypotheses. Following this, the results of the study will be presented, followed by a brief summary of the main findings.

5.2 Research Aims and Hypotheses

The previous chapter established a relationship between childhood trauma and suicidality. The current chapter will build on this by exploring the predictive utility of childhood trauma on suicide attempt status. It is hypothesised that childhood trauma, through a cumulative severity, will be related to the presence of lifetime suicide attempts. Expanding upon this, mediating variables between childhood trauma and suicide attempt status will be explored. The systematic literature review presented in chapter two highlighted the roles of overlapping domains of self-perception, relational functioning, and affect regulation as mediating this relationship. As was mentioned in chapter 1, CPTSD contains two distinct groups of symptomatology, those present in PTSD, and three disturbances of self-organisation (DSO). These DSO features are negative self-concept, disturbed relationships, as well as either emotion hyperactivation or emotion deactivation. It is hypothesised that these disturbances of self-organisation will mediate the relationship between childhood trauma and suicide attempt status as a single entity.

The systematic literature review presented in chapter two identified overlapping themes of affect regulation, interpersonal functioning, and self-perception as being involved in the mediation of the relationship between childhood trauma and suicidal behaviour. Factors present within these themes were therefore explored for their mediating role between childhood trauma and suicidal behaviour in the current chapter. As discussed in chapter 1, attachment security is a fundamental developmental system which may be disrupted through experiencing childhood trauma. Attachment styles are understood to govern mechanisms used to regulate emotional arousal in times of distress. Heightened emotionality in response to adverse life events (also discussed in chapter 1) is a key feature of suicidality. For these reasons, attachment style and emotion regulation were each explored in the current chapter as potential mediators of the relationship between childhood trauma and suicide attempts. It has previously been theorised that attachment insecurity and impairments in cognitive development emerge in response to childhood trauma (Briere, 2002), as such, the cognitive elements of emotion regulation were focused on in this chapter.

5.3 Methods

A description of the methods adopted for the current study was provided in chapter 3.

5.4 Results

5.4.1 Missing data

The original sample contained 330 participants. In the first instance, those missing more than 50% of responses for any subscale under investigation were removed prior to any further analyses (n=34). This applies to the CTQ, ITQ and the CERQ, where subscale scores are generated by summing scores on multiple

items. Descriptive statistics demonstrated that missing data for research items ranged from .3%-2.4%, with series means being imputed to replace missing values. Higher levels of missing data were present in the items of the RQ, ranging from 2.8% for fearful attachment to 5.5% for dismissing attachment. In the first instance, the randomness of missing values across the RQ was tested for using Little's MCAR test, with missing values found to be missing completely at random. The expectation maximisation (EM) algorithm was used to impute missing values for the four items on the RQ. Participants with missing data for the dichotomous suicide attempt outcome were also removed (n=5). As noted above, the use of imputation methods for dichotomous variables are considered troublesome (Berkowitz et al., 2011), and so these were avoided. Following missing data removals, a final sample of 289 was included in all analyses.

5.4.2 Descriptive Statistics

All statistical analyses were carried out using SPSS version 23. Descriptive statistics were run for demographic factors, the results of which are presented in table 10. A little over a third of the sample identified as male (n=103, 35.64%). Ages ranged from 18-78 years (mean=38.39, SD=12.30). Approximately half of the sample were living with their partner or family at the time of participation (n=138, 47.75%), with around a third living alone (n=95, 32.87%). Fewer than half of the sample were in employment (n=119, 41.17%), with approximately one quarter unemployed (n=81, 28.03%). A little under half of the sample reported having made a suicide attempt (n=127, 43.9%).

Table 10: Demographic characteristics

Age Range (Mean±SD)	18-78yrs (38.39±12.30)
Gender Female/Male (%)	178/103 (61.59/35.64)
Employment status	
Unemployed n (%)	81 (28.03)
Employed n (%)	119 (41.17)
Homemaker n (%)	20 (6.92)
Student n (%)	20 (6.92)
Retired n (%)	10 (3.46)
Off sick n (%)	28 (9.69)
Living Arrangements	
Alone n (%)	95 (32.87)
With partner or family n (%)	138 (47.75)
With friends n (%)	9 (3.11)
Other n (%)	33 (11.42)
Suicide attempt history Yes n (%)	127 (43.94)

*Where demographics do not add up to 100%, this is due to missing data

5.4.3 Continuous Variables Compared for Suicide Attempts

Independent samples t-tests were run to compare the mean scores on CTQ, RQ, ITQ, and CERQ scales for those with and without suicide attempt histories. Comparing mean differences for those with and without lifetime histories of suicide attempts, significant differences were found for CTQ total (t (244.1) = -5.02, *p*<.001), CEA (t (287) = -4.63, *p*<.001), CSA (t (248.2) = -5.16, *p*<.001), CEN (t (286) = -3.49, *p* =.001), CPN (t (239.5) = -3.37, *p* =.001), PTSD-intrusion (t (287) = -3.66, *p*<.001), emotion hyper-activation (t (246.9) = -3.52, *p* =.001), emotion deactivation (t (287) = -4.05, *p*<.001), negative self-concept (t (284.8) = -3.98, *p*<.001), disturbed relationships (t (287) = -3.61, *p*<.001), *p*<.001), and self-blame (t (287) = -2.74, *p* =.006). The results of the t-tests comparing those with and without suicide attempt histories are presented in table 11, below (Means, standard deviations, and ranges for each experimental variable across the full sample are presented in appendix 8). Adjustments to the significance level to

account for multiple comparisons were not made due to the exploratory nature of the current study (Bender and Lange, 2002).

5.4.4 Bivariate Correlations

In order to explore relationships between childhood trauma and the four DSO variables, bivariate correlations were run. These identified significant associations between CTQ total and negative self-concept (r=.276, p<.001), disturbed relationships (r=.301, p<.001), emotion hyperactivation (r=.274, p<.001), and emotion deactivation (r=.300, p<.001).

5.4.5 Multivariate Analyses

The aim of the current chapter was to identify psychological variables which mediate the relationship between cumulative experiences of childhood trauma and suicide attempt history. The t-tests described above found that childhood trauma total score, CPTSD symptoms of intrusion, emotion hyperactivation, emotion deactivation, negative self-concept, and disturbed relationships, as well as the cognitive regulation strategy of self-blame, all differed significantly between those with and those without a suicide attempt history. Additionally, bivariate correlations identified associations between childhood trauma and the four DSO factors of negative self-concept, disturbed relationships, emotion hyperactivation, and emotion deactivation. Based on these results these variables were then included in the subsequent mediation analyses. All of the analyses described below were run with 10,000 bootstrapped iterations. The remaining results will be presented in two parts. First, results of mediation analyses containing CTQ total score as predictor variable will be presented. Following this, results of mediation analyses containing individual CTQ subscales as predictor variables will be presented.

Table 11: T-Tests comparing means for those with and without suicide attempt histories

	Suicide attempt history mean (SD)	No suicide attempt history mean (SD)	Significance	Cohen's d
Childhood Trauma Questionnaire				
CTQ total	72.04 (21.54)	60.09 (17.94)	<.001**	.60
CEA	17.17 (6.41)	13.67 (6.35)	<.001**	.55
CPA	13.63 (3.53)	14.40 (3.38)	.061	.22
CSA	14.03 (7.95)	9.46 (6.81)	<.001**	.62
CEN	16.22 (6.19)	13.68 (6.06)	.001**	.42
CPN	10.98 (5.54)	8.94 (4.49)	.001**	.40
Relationship Questionnaire				
Secure attachment	2.60 (1.70)	3.01 (1.81)	.053	.23
Fearful attachment	5.61 (1.72)	5.38 (1.88)	.291	.13
Preoccupied attachment	3.59 (1.94)	3.33 (1.87)	.250	.14
Dismissing attachment	3.76 (1.98)	3.48 (1.85)	.217	.15
International Trauma Questionnaire				
Intrusion	21.89 (7.10)	18.77 (7.27)	<.001**	.43
Avoidance	6.30 (1.85)	5.93 (2.04)	.111	.19
Hypervigilance	6.37 (1.95)	6.15 (2.01)	.349	.11
Emotion hyper-activation	13.31 (4.67)	11.48 (3.96)	.001**	.42
Emotion deactivation	11.13 (3.87)	9.24 (3.99)	<.001**	.48
Negative self-concept	13.23 (3.84)	11.28 (4.49)	<.001**	.47
Disturbed relationships	8.72 (3.34)	7.32 (3.21)	<.001**	.43
Cognitive Emotion Regulation Questionnaire- short form				
Rumination	7.68 (2.01)	7.52 (2.08)	.525	.08
Self-blame	6.89 (2.56)	6.06 (2.51)	.006**	.33
Others-blame	5.13 (2.67)	5.05 (2.50)	.785	.03
Catastrophising	6.68 (2.45)	6.66 (2.41)	.947	.01

*Significant difference at the .05 level, **Significant difference at .01 level
Cohen's d: .20=small effect, .50=medium effect, .80=large effect

5.4.5.1 Mediation Models from CTQ-total to Suicide Attempt Status

In order to test the hypotheses that CTQ total predicted suicide attempt status, and that this relationship was mediated by DSO symptoms, a multiple mediation model was tested containing CTQ total score as predictor, suicide attempt status as outcome, and DSO symptom clusters of emotion hyperactivation, emotion deactivation, negative self-concept, and disturbed relationships as mediator variables. The mediation model tested is presented in figure 6. As shown in table 12, the total indirect effect of the model was significant (indirect effect =.008, 95% CI =.002-.016), however, none of the symptom clusters demonstrated a significant independent mediating effect. This suggests that the DSO features operate in tandem between childhood trauma and suicide attempts, as opposed to any of them operating independently. Based on this finding, subsequent analyses included these symptoms as a single DSO variable. It should be noted that although the effect sizes reported are very small, this does not mean that the effect is very small. Rather, it reflects the scale of measurement of the predictor variable, namely, the CTQ. Scores on the CTQ can range from 25 to 125, the direct effect of .024 would suggest that an approximately 40-point increase in CTQ score is associated with differentiating between no suicide attempt history and a suicide attempt history. For reference, a CTQ total score of 25 indicates no childhood trauma history, while a 40-point increase to 65 indicates a severe level of childhood trauma (Bernstein & Fink, 1998).

A second mediation model was tested with DSO-total score, intrusion, and self-blame included as mediators, CTQ total score as predictor variable, and suicide attempt status as the outcome. As shown in table 13, the total indirect effect of the model was significant (indirect effect =.008, 95% CI =.001-.016), however,

none of the included mediators demonstrated significant independent direct effects.

Table 12: Mediation model between CTQ total and suicide attempts containing DSO symptoms

Mediator	Direct effect	Indirect effect	Bootstrapped CI
Total Model	.024	.008	.002-.016
Emotion hyperactivation		.002	-.003-.007
Emotion deactivation		.003	-.002-.008
Negative self-concept		.003	-.002-.008
Disturbed relationships		.001	-.003-.007

Table 13: Mediation model between CTQ total and suicide attempt status

Mediator	Direct effect	Indirect effect	Bootstrapped CI
Total Model	.023	.009	.003-.017
DSO total		.007	.000-.015
Self-blame		.002	-.002-.006
Intrusion		.001	-.003-.005

5.4.5.2 Childhood Trauma Predicting DSO

The analysis described in section 5.4.4.1 identified the mediating role of DSO between childhood trauma and suicide attempt status. When including self-blame and intrusion in the model, this relationship was no longer significant. This means that DSO was not mediating the relationship between childhood trauma and suicide attempt status when controlling for the effects of these additional variables, potentially suggesting their involvement in the mediating effect previously displayed by DSO. Based on these findings, subsequent analyses were conducted testing for mediating relationships between CTQ total score and DSO total score. Bivariate correlations identified secure attachment (r(287) =-.32,

p<.001, r^2=.10), positive reappraisal (r(287) =-.24, *p*<.001, r^2=.06), and positive refocus (r(287) =-.26, *p*<.001, r^2=.07) to all negatively correlate with DSO total score, while fearful attachment (r(287) =.33, *p*<.001, r^2=.11), preoccupied attachment (r(287) =.18, *p*=.002, r^2=.03), dismissing attachment (r(287) =.13, *p*=.031, r^2=.02), rumination (r(287) =.34, *p*<.001, r^2=.12), self-blame (r(287) =.43, *p*<.001, r^2=.18), catastrophizing (r(287) =.38, *p*<.001, r^2=.14), intrusion (r(287) =.59, *p*<.001, r^2=.35), avoidance (r(287) =.42, *p*<.001, r^2=.18), and hypervigilance (r(287) =.44, *p*<.001, r^2=.19) all positively correlated with DSO.

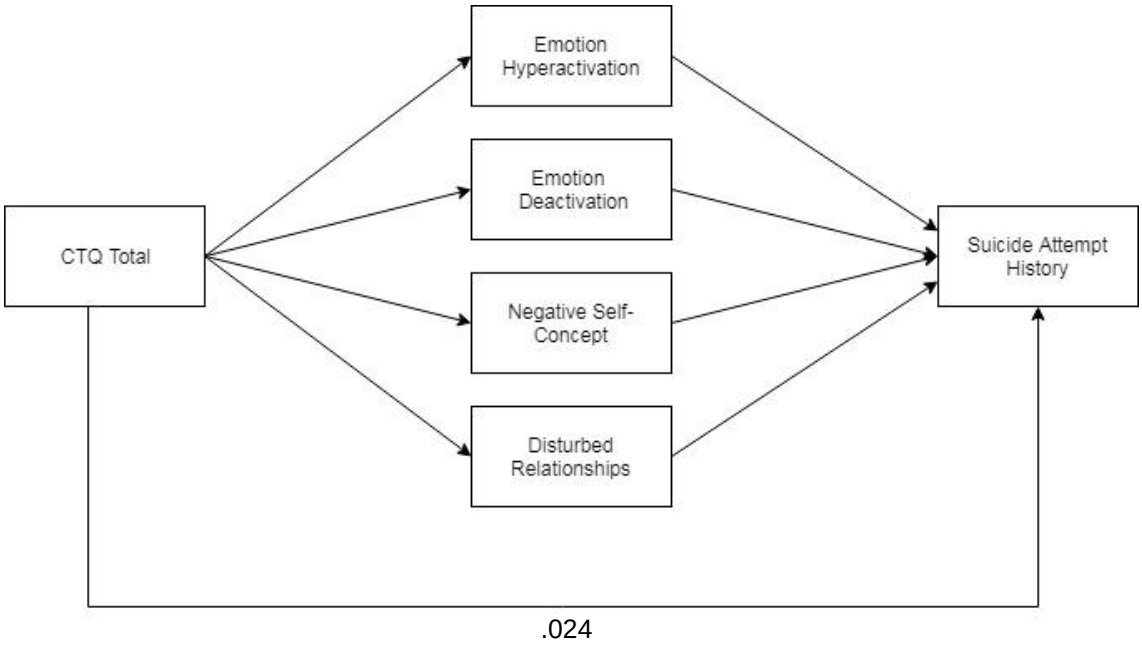


Figure 6: DSO symptoms mediating relationship between childhood trauma and suicide attempt status

Subsequently, these correlates of DSO were entered into a mediation model with CTQ total score as predictor and DSO total score as outcome. The mediation model tested is presented in figure 7. The results of the mediation model containing secure attachment, fearful attachment, preoccupied attachment, dismissing attachment, rumination, self-blame, catastrophizing, intrusion, avoidance, and hypervigilance are displayed in table 14. Of these, secure attachment (indirect effect =.014, 95% CI =.004-.032), fearful attachment (indirect

effect =.019, 95% CI =.005-.042), self-blame (indirect effect =.038, 95% CI =.020-.064), intrusion (indirect effect =.050, 95% CI =.026-.081), and hypervigilance (indirect effect =.010, 95% CI =.001-.029) demonstrated significant independent mediating roles between childhood trauma and DSO.

Table 14: Mediation model between childhood trauma and DSO

Mediator	Direct effect	Indirect effect	Bootstrapped CI
Total Model	.075	.150	.096-.208
Secure attachment		.014	.004-.032
Fearful attachment		.019	.005-.042
Preoccupied attachment		.004	-.001-.016
Dismissing attachment		.002	-.002-.013
Rumination		.004	-.002-.018
Self-blame		.038	.020-.064
Catastrophizing		.002	-.013-.017
Intrusion		.050	.026-.081
Avoidance		.009	-.003-.027
Hypervigilance		.010	.001-.029

5.4.5.3 Childhood Trauma Types Predicting Suicide Attempt Status

This chapter has thus far focused on identifying mediators between cumulative severity of childhood trauma experiences and suicide attempt status. The following section will examine relationships between individual forms of childhood trauma and suicide attempts, before exploring mediating relationships between these. Univariate analyses presented in section 5.4.3 identified those with a suicide attempt history as scoring significantly higher for CEA, CSA, CEN, and CPN. These four trauma types were entered into a binary logistic regression model to determine which, if any, were independently predictive of suicide

attempt status. A test of the full model against a constant only model was statistically significant (X^2 (4, n=289) = 34.23, p<.001). This indicates that the model was able to distinguish between those with and those without a suicide attempt history. The model as a whole explained between 11.2% (Cox & Snell R^2) and 15.0% (Nagelkerke R^2) of variance in suicide attempt status, and correctly classified 66.4% of cases. As shown in table 15, results suggest that only CSA (OR =1.07, p<.001) was significantly related to suicide attempt status. Due to this, only CSA was tested as an independent predictor in subsequent mediation models. The mediation analyses described in section 5.3.4.1 were re-run with CTQ total score replaced with CSA score for the predictor variable.

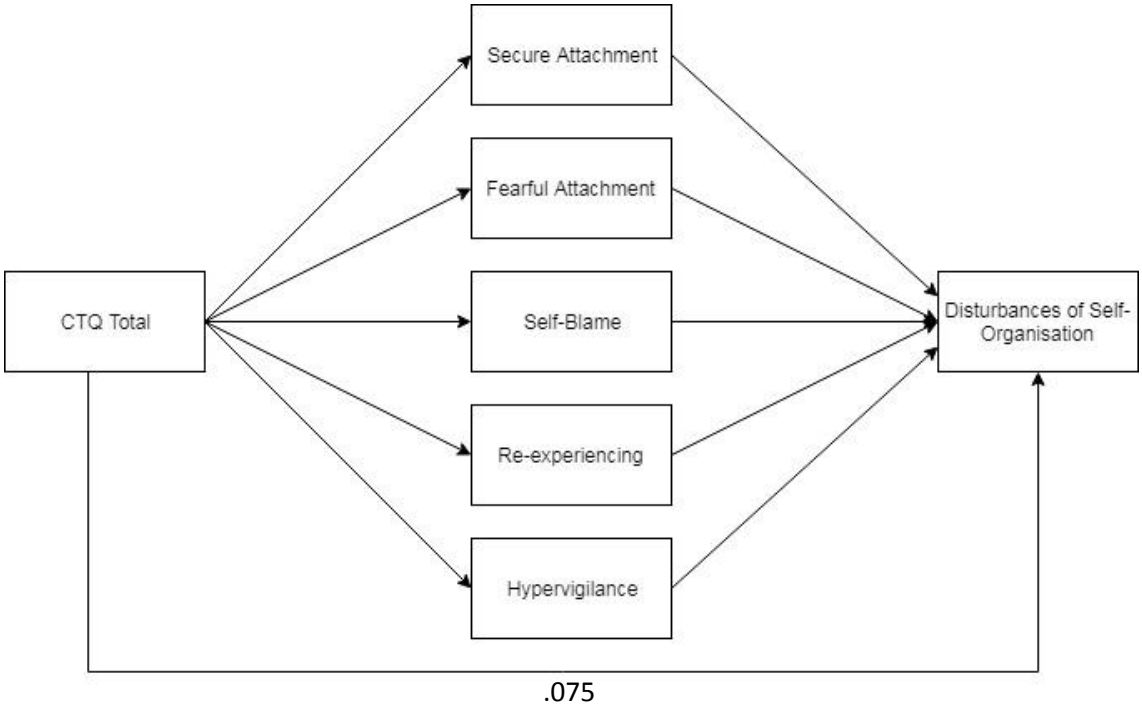


Figure 7: Mediation model between childhood trauma and DSO containing significant mediators

Table 15: Binary logistic regression predicting likelihood of having suicide attempt history

Predictor	*B*	Wald X^2	*P*	Odds Ratio	C.I for Odds ratio	
CEA	.060	3.645	.056	1.062	.998	1.129
CSA	.063	12.781	<.001**	1.065	1.029	1.102
CEN	-.004	.015	.902	.996	.932	1.064
CPN	.006	.030	.862	1.006	.939	1.078

*Significant association at .05 level

5.4.5.4 Mediation models from CSA to suicide attempt status

The first mediation model tested in this section included the four DSO symptom clusters of emotion hyperactivation, emotion deactivation, negative self-concept, and disturbed relationships as mediators. As was the case in relation to CTQ total score, this was run first to test whether DSO acted in combination to mediate the relationship between CSA and suicide attempts, and second to identify any independent mediating effects of DSO symptom clusters between CSA and suicide attempts. This model was tested while including the remaining childhood trauma subscales as covariates in order to control for their effects. As shown in table 16, the total indirect effect of the model was not significant, with the lower confidence interval being equal to zero (indirect effect =.012, 95% CI =.000-.026), and none of the symptom clusters demonstrated a significant mediating effect. Based on this finding, no further analysis was conducted using CSA as predictor variable.

Table 16: Mediation model between CSA and suicide attempts containing DSO symptoms

Mediator	Direct effect	Indirect effect	Bootstrapped CI
Total Model	.053	.012	.000-.026
Emotion hyperactivation	.053	.003	-.004-.012
Emotion deactivation	.053	.004	-.008-.017
Negative self-concept	.053	.006	-.001-.014
Disturbed relationships	.053	.004	-.002-.010

5.5 Summary of Main Findings

The current study examined variables within attachment, CPTSD symptomatology, and emotion regulation for their mediating roles between childhood trauma and suicide attempt history. Through initial analyses, the disturbances of self-organisation present within CPTSD were found to mediate the relationship between childhood trauma and suicide attempt status. Further analysis focused on examining variables which mediated the relationship between childhood trauma and the disturbances of self-organisation. It was found that insecure attachment, both in the form of high levels of fearful attachment and low levels of secure attachment, self-blame, re-experiencing, and hypervigilance each mediated this relationship. These were all found to exert a mediating effect when controlling for the remaining mediators, suggesting the presence of four independent pathways between childhood trauma and disturbances of self-organisation. The mediating pathways described herein are presented in figures 2 and 3, above.

Subsequent analyses focused on exploring unique relationships between individual forms of childhood trauma, potential mediating variables, and suicide

attempt status. Univariate analyses identified those with a suicide attempt history to score significantly higher for CEA, CSA, CEN, and CPN. As such these four were entered into a binary logistic regression model to test their unique predictive utility for suicide attempt status. The regression analysis identified CSA as an independent predictor of suicide attempt status, and as such subsequent mediation analysis was conducted with CSA as the predictor variable. When testing the mediating role of DSO symptoms between CSA and suicide attempt status, none of these individual symptom clusters, nor was the overall DSO score found to mediate this relationship.

Overall, the results suggest first that those who have experienced childhood trauma are more likely to have made a suicide attempt at some point in their lifetime. The results of the mediation analyses suggest that this is in part due to the development of DSO features of emotion dysregulation, disturbed relationships, and a negative self-concept. In particular, it appears that these features, in combination, act as a mediating variable between childhood trauma and suicide attempt status. Looking in more depth, results suggest that the development of these disturbances of self-organisation results from four outputs from childhood trauma. First, it would appear that childhood trauma increases the likelihood of an insecure attachment style forming, which in turn increases the likelihood of the disturbances of self-organisation developing. Second, childhood trauma increases the likelihood of self-blame being used in times of negativity, which in turn increases the likelihood of disturbances of self-organisation developing. Thirdly, childhood trauma increases the likelihood of posttraumatic intrusion occurring, again subsequently increasing the likelihood of disturbances of self-organisation developing. And finally, childhood trauma increases the likelihood of posttraumatic hypervigilance occurring, which in turn increases the

likelihood of the development of disturbances of self-organisation. Implications for the current findings will be discussed in the following discussion chapter, as well as integrating these findings with those of the previous study (chapter 4) and literature review (chapter 2).

Chapter 6: Discussion

6.1 Chapter Overview

The preceding chapters described first a systematic review of the existing literature identifying psychological factors which mediate the relationship between childhood trauma and suicidal behaviour, and then two studies aimed at exploring psychological mediators of this relationship. The present chapter will highlight the key findings from each of the studies before discussing these in relation to previous empirical evidence and theoretical perspectives. Following this, clinical implications and potential future research directions will be presented, alongside strengths and limitations of this work.

6.2 Summary of main findings

6.2.1 Literature Review Findings

In order to assess the state of current evidence in relation to mediators between childhood trauma and suicidal behaviour, a systematic literature review was conducted. The review aimed to identify psychological variables which had previously been found to meditate the relationship between childhood trauma and suicidal behaviour, in order to determine the state of current evidence and identify existing gaps in the literature by recognising any patterns within known mediators. As was discussed in chapter two, it was found that existing evidence pointed to the involvement of three overlapping domains of self-perception, interpersonal functioning, and affective regulation, in the development of suicidal behaviours following childhood trauma, in line with the disturbances of self-organisation present within CPTSD. Attempting to integrate these findings into existing theories of suicidal behaviour proved challenging as existing theories describe different processes through which childhood trauma generate suicide risk.

Within existing theoretical perspectives on the development of suicide risk, there is a gap between the impact on psychosocial development resulting from childhood trauma, and the manner in which this development may subsequently increase suicide risk. For example, the IMV acknowledges that early life experiences, including traumatic childhood experiences, enhance later-life suicide risk through their presence within a suicide diathesis (O'Connor, 2011). Subsequent sections of the model describe features such as defeat and entrapment in response to proximal life stressors which begin a journey towards suicidal ideation and behaviours. These features may be exacerbated by the developmental outcomes of childhood trauma, such as impairments in self-perception strengthening ones belief that they are incapable of escaping their defeating stressor, or impaired interpersonal functioning preventing the ability to seek the support of others in such times. As will be discussed, the connection between the distal diathesis formation and the proximal responses to stress is absent in existing theoretical models, however, it is this connection which is required to understand more fully the findings of the literature review.

The psychological pathways presented within suicide theories focus on the processes involved in attempting to escape from painful experiences, be they physical or emotional situations. Within the Escape from Self theory (Baumeister, 1990), suicide risk develops through attempts to escape from feelings of inadequacy in the face of failed attempts at navigating life. The focus here is on anxious and depressed affect being suppressed through the avoidance of meaningful experiences. The interplay between avoidance and negative affect creates a sense of hopelessness out of which suicidal ideation is understood to emerge. Within both the Cry of Pain (Williams, 1997) and the IMV (O'Connor, 2011), the psychological processes leading towards suicidality focus on the

development of defeat and entrapment in response to painful life events. It is understood through each of these theories that painful experiences will bring about a sense of defeat, with failed escape attempts converting this defeat into entrapment. Strengthening of this entrapment through additional escape failures is then understood to lead to the development of suicidal ideation. Within the IPT (Joiner, 2007) the focus is instead on how one perceives themselves in relation to others as being key to escaping painful situations. Instead of describing processes which may strengthen the likelihood of specific situations being responded to in a suicidal manner, it describes processes which relate to global perceptions of one's positioning leading towards suicidal outcomes.

As was discussed in chapter two, only a small number of mediators identified through the literature review were present within existing theoretical perspectives on suicide, namely alienation, anxiety, and depression. In most cases, the mediators identified through the literature review were not present within existing suicide frameworks. This dissonance between empirical evidence and theoretical frameworks highlighted the necessity to develop a new theoretical framework specific to the development of suicide risk following childhood trauma. The processes described throughout existing suicide frameworks allow for the integration of disparate elements of vulnerability, to provide overarching understandings of the processes believed to lead towards suicide in response to stressful life events. The literature review findings suggest there are different processes involved in response to these general life stressors when compared to those involved specifically following experiences of childhood trauma. This highlights a gap in the current literature with regards to theoretical perspectives tying together childhood trauma and suicidal behaviour, and providing psychological explanations for this relationship.

The two empirical studies making up this thesis sought to address this gap. The first study explored the effectiveness of a theory describing developmental processes from childhood trauma to non-suicidal self-injury in explaining suicide risk following childhood trauma. As will be discussed in the following section, the results of this study suggested this theory did not carry across from non-suicidal self-injury to suicidality. A second study was therefore conducted, with its aim being to develop evidence for a new theory describing the development of suicide risk following childhood trauma. This new theory therefore addresses the key gap in the literature identified through the literature review.

6.2.2 Study 1 Main Findings and Theoretical Discussion

As mentioned, the systematic review identified the inadequacy of current theoretical perspectives on suicide for explaining the elevation of suicide risk following childhood trauma. The designing of the first empirical study of the current project, was inspired first by the findings of the review, and second by an existing theory which explains the occurrence of non-suicidal self-injury following childhood trauma. As was described in chapter one, this model posits the existence of three pathways through which self-harming occurs in response to childhood trauma (Yates, 2009). Representatives of these pathways were examined for their ability to predict the presence of a suicidal outcome among traumatised adults.

The aims of this study were, first to identify which childhood trauma types were uniquely predictive of suicidality within a population of adults experiencing psychological trauma, second to examine elements of Yates' pathways in relation to suicidality as opposed to self-harm, and thirdly, to explore the protective roles of living arrangements, employment status, and marital status, in relation to

suicidality. In relation to the first aim, it was found that greater severity of both childhood emotional abuse and childhood emotional neglect were experienced by those with a history of suicidality than those with no such history. Examining these within a multivariate framework found only childhood emotional abuse to be independently predictive of suicidality status. In relation to the second aim, results do not support the presence of the representative pathway leading to suicidality, with neither negative self-concept nor disturbed relationships being related to suicidality. The presence of the regulatory pathway was not supported, with neither difficulties in impulse control, nor limited access to regulation strategies being significantly higher among those with a suicidality history than those without. Lack of emotional awareness was the only emotion regulation difficulty to be higher among those with a suicidality history, however, this relationship lost significance when examined within a multivariate framework. Partial support was found for the presence of the reactive pathway, with higher levels of emotion deactivation among those with a suicidality history. Again though, this difference did not retain significance when examined within the multivariate framework.

The lack of significance of both negative self-concept and disturbed relationships in relation to suicidality is surprising. Each of these features is present within two current empirically informed theoretical perspectives on suicide, namely Joiner's Interpersonal Psychological Theory (IPT), (van Orden et al., 2010), and O'Connor's Integrated Motivational Volitional (IMV) model (O'Connor & Kirtley, 2018). Within the IPT, vulnerability for suicide is understood to be predicated on interactions between perceived burdensomeness, thwarted belonging, and acquired capability for suicide. Thwarted belonging represents the absence of social connectedness, or a failure to satisfy an innate need to belong, while

perceived burdensomeness is essentially underpinned by self-hatred (van Orden et al., 2010). In O'Connor's IMV model, the presence of belongingness or connectedness is understood to act as a buffer against the development of suicidal ideation (O'Connor, 2011; O'Connor & Kirtley, 2018). In light of these theoretical perspectives it is surprising that no involvement of disturbed relationships or negative self-concept in suicidality emerged through the current study.

This discrepancy between current findings and existing theoretical perspectives may be due to the outcome variable used in the current study. The suicidality variable used contained both suicidal threats and behaviours. It may then be overly inclusive when compared to those used when formulating and testing these previous theories. Alternatively, it may that these variables do not operate independently of one another, as was explored in the current analyses. Rather, it may be the case that these variables are so intrinsically intertwined, with shared development and progression, that it is their combination which infers suicide risk. This would explain the lack of independent effects in the current study. This may additionally present a shortcoming of current theoretical perspectives on suicide, where there seems to be an assumption that myriad factors produce risk independently, with an additive effect expected to explain complete suicide risk within an individual. The absence of support for two of these well-understood risk factors in the current study may then provide support for the suggestion that it is the interaction between underlying risk factors such as a negative self-concept, or impaired relational functioning, which produces suicide risk, not merely the presence of any of these independently.

While there was partial support for the presence of reactive elements in relation to suicidality, as well as emotion regulation impairment in the form of lack of

emotional awareness, the loss of significance when controlling for additional predictors is noteworthy. This may suggest that these elements of emotion deactivation and lack of emotional awareness are not representative of independent pathways, but are potentially impactful in combination, implying the presence of a single pathway to suicidality which contains each of these elements. Alternatively, it may be representative of a more complex network of vulnerability factors working in combination to infer suicide risk. The limited sample used in the current study precluded the testing of a logistic regression controlling for all potential confounders. Overall then, results did not support the carrying over of Yates' self-harm model to suicidal outcomes.

In relation to the third aim, only employment status was found to represent a protective factor against suicidality. This relationship was retained when controlling for additional predictors of suicidality within a multivariate framework, where those out of employment were found to be almost four times more likely to have a suicidality history than those in employment. The remainder of this discussion will focus on the two significant relationships identified through the multivariate analysis, namely the roles of childhood emotional abuse and employment as risk and protective factors respectively. The identification of the unique predictive utility of CEA suggests that suicide risk may be specific to specific trauma types. Existing evidence in this regard is mixed. Emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect have all been previously found to uniquely infer suicide risk (Zatti et al., 2017). However, there is also evidence suggesting none of these are independently related to suicide risk when controlling for the effects of the remaining trauma types (Torchalla, Strehlau, Schuetz & Krausz, 2012). The current study used a sample known to be at elevated risk for suicide attempts, namely traumatised adults.

Identifying particularly strong risk factors for suicidality within such a population may prove pivotal on attenuating such risk.

Emotional abuse is particularly impactful on the developing person's attributions of themselves, as a result of the continual messages of worthlessness which characterise it (Puzia, Kraines, Liu & Kleiman, 2014). While other trauma types, such as physical abuse or sexual abuse, occur externally to any attributions of blame, or attributions about the self, with the recipient being left to construct their own attributions, CEA is unique in that its impact results due to the repeated messages being received that one is worthless, or deserves no better than this (Rose & Abramson, 1992). Such messages will then be internalised, with the individual unable to then form any form of positive perceptions about themselves, which may be drawn upon in times of stress (Rose & Abramson, 1992). Such an inability to identify positivity about the self in times of stress will increase the impact these stressors have, subsequently increasing the risk of a suicidal outcome. This may be of particular relevance to the trauma population, where subsequent traumas could be expected to have a more severe impact when an emotional abuse history is present.

Of note here is the finding that, in relation to CEA it was the event rather than its impact, namely CPTSD, which was found to be significantly associated with the presence of lifetime suicidality. This may point to the complexity of developmental outcomes which follow CEA. Features such as anxiety, depression, somatization, alexithymia, eating disorder pathology, and psychopathology symptoms have all been previously identified as bearing an association with experiences of CEA (Finzi & Karu, 2006; Hund & Espelage, 2006; Riggs & Kaminski, 2010; Spertus, Yehuda, Wong, Halligan & Seremetis, 2003). Each of these has additionally been identified as representing risk for suicide (Chioqueta & Stiles, 2004; De Beradis,

Campanella, Serroni, Moschetta, Di Emidio et al., 2013; Fleischman et al., 2005; Grunebaum, Galfalvy, Mortenson, Burke, Oquendo & Mann, 2010; McGirr et al., 2008; Zaitsoff & Girlo, 2010). The array of outcomes following CEA, which were outwith the bounds of the current study, suggest that its potential impact on CPTSD is just one piece of a much larger puzzle.

While CEA emerged as an independent risk factor for suicidality, being in employment emerged as an independent protective factor against suicidality. Previous research has commonly found unemployment to increase suicide risk (Milner, Page & LaMontagne, 2013). Epidemiological data have consistently found fluctuations in suicide rates to follow fluctuations in employment rates, such that when unemployment rates increase, so do suicide rates (Yip & Caine, 2010). Further to this population-level evidence, case control studies have generally identified a similar relationship, with unemployment being implicated as a strong risk factor for suicide (Milner, Page & LaMontagne, 2014). There is a preponderance within existing literature to focus on suicide deaths rather than suicide attempts, as well as to focus on the general population as opposed to specific clinical or “at risk” groups. One study conducted using a sample of recently discharged psychiatric patients found, among this population, being in employment to be a risk for suicide (Hunt, Kapur, Webb, Robinson, Burns et al., 2009), suggesting population level trends may not necessarily translate across to clinical populations. The identification of being out of employment as the strongest risk factor for suicidality within the current study is therefore particularly noteworthy, and of practical value when assessing suicide vulnerability within trauma-patients.

Theories abound as to why a relationship between employment and suicidality may exist, with three possible explanations having been proposed. First, it has

been suggested that unemployment may directly relate to suicide through its increasing of the impact of life stressors (Blakely, Collings & Atkinson, 2003). This may be particularly pertinent to the trauma population given that traumatic events are, by nature, stressors. It could therefore be expected that those within the trauma population have at least one severe life stressor to deal with. If unemployment impacts upon how this is coped with, as it is theorised, this can be expected to increase suicide risk. Second, it has been suggested that unemployment indirectly increases suicide risk through its resulting increased likelihood of mental health difficulties or financial problems (Blakely et al., 2003). According to this theory, unemployment may have begun to erode mental health and financial resources prior to a trauma being experienced. Traumatic experiences are known to frequently lead to impairments in mental health with features such as anxiety, depression, and PTSD common posttraumatic experiences (Hovens et al., 2012; Suliman et al., 2009). The addition of these trauma-related mental health outcomes into a situation already characterised by poorer mental health can therefore be expected to elevate such experiences to a potentially toxic degree. Finally, it has been proposed that unemployment and suicide may not be linked directly, but that there may be underlying factors which increase vulnerability for both (Blakely et al., 2003). One potential contextualisation of this in relation to traumatic events is that it is these traumas which represent the vulnerability for both unemployment and suicide. A defining feature of PTSD is the presence of impaired personal, social, or employment functioning (WHO, 2018). As such it may be considered that in many cases experiences of trauma will be followed by periods of unemployment. The retention of a strong significance between employment status and suicidality when controlling for additional predictors suggests that there may indeed be a unique

effect of unemployment on suicide risk over and above any potential common causes. Any direct or indirect route from unemployment to suicide risk is of particular pertinence within the trauma population, given the already potentially catastrophic mental health outcomes resulting from traumatic events. It is therefore of the utmost priority to minimise situations which may further exacerbate these outcomes.

6.2.3 Study 2 Main Findings

The results of the study discussed above suggest that Yates' model relating non-suicidal self-harm and childhood trauma does not carry over to explaining suicidal outcomes following childhood trauma. The previously discussed literature had highlighted the inadequacy of suicide theories in explaining risk following childhood trauma, leading to the testing of Yates' self-harm model in relation to suicidality. With results of the first study suggesting this model is not adequate for explaining suicide risk following childhood trauma, a second study was conducted. This study was further influenced by the findings from the systematic literature review suggesting the key involvement of the domains of self-perception, interpersonal functioning, and affect regulation between childhood trauma and suicidal behaviour. Thus, the aim of this study was to develop an original theory relating childhood trauma to suicidal behaviour by exploring the mediating role of psychological factors within these three domains. The results of this study will now be discussed.

The primary finding from the current study was the identification of DSO as mediating the relationship between childhood trauma and suicide attempt status. This represents the first study to examine the relationship of the DSO features in combination as mediators between childhood trauma and suicidal behaviour.

This is also the first time the DSO features have been examined in a single study for their relationship with suicide. The constituent constructs of DSO, namely negative self-concept, relational disturbances, and emotion dysregulation have previously been explored for their mediating roles between childhood trauma and suicidal behaviour. Holding a negative perception about oneself has been previously found to mediate the relationships between CSA, CPA, and CPN, and suicidal behaviour (Twomey et al., 2000). In this case, no mediating role from a cumulative severity of childhood trauma was found, in contrast to the current study.

Experiences of severe interpersonal difficulties, and impairments in social functioning have also been previously identified as mediating the relationship between childhood abuse and suicidal behaviours (Johnson et al., 2002; Soloff et al., 2008). In addition, psychosocial factors which may be expected to impact upon one's ability or willingness to function adaptively in interpersonal settings have been found to also mediate the relationship between childhood trauma and suicidal behaviour. Evidence exists for features such as a general social incompetence, the absence of cooperative personality traits, and the presence of schizotypal personality disorder – characterised by social withdrawal – all acting as mediators between childhood trauma and suicidal behaviour (Godet-Mardirossian et al., 2011; Soloff et al., 2008; Twomey et al., 2000). Each of these would be expected to impact upon one's ability to form and/or maintain social relationships.

In addition to the above interpersonal factors, previous evidence points to the mediating role of a number of factors which influence interpersonal functioning, but which are rooted in some way in negative beliefs about the self. Features such as a sensitivity to rejection or loss, a general mistrust of others' motivation,

and considering the self to exist in isolation have all been found to mediate the relationship between childhood trauma and suicidal behaviour in previous studies (Godet-Mardirossian et al., 2011; Twomey et al., 2000). Each of these may be expected to lead to an avoidance of forming meaningful relationships with others, or a general avoidance of social settings. They additionally may be built on considerations of the self as someone who will not be accepted by others. In this way, there is a modicum of existing evidence demonstrating the combination of two DSO features, namely a negative self-concept and relational disturbances, as mediators between childhood trauma and suicidal behaviour. The current study expands further upon this by proposing the interaction of all four DSO features in this mediatory relationship.

The final DSO element to be discussed includes the emotion regulation constructs of emotional hyperactivation and emotional deactivation. Emotion dysregulation, describing ineffectual reduction of negative affective experiences, has previously been shown to mediate relationships between severity of sexual and physical abuse, CSA, and CEA, and suicidal behaviour (Gordon et al., 2016; Wanner et al., 2012). In these cases, the role of emotion dysregulation in relation to overall severity of childhood trauma was not explored. The emotion dysregulation constructs used in each of these studies are similar to the hyperactivated emotion regulation element of DSO. In the current study, neither hyperactivated nor deactivated emotion regulation was found to act as an independent mediator between childhood trauma and suicidal behaviour. It was when these were included alongside the additional DSO elements of self-concept and relational functioning that a mediating effect was detected. Neither Wanner et al. (2012) or Gordon et al. (2016) controlled for these additional features when exploring the mediating role of emotion dysregulation.

A combination of heightened and diminished emotional responses has previously been identified as a mediator between childhood trauma and suicidal behaviour (Aas et al., 2017). Affective lability, described as the rapid changing of emotions (Aas et al., 2017), was found to mediate the relationship between childhood trauma severity and suicidal behaviours (Aas et al.,2017). The current study found both hyperactivated emotion regulation and deactivated emotion regulation, as constituents of the DSO construct, to mediate this same relationship between childhood trauma severity and suicide attempt history. The rapid fluctuations in emotions present within affective lability may be considered analogous to a flitting between emotion hyperactivation and emotion deactivation. As such it can be considered to contain these two DSO characteristics.

Past evidence has been presented for the involvement of each of the DSO constructs as mediators between childhood trauma, as well as for instances where two of these constructs might be operating in combination as mediators of the relationship between childhood trauma and suicidal behaviour. The current study is the first to consider these as a single, interlinked entity. This adds to our understanding of the role these features play in increasing suicide risk by highlighting the potential interplay and perpetuation among them.

The remaining findings to be discussed related to factors associated with the formation of DSO following experiences of childhood trauma. Attachment style, self-blaming cognitions, and the PTSD symptom clusters of re-experiencing and hypervigilance were each found to act as independent mediators of the relationship between childhood trauma and suicide attempt status. These findings will now be discussed in turn in relation to existing evidence in the area.

The current study found an insecure attachment style to mediate the relationship between childhood trauma and the DSO. Secure attachment, composed of low levels of avoidance and anxiety, was negatively associated with both childhood trauma and DSO, while fearful attachment, composed of high levels of both anxiety and avoidance, was positively associated with childhood trauma and DSO. A relationship between childhood trauma and insecure attachment has been established within previous literature, with both attachment anxiety and attachment avoidance being identified as present in increased levels among those with a history of childhood trauma (Tasca et al., 2013). Conversely, the presence of positive caregiver environments has been found to be associated with the development of attachment security (Westen, Nakash, Thomas and Bradley, 2006). Previous findings relating childhood trauma experiences to attachment insecurity have primarily been drawn from community samples (Aspelmeier, Elliot & Smith, 2007; Waldinger, Schulz, Barsky & Ahern, 2006; Yumbul, Cavusoglu & Geyimci, 2010). The current study expanded upon these through the use of a clinical sample of traumatised adults. This allows for the specificity of issues relating to this population to be fully explored.

As has been mentioned already in this thesis, the four features of DSO are negative self-concept, relational functioning, emotion hyperactivation, and emotion deactivation. Attachment style was found to mediate the relationship between childhood trauma and the combination of these as a diagnostic construct. While the development of DSO in response to childhood trauma has been supported through previous literature (Karatzias et al., 2017), there is a dearth of evidence for variables which may mediate this relationship. As mentioned, the relationships focused on in the current study were between severity of childhood trauma, attachment style, and severity of DSO symptoms

as a single construct. At the time of writing, attachment style had only been explored in relation to DSO on one previous occasion (Karatzias, Shevlin, Hyland, Brewin, Cloitre et al., 2018). In this study, attachment anxiety was found to differentiate between those with CPTSD as opposed to having PTSD. Given that CPTSD comprises of PTSD and DSO, it may be inferred that this represents an association between attachment anxiety and the presence of DSO.

Additionally, attachment has been found to be associated with factors relating to the constituent parts of DSO. Conclusive evidence has been reported for the association between the absence of attachment security, and impaired self-esteem (Gorrese & Ruggieri, 2013). In addition, attachment insecurity has been associated with reduced access to social support, interpersonal difficulties, and the presence of personality disorders characterised by social withdrawal such as avoidant personality disorder (Minzenberg, Poole & Vinogradov, 2006; Nakash-Eisikovits, Dutra & Westen, 2002; O'Connor & Elkit, 2009). Secure attachment has also been found to relate to emotion dysregulation (Goodall, Trenjnowska & Darling, 2012), with attachment anxiety demonstrating an association with emotional reactivity and avoidance demonstrating an association with emotional deactivation (Tasca, Szadkowski, Illing, Trinneer, Grenon et al., 2009). The current study expands on each of these findings by highlighting the interplay between each of these features in their emergence in the context of attachment insecurity.

In the current study, a second pathway from childhood trauma to DSO was found to operate through the use of self-blame in times of negativity. As mentioned when summarising the main findings of this study, no previous study has examined or identified a mediating role of self-blame between childhood trauma and DSO. The two sides of this relationship – childhood trauma leading to self-

blame, and self-blame leading to DSO - will now be contextualised within previous findings. The identified association between childhood trauma and self-blame is congruent with previous findings in the field, with consistent evidence suggesting self-blame to be a common outcome of traumatic experiences in childhood (Walsh et al., 2010). There is a preponderance within the extant literature to focus on self-blame following experiences of CSA, with a scope of the literature identifying only one study to investigate its development following multiple types of childhood trauma (Swannell et al., 2012). In this case, the use of self-blame in response to general negative events was found to act as a mediator between childhood trauma and non-suicidal self-injury (Swannell et al., 2012).

As mentioned, there is a relative abundance of findings demonstrating an association between childhood sexual abuse and self-blame, with such a relationship being found both among children and adults (Melville, Kellogg, Perez & Lukefahr, 2014; Quas, Goodman & Jones, 2003). Within community samples, increased severity of childhood sexual abuse has repeatedly been demonstrated as increasing the likelihood of a self-blaming attributional style developing (Coffey, Leitenberg, Henning, Tunrer & Bennett, 1996; Filipas & Ullman, 2006; Quas et al., 2003). Blaming the self for experiences of CSA has been shown as being predictive of poorer psychological outcomes. For example, Coffey et al. (1996) found internally directed blame for CSA to mediate the relationship between CSA and subsequent psychological functioning (Coffey et al., 1996). Similarly, Filipas and Ullman (2006) found a mediating role of blaming the self between CSA and PTSD symptomatology (Filipas & Ullman, 2006). A further study by Melville et al. (2014) found blaming the self for CSA experiences to be associated with a number of psychosocial outcomes, namely depression, anxiety, PTSD, dissociation, sleep problems, and self-injurious thoughts (Melville et al.,

2014). As well as focusing more broadly on the cumulative severity of childhood trauma rather than focusing on a single trauma type, the current study furthers our understanding by focusing on the role of a general self-blaming attributional style as opposed to simply self-blame for abuse experienced.

The involvement of self-blame between childhood trauma and suicide has previously been examined in relation to CSA (Peters and Range, 1996), with those who blame themselves for their experiences of CSA being identified as more likely to experience subsequent suicidal ideation or make suicide attempts (Peters & Range, 1996; Barker-Collo, 2001). In each of these studies only CSA was explored, and the self-blame construct was specific to attributing blame for having experienced this. The current study therefore expands upon these pervious findings by positioning self-blame between more general experiences of childhood trauma as well as by exploring the role of a general self-blaming attributional style. In addition, the current study found self-blame not to directly mediate the relationship between childhood trauma and suicide attempts, but rather to operate as a childhood trauma outcome which increased the likelihood of developing DSO. It was the presence of this DSO which subsequently increased suicide risk. This study therefore opens up a further layer of understanding of the manner in which attributional styles may operate following childhood trauma. My results suggest this attributional style may influence characterological developments which in turn increase suicide risk. Further studies have similarly found general self-blaming attributional styles to be indicative of suicide risk (e.g., Horwitz, Hill & King, 2011; Yen & Siegler, 2003). Again though, these suggest a direct route from self-blame to suicide, whereas the current findings illuminate this further by suggesting a further level of psychosocial development before suicide risk is elevated.

The PTSD symptom clusters of intrusion/re-experiencing and hypervigilance were each found to independently mediate the relationship between childhood trauma and DSO. Past research into the relationship between childhood trauma and PTSD has tended to include PTSD as a single diagnostic construct rather than exploring the development of specific symptom clusters. Cumulative severity of childhood trauma experiences have previously been shown to relate to the development of PTSD (Cloitre, Stolbach, Herman, Kolk, Pynoos et al., 2009). Additionally, an increasing number of childhood trauma types experienced are associated with increased severity of PTSD symptoms. The current study expands these findings by demonstrating the symptom clusters most strongly associated with childhood trauma experiences, as well as those which are most strongly associated with subsequent psychosocial impairments. The three PTSD symptom clusters of avoidance, re-experiencing, and hypervigilance have each previously been found to be associated with abusive experiences in childhood, through bivariate analyses (Cloitre et al., 2009). Where the current study expands on this is by demonstrating unique pathways through the symptom clusters of re-experiencing and hypervigilance within a multivariate framework.

Research exploring the ICD 11 diagnostic constructs of PTSD and CPTSD have until now been aimed at developing an evidence base for these being distinct categories (Cloitre et al., 2013). In addition, evidence is emerging for childhood trauma being more commonly associated with CPTSD than PTSD (Karatzias et al., 2016), with one study finding childhood trauma experiences to be particularly strongly associated with the DSO factor of CPTSD (Shevlin, Hyland, Karatzias, Fyvie, Roberts et al., 2017). The assumption within current evidence, and indeed within the ICD-11 framework of CPTSD is that the emergence of DSO symptoms occurs concomitantly with the emergence of PTSD symptoms.

Associations have previously been reported between PTSD and its constituent symptoms, and the DSO features of negative self-concept, impaired relational functioning, and emotion dysregulation. An association between low self-esteem, a proxy measure for negative self-concept, and PTSD severity has previously been reported, with increased severity of PTSD symptoms being associated with lower levels of self-esteem (Robinaugh & McNally, 2011). Further to this, reduced levels of self-esteem have been identified as predictive of the emergence of PTSD symptoms up to two-years post-trauma (Adams & Boscarino, 2006). Similarly, PTSD has consistently been found to be associated with impairments in interpersonal functioning (e.g., Cloitre, Miranda, Stovall-McGlough & Han, 2005). In addition to an association between the overall severity of PTSD and interpersonal functioning, the avoidance symptom cluster has been demonstrated as being uniquely associated with experiencing such difficulties (Beck Grant, Clapp & Palyo, 2009). In partial contrast to the current study, previous evidence suggests that neither re-experiencing or hypervigilance symptom clusters are uniquely associated with the DSO feature of impaired interpersonal functioning (McLean, Rosenbach, Capaldi & Foa, 2013).

The final two elements of DSO each pertain to emotional regulation, in the forms of hyperactivation and deactivation. An association has previously been reported between PTSD and emotion regulation difficulties (Weiss, Tull, Viana, Anestis & Gratz, 2012). Specifically, severity of overall PTSD symptoms have been found to relate to impaired awareness of emotional experiences, impaired acceptance of emotional experiences, impaired use of goal directed over impulsive responses to emotions, and impaired use of emotion regulation strategies (Ehring & Quack, 2010). Of more relevance to the findings of the current study are relationships between avoidance, re-experiencing, and hypervigilance symptom clusters and

emotion regulation difficulties which have been reported previously (Dyer, Dorahy, Hamilton, Corry, Shannon et al., 2009). While the current study supports the role of re-experiencing and hypervigilance symptoms in the formation of DSO features, avoidance was not identified as having a significant involvement. These differences must be interpreted with caution however, as should those in relation to negative self-concept and disturbed relationships, given that the extant findings reported relate to the individual features of DSO, in the absence of remaining features. The current study exclusively explored the role of PTSD symptoms in predicting the formation of an overarching DSO construct.

While there is yet to be any reporting on the involvement of PTSD symptom clusters of the development of DSO, past studies have explored these symptoms in relation to Disorders of Extreme Stress Not Otherwise Specified (DESNOS). DESNOS may be considered an alternate conceptualisation of posttraumatic complexity and was included in the DSM-5 as an additional diagnosis to PTSD. DESNOS contains symptom clusters of alterations in affect regulation, alterations in attention or cognitions, alterations in self-perception, alterations in relationships with others, somatization, and alterations in systems of meanings (APA, 2013), and has been found to develop in association with PTSD (Dorahy, Corry, Shannon, MacSherry, Hamilton et al., 2009). In addition, the avoidance symptom cluster, but not either re-experiencing or hyperarousal, has been shown to be associated with the formation of DESNOS (Dyer et al., 2009). In particular, each of these PTSD symptom clusters have been found to relate to the DESNOS features of alterations in affect regulation, alterations in self-perception, and alterations in relationships with others (Dyer et al., 2009), with these features in particular overlapping with the constituents of DSO. The current study expands upon these findings in two ways. First, it explored the DSO construct as a single

entity composed of negative self-concept, disturbed relationships, and emotion dysregulation, whereas the findings in relation to DESONS symptom groups considered these as separate, but co-existing features. Second, the current study suggests that the elements of PTSD and DSO do not develop concurrently, but rather that PTSD symptom clusters form first, with two of these, re-experiencing and hypervigilance, then influencing the subsequent development of DSO.

6.3 Theoretical Explanations for Study 2 Findings

6.3.1 DSO as a Mediator Between Childhood Trauma and Suicide Attempts

The following section will focus on the mediating role of disturbances of self-organisation between childhood trauma and suicide attempts. Consideration will first be given for the potential mechanisms leading to the positioning of the disturbances of self-organisation within contemporary understandings of suicide, before elaborating on potential explanations for suicide occurring as a result of the presence of disturbances of self-organisation.

Before discussing the role of disturbances of self-organisation in the development of suicidal behaviours, a moment of reflection. When exploring factors for suicide risk, the aim is not to identify variables whose presence will predict the development of a suicidal outcome. Suicide is an ecological phenomenon, it is, in essence, a response to extreme life stressors. These stressors bring about a series of maladaptive emotional and cognitive developments which must be dealt with in an appropriate manner. When these are not dealt with successfully, there is an increase in the risk that emotional and cognitive developments will lead towards a suicidal outcome. As such, the argument to be made within this discussion is not that disturbances of self organisation lead people to make suicide attempts. Rather, that those with disturbances of self-organisation are at

increased likelihood of responding to or coping with severe life stressors in a manner which may be ineffectual in reducing the emotional pain brought on through these stressors, with this ineffectual reduction of emotionality increasing the likelihood of a suicidal outcome occurring. It may very well be the case that people with the DSO clusters investigated through this study are never faced with the type of scenario which elicits a suicidal response. In that case these individuals are at no greater risk for suicide than anyone else. However, when faced with extreme life stressors, those who possess the disturbances of self-organisation discussed herein are at increased likelihood of responding to these in a manner which may lead to a suicidal outcome.

As was established within the introduction chapter, and was summarised in section 6.2, existing theoretical perspectives on suicidal behaviour are not sufficient to explain the specific suicide risk seemingly inherent within childhood trauma. None provides a workable model demonstrating the processes emerging out of childhood trauma which lead towards suicide. When taken in combination however, a picture begins to emerge of some features in the areas of self-concept, disturbed relationships, and emotion dysregulation which coalesce to enhance suicide risk. The disturbances of self-organisation, identified within the current study as mediating the relationship between childhood trauma and suicide attempts, will therefore be discussed in line with these theoretical perspectives.

Through his Escape from Self theory, Baumeister (1990) provides an overview of the mechanisms through which a negative self-concept may lead towards suicide (Baumeister, 1990). It is suggested that negative self-perceptions lead to the experiencing of negative affect, with attempts to escape this affect coming through a process of cognitive deconstruction. This deconstruction involves

removing meaning and attributions from experiences, instead focusing on proximal, concrete elements of experience (Baumeister, 1990). In this way, there is an avoidance of providing meaning to experiences, or contextualising them in line with distal beliefs or perceptions, as to do so may inhibit the avoidance of negative affective states. Following Baumeister's (1990) model through, deconstruction reduces inhibition and subsequently reduces aversion to suicide. Alternatively, when deconstruction fails, negative affect, negative self-perceptions, and internal attributions of blame will re-emerge. This re-emergence triggers subsequent cognitive deconstruction, with perpetual cycles between the two leading to both a pervasive sense of hopelessness, given no long-term absolution from negativity is achieved, and ambivalence to long-term outcomes given the reduction of distal awareness brought about through deconstruction (Baumeister, 1990). The combination of hopelessness and ambivalence are then taken as the underlying features of subsequent suicidality.

Considering suicide as an Escape from Self provides a clear indication of the manner in which a negative self-concept may introduce suicide risk. The processes involved in suicide are described as beginning with perceived failings to achieve the ideals of the self or others (Baumeister, 1990). These perceptions emanate into perceptions of the self as a failure, and more generally into a cacophony of negativity, with perceptions, affect, and attributions accentuating one another in perpetuity. Suicide acts as a mechanism of escape from these features (Baumeister, 1990). It may perhaps be best to consider this desire for escape as the elicitation of suicidal ideations. Aversion to suicide is expected to have been reduced through the development of hopelessness and ambivalence as described above (Baumeister, 1990). This reduced aversion to suicide, when

existing within the milieu of desired escape demonstrates where the displaying of suicidal behaviours will emerge from, in relation to a negative self-concept.

In attempting to understand the manner in which relational disturbances may increase suicide risk, one may focus attention on the Interpersonal Psychological Theory (IPT) of suicide (Joiner, 2007). Through the IPT, Joiner proposes the integration of three overlapping areas of risk which, in differing combinations increase risk for becoming suicidal or making suicide attempts (Joiner, 2007). Suicidal ideation is considered to develop as a result of a combination of thwarted belonging and perceived burdensomeness, with suicide attempt risk emerging when acquired capability for suicide is entered into the mix (Joiner, 2007). Thwarted belonging refers to a combination of feeling isolated from others, and lacking any substantive reciprocal relationships. Perceived burdensomeness refers to feelings of being a liability to others, with associated feelings of self-hatred emanating out from this (Van Orden et al., 2010). Vulnerability for suicidal ideation then is borne out of feeling one is a liability to a set of people while also not having the reassurance of belonging elsewhere. This suicidal desire is considered to develop into risk for making a suicide attempt where the individual has acquired the capability to make a suicide attempt. This capability may come from a habituation for pain or decreased fear of death (Joiner, 2007). The suggestion here is that exposure to pain or self-injury, the fear associated with it dissipates and is replaced by a sense of release or relief (Joiner, 2007). Suicide risk is therefore present among those at the centre point where the three vectors of thwarted belonging, perceived burdensomeness, and acquired capability converge.

The focus within the IPT, as suggested through its name, is very much on difficulties within interpersonal situations as being at the heart of suicidality.

Thwarted belonging revolves around being disconnected from others, while perceived burdensomeness revolves around maladaptive perceptions of being deserving of this disconnection. Each of these can be demonstrated as emerging through relational disturbance. Thwarted belonging may be inhibited through social connection and through the experiencing of positive, reciprocal relationships (Van Orden et al., 2010). The relational disturbance construct, explored in the current study, includes elements of feeling distanced from others, experiencing difficulty in retaining emotional closeness with others, and relational avoidance. Where one is distanced from others it may be expected that elements of loneliness are inherent within this distance, with loneliness considered the active ingredient in a sense of disconnection. Similarly, a feeling of distance from others can be anticipated as including within it inherent disconnect, which may be brought on by both physical and emotional distance. Where this distance is emotional in nature, it may necessarily be brought on, or aggravated, where one is impaired in their ability to retain any form of emotional closeness with others. Where a person actively avoids forming relationships with others, it can be expected that both physical and emotional distances are inherent, with each serving to redouble the sense of disconnect.

Relational disturbances, in the forms present within the disturbances of self-organisation could also be implicated in the absence of reciprocal relationships, a further component of thwarted belonging. First, relational avoidance innately inhibits relational formation. Difficulties in forming close emotional bonds, or a sense of emotional distance from others would similarly be expected to enhance the perception that one is void of any meaningful interactions. It may be expected that these relational disturbances operate cyclically, for example relational avoidance would lead to isolation or disconnectedness, which in turn may impact

upon one's ability to feel a closeness to others, this difficulty in developing closeness may itself then lead to further relational avoidance, and so on. In this way, it is not any single element of relational disturbances which is the most toxic in relation to the developing of suicidality, but rather, this toxicity emerges through a dynamic process involving multiple elements of disturbance.

As was the case for thwarted belonging, perceived burdensomeness could be understood as being underpinned, in part, by elements of relational disturbances. Here though, there may be a demonstration of these relational disturbances interacting with elements of a negative self-concept in the formation of suicide risk. Perceived burdensomeness is understood to incorporate both a sense that you are a liability to others, such that you are overly reliant on the input of others, and also a sense of self-hatred built on elements such as blaming yourself for your role of reliance and the erosion of self-esteem this may bring. Feeling that you are a liability to others, or that you are somehow worsening their life experiences by being present in them could lead an individual to remove themselves from the vicinity of these others. There is a belief within burdensomeness that one would be worth more in death than in life, this may lead to the exiling of oneself from others. Although one may feel reliant on others, for example for financial aid in times of unemployment, or physical support in times of illness, this reliance can be expected to shift the balance of reciprocity in any close relationships, such that others are there to support you while you are unable to reflect this support back to them. In situations such as this, where the natural position of the individual may be to avoid closeness to others, or where one is impaired in their ability to form close bonds, their sense of burdensomeness may be further ignited due to the foreign nature of relying on others.

With regards to a sense of self-hatred tied to perceived burdensomeness, this may emanate from a position of guilt over the encumbrance one is delivering to others. Again, taking into account the expected position of one experiencing relational disturbances, such that they would naturally avoid seeking out the support of others, or avoid demonstrating their vulnerability to others through fear of hurt, a sense of guilt or shame in their inability to support themselves may be prevalent. This guilt may slowly eat in to the persons self-esteem, while a sense of shame may bring with it internal attributions of blame for the imposition they perceive themselves to be. Each of these may serve to enhance the sense of self-hatred symptomatic of perceived burdensomeness (Van Orden et al., 2010). Perceiving oneself as a burden to others may be considered to be borne out of an absence of reciprocity, or mutual support and relational reliance. The resulting hatred of the self for being such a burden may lead to the avoidance of closeness to others, although one feels they need others to support them through the tribulations they are faced with, the struggle of overcoming these independently may be considered less impactful than the difficulty one perceives they are adding to the lives of others through their lack of self-reliance. There is then an interaction with a negative self-concept, given that where underlying perceptions of shame, or guilt, or self-hatred will be built upon by the belief in oneself as a liability.

The role of emotion in suicide is understood generally as representing an entity whose avoidance is sought through the suicidal process (Brown, Comtois & Linehan, 2002). It has been proposed that suicide risk emerges when life stressors and pre-existing vulnerabilities coalesce to produce unbearable affective arousal (Williams, 1997). Suicidal ideation is then taken to develop through instances where escape from the affective states brought on are deemed inescapable (Williams, 2001). It is not the unbearable nature of the emotional

experience here which elicits suicide risk, but rather the inescapability of this emotionality. When heightened emotional reactivity is experienced, such as the type of hyperactivation present within the disturbances of self-organisation, a number of resources are understood to be drawn upon in attempts to reduce this arousal (Williams & Pollock, 2000). These resources are summarised in most depth within the IMV model of suicidal behaviour (O'Connor & Kirtley, 2018), and so explanatory examples will be drawn from this model. The IMV suggests that attempts to escape are governed by factors which increase or decrease feelings of defeat and entrapment in relation to the escape attempt (O'Connor & Kirtley, 2018). Defeat is accentuated into entrapment through the failure of internal resources, such as memory biases, problem solving deficits, or ineffective coping strategies (O'Connor & Kirtley, 2018). This enhancement of entrapment is understood to develop into suicidal ideation through the failings of externally oriented resources such as connectedness to others, social support, or perceived future goals (O'Connor & Kirtley, 2018).

As can be seen from the example of the IMV, the desire to escape from aversive affective arousal is a key component of the development of suicidality (O'Connor & Kirtley, 2018). Where this arousal is present in an extreme form, such as through experiencing hyperactivity, it may be concluded that increased resources will be required to prevent this experiencing developing towards suicidal ideation. Indeed, increased emotion reactivity has been found to increased suicide risk (Dour, Cha & Nock, 2011). It may further be noted that it is not the presence of heightened emotional arousal which brings a predisposition for suicide, but the ability or lack thereof, to adaptively cope with and diminish this arousal. Where appropriate resources are lacking or perceived to be lacking, such as through the processes of thwarted belonging or perceived burdensomeness described

above, the experiencing of aversive affective states will represent a significant risk for suicide (Van Orden et al., 2010). However, where the individual experiencing these states is able to draw on internal resources centred on perceptions of successful regulation abilities, or external resources such as the emotional support of others, then the affective state would not represent a risk factor for suicide (O'Connor & Kirtley, 2018). This demonstrates, not only the positioning of increased emotional activity as the source of suicidal ideation but also the interaction between emotional arousal and both perceptions of one's self, through the belief that one can overcome the situation, and the availability of others, through things like social supporting, in converting this dormant risk into an active suicide crisis.

There is something of a preponderance within existing literature to focus on emotion dysregulation in terms of the inability to effectively diminish heightened negative emotional activity (see Law, Khazem & Anestis, 2015 for review). One common exception to this is the investigation of emotional suppression in relation to suicide (Kaplow, Gibson, Horwitz, Burch & King, 2014). Emotional suppression involves the deliberate non-displaying of emotion-related behaviours or gestures (Gross, 2001). While this, on its face, may appear to be a mechanism for deactivating emotional arousal, it has been shown to lead to an increase in the duration and intensity of the adverse emotional experience (Kaplow et al., 2014). Within this then there may be an inkling of an explanation for the relationship between both emotion hyperactivation and emotion deactivation and suicidal behaviours. If emotional arousal is taken as needing to be escaped from to inhibit suicidal ideation, the ineffectual nature of emotional suppression in reducing emotional activation would represent a failure to do so. This would therefore connect hyperactivation of emotions to suicidal ideation. Beyond this, there may

be something of a habituation effect from the continued, if ineffective, attempts to diminish emotional experiences through suppression. Where attempts are made to suppress emotions following the activation of affective arousal, these attempts may start to be employed as antecedent-focused strategies prior to this activation, through the awareness that they were not effective as an emotion-focused strategy following affective activation. The predisposition to using more global deactivating strategies may have the knock-on effect of leading to pervasive experiences of deactivation. Such continued deactivated states may then lead to greater sensitivity to extreme emotion-inducing events, such that no adaptive coping strategies have been able to develop in the face of such ubiquitous emotional avoidance.

As is highlighted through the current discussion, theoretical bases may be used to contextualise the positioning of disturbances of self-organisation as representing increased suicide risk. As was proposed at the beginning of this section, it is important to recognise that these factors do not represent suicide risk outwith a set of process activated in response to life stressors. As such, these disturbances of self-organisation should be understood as bringing with them increased underlying vulnerability for becoming suicidal or making a suicide attempt, should any set of events occur such as to activate these processes. It is the manner in which these stressors are reacted to or coped with which bring out the vulnerability to suicide introduced through the disturbances of self-organisation. As detailed above, both a negative self-concept and relational disturbances will reduce the pool of coping mechanisms available to an individual, while emotional hyperactivation and deactivation will both exacerbate the need for coping mechanisms to be employed. This brings with it an exposition of the interaction between these elements of disturbances of self-organisation.

6.3.2 Mediators between childhood trauma and DSO

6.3.2.1 Attachment as a Mediator Between childhood trauma and DSO

The remaining theoretical discussion will focus on factors identified as mediating the relationship between childhood trauma and DSO. The relationship between childhood trauma and DSO was found to be mediated first by the absence of attachment security. Attachment incorporates three core elements, namely emotion regulation (the underlying aim), self-perception (the basis for attachment anxiety), and the perception of others (the basis for attachment avoidance) (Fowler, Allen, Oldham & Frueh, 2013). Similarly, the disturbances of self-organisation present within CPTSD contain three core elements, namely emotion dysregulation (both hyperactivating and deactivating), a negative self-concept, and disturbed relational functioning (Maercker, Brewin, Bryant, Cloitre, van Ommeren et al., 2013). When secondary attachment systems of anxiety and avoidance are activated, the goal of the attachment process shifts from being aimed at regulating distress, to maintaining either a hyperactivation system or a deactivation system (Mikulincer et al., 2003). Hyperactivation systems aim to retain maximum closeness to others through the chronic fear of being incapable of dealing with threats to self on your own. Deactivation strategies are aimed at avoiding attachment activation, through avoiding the closeness which is craved through hyperactivation strategies (Mikulincer et al., 2003). The hyperactivation strategies of attachment anxiety have been found to be associated with heightened perceptions of threats, negative perceptions of the self, and extreme negative beliefs surrounding potential interactions with others, while the deactivation strategies of attachment avoidance have been found to be associated with reduced intimacy in close relationships, the suppression of painful thoughts or memories, and both the repression of negative cognitions

about the self, and the projection of negative self-cognitions onto others (Mikulincer et al., 2003 for review).

To be discussed first are the route from hyperactivation strategies of attachment anxiety to the disturbances of self organisation. To be borne in mind throughout this section is the notion that attachment systems are activated in response to every instance of emotional distress emergence (Bowlby, 1988). These are systems which continually come into play, and as such they will continually perpetuate any cognitive residue they leave behind. This is important when considering the manner in which a negative self-perception in relation to a specific emotion-inducing event could manifest into a globally diminished self-concept, for example. Attachment anxiety is built around a near total reliance on others in times of distress, mirrored by a near total preclusion of self-reliance (Tasca et al., 2013). As such it is predicted on the belief that oneself is incapable of alleviating distress, or regulating the associated emotional arousal, without external input. In this way, attachment insecurity represents a repeated source of negative beliefs in one's abilities. Through the repeated activation of the attachment anxiety system, as described above, it would therefore seem clear that these may develop into pervasive negative perceptions of the self as being somehow incomplete or ineffectual, as is present within the negative self-concept element of disturbances of self-organisation. Attachment anxiety has previously been found to mediate the relationship between childhood trauma and subsequent cognitive distortions, with one explanation for this being that childhood trauma's effect on the model of self is maintained through cognitive styles based around a negative perception of the self (Browne & Winkelman, 2007).

The manner in which attachment anxiety may be expected to lead to the reinforcement of a negative self-concept can be contrasted to the manner in

which attachment avoidance may be expected to impact upon relational functioning throughout life. Attachment avoidance is built around chronic attempts to push others away in favour of relying exclusively on oneself to alleviate emotional arousal in times of distress (Tasca et al., 2013). Through these deactivation strategies, thoughts or memories which may elicit feelings of feelings of distress or vulnerability are suppressed, in part to prevent the unavailability of attachment figures from being further reinforced (Mikulincer et al., 2003). In a similar vein, closeness to others, be it emotional or behavioural, is avoided (Mikulincer et al., 2003). It may be expected that this pathological avoidance of closeness to others will over time lead to the level of relational disturbances present within the disturbances of self-organisation. Furthermore, the suppression of distress-eliciting thoughts and memories may further compound difficulties in sustaining meaningful relationships, with suppression of emotions and related behavioural elements understood to impact upon one's ability to be interacted with by others at a meaningful level (Gross and John, 2003). These processes of avoidance and suppression then provide some insight into the development of the impaired relational functioning present within the disturbances of self-organisation.

The final elements of the disturbances of self organisation construct are severe impairments in regulating affect, in the form of emotion hyperactivation or emotion deactivation. Here emotion hyperactivation refers to extreme, intense, long-lasting, or uncontrollable periods of affective arousal, while emotion deactivation refers to pervasive muting of affective experiences, both positive and negative affect (Cloitre et al., 2015). It could be anticipated that the hyperactivating strategies indicative of attachment anxiety would over time lead to the formation of hyperactivated dysregulation through the absence of self-soothing abilities. It

could additionally be anticipated that the deactivating strategies indicative of attachment avoidance would over time lead to the forming of deactivated dysregulation through repeated attempts at avoiding attachment activation.

It could be expected that where a preoccupied attachment style, based on attachment anxiety, or a dismissing attachment style, based on attachment avoidance is present, that there may only be certain elements of the disturbances of self-organisation features which develop. Specifically, preoccupied attachment may be expected to lead to negative self-concept and emotion hyperactivation, while dismissing attachment could be expected to relate most strongly to disturbed relationships and emotion deactivation. In the current study it was found that the absence of a secure attachment style in general, as well as the presence of a fearful attachment style, combining both anxiety and avoidance, mediated the relationship between childhood trauma and disturbances of self-organisation. Attachment style is considered to represent a single entity consisting of a collection of behavioural patterns, with its constituent parts of emotion regulation, model of the self, and model of others being inherently integrated (Bowlby, 1988). It may similarly be efficacious therefore to consider the disturbances of self-organisation features as inherently influencing one another, with the success of affect regulation attempts being in part reliant on the perception of oneself and one's ability to interact with others in a meaningful manner. This notion was supported through the current analyses, with the four disturbances of self-organisation elements in combination mediating the relationship between childhood trauma and suicide attempts, but the effect of each element being non-significant when controlling for the remaining three.

6.3.2.2 Self-blame as a Mediator Between Childhood Trauma and DSO

A second pathway from childhood trauma to DSO was found to operate through self-blaming cognitions in response to negative or unpleasant events. Two potential explanations for the emergence of self-blame following childhood trauma will now be discussed. The first of these explanations comes from betrayal trauma theory (Freyd, 1994), with this theory suggesting that self-blame may emerge as a cognitive strategy aimed, primarily, at maintaining attachment relationships to the perpetrators of abuse (Freyd, DePrince & Gleaves, 2007). Betrayal trauma describes events where an individual or group that are depended on for survival violate the trust or well-being of those reliant on them (Freyd, 1994). Childhood trauma, when carried out by a parent or caregiver, would be considered a form of betrayal trauma. Betrayal Trauma Theory (BTT) suggests that the extent to which this trauma is considered a violation of trust will impact upon the manner in which the trauma is remembered (Freyd et al., 2007). Cognitive strategies which are intended to allow for the maintenance of a close relationship with the abusive caregiver, such as memory impairments or blaming the self, will then be implemented (Babcock & DePrince, 2012). The suggestion here is that developing self-blaming strategies, specifically in relation to abusive experiences, would minimise the impact on attachment relationships by absolving the abuser of blame (Babcock & DePrince, 2012). Childhood trauma would therefore lead to the development of self-blaming attributions as a mechanism for retaining potential protective relationships, to the detriment of ones perception of them self.

It has elsewhere been suggested that childhood trauma involves feelings of shame and self-hatred, which may then lead to the development of a self-blaming attributional style (Messman-Moore & Coates, 2007). The explanation here is that

the one being abused will internalise negative messages about themselves which are directed through the abuse (Swannell et al., 2012). Similarly, it has been suggested that where trauma occurs as a punitive disciplinarian tactic, that there is an almost conditioning effect whereby the abuse experienced is considered to represent punishment for some infraction on the part of the recipient (Swannell et al., 2012). In this situation, the child would then associate episodes of abuse as happening in direct response to their own behaviours, thus assuming they are the root of the reason for this abuse (Swannell et al., 2012). Through this conceptualisation, childhood trauma would be expected to lead to the development of a self-blaming attributional style through the imprinting of faulty beliefs with regards to the reasoning behind the traumatic experiences they have been exposed to. Self-blame has previously been found to correlate with experiences of interpersonal trauma but not non-interpersonal trauma (DePrince, Chu & Pineda, 2011), potentially adding credence to the notion that there is an element of internalising direct messages in its development. The progression of self-blame into the disturbances of self-organisation will now be explored.

Self-blame, as a negative attribution about the self, may be expected to increase the likelihood of a negative self-concept developing in a similar manner to that of attachment anxiety. As described above, attachment anxiety is a hyperactivation system which is activated in times of stress or distress (Mikulincer et al., 2003). This continued reactivation of the anxiety could be expected to lead to its influencing general perceptions of the self as someone incapable of regulating their own emotions or coping with distress independently. Similarly, blaming the self in response to any negative with which one is befallen, may lead to the imprinting of the belief that one is responsible for the negativity they experience. The negative self-concept is focused on feelings of shame, guilt, failure, and

worthlessness (Cloitre et al., 2015), each of which can conceivably be considered an expected outcome of perpetual self-blame. As noted above, shame and self-hatred are considered to be fundamental structures underpinning self-blame (Messman-Moore & Coate, 2007). It could be expected that these operate in a cyclical manner with shame and self-hatred influencing the blaming of the self in times of negativity. Attributing blame for this negativity to the self would then exacerbate these underlying feelings of shame and hatred. This pattern of shame, blame, and hatred would then strengthen the self-blame, given it reinforces these underlying negative perceptions, this in turn would then reinforce the underlying feelings of shame and hatred.

Self-blame leading to disturbed relationships may also be the result of these underpinning perceptions of shame and self-hatred, with it perhaps being the case that, in relation to self-blame, relational disturbances in part may develop as something of an offshoot of the negative self-concept which has been imprinted through the use of self-blame. If a cyclical, perpetuating pattern of self-blame and negative self-perceptions is in operation, it may then be that close relationships to others are actively avoided through the assumption that one is a source of events which elicit negative emotional experiences. The shame or guilt associated with evoking such emotional states in others may serve as inspiration for a distancing of oneself from others. This may then serve however, to once again reinforce the self-attributions of blame for negative experiences,

Self-blame can be considered a maladaptive emotion regulation, or coping, strategy, such that its use is considered ineffectual in reducing negative emotional experiences (Garnefski et al., 2001). As with all cognitive regulation strategies, self-blame is employed as an emotion-focused, after the fact strategy, brought in once an event has triggered negative emotional arousal (Garnefski et al., 2001).

Emotion-focused regulation strategies are considered secondary in their ability to reduce emotional arousal when compared to antecedent-focused strategies which focus on avoiding scenarios likely to lead to negative emotional arousal (Gross & John, 2003). Emotion-focused strategies operate once the negative emotionality has been elicited, as such they are the final port of call in attempts to regulate emotional experiences (Gross, 2001). Where they fail to bring about a reduction in affective arousal, this arousal can be expected to be experienced for prolonged periods (Gross, 2001). The emotion hyperactivation construct assessed in the current study was composed of intense emotional reactivity, prolonged periods of arousal, emotional sensitivity, and uncontrollable arousal (Cloitre et al., 2015). The ineffective nature of emotion-focused strategies such as self-blame could be expected to result in prolonged periods of arousal, which may in turn elevate to a position of uncontrollability should attempts to regulate it be continually ineffective.

6.3.3.3 PTSD Symptoms as Mediators Between Childhood Trauma and DSO

The current study found two PTSD symptom clusters, re-experiencing and hypervigilance, to independently mediate the relationship between childhood trauma and disturbances of self-organisation. It is perhaps most relevant to view these relationships through the lens of Briere's Self-Trauma Model (Briere, 2002), which discusses the most salient outcomes of traumatic experiences in childhood. In brief, Briere proposes that maltreatment in childhood, be it abuse or neglect, will impair six core developmental features. These features are attachment-based representations, conditioned emotional responses to trauma reminders, sensory memories, autobiographical memories, suppressed memories and their related cognitions, and affect regulation abilities (Briere, 2002).

One of the core outcomes of childhood trauma as understood through the Self-Trauma model is the development of conditioned emotional responses, whereby the fear or distress associated with the trauma is connected to the physical characteristics of the abuser (Briere, 2002). Through this conditioned connection, the fear and distress of the traumatic experience may be reignited through seeing other people who possess any of these physical characteristics. This, it is said, may lead to the displaying of these conditioned emotional responses within interpersonal relationships, particularly within intimate relationships (Briere, 2002). This may provide some explanation for the development of hypervigilant characteristics following childhood trauma. Where other people are considered to represent a source of fear, as they would come to through these conditioned responses, it could be expected to follow that one may be 'on alert' when in the vicinity of others, who may pose a threat. In this way, the current threat which manifests as hypervigilance can be taken to represent other people.

The presence of conditioned emotional responses following experiences of childhood trauma offer some explanation for the development of hypervigilance symptoms. Additionally, they may provide insight in to the subsequent development of disturbances of self-organisation through this hypervigilance. Hypervigilance, in the current example, is predicated on the belief that other people represent a source of threat or distress. On this basis, relational disturbances may be one expected outcome. If others are a source of threat, then the prudent move may be to avoid closeness to others. Briere describes the manner in which these conditioned responses operate such that they are not biographical memory structure, but are emotional and behavioural response patterns which are invoked through situations evocative of the trauma (Briere, 2002). In this way it could be expected that those with histories of childhood

trauma may continually keep their guard up, so to speak, when interacting with others, preventing the formation of meaningful relationships. Similarly, these conditioned responses to the threat inherent in others may lead to a physical distancing of oneself from others, a further component of the relational disturbances present within disturbances of self-organisation.

A further two post-childhood trauma developments described within the self-trauma model may provide explanation for the mediating role of re-experiencing symptoms between childhood trauma and disturbances of self-organisation, as will now be discussed. It is posited that experiences of childhood trauma will lead to the development of maladaptive memories, both implicit, or sensory level memories, and explicit autobiographical memories (Briere, 2002). First, sensory recollections, absent of any autobiographical meaning, are commonly experienced following childhood trauma in the form of almost somatic flashbacks, with unexpected bodily sensations occurring seemingly without a cause (Briere, 2002). These sensations are completely devoid of meaning, but can serve to activate memory systems, which in turn elicit the conditioned emotional response described above. These responses are understood to contain sufficient autobiographical material so as to trigger a contextualised re-experiencing of the childhood trauma (Briere, 2002). In this way re-experiencing would emerge following childhood trauma through a combination of conscious and unconscious affective memories triggering contextualisation. In relation to the development of disturbances of self-organisation, these sensory memories are perhaps best understood as a mechanism through which emotion hyperactivation operates. The original, implicit memory is experienced as pure affect, with no cognitive component, this then triggers a contextualised flashback containing within it affective components related to fear or distress, as present in the original

traumatic events, this will serve to elongate the duration of the implicit affective experience. In addition, this type of re-experiencing may bring with it anger directed towards the source of the trauma, further hyperactivating the affective arousal.

As mentioned, in addition to implicit or sensory memories, it is understood that childhood trauma will lead to the imprinting of explicit, autobiographical memories (Briere, 2002). These may also be expected to be implicated in the development of re-experiencing symptoms, with the encountering of people or situations reminiscent of their trauma bringing these memories to the fore. These autobiographical flashbacks could also be used to explain the role of re-experiencing in subsequent negative self-concept, disturbed relationships, and emotion dysregulation. It is posited that events similar to trauma events will evoke memories of these trauma events, as well as associated cognition or attributions (Briere, 2002). For example, a situation which triggers these autobiographical memories may trigger cognitions about the self as being to blame for the abuse, or somehow deserving of it, as well as the feelings of fear or threat that were felt at the time of the abuse. The fact that they activate schemas related to the self would explain the formation of a negative self-concept. Conflict is a common aspect of life, if it were to trigger negative self-attributions and cognitions in every instance it is understandable that the individual would eventually become defeated by these negative perceptions about themselves and succumb to their content, thus developing pervasive negativity in relation to their self-concept. Given that everything being discussed here is interpersonal in nature, and that the manner in which to avoid the sensory and emotional experiences described herein is to keep a distance from others, there is inherently an element of relational disturbance running through the core. Where others are the source of

potential threat, either through representing a current threat, or representing the threat of triggering past traumas, it may be expected that one would seek to keep others at a distance. It may also be expected that there would be an absence of sufficient trust in general to form close emotional attachments to others.

6.4 Unique Contributions to the Literature

A number of original contributions have been made to the extant literature through the two studies discussed above, these will now be discussed in turn. The first of the two studies, described in chapter four, was the first time increased suicide risk in relation to being out of employment was found within a traumatised sample. This was also the first study to ever examine the full set of CPTSD, and by proxy, DSO, symptoms in a single study for their association with a suicidal outcome.

The second study conducted was the first to explore CPTSD, and again DSO by proxy, for its mediating role between childhood trauma and suicidal behaviour. In addition, this was the first study to ever explore the developmental mechanisms which lead to the development of DSO following childhood trauma. Slightly contradictory findings emerged in relation to DSO across the two studies. In the first, only deactivated emotion regulation was found to have any association with the suicidality outcome, while in the second, all four DSO elements were associated with prior suicide attempts. This discrepancy may be the result of differences in the aspect of suicidality explored through each study, with the first study using an outcome of lifetime experiences of suicidal threats or behaviours, and the second focused specifically on the presence of a suicide attempt history. The second study conducted identified the combination of DSO symptoms as representing increased suicide risk, with this being the first time these elements have been explored in combination for suicide risk.

Further to the above original elements of this thesis, perhaps the most important unique contribution it makes to the literature is its proposal of a model for understanding the development of suicide risk specific to those with experiences of childhood trauma. As displayed in figure 8, the proposed theoretical framework sees childhood trauma disrupting the formation of attachment security, increasing both attachment anxiety and attachment avoidance. This insecure attachment is then one factor involved in the development of DSO, with this development understood as resulting from the chronic activation of these attachment systems. A second pathway linking childhood trauma to DSO is proposed as operating through internal attributions of blame. These attributions develop in part as strategies for absolving others of blame for traumatic events, so as to retain attachment relationships to abuse perpetrators, and in part as a result of feelings of shame and guilt commonly associated with childhood trauma. Internal attributions of blame are then proposed as leading to DSO due to their being ineffectual in diminishing negative emotional experiences, as well as their reinforcement of negative perception about the self. Two final pathways from childhood trauma to DSO are then proposed through the PTSD symptom groups of hypervigilance, representing a sense of current threat, and the reexperiencing of intrusive thoughts and memories. Each of these pathways are understood to emerge, in essence, in response to the perceived threat posed by other people. This perceived threat then enhances DSO features by heightening emotionality, and promoting isolating behaviours.

Finally, the presence of DSO are taken to represent increased risk for suicide attempts being made. This risk emerges as a result of the interaction of the four elements (emotion hyperactivation, emotion deactivation, negative self-concept, and impaired relational functioning) in response to stressful events. The

processes described in this model may be best understood as representing a connection between the pre-motivational and motivational phases of O'Connor's (2011) IMV model of suicide. Childhood trauma can be understood as being a pre-motivational vulnerability factor for suicide, the model being proposed here describes the psychological processes which lead these distal experiences to their representation of suicide risk. An important caveat to note here is that this model is not proposing that DSO independently increases suicide risk, but rather the presence of DSO increases the likelihood of extreme life stressors being responded to in a manner described in previous suicide frameworks such as the IMV. This distinction is indicated in figure 8 by a dashed line separating DSO from suicidal behaviour. This line can be taken as indicative of a trigger event which converts the latent suicide risk present within DSO into active processes.

Existing theoretical frameworks of suicide have focused on the development of suicide risk in general, with none present which explains the development of suicide risk specifically following childhood trauma. Given the increase in suicide risk associated with childhood trauma, such a framework is vital in understanding the specific psychological processes which connect experiences of childhood trauma to suicidal behaviour. In addition to being the first framework to be developed which describes the development of suicide risk in relation to childhood trauma, this model is also unique in its explanation of the development of distal vulnerabilities into proximal suicide risk. Previous models, for example the IMV model (O'Connor, 2011; O'Connor & Kirtley, 2018), have acknowledged the vulnerability for suicide associated with background experiential factors, but without exploring the mechanisms through which these factors increase subsequent suicide risk. The current model therefore expands upon this

understanding by detailing specific developmental processes which convert these experiences into later suicide risk.

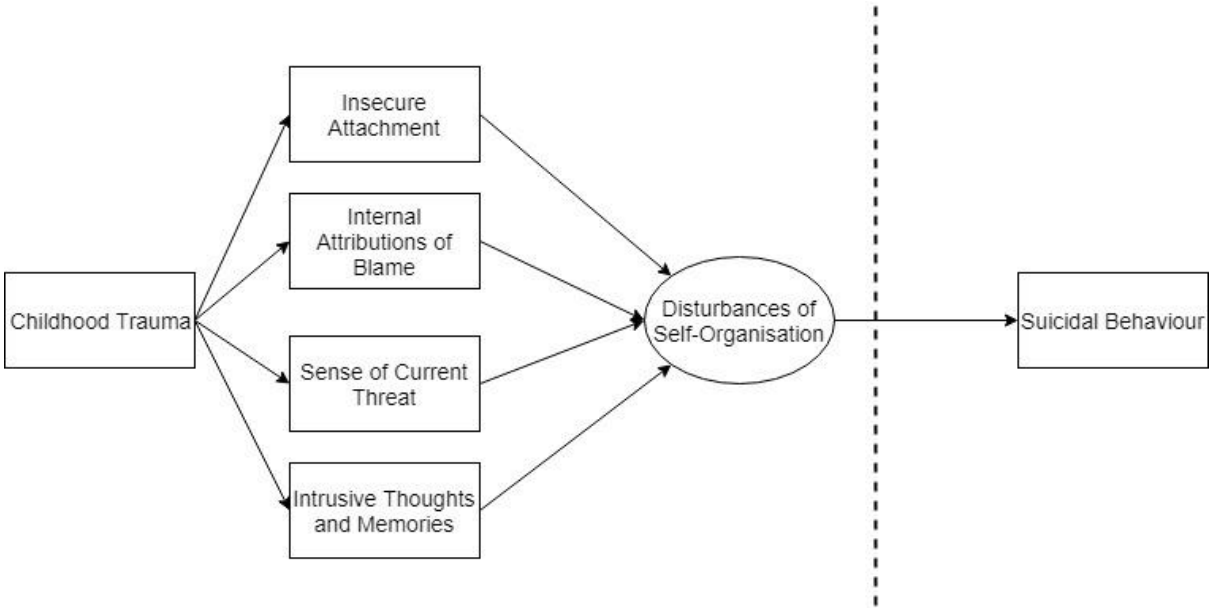


Figure 8: Proposed theoretical model

6.5 Implications for Practice

The theoretical model of childhood trauma leading to suicide risk being proposed in the current thesis suggests that treating DSO symptoms will reduce suicide risk within this population. The four-component set-up of DSO perhaps lends itself best to a dual-aspect approach to its treatment. First, the elements of negative self-concept and relational disturbances may be treated in combination through a compassion-focused approach. Compassion-focused therapy (CFT) aims to encourage people to develop compassionate thoughts and feelings both towards themselves and others (Gilbert, 2009). It may be particularly relevant in the treatment of those with a history of childhood trauma, where negative perceptions of the self and others result directly from these experiences. Taking a compassion-focused approach would be anticipated as promoting a positive self-

concept, by replacing self-criticism with self-compassion (Gilbert, 2014). A further intention of CFT is to instil within a person a sense of safety and contentment in interpersonal relationships (Gilbert, 2009). Through this, It would be expected that taking a compassion-focused approach would help diminish the relational disturbances associated with DSO.

Compassion focused therapy acknowledges the involvement of attachment insecurity, negative self-attributions, and heightened threat perception in the formation of a negative self-concept (Gilbert, 2009). There is an accord between these proposed underpinnings and the findings from this project, where the formation of DSO was found to be underpinned by insecure attachment, internal attributions of blame, a sense of current threat, and intrusive thoughts and memories. This adds further credence to the suggested use of CFT in treating the negative self-concept and disturbed relationships elements of DSO.

The treatment of the emotion dysregulation elements of DSO may be better achieved through the use of a cognitive-behavioural approach. Cognitive-behavioural approaches to therapy are built on the foundational philosophy that emotional experiences and emotional expression are causally-influenced by cognitive processes (Hofmann, Asmundson & Beck, 2013). It is one's perception of a situation or experience which generates an emotional response, as opposed to any concrete, objective, emotionally-laden component of these situations or experiences. The aim of Cognitive-Behavioural Therapies (CBT) is to engender alternative thought processes within an individual to the end of encouraging thought processes less likely to elicit negative emotional responses (Hofmann et al., 2013). The use of a CBT approach may then be of particular effectiveness in the treatment of the emotional dysregulation elements of DSO. Promoting the use of alternative thought processes in situations known to bring about extreme

emotional reactions may provide the individual with a cognitive toolkit they can draw upon in times of distress, or potential distress, which reduce the likelihood of an extreme emotional response occurring. Given how closely entwined all four of the DSO symptoms are, the recommendation from the current findings would be to incorporate both compassion-focused and cognitive behavioural approaches into the treatment of DSO, in order to diminish these symptoms in a holistic manner.

Further to the implications of the current findings for clinical practice, there are also implications to be acknowledged for healthcare professionals more generally. In 2017, NHS Scotland published a framework for training healthcare professionals in a trauma-informed manner (NHS Education for Scotland, 2017). Through this it was proposed that all healthcare professionals should be trauma-informed and should be alert to different approaches which may need to be considered when treating traumatised individuals. The key messages from this framework centre on being aware of traumatic experiences and their impact, being aware of potential retraumatising situations or memories, providing empathic care, and establishing feelings of collaboration, trust, empowerment, and safety in the healthcare journey (NHS Scotland, 2017). The findings of the current largely support these recommendations, but there are perhaps some specific implications to be added, with these focusing on the development of DSO following childhood trauma.

Included within the DSO symptoms found to mediate the relationship between childhood trauma and suicidal behaviour is a chronic negative self-concept, containing feelings of being a failure and being worthless. This should inform healthcare provision by bringing an awareness of potential adherence difficulties in those with childhood trauma histories. The negative self-concept may leave

individuals feeling that they are incapable of overcoming any health difficulties they might be experiencing, as such there may be a danger of them believing any intervention may be somewhat futile.

In line with existing guidelines (NHS Scotland, 2017), the present findings further highlight the need for individuals to be able to develop senses of trust and safety in their healthcare providers. DSO contains severe relational disturbance which involve a distancing from others through the fear of being hurt, as such it is imperative that these individuals feel they can trust those tasked with caring for them. This may involve a high degree of collaboration in care plans, allowing the individual to feel they are retaining control over these. It may also involve providing choice in relation to what care is being provided, as well as when, where, and by whom, this is being provided. Again, this may allow for greater trust to be engendered. Furthermore, there is a need to be aware of consistency of care for those with histories of childhood trauma. Building a rapport between healthcare provider and recipient is a further way to enhance feelings of safety and trust within this dyad.

Finally, in relation to the emotion regulation difficulties present within DSO, there is a need to be aware that those who have experienced childhood trauma may be more likely to display extreme emotional reactions. Healthcare professionals may then be encouraged to identify triggers for these reactions in interactions with clients in attempts to minimise their subsequent occurrences. In addition, results highlight a need for a general awareness for potential extreme emotional reactions in those with childhood trauma histories, as well as an awareness that these outbursts may hold a deeper meaning than first thought and may be related more to past traumas than current situations. As such they must be met with compassion and understanding.

The significant increase in suicide risk associated with being out of employment identified in study 1 demonstrates how important a protective buffer this may provide people who have experienced traumatising events in times of distress. This finding demonstrates the role of functional impairments as elevating suicide risk over and above psychological factors. It is vital, therefore, that functional impairments which may be associated with psychological trauma are acknowledged, discussed, and addressed in accordance with clinical symptomatology.

6.6 Strengths and Limitations

There were a number of conceptual and methodological strengths of the current project, as will now be discussed. The first major strength of the current project is that the research questions posed and answered were based on the findings of an exhaustive systematic literature review as opposed to simply existing theoretical perspectives. It has already been discussed that existing theoretical frameworks for suicide proved inadequate for explaining the development of suicide risk following childhood trauma. As such, basing the research questions in empirical evidence provided the most robust basis for these, while also ensuring the relevant findings were presented.

A second major strength of this thesis is that it investigated factors which contribute to the development of CPTSD – the first time such an exploration has been undertaken. The importance of CPTSD as a diagnostic construct for traumatised adults has been ratified by its inclusion in the ICD-11. The next stage in the support of those with experiences of trauma and CPTSD is to understand how and why CPTSD develops. Developing an evidence base for the mechanisms through which CPTSD forms would allow for the development of

interventions aimed not just at managing the symptoms, but also tailored towards rectifying some of the underlying processes. It would also allow for these mechanisms to potentially be acknowledged and tackled before CPTSD develops.

The third key strength of the current project is that both of its studies were conducted with highly traumatised samples. The importance of this lies in it bringing an understanding of the issues most pertinent to those most in need. The purpose of this study is to develop an understanding of the reasons behind suicide risk among those with a history of childhood trauma. There may be psychological issues which develop following childhood trauma which are similar to those which develop in response to most traumatic experiences. By using a highly traumatised sample, sources of risk specific to those with childhood trauma histories, over and above sources of risk common following trauma, can therefore be identified.

The current project incorporated a breadth of psychological factors when exploring suicide risk in those with a childhood trauma history. These were drawn from a number of psychological domains including the perceptual, the cognitive, the pathological, and the behavioural. This allows for the presentation of an understanding of how elements of these domains may influence one another across developmental periods, and also how they may operate in tandem, leading to increased suicide risk.

Related to this, a further strength of the current project is its basis in empiricism over theory. As noted throughout, current theoretical perspectives seem inadequate for explaining suicide risk following childhood trauma. The empirical informing of the current project therefore puts the issues most salient in relation

to childhood trauma front and centre, rather than simply positioning childhood trauma within suicide theory and working forward from there.

It is important to interpret the included findings in the context of limiting factors. The first limitation to be noted is the adoption of a cross-sectional design in the two studies within this thesis. Cross-sectional designs provide a cheap and quick way to collect a large volume of data at a single timepoint (Levin, 2006). However, it has been noted that the use of a cross-sectional design limits the inferences which can be drawn from the results, with associations being identifiable but not the causal inferences one may be looking for (Sedgwick, 2014). Furthermore, given that the data used in the current study was collected at a single point, the temporal ordering of the events and outcomes under investigation could not be definitively determined (Sedgwick, 2014). In order to achieve such an insight a longitudinal approach would be required, where data would be collected at different time points (Ployhart & Vandenberg, 2010). Collecting data at different time points would allow for the onset of psychological and symptomatologic developments, and enhancements being followed over time. This would give a clearer insight into the order in which the variables under investigation occurred, as such providing a clearer insight into the potential causal relationships between them.

It has further been suggested that the use of cross-sectional designs involving the exploration of mediating effects may introduce bias into the magnitude of the effects under investigation (Maxwell & Cole, 2007). Studies suggest that in mediation analyses where the independent variable is a more stable construct than the mediating variable, that there may be a positive bias in the direct effect between the independent and dependent variables (Maxwell & Cole, 2007). Similarly, where the independent and mediating variables are each considered

relatively stable constructs, there is a risk of a positive bias in the magnitude of the indirect effect through the mediating variable (Maxwell & Cole, 2007). In the study described in chapter five, where mediation analyses were performed, the independent variable of childhood trauma can be considered to be a stable construct (Bernstein & Fink, 1998), with the presence or absence of such experiences not likely to change over time. CPTSD is understood to develop over time following childhood trauma experiences (Cloitre, Garvert, Brewin, Bryant & Maercker, 2013), as such its intensity will vary over time. Both attachment style, and the cognitive emotion regulation strategies explored are expected to be relatively stable across time (Fraley, 2002; Garnefski et al., 2001), but perhaps not as unchanging as the presence of a childhood trauma history. Taking this into consideration, the use of a cross-sectional design for the mediation analyses conducted herein may lead to a bias in the magnitude of the direct and indirect effects identified.

Although the use of cross-sectional designs may be criticised, they were key reasons behind the decision to use such designs. First, as noted above, cross-sectional designs allow for the collection of large volumes of information in time and resource efficient ways. Given that large samples were required in order to achieve adequate statistical power in the two studies, it was imperative that the highest volume of participants as possible could be accessed. The requirement for using clinical samples of highly traumatised adults diminished the potential participant pools available. It would have been unrealistic to expect to achieve the participants numbers generated for the current project at multiple timepoints. In addition, the time constraints of this being a PhD project removed the possibility of large-scale, long-term follow-ups on the number of individuals required.

A further limitation of the current project may lie in the use of self-report measures for collecting research data. All data used across the two studies within this thesis were collected through self-report questionnaires. It has been suggested that there may be issues inherent within such a method related to participants comprehension or interpretation of the content of self-report questionnaires, which would call into question the validity of such a method (Chan, 2009). While it may not be possible to state conclusively that all participants extracted identical understanding from the questionnaires they completed, the potential for discrepancies being present was partially controlled for through the use of measures which have previously been demonstrated as possessing good validity. Further to this, individuals with low proficiency for written English, as well as any individuals who required an interpreter for the completion of questionnaire measures were excluded from the current studies. This was to ensure all those who were included possessed sufficient aptitude with the English language for them to understand what was being asked of them in each questionnaire. Moreover, a psychology assistant from the trauma service through which participants were recruited was present throughout the completion of all questionnaire measures in order to provide any clarification on any items as required. This further increased the consistency of comprehension of the measures being completed.

In spite of the noted limitations of adopting self-report measures, it has been previously highlighted that, in certain instances, these may be the only source available through which to gather the information of interest (Baldwin, 1999). This was a key factor in the decision to utilise self-report measures in the current studies. Information on attachment style, the use of cognitive regulation strategies, the presence of lifetime suicide attempts, the presence of childhood

trauma experiences, CPTSD symptomatology, and the presence of lifetime history of suicide attempts was not expected to have been routinely, reliably, and consistently gathered from participants in previous interactions with healthcare professionals. Indeed, concepts such as cognitive emotion regulation and attachment style are perhaps more common within the research domain than the healthcare domain, as such records of these would not be expected to exist. In the absence of such information, the most pragmatic option for garnering such information was through self-report questionnaires.

In relation to the study described in chapter 4, the sample used was relatively small for the analyses undertaken. While the ratio of participants to variables was approaching adequacy for the final regression model tested, a larger sample would have allowed for the testing of all variables in a single multivariable framework while retaining requisite statistical power. This would have delivered greater confidence in the independent nature of the variable identified as relating to suicidality, given the possibility to control for the maximum number of influencing factors.

The current studies focused solely on the psychological elements of suicide risk following childhood trauma. The centrality of the involvement of interpersonal functioning as increasing suicide risk following childhood trauma highlights the importance of incorporating functional elements into subsequent research studies. This message is further supported by the discovery of significant suicide risk associated with being out of employment, found in chapter 4. By exploring psychological functioning to the preclusion of interpersonal functioning provides only a snapshot of the full complexity of risk and protective factors for suicide which may be related to experiences of childhood trauma. While the relational

elements of social functioning were included through the investigation of DSO, broader social opportunities or capabilities were largely omitted.

6.7 Future Research Directions

As described in section 6.4, based on the findings of this thesis, a model has been proposed describing the psychological processes involved in the development of suicide risk among those with a history of childhood trauma. To recap, this model posits that childhood trauma will disrupt the development of a secure attachment style, lead to the development of internal attributions of blame, a sense of current threat, and intrusive thoughts or memories. Each of these are understood to lead to the development of DSO, which then increase suicide risk. As with any new model, this requires testing and validating across diverse sample groups. The current project utilised samples of highly traumatised adults, the reason for this was that there is increased suicide risk within the trauma population, as such it was the most efficacious staring point. Also, it is the population within which any clinical intervention derived from these findings would be implemented. It was therefore important to understand the underlying issues within this population. Childhood trauma and suicide are not issues unique to clinical populations however, as such the current project should be replicated within community populations in order to identify any similarities or differences here. Of particular relevance here may be protective factors present in cases where childhood trauma has been experienced, but the development sequelae described in the proposed theory have not emerged.

Following from the above point, the current project sought to develop evidence for mediating factors relating childhood trauma to suicide. The focus within this project was on pathological factors which may contribute to an increase in suicide

risk following childhood trauma. Going forward, it may be efficacious to examine potential moderating factors alongside these which may offer sources of protection against suicide risk. It is understood through the current findings that experiences of childhood trauma impact upon the development of an insecure attachment style, internal attributions of blame, a sense of current threat, and intrusive thoughts and or memories, with each of these impacting upon the development of DSO. These DSO features are then understood to increase suicide risk when faced with an extreme life stressor. Within suicide research, there is currently a strong focus on the IMV model of suicide (O'Connor, 2011; O'Connor & Kirtley, 2018). Within this theory, the development of suicide risk is understood to be dependent on sequential groupings of moderating factors. Identifying potential moderators of suicide risk in relation to childhood trauma would allow for a greater integration of theoretical perspectives. Taking inspiration from the IMV, which posits the moderating involvement of internal and external resources, it may be of value to explore protective interpersonal systems such as the presence of adults out with the caregiving milieu who provide a source of safety or support. In addition, it would be of benefit to understand any protective role of internal resources such as adaptive coping skills or degrees of resilience in response to childhood trauma. Doing so would allow for a fuller picture of suicide risk development following childhood trauma to be developed. Specifically, by understanding in full the contexts within which DSO are most likely to form.

The current study explored the impact of childhood trauma specifically, albeit within a sample of highly traumatised adults. Future work may explore the impact of subsequent traumatic events within those with a childhood trauma history, or those who meet criteria for DSO. The focus here may be on understanding more

deeply the role DSO plays in how subsequent traumas may be responded to. As it has been argued throughout, the presence of DSO is not anticipated to lead to increased suicide risk in isolation, it is its influence over the manner in which life stressors are experienced and responded to which bring increased suicide risk. Traumatic life events are known to be associated with an increase in suicide risk (Blaauw, Arensman, Kraaij, Winkel & Bout, 2002), it would be beneficial to understand the degree of this risk which may be attributed to the presence of DSO. Due to the strong interpersonal elements present within DSO, the impacts of interpersonal traumas (e.g., sexual or physical assault) may be compared to the impacts of non-interpersonal traumas (e.g., road traffic accidents). These events may be understood as potential triggers which activate the latent risk present within DSO, as such it may prove crucial to understand how their suicide risk may relate back to prior life events.

Ultimately, there should be a synergy between the clinical implications of the current project and the future research directions it may influence. The clinical implications mentioned above, which focus on tackling a breadth and depth of issues concurrently should be mirrored in future research in this area. There is a need to develop an evidence base for a full spectrum of intertwined psychosocial factors coming together to enhance or attenuate suicide risk in those with a history of childhood trauma. Future research should therefore be focused on building this picture.

6.8 Overall Conclusions

This thesis aimed to identify why those with a history of childhood trauma are more likely to make suicide attempts. Initially, existing evidence for psychological factors which may mediate this relationship were compared against theoretical

perspectives on suicide. Doing so identified the need for the development of a novel perspective on suicide risk specific to the childhood trauma population. A first study tested known antecedents of non-suicidal self-injury following childhood trauma, in order to determine if any of these may also explain elevated suicide risk. When these did not demonstrate relevance to suicide risk, a second study sought to develop a novel perspective on mediating relationships between childhood trauma and suicidal behaviour. It was found that the elements of negative self-concept, relational disturbances, emotion hyperactivation, and emotion deactivation, when operating in the combined conceptualisation of disturbances of self-organisation (DSO), mediated this relationship. In order to further illuminate the processes involved in this relationship, mediating factors between childhood trauma and DSO were explored. It was found that those with an insecure attachment style, those who utilise self-blaming attributions in times of negativity, and those who are experiencing PTSD symptom clusters of reexperiencing and hypervigilance are at increased risk of developing DSO following childhood trauma. These findings highlight the involvement of perceptual, pathological, and behavioural psychological levels, operating within the domains of self-perception, relational functioning, and emotion dysregulation, in the development of suicide risk following childhood trauma. This points to the need for psychosocial interventions which tackle these domains in combination. Any future research in this area would also benefit from taking a holonic or holistic approach by incorporating a breadth of psychosocial elements in combination.

References

Aaltonen, K. I., Rosenström, T., Baryshnikov, I., Karpov, B., Melartin, T., Suominen, K., ... & Isometsä, E. (2017). Mediating role of borderline personality disorder traits in the effects of childhood maltreatment on suicidal behaviour among mood disorder patients. *European psychiatry*, *44*, 53-60.

Aas, M., Henry, C., Bellivier, F., Lajnef, M., Gard, S., Kahn, J. P., ... & Andreassen, O. A. (2017). Affective lability mediates the association between childhood trauma and suicide attempts, mixed episodes and co-morbid anxiety disorders in bipolar disorders. *Psychological medicine*, *47*(5), 902-912.

Acar, S., & Runco, M. A. (2012). Psychoticism and creativity: A meta-analytic review. *Psychology of Aesthetics, Creativity, and the Arts*, *6*(4), 341.

Adams, R. E., & Boscarino, J. A. (2006). Predictors of PTSD and delayed PTSD after disaster: The impact of exposure and psychosocial resources. *The Journal of nervous and mental disease*, *194*(7), 485.

Allison, P., & Pomeroy, E. (2000). How shall we "know?" Epistemological concerns in research in experiential education. *Journal of Experiential Education*, *23*(2), 91-98.

Anestis, M. D., Khazem, L. R., Mohn, R. S., & Green, B. A. (2015). Testing the main hypotheses of the interpersonal–psychological theory of suicidal behavior in a large diverse sample of United States military personnel. *Comprehensive Psychiatry*, *60*, 78-85.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.

Arie, M., Apter, A., Orbach, I., Yefet, Y., & Zalzman, G. (2008). Autobiographical memory, interpersonal problem solving, and suicidal behavior in adolescent inpatients. *Comprehensive psychiatry*, *49*(1), 22-29.

Arsenault-Lapierre, G., Kim, C., & Turecki, G. (2004). Psychiatric diagnoses in 3275 suicides: a meta-analysis. *BMC psychiatry*, *4*(1), 37.

Aspelmeier, J. E., Elliott, A. N., & Smith, C. H. (2007). Childhood sexual abuse, attachment, and trauma symptoms in college females: The moderating role of attachment. *Child abuse & neglect*, *31*(5), 549-566.

Babcock, R. L., & DePrince, A. P. (2012). Childhood betrayal trauma and self-blame appraisals among survivors of intimate partner abuse. *Journal of Trauma & Dissociation*, *13*(5), 526-538.

Baldwin, W. (1999). Information no one else knows: The value of self-report. In *The science of self-report* (pp. 15-20). Psychology Press.

Barker-Collo, S. L. (2001). Adult reports of child and adult attributions of blame for childhood sexual abuse: Predicting adult adjustment and suicidal behaviors in females. *Child abuse & neglect*, *25*(10), 1329-1341.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, *51*(6), 1173.

Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: a meta-analysis. *Personnel psychology*, *44*(1), 1-26.

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: a test of a four-category model. *Journal of personality and social psychology*, *61*(2), 226.

Bartley, M. (1994). Unemployment and ill health: understanding the relationship. *Journal of epidemiology & Community Health, 94*(1), 82-88.

Baumeister, R. F. (1990). Suicide as escape from self. *Psychological review*, *97*(1), 90.

Bebbington, P. E., Cooper, C., Minot, S., Brugha, T. S., Jenkins, R., Meltzer, H., & Dennis, M. (2009). Suicide attempts, gender, and sexual abuse: data from the 2000 British Psychiatric Morbidity Survey. *American Journal of Psychiatry*, *166*(10), 1135-1140.

Beck, J. G., Grant, D. M., Clapp, J. D., & Palyo, S. A. (2009). Understanding the interpersonal impact of trauma: Contributions of PTSD and depression. *Journal of Anxiety Disorders*, *23*(4), 443-450.

Bender, R., & Lange, S. (2001). Adjusting for multiple testing—when and how?. *Journal of clinical epidemiology*, *54*(4), 343-349.

Berkowitz, S. J., Stover, C. S., & Marans, S. R. (2011). The child and family traumatic stress intervention: Secondary prevention for youth at risk of developing PTSD. *Journal of Child Psychology and Psychiatry*, *52*(6), 676-685.

Bernstein, D. P., & Fink, L. (1998). *Childhood trauma questionnaire: A retrospective self-report: Manual*. Psychological Corporation.

Bernstein, D. P., Fink, L., Handelsman, L., Foote, J., Lovejoy, M., Wenzel, K., ... & Ruggiero, J. (1994). Initial reliability and validity of a new retrospective measure of child abuse and neglect. *The American journal of psychiatry*, *151*(8), 1132.

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., ... & Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child abuse & neglect*, *27*(2), 169-190.

Blaauw, E., Arensman, E., Kraaij, V., Winkel, F. W., & Bout, R. (2002). Traumatic life events and suicide risk among jail inmates: the influence of types of events, time period and significant others. *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies*, *15*(1), 9-16.

Blakely, T. A., Collings, S. C., & Atkinson, J. (2003). Unemployment and suicide. Evidence for a causal association?. *Journal of Epidemiology & Community Health*, *57*(8), 594-600.

Borges, G., Nock, M. K., Abad, J. M. H., Hwang, I., Sampson, N. A., Alonso, J., ... & Bruffaerts, R. (2010). Twelve month prevalence of and risk factors for suicide attempts in the WHO World Mental Health Surveys. *The Journal of clinical psychiatry*, *71*(12), 1617.

Bowlby, J. (1988) A Secure Base: Clinical Applications of Attachment Theory. New York: Routledge

Bradford Hill, A. (1965). The environment and disease: association or causation? *Proc R Soc Med, 58*, 295-300.

Brezo, J., Paris, J., Tremblay, R., Vitaro, F., Zoccolillo, M., Hébert, M., & Turecki, G. (2006). Personality traits as correlates of suicide attempts and suicidal ideation in young adults. *Psychological medicine*, *36*(2), 191-202.

Briere, J. (2002). Treating adult survivors of severe childhood. *The APSAC handbook on child maltreatment*, *175*.

Brown, M. Z., Comtois, K. A., & Linehan, M. M. (2002). Reasons for suicide attempts and nonsuicidal self-injury in women with borderline personality disorder. *Journal of abnormal psychology*, *111*(1), 198.

Browne, C., & Winkelman, C. (2007). The effect of childhood trauma on later psychological adjustment. *Journal of Interpersonal Violence*, *22*(6), 684-697.

Carlson, E. B., McDade-Montez, E., Armstrong, J., Dalenberg, C., & Loewenstein, R. J. (2013). Development and initial validation of the structured interview for self-destructive behaviors. *Journal of Trauma & Dissociation*, *14*(3), 312-327.

Chan, D. (2009). So why ask me? Are self-report data really that bad. *Statistical and methodological myths and urban legends: Doctrine, verity and fable in the organizational and social sciences*, 309-336.

Chapman, A. L., Specht, M. W., & Cellucci, T. (2005). Factors associated with suicide attempts in female inmates: The hegemony of hopelessness. *Suicide and Life-Threatening Behavior*, *35*(5), 558-569.

Chesney, E., Goodwin, G. M., & Fazel, S. (2014). Risks of all-cause and suicide mortality in mental disorders: a meta-review. *World Psychiatry*, *13*(2), 153-160.

Cheung, G. W., & Lau, R. S. (2008). Testing mediation and suppression effects of latent variables: Bootstrapping with structural equation models. *Organizational research methods*, *11*(2), 296-325.

Chioqueta, A. P., & Stiles, T. C. (2004). Suicide risk in patients with somatization disorder. *Crisis*, *25*(1), 3-7.

Christensen, H., Batterham, P. J., Mackinnon, A. J., Donker, T., & Soubelet, A. (2014). Predictors of the risk factors for suicide identified by the interpersonal-psychological theory of suicidal behaviour. *Psychiatry Research*, *219*(2), 290-297.

Cloitre, M., Garvert, D. W., Brewin, C. R., Bryant, R. A., & Maercker, A. (2013). Evidence for proposed ICD-11 PTSD and complex PTSD: A latent profile analysis. *European journal of psychotraumatology*, *4*(1), 20706.

Cloitre, M., Miranda, R., Stovall-McClough, K. C., & Han, H. (2005). Beyond PTSD: Emotion regulation and interpersonal problems as predictors of functional impairment in survivors of childhood abuse. *Behavior Therapy*, *36*(2), 119-124.

Cloitre, M., Roberts, N. P., Bisson, J. I., & Brewin, C. R. (2015). The International Trauma Questionnaire (ITQ). *Unpublished measure*.

Cloitre, M., Stolbach, B. C., Herman, J. L., Kolk, B. V. D., Pynoos, R., Wang, J., & Petkova, E. (2009). A developmental approach to complex PTSD: Childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of traumatic stress*, *22*(5), 399-408.

Cloitre, M., Stovall-McClough, C., Zorbas, P., & Charuvastra, A. (2008). Attachment organization, emotion regulation, and expectations of support in a clinical sample of women with childhood abuse histories. *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies*, *21*(3), 282-289.

Cloninger, C. R., Przybeck, T. R., Svrakic, D. M., & Wetzel, R. D. (1994). The Temperament and Character Inventory (TCI): A guide to its development and use.

Coffey, P., Leitenberg, H., Henning, K., Turner, T., & Bennett, R. T. (1996). Mediators of the long-term impact of child sexual abuse: Perceived stigma, betrayal, powerlessness, and self-blame. *Child Abuse & Neglect*, *20*(5), 447-455.

Cook, A., Spinazzola, J., Ford, J., Lanktree, C., Blaustein, M., Cloitre, M., ... & Mallah, K. (2005). Complex trauma in children and adolescents. *Psychiatric annals*, *35*(5), 390-398.

Craney, T. A., & Surles, J. G. (2002). Model-dependent variance inflation factor cutoff values. *Quality Engineering*, *14*(3), 391-403.

Daray, F. M., Rojas, S. M., Bridges, A. J., Badour, C. L., Grendas, L., Rodante, D., ... & Rebok, F. (2016). The independent effects of child sexual abuse and impulsivity on lifetime suicide attempts among female patients. *Child abuse & neglect*, *58*, 91-98.

Dean, P. J., Range, L. M., & Goggin, W. C. (1996). The escape theory of suicide in college students: Testing a model that includes perfectionism. *Suicide and Life-Threatening Behavior*, *26*(2), 181-186.

Dean, P. J., & Range, L. M. (1999). Testing the escape theory of suicide in an outpatient clinical population. *Cognitive Therapy and Research*, *23*(6), 561-572.

De Berardis, D., Campanella, D., Serroni, N., Moschetta, F. S., Di Emidio, F., Conti, C., ... & Siracusano, A. (2013). Alexithymia, suicide risk and serum lipid

levels among adult outpatients with panic disorder. *Comprehensive psychiatry*, *54*(5), 517-522.

DePrince, A. P., Chu, A. T., & Pineda, A. S. (2011). Links between specific posttrauma appraisals and three forms of trauma-related distress. *Psychological Trauma: Theory, Research, Practice, and Policy*, *3*(4), 430.

Dhingra, K., Boduszek, D., & O'Connor, R. C. (2015). Differentiating suicide attempters from suicide ideators using the Integrated Motivational–Volitional model of suicidal behaviour. *Journal of affective disorders*, *186*, 211-218.

Dorahy, M. J., Corry, M., Shannon, M., MacSherry, A., Hamilton, G., McRobert, G., ... & Hanna, D. (2009). Complex PTSD, interpersonal trauma and relational consequences: Findings from a treatment-receiving Northern Irish sample. *Journal of affective disorders*, *112*(1-3), 71-80.

Dour, H. J., Cha, C. B., & Nock, M. K. (2011). Evidence for an emotion–cognition interaction in the statistical prediction of suicide attempts. *Behaviour research and therapy*, *49*(4), 294-298.

Drapeau, C. W., & McIntosh, J. L. (2015). USA suicide 2014: Official final data. Washington, DC: American Association of Suicidology, dated December 22, 2015.

Dube, S. R., Anda, R. F., Felitti, V. J., Chapman, D. P., Williamson, D. F., & Giles, W. H. (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: findings from the Adverse Childhood Experiences Study. *Jama*, *286*(24), 3089-3096.

Dyer, K. F., Dorahy, M. J., Hamilton, G., Corry, M., Shannon, M., MacSherry, A., ... & McElhill, B. (2009). Anger, aggression, and self-harm in PTSD and complex PTSD. *Journal of clinical psychology*, *65*(10), 1099-1114.

Easterby-Smith, M., Thorpe, R., & Jackson, P. R. (2015). *Management and business research*. Sage.

Ehring, T., & Quack, D. (2010). Emotion regulation difficulties in trauma survivors: The role of trauma type and PTSD symptom severity. *Behavior therapy*, *41*(4), 587-598.

Enders, C. K. (2010). *Applied missing data analysis*. Guilford press.

Evren, C., Cınar, O., Evren, B., Ulku, M., Karabulut, V., & Umut, G. (2013). The mediator roles of trait anxiety, hostility, and impulsivity in the association between childhood trauma and dissociation in male substance-dependent inpatients. *Comprehensive psychiatry*, *54*(2), 158-166.

Filipas, H. H., & Ullman, S. E. (2006). Child sexual abuse, coping responses, self-blame, posttraumatic stress disorder, and adult sexual revictimization. *Journal of Interpersonal Violence*, *21*(5), 652-672.

Finzi-Dottan, R., & Karu, T. (2006). From emotional abuse in childhood to psychopathology in adulthood: A path mediated by immature defense mechanisms and self-esteem. *The Journal of nervous and mental disease*, *194*(8), 616-621.

Fleischmann, A., Bertolote, J. M., Belfer, M., & Beautrais, A. (2005). Completed suicide and psychiatric diagnoses in young people: a critical examination of the evidence. *American Journal of Orthopsychiatry*, *75*(4), 676-683.

Ford, J. D., & Courtois, C. A. (Eds.). (2013). *Treating complex traumatic stress disorders in children and adolescents: Scientific foundations and therapeutic models*. Guilford Press.

Fowler, J. C., Allen, J. G., Oldham, J. M., & Frueh, B. C. (2013). Exposure to interpersonal trauma, attachment insecurity, and depression severity. *Journal of Affective Disorders*, *149*(1-3), 313-318.

Fox-Wasylyshyn, S. M., & El-Masri, M. M. (2005). Handling missing data in self-report measures. *Research in nursing & health*, *28*(6), 488-495.

Fraley, R. C (2002). Attachment stability from infancy to adulthood: Meta-analysis and dynamic modeling of developmental mechanisms. *Personality and social psychology review*, *6*(2), 123-151.

Freedman, L. S., & Schatzkin, A. (1992). Sample size for studying intermediate endpoints within intervention trials or observational studies. *American Journal of Epidemiology*, *136*(9), 1148-1159.

Freyd, J. J. (1994). Betrayal trauma: Traumatic amnesia as an adaptive response to childhood abuse. *Ethics & Behavior*, *4*(4), 307-329.

Freyd, J. J., DePrince, A. P., & Gleaves, D. H. (2007). The state of betrayal trauma theory: Reply to McNally—Conceptual issues, and future directions. *Memory*, *15*(3), 295-311.

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological science*, *18*(3), 233-239.

Fritz, M. S., & MacKinnon, D. P. (2008). A graphical representation of the mediated effect. *Behavior research methods*, *40*(1), 55-60.

Fuller-Thomson, E., Baird, S. L., Dhrodia, R., & Brennenstuhl, S. (2016). The association between adverse childhood experiences (ACEs) and suicide attempts in a population-based study. *Child: care, health and development*, *42*(5), 725-734.

Garnefski, N., & Kraaij, V. (2006). Cognitive emotion regulation questionnaire–development of a short 18-item version (CERQ-short). *Personality and individual differences*, *41*(6), 1045-1053.

Garnefski, N., & Kraaij, V. (2007). The cognitive emotion regulation questionnaire. *European Journal of Psychological Assessment*, *23*(3), 141-149.

Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual differences*, *30*(8), 1311-1327.

Garnefski, N., Kraaij, V., & Spinhoven, P. (2002). Manual for the use of the Cognitive Emotion Regulation Questionnaire. *Leiderdorp, The Netherlands: DATEC*.

Gilbert, P. (2009). Introducing compassion-focused therapy. *Advances in psychiatric treatment*, *15*(3), 199-208.

Gilbert, P. (2014). The origins and nature of compassion focused therapy. *British Journal of Clinical Psychology*, *53*(1), 6-41.

Gillespie, N. A., Cloninger, C. R., Heath, A. C., & Martin, N. G. (2003). The genetic and environmental relationship between Cloninger's dimensions of temperament and character. *Personality and individual differences*, *35*(8), 1931-1946.

Goodall, K., Trejnowska, A., & Darling, S. (2012). The relationship between dispositional mindfulness, attachment security and emotion regulation. *Personality and Individual Differences*, *52*(5), 622-626.

Godet-Mardirossian, H., Jehel, L., & Falissard, B. (2011). Suicidality in male prisoners: influence of childhood adversity mediated by dimensions of personality. *Journal of forensic sciences*, *56*(4), 942-949.

Gordon, K. H., Simonich, H., Wonderlich, S. A., Dhankikar, S., Crosby, R. D., Cao, L., ... & Engel, S. G. (2016). Emotion Dysregulation and Affective Intensity Mediate the Relationship Between Childhood Abuse and Suicide-Related Behaviors Among Women with Bulimia Nervosa. *Suicide and Life-Threatening Behavior*, *46*(1), 79-87.

Gorrese, A., & Ruggieri, R. (2013). Peer attachment and self-esteem: A meta-analytic review. *Personality and Individual Differences*, *55*(5), 559-568.

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of psychopathology and behavioral assessment*, *26*(1), 41-54.

Griffin, D. W., & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of personality and social psychology*, *67*(3), 430.

Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Review of general psychology*, *2*(3), 271.

Gross, J. J. (2001). Emotion regulation in adulthood: Timing is everything. *Current directions in psychological science*, *10*(6), 214-219.

Gross, J. J. (2014). Emotion regulation: Conceptual and empirical foundations. In Gross J., editor. (Ed.), Handbook of emotion regulation (pp. 3–24). New York, NY: Guilford Press.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of personality and social psychology*, *85*(2), 348.

Grunebaum, M. F., Galfalvy, H. C., Mortenson, L. Y., Burke, A. K., Oquendo, M. A., & Mann, J. J. (2010). Attachment and social adjustment: relationships to suicide attempt and major depressive episode in a prospective study. *Journal of affective disorders*, *123*(1-3), 123-130.

Gunderson, J. G., Kolb, J. E., & Austin, V. (1981). The diagnostic interview for borderline patients. *The American Journal of Psychiatry*.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication monographs*, *76*(4), 408-420.

Hayes, A. F. (2013). An introduction to mediation, moderation, and conditional process analysis. New York: The Guilford Press

Hayes, A. F., & Scharkow, M. (2013). The relative trustworthiness of inferential tests of the indirect effect in statistical mediation analysis: Does method really matter?. *Psychological science*, *24*(10), 1918-1927.

Herman, J. L. (1992). Complex PTSD: A syndrome in survivors of prolonged and repeated trauma. *Journal of traumatic stress*, *5*(3), 377-391.

Hill, R. M., Castellanos, D., & Pettit, J. W. (2011). Suicide-related behaviors and anxiety in children and adolescents: a review. *Clinical psychology review*, *31*(7), 1133-1144.

Hirsch, J. K., & Barton, A. L. (2011). Positive social support, negative social exchanges, and suicidal behavior in college students. *Journal of American College Health, 59*(5), 393-398.

Hofmann, S. G., Asmundson, G. J., & Beck, A. T. (2013). The science of cognitive therapy. *Behavior therapy*, *44*(2), 199-212.

Horwitz, A. G., Hill, R. M., & King, C. A. (2011). Specific coping behaviors in relation to adolescent depression and suicidal ideation. *Journal of adolescence*, *34*(5), 1077-1085.

Hovens, J. G., Giltay, E. J., Wiersma, J. E., Spinhoven, P., Penninx, B. W., & Zitman, F. G. (2012). Impact of childhood life events and trauma on the course of depressive and anxiety disorders. *Acta psychiatrica scandinavica*, *126*(3), 198-207.

Hund, A. R., & Espelage, D. L. (2006). Childhood emotional abuse and disordered eating among undergraduate females: Mediating influence of alexithymia and distress. *Child abuse & neglect*, *30*(4), 393-407.

Hunt, I., Kapur, N., Webb, R., Robinson, J., Burns, J., Shaw, J., & Appelby, L. (2009). Suicide in recently discharged psychiatric patients: a case-control study. *Psychological medicine, 39*(3), 443-449.

Hyman, S. M., Paliwal, P., & Sinha, R. (2007). Childhood maltreatment, perceived stress, and stress-related coping in recently abstinent cocaine dependent adults. *Psychology of addictive behaviors*, *21*(2), 233.

Johnson, J., Gooding, P., & Tarrier, N. (2008). Suicide risk in schizophrenia: explanatory models and clinical implications, The Schematic Appraisal Model

of Suicide (SAMS). *Psychology and Psychotherapy: Theory, Research and Practice*, *81*(1), 55-77.

Johnson, J. G., Cohen, P., Gould, M. S., Kasen, S., Brown, J., & Brook, J. S. (2002). Childhood adversities, interpersonal difficulties, and risk for suicide attempts during late adolescence and early adulthood. *Archives of general psychiatry*, *59*(8), 741-749.

Joiner, T. (2007). *Why people die by suicide*. Harvard University Press.

Joiner Jr, T. E., Van Orden, K. A., Witte, T. K., Selby, E. A., Ribeiro, J. D., Lewis, R., & Rudd, M. D. (2009). Main predictions of the interpersonal–psychological theory of suicidal behavior: Empirical tests in two samples of young adults. *Journal of abnormal psychology*, *118*(3), 634.

Karatzias, T., Shevlin, M., Fyvie, C., Hyland, P., Efthymiadou, E., Wilson, D., ... & Cloitre, M. (2017). Evidence of distinct profiles of posttraumatic stress disorder (PTSD) and complex posttraumatic stress disorder (CPTSD) based on the new ICD-11 Trauma Questionnaire (ICD-TQ). *Journal of Affective Disorders*, *207*, 181-187.

Karatzias, T., Shevlin, M., Hyland, P., Brewin, C. R., Cloitre, M., Bradley, A., ... & Roberts, N. P. (2018). The role of negative cognitions, emotion regulation strategies, and attachment style in complex post-traumatic stress disorder: Implications for new and existing therapies. *British Journal of Clinical Psychology*, *57*(2), 177-185.

Kaplow, J. B., Gipson, P. Y., Horwitz, A. G., Burch, B. N., & King, C. A. (2014). Emotional suppression mediates the relation between adverse life events and

adolescent suicide: Implications for prevention. *Prevention science*, *15*(2), 177-185.

Khan, K. S., Kunz, R., Kleijnen, J., & Antes, G. (2003). Five steps to conducting a systematic review. *Journal of the royal society of medicine*, *96*(3), 118-121.

Kimonis, E. R., Skeem, J. L., Edens, J. F., Douglas, K. S., Lilienfeld, S. O., & Poythress, N. G. (2010). Suicidal and criminal behavior among female offenders: The role of abuse and psychopathology. *Journal of personality disorders*, *24*(5), 581-609.

Kleiman, E. M., & Liu, R. T. (2013). Social support as a protective factor in suicide: findings from two nationally representative samples. *Journal of affective disorders, 150*(2), 540-545.

Koole, S. L. (2009). The psychology of emotion regulation: An integrative review. *Cognition and emotion*, *23*(1), 4-41.

Kranzler, A., Fehling, K. B., Anestis, M. D., & Selby, E. A. (2016). Emotional dysregulation, internalizing symptoms, and self-injurious and suicidal behavior: Structural equation modeling analysis. *Death studies*, *40*(6), 358-366.

Krauss, S. E. (2005). Research paradigms and meaning making: A primer. *The qualitative report*, *10*(4), 758-770.

Krysinska, K., & Lester, D. (2010). Post-traumatic stress disorder and suicide risk: a systematic review. *Archives of Suicide Research*, *14*(1), 1-23.

Kuo, J. R., Goldin, P. R., Werner, K., Heimberg, R. G., & Gross, J. J. (2011). Childhood trauma and current psychological functioning in adults with social anxiety disorder. *Journal of anxiety disorders*, *25*(4), 467-473.

Law, K. C., Khazem, L. R., & Anestis, M. D. (2015). The role of emotion dysregulation in suicide as considered through the ideation to action framework. *Current Opinion in Psychology*, *3*, 30-35.

Leichsenring, F., Leibing, E., Kruse, J., New, A. S., & Leweke, F. (2011). Borderline personality disorder. *The Lancet*, *377*(9759), 74-84.

Levin, K. A. (2006). Study design III: Cross-sectional studies. *Evidence-based dentistry*, *7*(1), 24.

Li, X., Wang, Z., Hou, Y., Wang, Y., Liu, J., & Wang, C. (2014). Effects of childhood trauma on personality in a sample of Chinese adolescents. *Child abuse & neglect*, *38*(4), 788-796.

MacKinnon, D. P., & Fairchild, A. J. (2009). Current directions in mediation analysis. *Current directions in psychological science*, *18*(1), 16-20.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annu. Rev. Psychol.*, *58*, 593-614.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological methods*, *7*(1), 83.

McLean, J., Maxwell, M., Platt, S., Harris, F. M., & Jepson, R. (2008). *Risk and protective factors for suicide and suicidal behaviour: A literature review.* Scottish Government.

Maercker, A., Brewin, C. R., Bryant, R. A., Cloitre, M., van Ommeren, M., Jones, L. M., ... & Somasundaram, D. J. (2013). Diagnosis and classification of disorders specifically associated with stress: proposals for ICD-11. *World Psychiatry*, *12*(3), 198-206.

Mann, J. J., Waternaux, C., Haas, G. L., & Malone, K. M. (1999). Toward a clinical model of suicidal behavior in psychiatric patients. *American journal of Psychiatry*, *156*(2), 181-189.

Mann, J. J. (2002). A current perspective of suicide and attempted suicide. *Annals of internal medicine*, *136*(4), 302-311.

Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological methods*, *12*(1), 23.

McGirr, A., Renaud, J., Bureau, A., Seguin, M., Lesage, A., & Turecki, G. (2008). Impulsive-aggressive behaviours and completed suicide across the life cycle: a predisposition for younger age of suicide. *Psychological medicine*, *38*(3), 407-417.

McGirr, A., Alda, M., Séguin, M., Cabot, S., Lesage, A., & Turecki, G. (2009). Familial aggregation of suicide explained by cluster B traits: a three-group family study of suicide controlling for major depressive disorder. *American Journal of Psychiatry*, *166*(10), 1124-1134.

McLean, C. P., Rosenbach, S. B., Capaldi, S., & Foa, E. B. (2013). Social and academic functioning in adolescents with child sexual abuse-related PTSD. *Child abuse & neglect*, *37*(9), 675.

Meadows, L. A., & Kaslow, N. J. (2002). Hopelessness as mediator of the link between reports of a history of child maltreatment and suicidality in African American women. *Cognitive Therapy and Research*, *26*(5), 657-674.

Meadows, L. A., Kaslow, N. J., Thompson, M. P., & Jurkovic, G. J. (2005). Protective factors against suicide attempt risk among African American women

experiencing intimate partner violence. *American journal of community psychology*, *36*(1-2), 109-121.

Melville, J. D., Kellogg, N. D., Perez, N., & Lukefahr, J. L. (2014). Assessment for self-blame and trauma symptoms during the medical evaluation of suspected sexual abuse. *Child abuse & neglect*, *38*(5), 851-857.

Messman-Moore, T. L., & Coates, A. A. (2007). The impact of childhood psychological abuse on adult interpersonal conflict: The role of early maladaptive schemas and patterns of interpersonal behavior. *Journal of Emotional Abuse*, *7*(2), 75-92.

Mikulincer, M., Shaver, P. R., & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and emotion*, *27*(2), 77-102.

Mikulincer, M., Shaver, P. R., Gillath, O., & Nitzberg, R. A. (2005). Attachment, caregiving, and altruism: boosting attachment security increases compassion and helping. *Journal of personality and social psychology*, *89*(5), 817.

Miller, A. B., Esposito-Smythers, C., Weismoore, J. T., & Renshaw, K. D. (2013). The relation between child maltreatment and adolescent suicidal behavior: a systematic review and critical examination of the literature. *Clinical child and family psychology review*, *16*(2), 146-172.

Milner, A., Page, A., & LaMontagne, A. D. (2013). Long-term unemployment and suicide: a systematic review and meta-analysis. *PloS one*, *8*(1), e51333.

Minzenberg, M. J., Poole, J. H., & Vinogradov, S. (2006). Adult social attachment disturbance is related to childhood maltreatment and current symptoms in

borderline personality disorder. *The Journal of nervous and mental disease*, *194*(5), 341-348.

Mok, P. L., Leyland, A. H., Kapur, N., Windfuhr, K., Appleby, L., Platt, S., & Webb, R. T. (2013). Why does Scotland have a higher suicide rate than England? An area-level investigation of health and social factors. *J Epidemiol Community Health*, *67*(1), 63-70.

Monteith, L. L., Menefee, D. S., Pettit, J. W., Leopoulos, W. L., & Vincent, J. P. (2013). Examining the interpersonal–psychological theory of suicide in an inpatient veteran sample. *Suicide and Life-Threatening Behavior*, *43*(4), 418-428.

Mulrow, C. D. (1994). Systematic reviews: rationale for systematic reviews. *Bmj*, *309*(6954), 597-599.

Nakash-Eisikovits, O. R. A., Dutra, L., & Westen, D. (2002). Relationship between attachment patterns and personality pathology in adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, *41*(9), 1111-1123.

National records for Scotland (2016) *Probable Suicides: Deaths which are the Result of Intentional Self-harm or Events of Undetermined Intent*. Retrieved from: https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/deaths/suicides/list-of-tables-and-chart

Neacsiu, A. D., Fang, C. M., Rodriguez, M., & Rosenthal, M. Z. (2018). Suicidal behavior and problems with emotion regulation. *Suicide and Life-threatening Behavior*, *48*(1), 52-74.

NHS Education for Scotland (2017) *Transforming Psychological Trauma: A Knowledge and Skills Framework for the Scottish Workforce.* Retrieved from:

https://www.nes.scot.nhs.uk/media/3971582/nationaltraumatrainingframework.pdf

Nightingale, A. (2009). A guide to systematic literature reviews. *Surgery (Oxford)*, *27*(9), 381-384.

O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & quantity*, *41*(5), 673-690.

O'Connor, M., & Elklit, A. (2008). Attachment styles, traumatic events, and PTSD: A cross-sectional investigation of adult attachment and trauma. *Attachment & human development*, *10*(1), 59-71.

O'Connor, R. C. (2003). Suicidal behavior as a cry of pain: Test of a psychological model. *Archives of Suicide Research*, *7*(4), 297-308.

O'Connor, R. C. (2011). Towards an integrated motivational–volitional model of suicidal behaviour. *International handbook of suicide prevention: Research, policy and practice*, *1*, 181-198.

O'Connor, R. C., Smyth, R., Ferguson, E., Ryan, C., & Williams, J. M. G. (2013). Psychological processes and repeat suicidal behavior: A four-year prospective study. *Journal of consulting and clinical psychology*, *81*(6), 1137.

O'Connor, R. C., & Kirtley, O. J. (2018). The integrated motivational–volitional model of suicidal behaviour. *Phil. Trans. R. Soc. B*, *373*(1754), 20170268.

O'Connor, R. C., & Nock, M. K. (2014). The psychology of suicidal behaviour. *The Lancet Psychiatry*, *1*(1), 73-85.

Office for National Statistics (2017) *Suicides in the UK: 2016 Registrations.* Retrieved from:

https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/suicidesintheunitedkingdom/2016registrations

Office for National Statistics (2018) *Suicides in the UK: 2017 Registrations.* Retrieved from: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/suicidesintheunitedkingdom/2017registrations

Palmier-Claus, J., Berry, K., Darrell-Berry, H., Emsley, R., Parker, S., Drake, R., & Bucci, S. (2016). Childhood adversity and social functioning in psychosis: exploring clinical and cognitive mediators. *Psychiatry research*, *238*, 25-32.

Pallant, J. (2007). *SPSS survival manual*. McGraw-Hill Education (UK).

Peters, D. K., & Range, L. M. (1997). Self-blame and self-destruction in women sexually abused as children. *Journal of Child Sexual Abuse*, *5*(4), 19-33.

Platt, S., Boyle, P. J., Crombie, I., Feng, Z., & Exeter, D. (2007). *The epidemiology of suicide in Scotland 1989-2004: an examination of temporal trends and risk factors at national and local levels*. Scottish Executive Social Research.

Ployhart, R. E., & Vandenberg, R. J. (2010). Longitudinal research: The theory, design, and analysis of change. *Journal of management*, *36*(1), 94-120.

Pollock, L. R., & Williams, J. M. G. (2004). Problem-solving in suicide attempters. *Psychological medicine*, *34*(1), 163-167.

Ponterotto, J. G. (2005). Qualitative research in counseling psychology: A primer on research paradigms and philosophy of science. *Journal of counseling psychology*, *52*(2), 126.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior research methods*, *40*(3), 879-891.

Preacher, K. J., & Selig, J. P. (2012). Advantages of Monte Carlo confidence intervals for indirect effects. *Communication Methods and Measures*, *6*(2), 77-98.

Puzia, M. E., Kraines, M. A., Liu, R. T., & Kleiman, E. M. (2014). Early life stressors and suicidal ideation: Mediation by interpersonal risk factors. *Personality and individual differences*, *56*, 68-72.

Quas, J. A., Goodman, G. S., & Jones, D. P. (2003). Predictors of attributions of self-blame and internalizing behavior problems in sexually abused children. *Journal of Child Psychology and Psychiatry*, *44*(5), 723-736.

Rasmussen, S. A., Fraser, L., Gotz, M., MacHale, S., Mackie, R., Masterton, G., ... & O'connor, R. C. (2010). Elaborating the cry of pain model of suicidality: Testing a psychological model in a sample of first-time and repeat self-harm patients. *British Journal of Clinical Psychology*, *49*(1), 15-30.

Riggs, S. A., & Kaminski, P. (2010). Childhood emotional abuse, adult attachment, and depression as predictors of relational adjustment and psychological aggression. *Journal of aggression, maltreatment & trauma*, *19*(1), 75-104.

Robinaugh, D. J., & McNally, R. J. (2011). Trauma centrality and PTSD symptom severity in adult survivors of childhood sexual abuse. *Journal of traumatic stress*, *24*(4), 483-486.

Rose, D. T., & Abramson, L. (1992). IX developmental predictors of depressive cognitive style: research and theory. *Developmental perspectives on depression*, *4*, 323.

Ross, C. A., Heber, S., Norton, G. R., Anderson, D., Anderson, G., & Barchet, P. (1989). The dissociative disorders interview schedule: A structured interview. *Dissociation*, *2*(3), 169-189.

Sachs-Ericsson, N. J., Stanley, I. H., Sheffler, J. L., Selby, E., & Joiner, T. E. (2017). Non-violent and violent forms of childhood abuse in the prediction of suicide attempts: Direct or indirect effects through psychiatric disorders?. *Journal of affective disorders*, *215*, 15-22.

Scharfe, E., & Bartholomew, K. I. M. (1994). Reliability and stability of adult attachment patterns. *Personal relationships*, *1*(1), 23-43.

Schafer, J. L., & Graham, J. W. (2002). Missing Data: our view of the state of the art. *Psychological methods, 7*(2), 147.

Schlomer, G. L., Bauman, S., & Card, N. A. (2010). Best practices for missing data management in counseling psychology. *Journal of Counseling psychology*, *57*(1), 1.

Schotte, D. E., & Clum, G. A. (1987). Problem-solving skills in suicidal psychiatric patients. *Journal of consulting and clinical psychology*, *55*(1), 49.

Scottish Intercollegiate Guidelines Network (2012) *Methodology Checklist 3: Cohort Studies*. Retrieved from: https://www.sign.ac.uk/checklists-and-notes.html

Sedgwick, P. (2014). Cross sectional studies: advantages and disadvantages. *BMJ: British Medical Journal (Online)*, *348*.

Séguin, M., Beauchamp, G., Robert, M., DiMambro, M., & Turecki, G. (2014). Developmental model of suicide trajectories. *The British Journal of Psychiatry*, *205*(2), 120-126.

Shevlin, M., Hyland, P., Karatzias, T., Fyvie, C., Roberts, N., Bisson, J. I., ... & Cloitre, M. (2017). Alternative models of disorders of traumatic stress based on the new ICD-11 proposals. *Acta Psychiatrica Scandinavica*, *135*(5), 419-428.

Shneidman, E. S. (1993) Suicide as Psychache: A clinical Approach to Self-Destructive Behavior. Lenham: Rowman & Littlefield

Simpson, J. A., & Rholes, W. S. (2002). Fearful-avoidance, disorganization, and multiple working models: Some directions for future theory and research. *Attachment & Human Development*, *4*(2), 223-229.

Smith, M. M., Sherry, S. B., Chen, S., Saklofske, D. H., Mushquash, C., Flett, G. L., & Hewitt, P. L. (2018). The perniciousness of perfectionism: A meta-analytic review of the perfectionism–suicide relationship. *Journal of personality*, *86*(3), 522-542.

Soloff, P. H., Feske, U., & Fabio, A. (2008). Mediators of the relationship between childhood sexual abuse and suicidal behavior in borderline personality disorder. *Journal of personality disorders*, *22*(3), 221-232.

Speckens, A. E., & Hawton, K. (2005). Social problem solving in adolescents with suicidal behavior: A systematic review. *Suicide and Life-Threatening Behavior*, *35*(4), 365-387.

Spertus, I. L., Yehuda, R., Wong, C. M., Halligan, S., & Seremetis, S. V. (2003). Childhood emotional abuse and neglect as predictors of psychological and

physical symptoms in women presenting to a primary care practice. *Child abuse & neglect*, *27*(11), 1247-1258.

Stevens, N. R., Gerhart, J., Goldsmith, R. E., Heath, N. M., Chesney, S. A., & Hobfoll, S. E. (2013). Emotion regulation difficulties, low social support, and interpersonal violence mediate the link between childhood abuse and posttraumatic stress symptoms. *Behavior therapy*, *44*(1), 152-161.

Suliman, S., Mkabile, S. G., Fincham, D. S., Ahmed, R., Stein, D. J., & Seedat, S. (2009). Cumulative effect of multiple trauma on symptoms of posttraumatic stress disorder, anxiety, and depression in adolescents. *Comprehensive psychiatry*, *50*(2), 121-127.

Swannell, S., Martin, G., Page, A., Hasking, P., Hazell, P., Taylor, A., & Protani, M. (2012). Child maltreatment, subsequent non-suicidal self-injury and the mediating roles of dissociation, alexithymia and self-blame. *Child abuse & neglect*, *36*(7-8), 572-584.

Swogger, M. T., You, S., Cashman-Brown, S., & Conner, K. R. (2011). Childhood physical abuse, aggression, and suicide attempts among criminal offenders. *Psychiatry research*, *185*(3), 363-367.

Tasca, G. A., Ritchie, K., Zachariades, F., Proulx, G., Trinneer, A., Balfour, L., ... & Bissada, H. (2013). Attachment insecurity mediates the relationship between childhood trauma and eating disorder psychopathology in a clinical sample: a structural equation model. *Child Abuse & Neglect*, *37*(11), 926-933.

Tasca, G. A., Szadkowski, L., Illing, V., Trinneer, A., Grenon, R., Demidenko, N., ... & Bissada, H. (2009). Adult attachment, depression, and eating disorder

symptoms: The mediating role of affect regulation strategies. *Personality and Individual Differences*, *47*(6), 662-667.

Taylor, P. J., Wood, A. M., Gooding, P., & Tarrier, N. (2010). Appraisals and suicidality: The mediating role of defeat and entrapment. *Archives of Suicide Research*, *14*(3), 236-247.

Torchalla, I., Strehlau, V., Li, K., Schuetz, C., & Krausz, M. (2012). The association between childhood maltreatment subtypes and current suicide risk among homeless men and women. *Child maltreatment*, *17*(2), 132-143.

Tucker, R. P., O'Connor, R. C., & Wingate, L. R. (2016). An investigation of the relationship between rumination styles, hope, and suicide ideation through the lens of the integrated motivational-volitional model of suicidal behavior. *Archives of suicide research*, *20*(4), 553-566.

Twomey, H. B., Kaslow, N. J., & Croft, S. (2000). Childhood maltreatment, object relations, and suicidal behavior in women. *Psychoanalytic Psychology*, *17*(2), 313.

U.S Department of Health and Human Services National Institute of Health, 2014

van Heeringen, K. (2012). Stress-diathesis model of suicidal behavior. *The neurobiological basis of suicide*, *51*, 113.

Van Orden, K. A., Witte, T. K., Gordon, K. H., Bender, T. W., & Joiner Jr, T. E. (2008). Suicidal desire and the capability for suicide: Tests of the interpersonal-psychological theory of suicidal behavior among adults. *Journal of consulting and clinical psychology*, *76*(1), 72.

Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner Jr, T. E. (2010). The interpersonal theory of suicide. *Psychological review*, *117*(2), 575.

Vettese, L. C., Dyer, C. E., Li, W. L., & Wekerle, C. (2011). Does self-compassion mitigate the association between childhood maltreatment and later emotion regulation difficulties? A preliminary investigation. *International Journal of Mental Health and Addiction*, *9*(5), 480.

Viswanathan, M., Berkman, N. D., Dryden, D. M., & Hartling, L. (2013). Assessing risk of bias and confounding in observational studies of interventions or exposures: further development of the RTI item bank.

Waldinger, R. J., Schulz, M. S., Barsky, A. J., & Ahern, D. K. (2006). Mapping the road from childhood trauma to adult somatization: the role of attachment. *Psychosomatic medicine*, *68*(1), 129-135.

Waldrop, A. E., Hanson, R. F., Resnick, H. S., Kilpatrick, D. G., Naugle, A. E., & Saunders, B. E. (2007). Risk factors for suicidal behavior among a national sample of adolescents: Implications for prevention. *Journal of traumatic Stress*, *20*(5), 869-879.

Walsh, K., Fortier, M. A., & DiLillo, D. (2010). Adult coping with childhood sexual abuse: A theoretical and empirical review. *Aggression and violent behavior*, *15*(1), 1-13.

Wanner, B., Vitaro, F., Tremblay, R. E., & Turecki, G. (2012). Childhood trajectories of anxiousness and disruptiveness explain the association between early-life adversity and attempted suicide. *Psychological medicine*, *42*(11), 2373-2382.

Webb, T. L., Miles, E., & Sheeran, P. (2012). Dealing with feeling: a meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychological bulletin*, *138*(4), 775.

Weiss, N. H., Tull, M. T., Viana, A. G., Anestis, M. D., & Gratz, K. L. (2012). Impulsive behaviors as an emotion regulation strategy: Examining associations between PTSD, emotion dysregulation, and impulsive behaviors among substance dependent inpatients. *Journal of anxiety disorders*, *26*(3), 453-458.

Westen, D., Nakash, O., Thomas, C., & Bradley, R. (2006). Clinical assessment of attachment patterns and personality disorder in adolescents and adults. *Journal of Consulting and Clinical Psychology*, *74*(6), 1065.

Williams, J. M. G., & Williams, M. (1997). *Cry of pain: Understanding suicide and self-harm*. Penguin Group USA.

Williams, J. M. G., & Pollock, L. R. (2001). Psychological aspects of the suicidal process. *Understanding suicidal behaviour*, 76-93.

Williams, M. (2016). *Key concepts in the philosophy of social research*. Sage.

World Health Organisation (2013) *Mental Health Action Plan 2013-2020.* Retrieved from: http://www.who.int/mental_health/action_plan_2013/en/

World Health Organization (2014) *Preventing suicide: a global imperative*. Retrieved from: http://www.who.int/mental_health/suicide-prevention/world_report_2014/en/

World Health Organisation (2018) *World Health Statistics 2018: Monitoring health for the sustainable development goals. Retrieved from: https://www.who.int/mental_health/prevention/suicide/estimates/en/*

World Health Organisation (2018) *International Classification of Diseases, 11th Revision (ICD-11).* Retrieved from: http://www.who.int/classifications/icd/en/

Wu, C. H. (2009). The relationship between attachment style and self-concept clarity: The mediation effect of self-esteem. *Personality and Individual Differences*, *47*(1), 42-46.

Yang, B., & Clum, G. A. (2000). Childhood stress leads to later suicidality via its effect on cognitive functioning. *Suicide and Life-Threatening Behavior*, *30*(3), 183-198.

Yates, T. M. (2009). Developmental pathways from child maltreatment to nonsuicidal self-injury. *Understanding nonsuicidal self-injury: Origins, assessment, and treatment*, 117-137.

Yen, S., & Siegler, I. C. (2003). Self-blame, social introversion, and male suicides: Prospective data from a longitudinal study. *Archives of Suicide Research*, *7*(1), 17-27.

Yip, P. S., & Caine, E. D. (2011). Employment status and suicide: the complex relationships between changing unemployment rates and death rates. *Journal of Epidemiology & Community Health*, *65*(8), 733-736.

Yoshimasu, K., Kiyohara, C., & Miyashita, K. (2008). Suicidal risk factors and completed suicide: meta-analyses based on psychological autopsy studies. *Environmental health and preventive medicine*, *13*(5), 243.

Young, J. E., Klosko, J. S., & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide*. Guilford Press.

Yumbul, C., Cavusoglu, S., & Geyimci, B. (2010). The effect of childhood trauma on adult attachment styles, infidelity tendency, romantic jealousy and self-esteem. *Procedia-social and behavioral sciences*, *5*, 1741-1745.

Zaitsoff, S. L., & Grilo, C. M. (2010). Eating disorder psychopathology as a marker of psychosocial distress and suicide risk in female and male adolescent psychiatric inpatients. *Comprehensive psychiatry*, *51*(2), 142-150.

Zatti, C., Rosa, V., Barros, A., Valdivia, L., Calegaro, V. C., Freitas, L. H., ... & Schuch, F. B. (2017). Childhood trauma and suicide attempt: a meta-analysis of longitudinal studies from the last decade. *Psychiatry research*, *256*, 353-358.

Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of consumer research*, *37*(2), 197-206.

Appendix List

Appendix 1: Childhood Trauma Questionnaire

When I was growing up ...	Never True	Rarely True	Sometimes True	Often True	Very Often True
1. I didn't have enough to eat.					
2. I knew that there was somebody to take care of me and protect me.					
3. People in my family called me things like "stupid", "lazy", or "ugly."					
4. My parents were too drunk or high to take care of the family.					
5. There was somebody in my family who helped me feel that I was important or special.					
6. I had to wear dirty clothes.					
7. I felt loved.					

When I was growing up ...	Never True	Rarely True	Sometimes True	Often True	Very Often True
8. I thought my parents wished I had never been born.					
9. I got hit so hard by somebody in my family that I had to see a doctor or go to hospital.					
10. There was nothing I wanted to change about my family.					
11. People in my family hit me so hard that it left me with bruises or marks.					
12. I was punished with a belt, a cord, or some other hard object.					
13. People in my family looked out for each other.					
14. People in my family said hurtful or insulting things to me.					

When I was growing up ...	Never True	Rarely True	Sometimes True	Often True	Very Often True
15. I believe I was physically abused					
16. I had the perfect childhood					
17. I got hit or beaten so badly that it was noticed by someone like a teacher, neighbour, or doctor.					
18. I felt that somebody in my family hated me.					
19. People in my family felt close to each other.					
20. Someone tried to touch me in a sexual way, or tried to make me touch them.					
21. Someone threatened to hurt me or tell lies about me unless I did something sexual with them.					

When I was growing up ...	Never True	Rarely True	Sometimes True	Often True	Very Often True
22. I had the best family in the world.					
23. Someone tried to make me do sexual things or watch sexual things.					
24. Someone molested me.					
25. I believe I was emotionally abused.					
26. There was someone to take me to the doctor if I needed it.					
27. I believe I was sexually abused.					
28. My family was a source of strength and support.					

Appendix 2: International Trauma Questionnaire

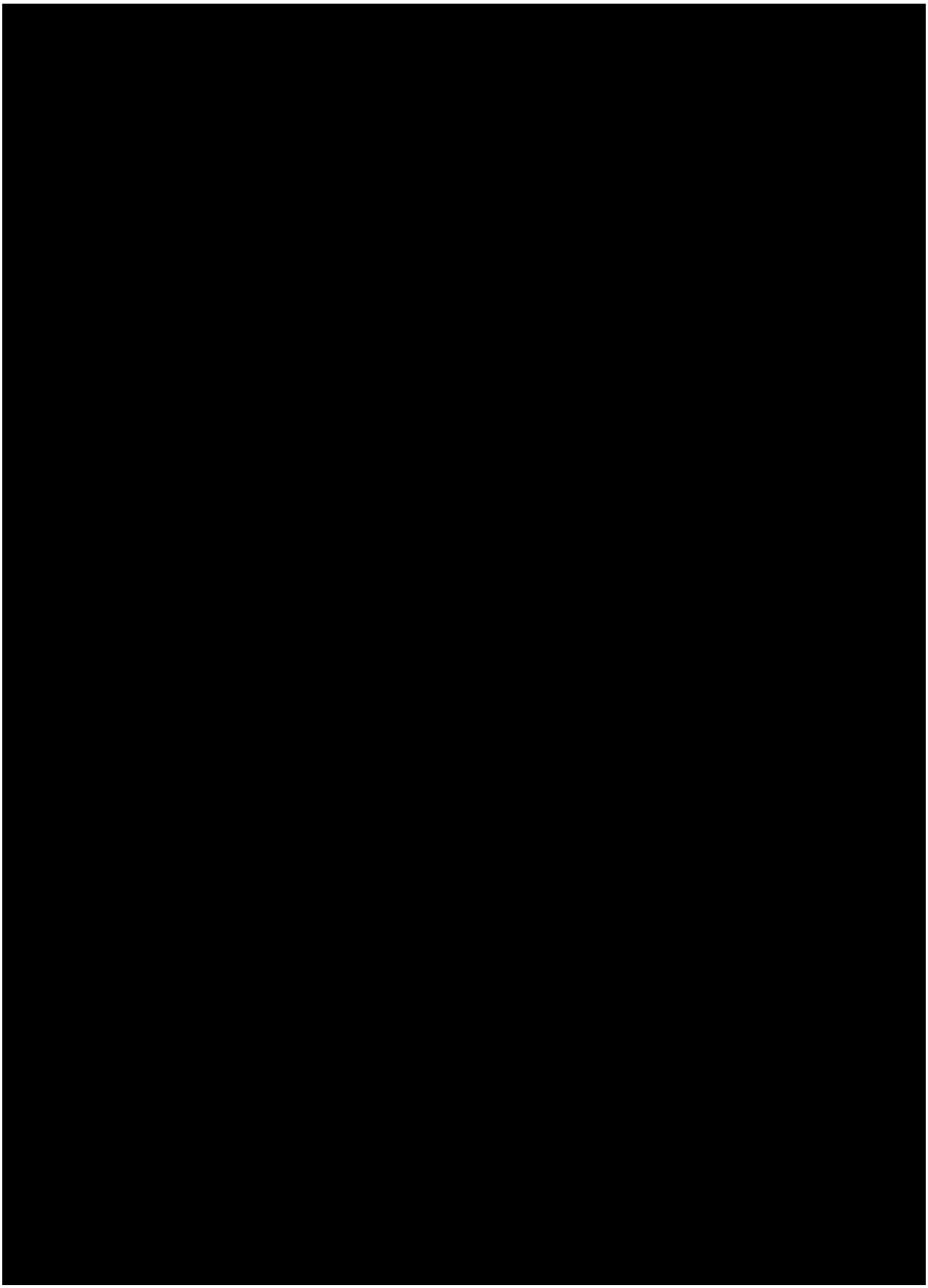
International Trauma Questionnaire

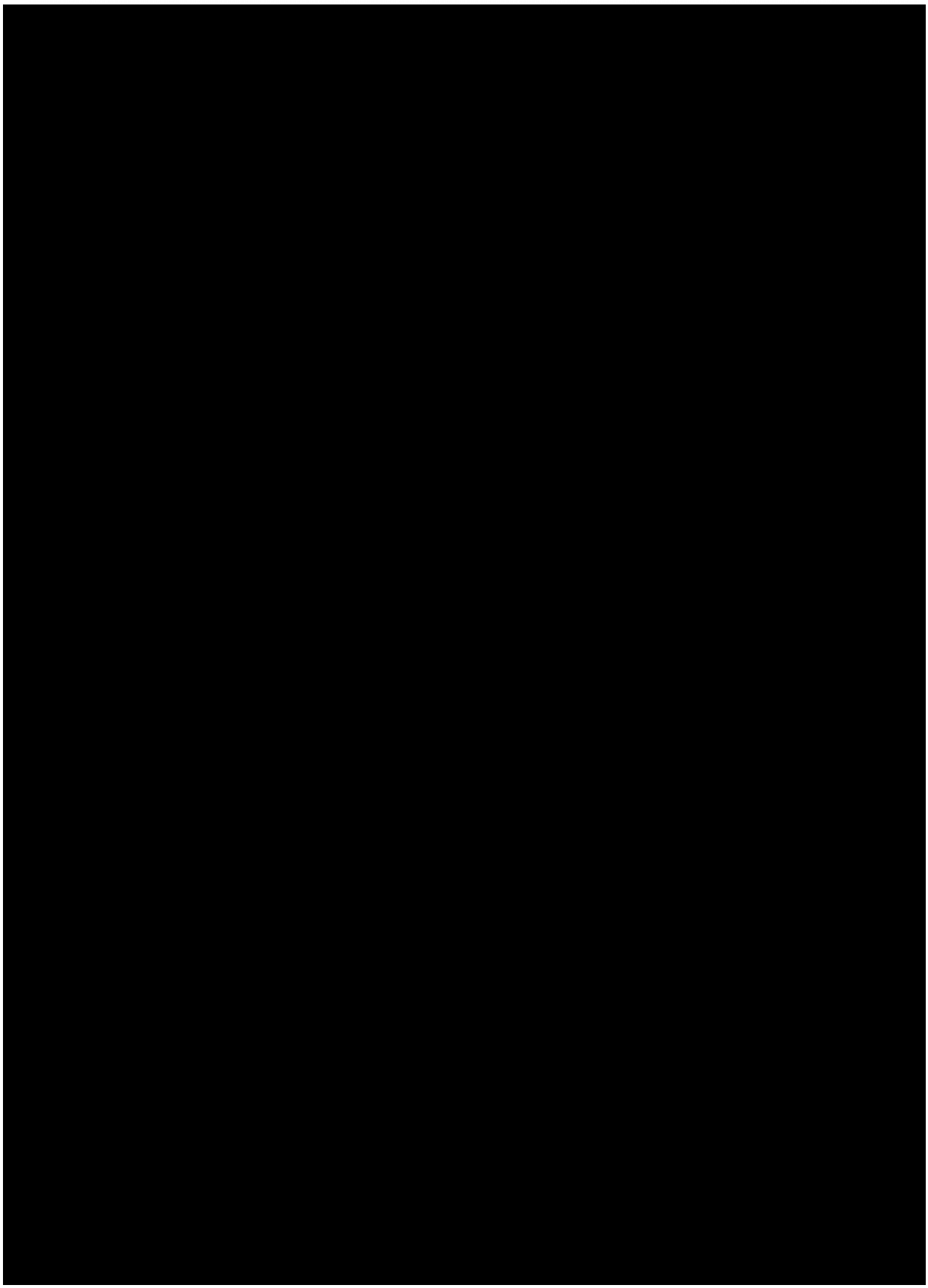
Self- Report Research Version 1.5.2

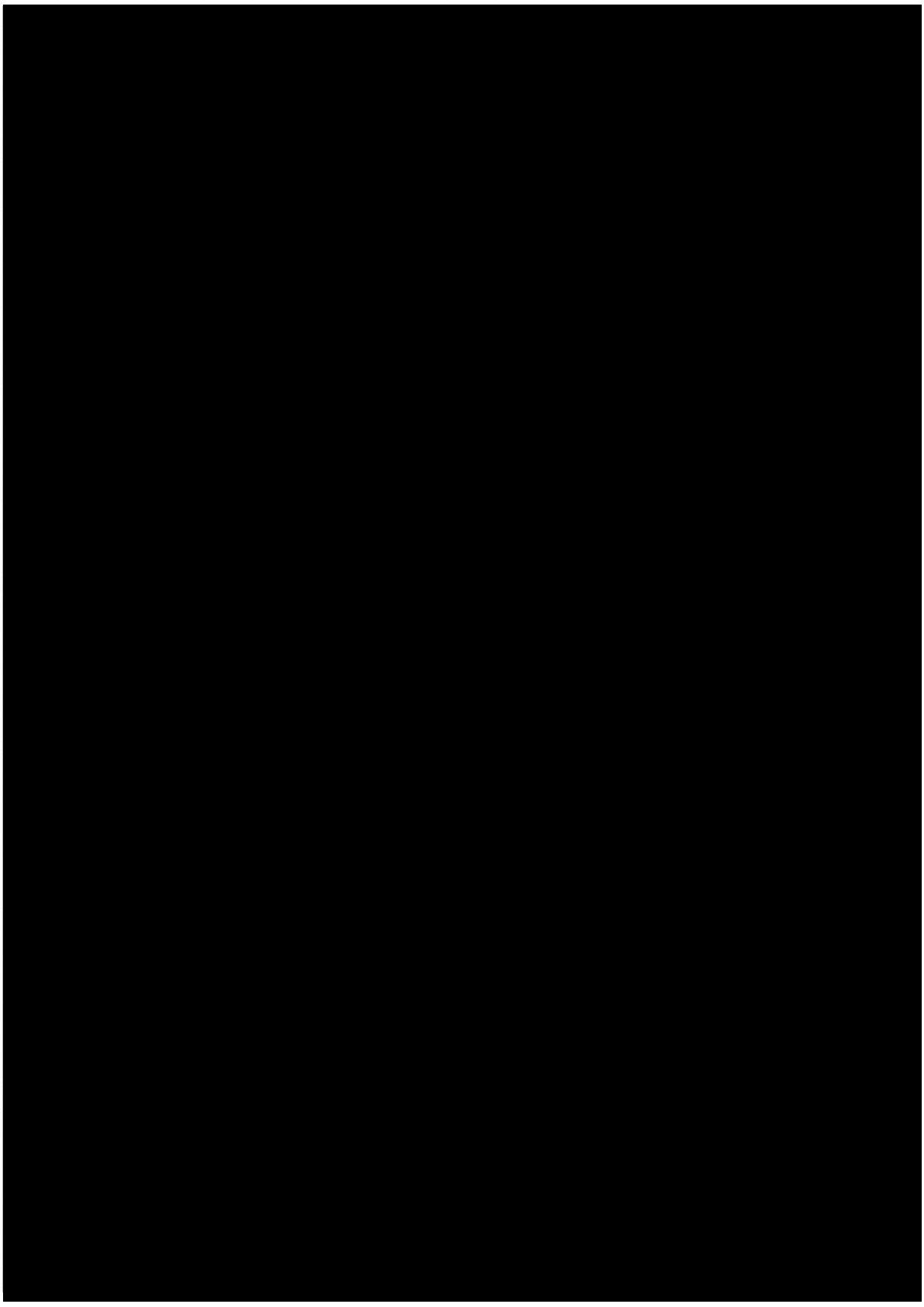
April 4, 2017

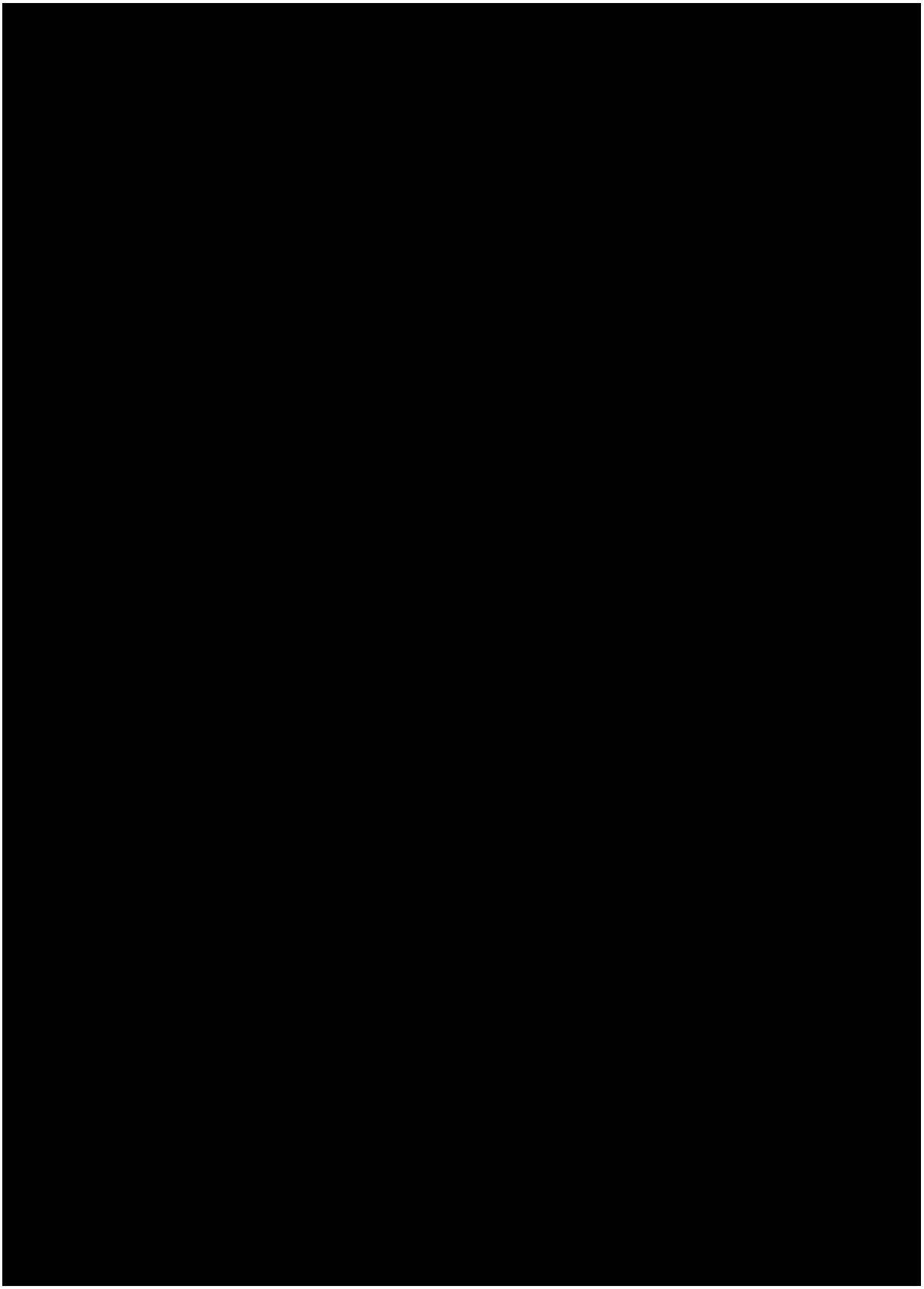
Marylene Cloitre, Neil Roberts, Jonathan Bisson, Chris Brewin

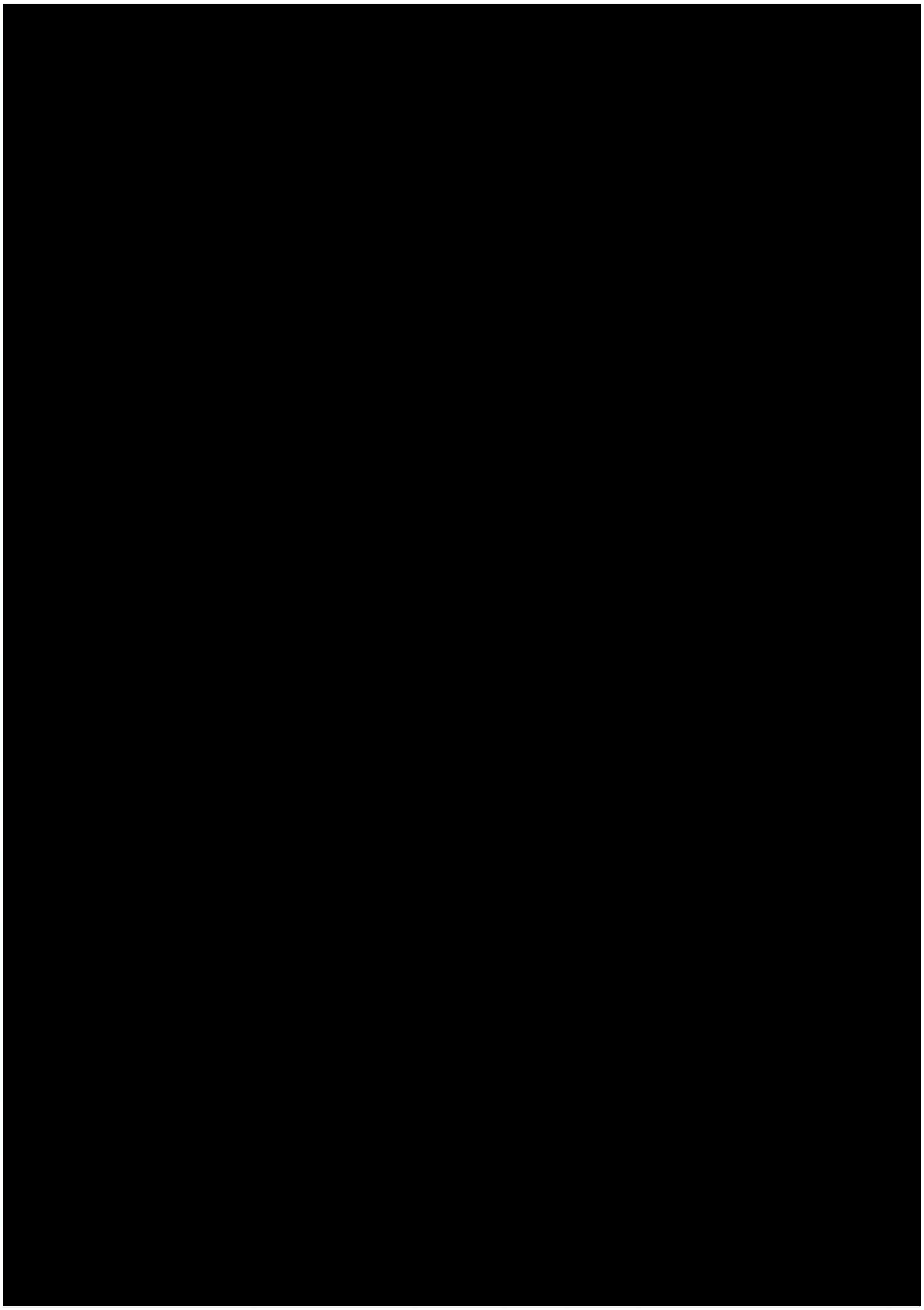
This is a draft version currently undergoing psychometric evaluation. Please do not use or distribute without permission from the first author (marylene.cloitre@nyumc.org)

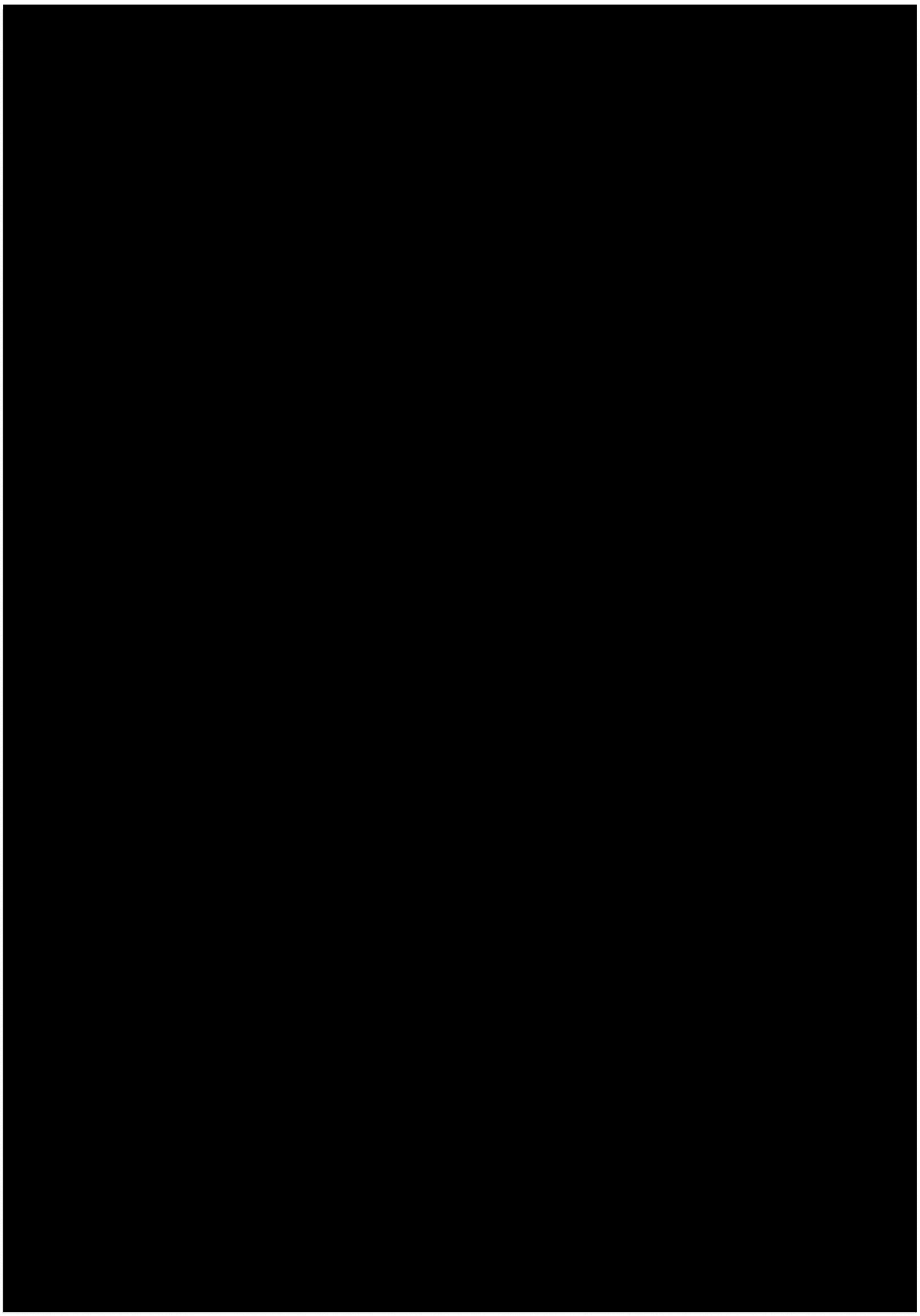


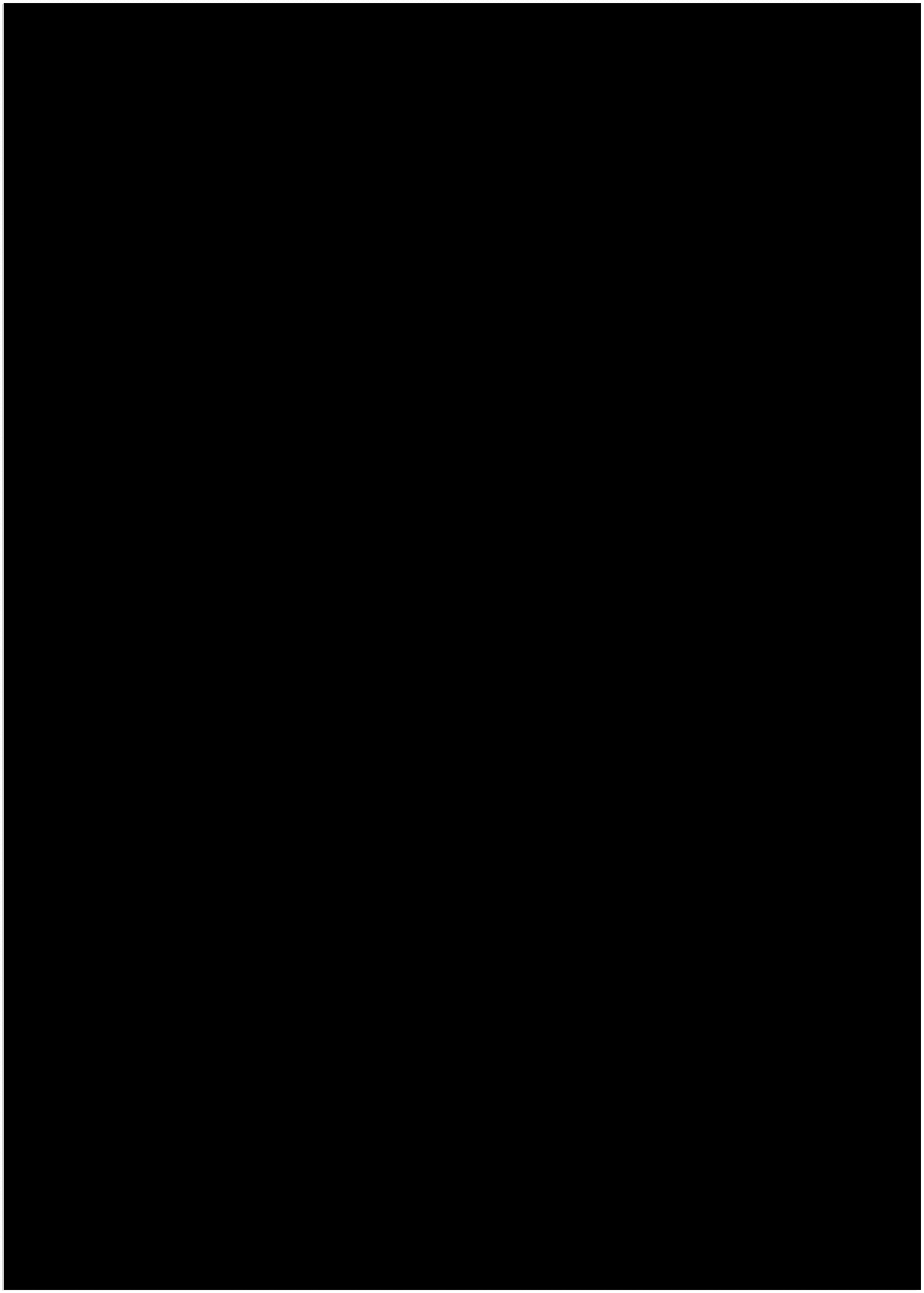




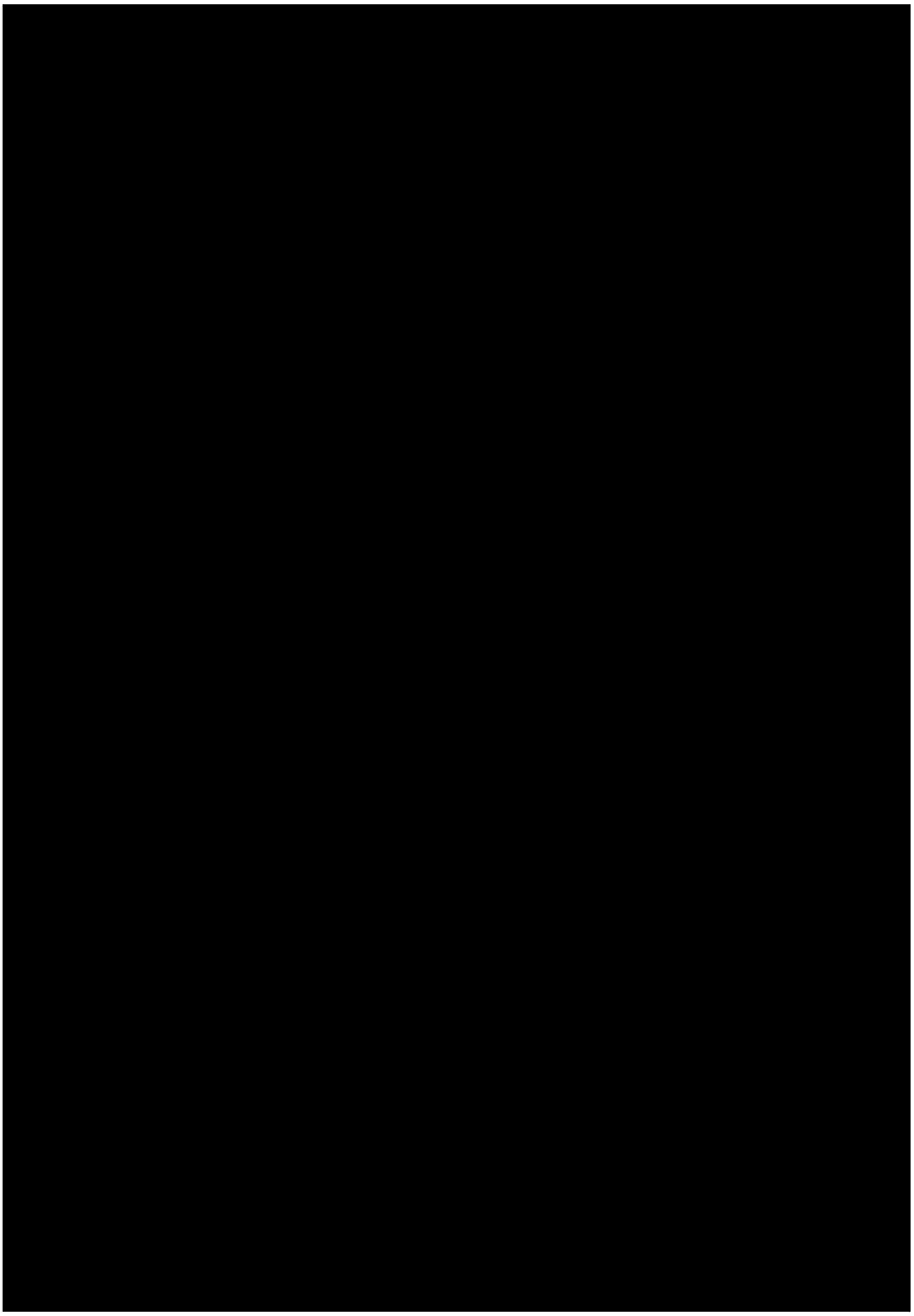


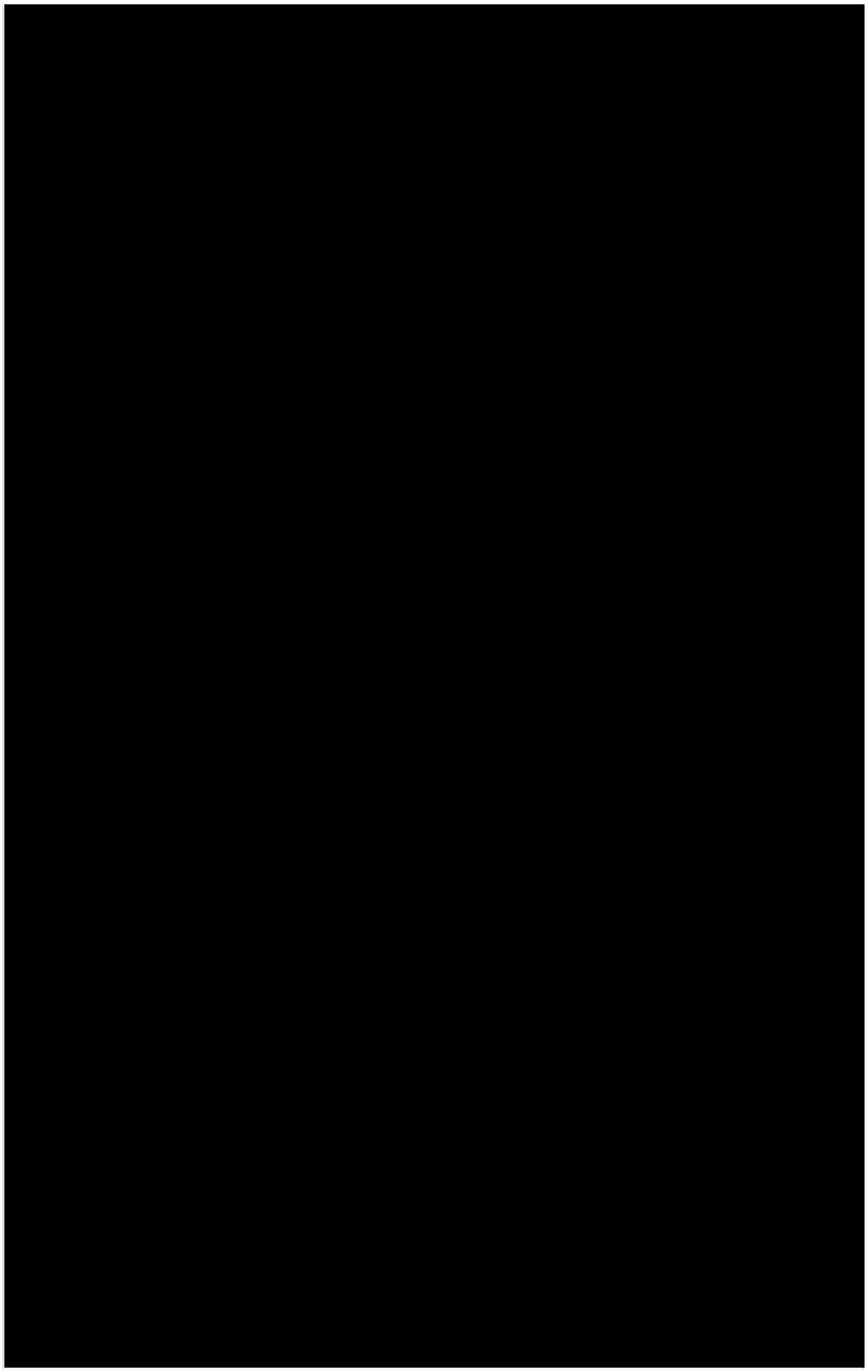


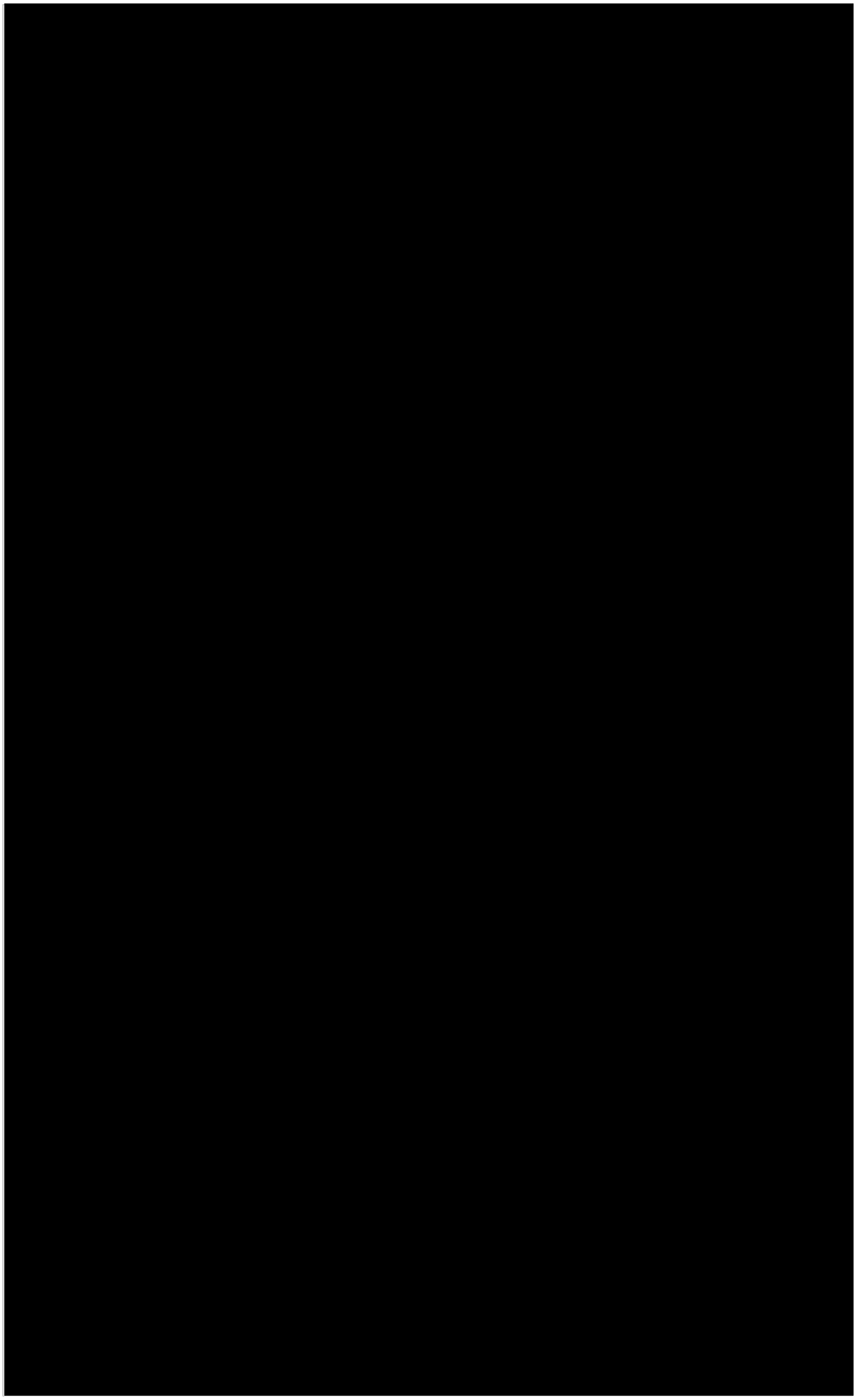


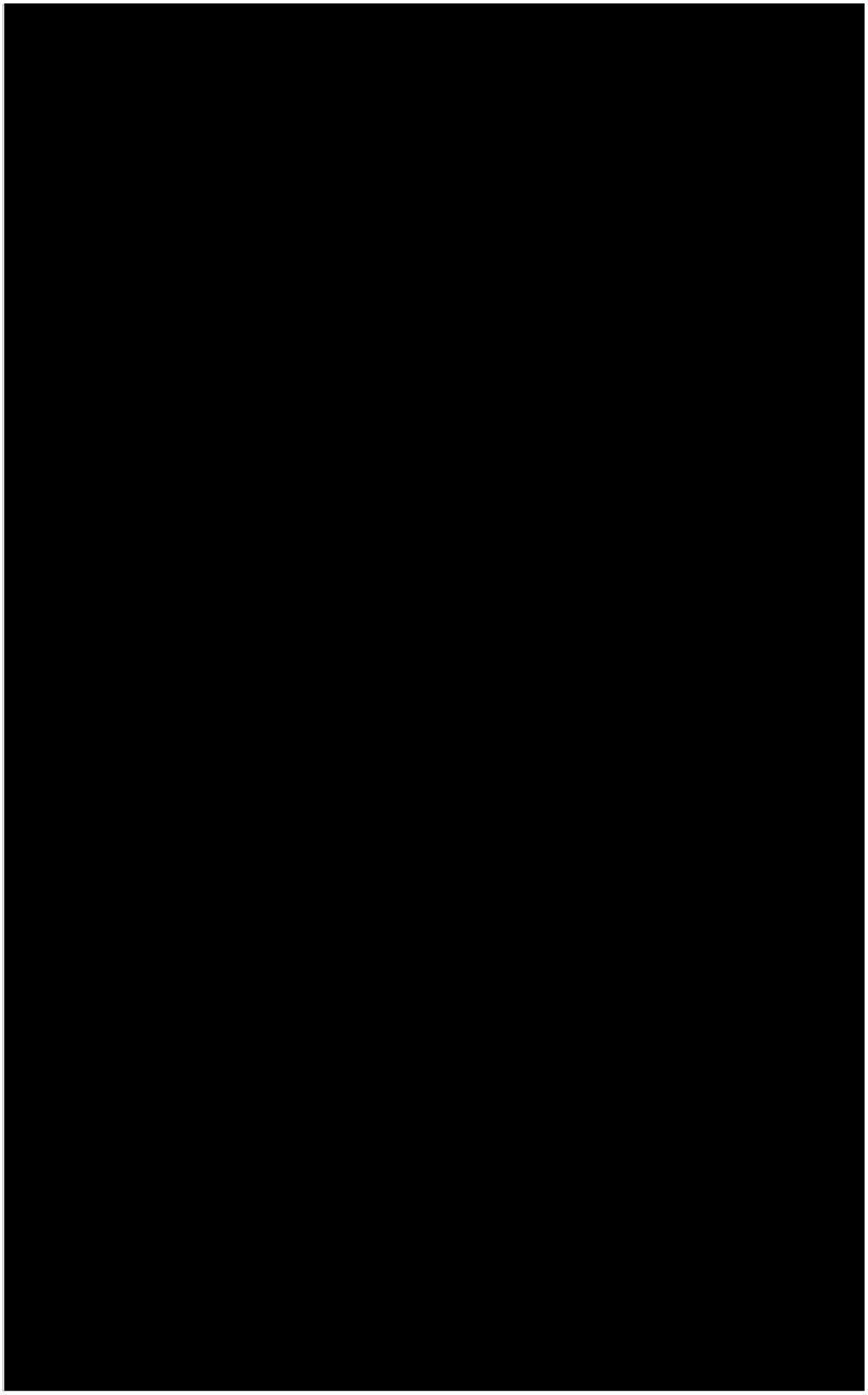


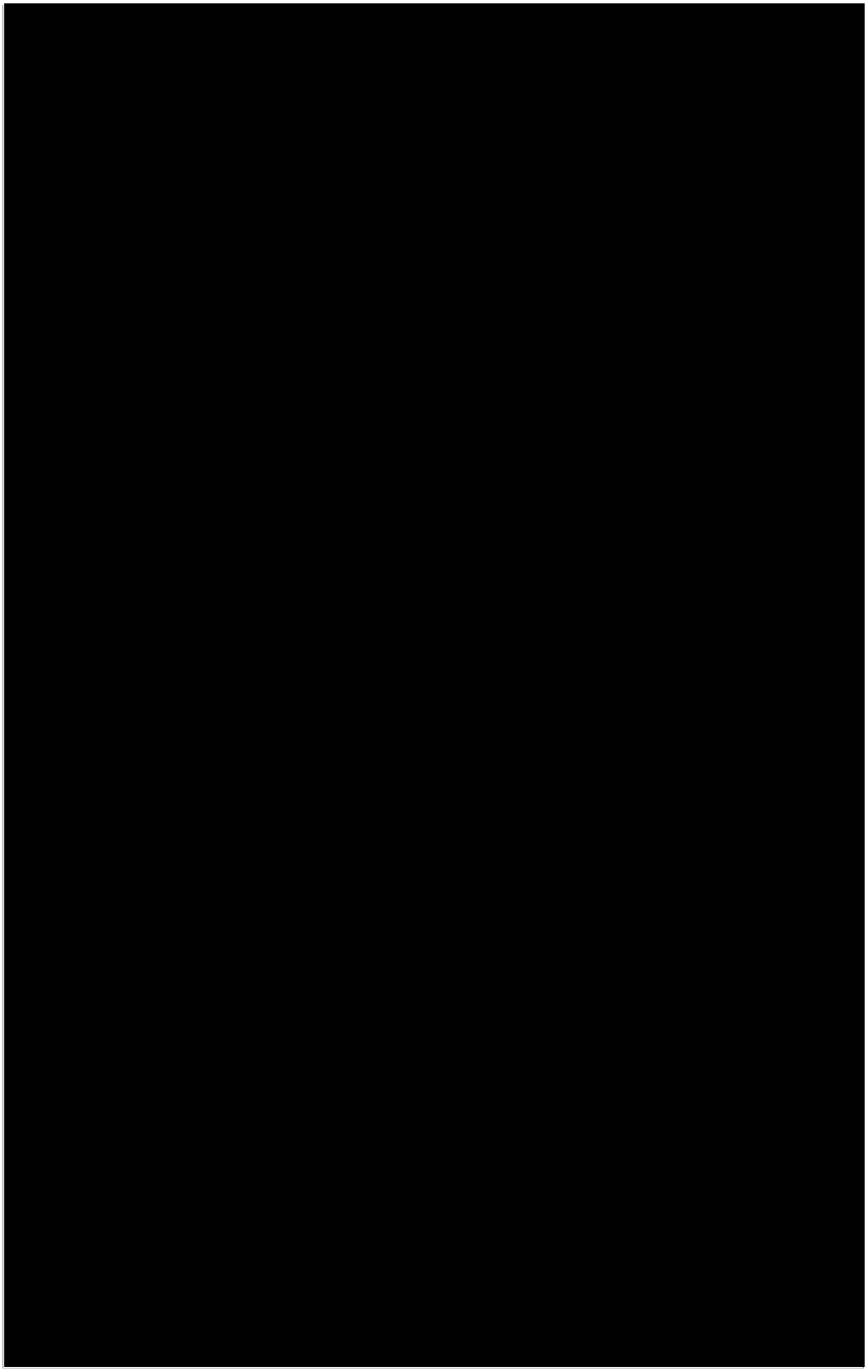
Appendix 3: Difficulties in Emotion Regulation Scale











Appendix 4: Behaviours Following Life Events Questionnaire

Behaviours Following Life Events

Do you injure yourself on purpose in some way?

Yes ☐ No ☐

If "yes", do you usually injure yourself.... (tick only one)

more than once a week ☐
approximately every two weeks ☐
about once a month ☐
less than once every few months ☐

Do you have any thoughts of ending your life? Yes ☐ No ☐

Have you ever attempted to end your life? Yes ☐ No ☐

Do you smoke cigarettes? Yes ☐ No ☐

If "yes", how many cigarettes do you normally smoke per day?
Please specify _____

Do you drink alcohol? Yes ☐ No ☐

If "yes", do you usually drink....(tick only one)

more than once a week ☐
approximately every two weeks ☐
about once a month ☐
less than once every few months ☐

If "yes", how many units do you usually drink per week?
Please specify _____
(1 unit = 1/2 pint beer, 1 glass of wine or 1 measure of spirits)

Do you use illicit substances (e.g. cannabis, heroin, cocaine) Yes ☐ No ☐

If "yes", do you normally use them....(tick only one)

more than once a week ☐
approximately every two weeks ☐
about once a month ☐
less than once every few months ☐

Appendix 5: Relationship Questionnaire

RELATIONSHIP QUESTIONNAIRE

PLEASE READ DIRECTIONS!!!

1. Following are descriptions of four general relationship styles that people often report. Please read each description and CIRCLE the letter corresponding to the style that best describes you or is closest to the way you generally are in your close relationships.

   A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.

   B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

   C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

   D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

2. Now please rate each of the following relationship styles according to the *extent* to which you think each description corresponds to your general relationship style.

A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.

B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

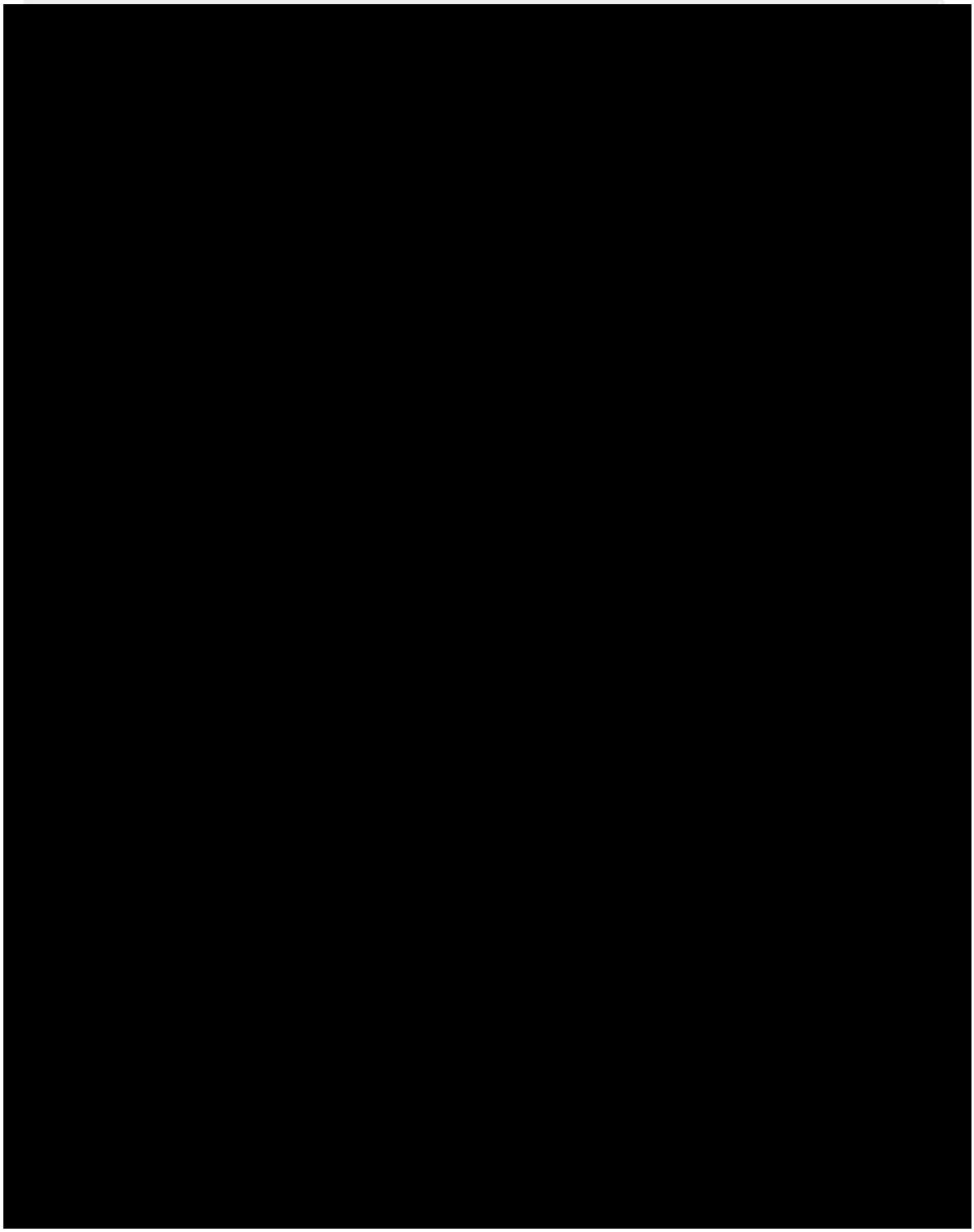
C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

	Not at all like me			**Somewhat like me**			**Very much like me**
Style A.	1	2	3	4	5	6	7
Style B.	1	2	3	4	5	6	7
Style C.	1	2	3	4	5	6	7
Style D.	1	2	3	4	5	6	7

Appendix 6: Cognitive Emotion Regulation Questionnaire

CERQ



Appendix 7: Full sample Means, Standard Deviations and Ranges for chapter 4

Variable	Minimum	Maximum	Mean (SD)
CTQ-Total	29	119	75.97 (19.65)
CEA	5	25	18.46 (5.42)
CPA	5	25	12.36 (5.26)
CSA	5	25	15.85 (7.65)
CEN	6	25	17.19 (5.38)
CPN	5	24	12.12 (4.59)
Emotion Hyperactivation	1	20	12.20 (4.03)
Emotion Deactivation	2	16	10.54 (3.63)
Negative Self-Concept	3	16	12.66 (3.87)
Disturbed Relationships	0	12	9.09 (2.64)
Non-acceptance	9	30	22.24 (5.89)
Goal-directed behaviour	8	25	20.03 (4.47)
Impulse control	7	30	17.71 (6.16)
Lack of awareness	7	30	21.30 (5.74)
Limited Strategies	12	40	27.30 (6.99)
Lack of clarity	5	25	16.29 (4.53)

Appendix 8: Full sample Means, Standard Deviations and Ranges for chapter 5

Variable	Minimum	Maximum	Mean (SD)
CTQ-Total	29	119	75.97 (19.65)
CEA	5	25	18.46 (5.42)
CPA	5	25	12.36 (5.26)
CSA	5	25	15.85 (7.65)
CEN	6	25	17.19 (5.38)
CPN	5	24	12.12 (4.59)
Emotion Hyperactivation	1	20	12.20 (4.03)
Emotion Deactivation	2	16	10.54 (3.63)
Negative Self-Concept	3	16	12.66 (3.87)
Disturbed Relationships	0	12	9.09 (2.64)
Acceptance	2	10	6.97 (2.35)
Rumination	2	10	7.59 (2.04)
Positive Reappraisal	2	10	5.46 (2.38)
Self-Blame	2	10	6.42 (2.56)
Positive Refocus	2	10	3.93 (1.89)
Catastrophising	2	10	6.67 (2.42)
Blaming Others	2	10	5.08 (2.57)
Refocus on Planning	2	10	5.49 (2.27
Putting into Perspective	2	10	4.96 (2.12)
Secure Attachment	1	7	2.83 (1.77)
Fearful Attachment	1	7	5.48 (1.81)
Preoccupied Attachment	1	7	3.45 (1.90)
Dismissing Attachment	1	7	3.60 (1.91)