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Deliberate self-harm in a clinical sample: the impact of schema
modes, parental bonding and perceived stress

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Submitted in part fulfilment of the degree of
Doctorate in Clinical Psychology

August 2012

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TABLE OF CONTENTS

ABSTRACT	1
CHAPTER 1: AN OVERVIEW OF THE THESIS	2-8
1.1. The Origins of Schema Therapy	2
1.2. Early Maladaptive Schemas	3
1.3. Schema Domains	4
1.4. Schema Perpetuation	5
1.5. The Schema Mode Concept	6
1.6. Schema Modes and the Present Doctoral Thesis	8
PART I: SYSTEMATIC REVIEW	9-52
CHAPTER 2: SYSTEMATIC REVIEW JOURNAL ARTICLE	10-52
ABSTRACT	12
INTRODUCTION	13
METHOD	16
RESULTS	25
DISCUSSION	39
REFERENCES	46
PART II: EMPIRICAL STUDY	53-116
CHAPTER 3: INTRODUCTION TO EMPIRICAL STUDY	54-60
3.1. Deliberate Self-Harm Definitions	54
3.2. Psychological Treatments for Deliberate Self-Harm	55
3.3. Schema Therapy and Deliberate Self-Harm	56
3.4. The Role of Parental Bonding in Deliberate Self-Harm	58
3.5. Levels of Perceived Stress in Deliberate Self-Harm	59
3.6. The Present Investigation	60
CHAPTER 4: AIMS AND HYPOTHESES	61
4.1. Aims	61
4.2. Hypotheses	61
CHAPTER 5: METHODOLOGY	62-73
5.1. Statistical Power and Sample Size	62
5.2. Participants	62
5.2.1. Inclusion and Exclusion Criteria	63
5.3. Measures	64
5.3.1. Semi-structured Interview	64
5.3.2. Deliberate Self-Harm Inventory	64
5.3.3. Schema Mode Inventory - Shortened Version	65
5.3.4. Parental Bonding Instrument - Shortened Version	66
5.3.5. Perceived Stress Scale	67
5.3.6. Hospital Anxiety and Depression Scale	68
5.4. Procedure	69
5.5. Ethical Considerations	69

5.5.1. Ethical Approval	69
5.5.2. Identified Risks to the Participant	70
5.5.3. Identified Risks to the Researcher	71
5.5.4. Informed Consent and Confidentiality	71
5.5.5. Data Storage	71
5.5.6. Identified Risks to Completion of the Project	72
CHAPTER 6: EMPIRICAL STUDY JOURNAL ARTICLE	74-99
ABSTRACT	76
INTRODUCTION	77
METHOD	80
RESULTS	83
DISCUSSION	89
REFERENCES	94
CHAPTER 7: EXTENDED RESULTS	100-109
7.1. Exploratory Data Analysis	100
7.2. Descriptive Statistics	100
7.3. Inspection of Normality of the Data	102
7.4. Data Transformation	103
7.5. Hypothesis Driven Analysis	104
7.5.1. Hypothesis 1	104
7.5.2. Hypothesis 2	104
7.5.3. Hypothesis 3	109
CHAPTER 8: EXTENDED DISCUSSION	110-118
8.1. Discussion of Main Findings	110
8.1.1. Hypothesis 1	110
8.1.2. Hypothesis 2	112
8.1.3. Hypothesis 3	113
8.2. Strengths and Limitations of the Study	113
8.3. Clinical Implications	115
8.4. Directions for Future Research	116
8.5. Overall Discussion of the Thesis	117
8.6. Conclusion to the Thesis	117
REFERENCES	119
APPENDICES	129-159
1. Cognitive Behaviour Therapy Journal Article Guidelines	130
2. Semi-structured Interview	132
3. Deliberate Self-Harm Inventory	134
4. Schema Mode Inventory – shortened version	140
5. Parental Bonding Instrument – shortened version	145
6. Perceived Stress Scale	147
7. Hospital Anxiety and Depression Scale	148
8. Participant Information Sheet	149
9. Participant Consent Form	152
10. Participant Debrief Sheet	153
11. Ethical Approval: East of Scotland Research Ethics Committee	154

12. Research and Development Approval: NHS Tayside	155
13. Ethical Approval: Amended Protocol	156
14. Research and Development Approval: Amended Protocol	157
15. Descriptive Statistics for Additional Variables	158
16. Tests of Normality for Additional Variables	159

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ABSTRACT

Introduction: Deliberate self-harm is being increasingly recognised as a behaviour with significant clinical importance. Yet, there remains uncertainty regarding which forms of psychological therapy are most effective for its treatment. Schema Therapy is an integrative psychotherapy blending elements of cognitive behaviour therapy, object relations and gestalt therapy into a unified approach for the treatment of individuals with complex and chronic psychological conditions. The current thesis aimed to provide a better understanding of the Schema Therapy model and its association with deliberate self-harm.

Systematic Review: Despite the increasing evidence base for the efficacy of Schema Therapy, less is known about the evidence for its theoretical underpinnings. To address this gap in the literature a systematic review was undertaken to explore the following question: How empirically supported is the theoretical underpinning of Schema Therapy? In a systematic search of the literature conducted until 01 June 2012, studies based on cross-sectional, longitudinal, intervention, meditational and experimental designs were considered. These studies underwent detailed quality analysis culminating in 19 articles being included in the current review. Overall these studies indicate that many of the key theoretical assumptions in Schema Therapy are supported by the literature.

Empirical Study: Schema Therapy has recently been expanded to include the 'schema mode' concept, with a number of researchers highlighting an association between particular schema modes and a number of chronic psychological conditions. Although the schema mode model allows a method for understanding moment-to-moment emotional states it has not previously been explored in relation to deliberate self-harm. The current project aimed to explore the relationship between these variables and their association with early experiences of parental bonding and current levels of perceived stress. 70 psychiatric outpatients with a history of deliberate self-harm completed a number of measures including the Deliberate Self-Harm Inventory, Schema Mode Inventory, Parental Bonding Instrument and Perceived Stress Scale. Results revealed significant associations between deliberate self-harm, maladaptive schema modes, perceived stress and patterns of parental care. Maladaptive schema modes significantly mediated the relationship between parental care and deliberate self-harm. The Punitive Parent and Angry Child modes were significant mediators in this relationship.

Conclusion: Results from the systematic review support the notion that Schema Therapy has a good theoretical underpinning. The empirical study also supports Schema Therapy by highlighting the meditational role of maladaptive schema modes in the relationship between low parental care in childhood and deliberate self-harm in adulthood. These findings provide further support for the Schema Therapy model and suggest that individuals with deliberate self-harm may benefit from this treatment.

CHAPTER 1: AN OVERVIEW OF THE THESIS

The following thesis is presented in portfolio format in part fulfilment of the degree of Doctorate in Clinical Psychology. The thesis is comprised of two distinct but interlinking parts which both aim to provide further insight into the psychological model of Schema Therapy. Part I (Chapter 2) contains a journal article entitled 'Empirical support for the theoretical underpinnings of Schema Therapy: a systematic review' which provides an analysis of the evidence base for the theoretical postulates of Schema Therapy. Part II is comprised of an empirical research study intended to explore theoretical constructs in Schema Therapy and their relationship with deliberate self-harm. Chapter 3 provides an introduction to the empirical study, followed by aims and hypotheses (Chapter 4) and a detailed description of the methodology (Chapter 5). This research is then presented in article format in Chapter 6 in an investigation entitled 'The mediatory role of maladaptive schema modes between parental care and deliberate self-harm'. Additional results from the empirical study are then reported in Chapter 7, with additional discussion in Chapter 8.

In order to ensure a good understanding of the theoretical constructs explored in both Parts I and II of the thesis, the reader requires a good overview of the psychological model in question. Therefore, the remainder of Chapter 1 presents an introduction to Schema Therapy.

1.1. The Origins of Schema Therapy

Young (1990) initially developed Schema Therapy as an expansion to traditional cognitive behavioural approaches as a way to address core emotional issues in individuals with complex and chronic psychological presentations. Schema Therapy can be described as an integrative therapy which combines elements of cognitive-behavioural, attachment, object relations, Gestalt, constructivist, and psychoanalytic approaches into a single unifying treatment model (Young *et al.*, 2003). Schema Therapy adopts a 'bottom-up' approach in which core beliefs are accessed and linked to surface level cognitions, behaviours and emotions using cognitive-behavioural techniques. However, it is the therapeutic relationship that is theorised to be most influential in recovery (Young, 1990).

Young (1990) argues that in order to overcome deep-seated psychopathology the patient requires a secure base which is achieved through the therapeutic relationship. Schema Therapy is heavily influenced by attachment theory, drawing upon childhood experiences of parenting and the long term impact this has on interpersonal functioning in adulthood (Ainsworth & Bowlby, 1991). Through 'limited reparenting' the therapeutic relationship partially provides what the patient did not receive in childhood and over time the patient learns to internalise healthy behaviours demonstrated by the therapist and eventually to meet their own core emotional needs (Young *et al.*, 2003).

Schema healing is the ultimate goal of Schema Therapy, a process which can be described as 'waging war' on the schema (Young *et al.*, 2003). The healing of schemas occurs by addressing the emotions, cognitions, bodily sensations and memories of a schema. Through the therapeutic relationship the schema is faced and diminished to the point that schema activation does not have the same detrimental impact it once did. Schemas are activated less frequently and less intensely and patients learn to respond to schema activation in a healthy manner. Unfortunately, schemas are based on the reality of often painful childhoods and no therapy can eradicate the memories associated with these. However, through Schema Therapy schemas fail to hold the power they once did. This process allows individuals to grow to accept the pain of childhood and to move on with their lives.

1.2. Early Maladaptive Schemas

One of the core concepts in Schema Therapy is that of 'early maladaptive schemas' (EMS) which are psychological themes which develop from unmet core emotional needs in childhood (Young, 1990). EMS are comprised of emotions, memories, cognitions and bodily sensations in response to which maladaptive behaviours develop. Young (1990) hypothesised that a combination of early life experiences and a child's innate emotional temperament prevents core needs being met. The strongest EMS are hypothesised to be the result of the earliest childhood experiences, arising from the 'nuclear' family environment. However, schemas can develop from experiences out-with the family and in later childhood and adolescence.

Young *et al.* (2003) described four types of early experiences that may lead to the development of EMS. The first of these is described as the ‘toxic frustration of needs’ whereby a child experiences too little of something essential such as stability, love or understanding. The second type is ‘traumatisation or victimisation’ where the child is harmed psychologically, emotionally, physically, or sexually. The third type of experience is described as being exposed to ‘too much of a good thing’, that is, the child is overindulged, overprotected or raised without rules so that they fail to adequately learn self-limits and autonomy. Finally, early experiences may lead to the ‘selective internalisation or identification with significant others’ in which the child internalises and over-identifies with parental feelings, thoughts or behaviours.

Young (1990) noted that certain temperaments may render children more vulnerable to difficult life circumstances. For instance, a child with an innate aggressive temperament may be more likely to elicit aggressive behaviour from a parent than a more passive child. Certain temperaments such as sociability may prove protective to children exposed to difficult life circumstances. Although these hypotheses are based upon the notion that certain aspects of personality are biologically determined (Kagan *et al.*, 1988), it is early life experiences and their interaction with assumed temperamental influences that are of primary importance in determining EMS.

1.3. Schema Domains

Schema Theory supposes that EMS can be grouped into ‘schema domains’ which correspond to five broad categories of unmet emotional needs (Young *et al.*, 2003). These domains, their associated schemas and the typical family of origin, are outlined in Table 1 below.

Table 1. Schema domains, schemas and typical family of origin (adapted from Young *et al.*, 2003)

Schema Domain	Associated Schemas	Typical Family of Origin
Disconnection and Rejection	Abandonment/Instability, Social Isolation/Alienation, Mistrust/Abuse, Defectiveness/Shame and Emotional Deprivation	Detached, cold, rejecting, abusive, explosive, unpredictable, lonely or withholding
Impaired Autonomy and Performance	Dependence/Incompetence, Vulnerability to Harm or Illness, Enmeshment/Undeveloped Self and Failure	Enmeshed, overprotective, undermining of confidence or failing to reinforce a child's autonomy
Impaired Limits	Entitlement/Grandiosity and Insufficient Self-Control/Self-Discipline	Overindulgent or showing a lack of direction, discipline, or limits
Other Directedness	Subjugation, Self-Sacrifice and Approval-Seeking/Recognition-Seeking	The child learns to suppress his or her needs in order to gain love, attention or approval
Overvigilance and Inhibition	Emotional Inhibition, Unrelenting Standards/Hypercriticalness, Negativity/Pessimism and Punitiveness	Demanding, critical or punitive

1.4. Schema Perpetuation

Although EMS initially develop in childhood and adolescence they are reinforced throughout life (Young *et al.*, 2003). Schema Therapy hypothesises that three operations perpetuate schemas, those being, 'cognitive distortions', 'self-defeating life patterns' and 'maladaptive coping styles'. In the first of these operations environmental information is filtered so that only information that confirms the schema is processed. In the second operation individuals unconsciously recreate negative feelings associated with childhood by engaging in behaviours that reinforce schemas. In the final operation individuals develop styles of coping which initially prevent the full pain of the schema being realised but which ultimately prevent healing of the schema.

Young *et al.* (2003) describe three maladaptive coping styles. First, an individual may 'surrender' to the schema, that is, they accept that the schema is true, they feel the pain of the schema and they unconsciously behave in ways that confirm the schema. Second, an individual may 'avoid' the schema, by blocking emotions or thoughts associated with the schema and by avoiding situations that may trigger the schema. Third, an individual may engage in schema 'overcompensation', by thinking, feeling and behaving in ways that are the exact opposite of the schema.

1.5. The Schema Mode Concept

The EMS trait model of Schema Therapy provides a framework of understanding how individuals present over time. However, this approach alone does not explain how an individual presents in a given moment, an issue that is particularly problematic in relation to people with borderline personality disorder (BPD) who show extreme and rapid emotional shifts (Young *et al.*, 2003). Young also noted in his clinical observations that individuals with BPD tend to have a very high number of EMS and that these tend to group together in a particular fashion (Young *et al.*, 2003). In order to explain these observations Young *et al.* (2003) expanded his theory to include what is now known as the ‘schema mode’ concept.

Schema modes are moment-to-moment emotional and behavioural states that can arise suddenly in response to triggering circumstances to which we are oversensitive (Young *et al.*, 2003). Schema modes can be adaptive or maladaptive in nature and at any given time a particular mode will be predominant while the rest lie dormant. Young *et al.* (2003) originally described 10 core schema modes, but more recently this has expanded to the 14 factor model that is assessed by schema mode measures (Young *et al.*, 2008). These modes are described in detail in Table 2 below.

Table 2. Schema mode descriptions (adapted from Young *et al.*, 2003)

Mode Category	Category Description	Schema Mode	Mode Description
Child Modes	Innate experiences we all possess but which are enhanced or inhibited by particular childhood experiences	Vulnerable Child	Feels lonely, lost, unlovable, powerless, victimised, unsafe, isolated and/or excluded
		Angry Child	Activated when emotional core needs are perceived to be unmet. This mode feels angry, frustrated and/or impatient and may appear like a child 'having a tantrum'
		Enraged Child	Conceptually similar to the Angry Child although the anger is more extreme and out of control
		Impulsive Child	Two modes often clinically amalgamated. May appear 'spoiled' if impulses or desires cannot be met. An individual may act on impulse or in an uncontrolled manner to achieve short-term goals without consideration of long-term consequences
		Undisciplined Child	
		Happy Child	Feels loved, connected, cared for, praised, nurtured, understood, safe, spontaneous, optimistic and/or appropriately self-reliant. There are no EMS associated with this mode as it is an adaptive mode
Maladaptive Parent Modes	Reflect internalised parent 'voices' from childhood	Punitive Parent	Blaming, punishing or bullying towards the self or others
		Demanding Parent	Strives to do things the 'right' way, achieve perfection or avoid wasting time
Maladaptive Coping Modes	Correspond to the schema processes of surrender (Compliant Surrenderer), avoidance (Detached Protector, Detached Self-Soother) and overcompensation (Bully/Attack, Self-Aggrandiser) which are activated to protect the self from schema pain	Detached Protector	Uses psychological avoidance to numb emotions and emotionally detach, may feel empty or disconnected
		Detached Self-Soother	Uses behavioural avoidance to emotionally detach by engaging in activities which numb emotions
		Compliant Surrenderer	Acts in a way that is passive, submissive, self-deprecating or approval-seeking as a way to avoid conflict, confrontation or rejection
		Bully and Attack	Directly harms or controls others through intimidation, threats, aggression or coercion
		Self-Aggrandiser	Feels special, self-important and superior to others
Healthy Adult	An adaptive mode which acts in a healthy and responsible manner by pursuing healthy adult activities	Healthy Adult	Soothes and nurtures the Vulnerable Child, sets realistic limits for the Angry and Impulsive Child, promotes the Happy Child, neutralises the Maladaptive Parent modes and eventually replaces the Maladaptive Coping modes

1.6. Schema Modes and the Present Doctoral Thesis

The schema mode concept is a relatively recent addition to Schema Therapy and it is proving to be a clinically popular method of working with individuals with chronic and complex psychological conditions. Yet, research on schema modes as theoretical constructs has been relatively limited. The present thesis aimed to contribute to the growing literature on schema modes and schema processes through I) a systematic review of the theoretical literature in relation to Schema Therapy processes and II) in an empirical project exploring schema modes in a deliberate self-harm sample. What follows is a description of these studies.

PART I
SYSTEMATIC REVIEW

CHAPTER 2: SYSTEMATIC REVIEW JOURNAL ARTICLE

Empirical Support for the Theoretical Underpinnings of Schema Therapy: A Systematic Review

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* The present work is written in its entirety by Amber Saldias, trainee clinical psychologist supervised by Dr David Gillanders, Academic Supervisor, and Professor Kevin Powers, Clinical Supervisor. Supervisor's names are included in the present article for publication purposes only, in acknowledgement of their intellectual contribution. Supervisors were not involved in the writing of this piece for the thesis.

EMPIRICAL SUPPORT FOR THE THEORETICAL UNDERPINNINGS OF
SCHEMA THERAPY: A SYSTEMATIC REVIEW

This review was written in accordance with *Cognitive Behaviour Therapy* author guidelines (Appendix 1)

ABSTRACT

Schema Therapy is a relatively new therapeutic intervention developed for individuals with personality disorders. Yet, despite the increasing evidence base for the efficacy of Schema Therapy, less is known about the evidence for the theoretical underpinnings of this model. Given the importance of evidence-based practice and cost effectiveness of delivery in the current political climate, it is more important than ever to justify the use of long-term interventions. In recent years evidence for the empirical basis of Schema Theory has begun to emerge but a comprehensive systematic review of this literature has not previously been conducted. To address this gap in the literature the current systematic review aimed to evaluate the empirical status of the theory underpinning Schema Therapy. In a systematic search of the literature conducted until 01 June 2012, studies based on cross-sectional, longitudinal, intervention, meditational and experimental designs were considered. These studies underwent detailed quality analysis culminating in 19 articles being included in the current review. Overall, these studies indicate that many of the key theoretical assumptions in Schema Therapy are supported by the literature. However, as the evidence base for Schema Therapy is still at a developing stage there remains a need to strengthen its position. Suggestions for future research to address this need are provided.

Key words: Schema theory, Schema-focussed therapy, personality disorder

INTRODUCTION

Once thought to be an ‘untreatable’ condition, it has become increasingly clear that individuals with personality disorder can and do respond to psychotherapeutic interventions (Fonagy & Bateman, 2006). This assertion is highlighted by findings from a number of studies including two meta-analyses (Perry, Banon & Ianni, 1999; Leichsenring & Leibing, 2003), one Cochrane review (Binks et al., 2009) and a number of systematic and literature reviews (e.g. Gabbard, 2000; Sanislow & McGlashan, 1998; Shea, 1993; Verheul & Herberink, 2007). The National Institute for Health and Clinical Excellence (NICE) has also produced clinical guidelines indicating that psychological therapies are central to the treatment of individuals with personality disorder (PD), especially in relation to borderline personality disorder (BPD; NICE, 2009).

A more recent model of psychological therapy developed for the treatment of PD is that of Schema Therapy, pioneered by Dr Jeffery Young (Young, 1990; Young, Klosko & Weishaar, 2003) who noticed that individuals with chronic categorical problems were not being adequately treated by traditional cognitive behavioural approaches (Young et al., 2003). Young hypothesised that these individuals were not ‘treatment resistant’ per se, but rather that the treatment choice was inappropriate. In his practice Young found that when adaptations were made to cognitive behavioural therapy (CBT) in people with PDs, therapeutic benefits could be achieved.

A series of adaptations has led to what is now known as Schema Therapy, an integrative approach encompassing cognitive behavioural and psychodynamic concepts (Young et al., 2003). This approach has proven to be a popular method for clinicians working therapeutically with PD. In recent years, Schema Therapy has also been extended to incorporate other clinical presentations such as agoraphobia, post-traumatic stress disorder (PTSD), substance misuse and eating disorders, and there is increasing evidence of the efficacy of ST for these conditions (see Masley, Gillanders, Simpson & Taylor, 2011 for a review). Yet, despite the clinical popularity of Schema Therapy and the increasing evidence base in regard to its effectiveness, less is known about the evidence for the theoretical underpinnings of this model.

A Brief Introduction to Schema Therapy

Young (1990) developed Schema Therapy to address the ‘core psychological themes’ typical in individuals with underlying categorical problems. These themes are hypothesised to develop in response to childhood or adolescent experiences, positive or negative, to create adaptive or maladaptive schemas. ‘Early maladaptive schemas’ (EMS) are comprised of emotions, memories, cognitions and bodily sensations in response to which maladaptive behaviours develop. Young hypothesised that EMS develop from unmet core emotional needs in childhood and that a combination of early life experiences and a child’s innate emotional temperament prevents core needs being met. The strongest EMS are hypothesised to be the result of the earliest childhood experiences, arising from the ‘nuclear’ family environment. However, schemas can develop from experiences outwith the family and in later childhood and adolescence.

The basic premise underpinning Schema Therapy is the notion that although schemas develop initially in childhood they are reinforced throughout life. Young et al. (2003) describe three operations that perpetuate schemas. The first of these are ‘cognitive distortions’ which occur when an individual misinterprets environmental information by focussing on those details which confirm the schema and minimising those that disconfirm the schema. The second operation is ‘self-defeating life patterns’ in which an individual feels unconsciously driven to recreate childhood environments by engaging in relationships and behaviours that confirm schemas. Individuals may also behave in ways that encourage others to respond in a way which reinforces schemas. The third operation is ‘maladaptive coping styles’ which individuals learn in childhood to protect them from the full pain of schema activation. These coping styles may prove protective at the time but later in life they serve to perpetuate EMS and prevent schema healing.

Schema Therapy has recently advanced to include the concept of ‘schema modes’ (Young et al., 2003). In contrast to EMS which are stable trait-like mental representations, schema modes are moment-to-moment emotional and behavioural states that can arise suddenly in response to triggering circumstances to which we are oversensitive (Young et al., 2003). Schema modes can be adaptive or maladaptive in

nature and at any given time a particular mode will be predominant while the rest lie dormant. Young, Arntz, Atkinson, Lobbestael, Weishaar et al. (2008) described 14 schema modes: Vulnerable Child, Angry Child, Enraged Child, Impulsive Child, Undisciplined Child, Happy Child, Detached Protector, Detached Self-Soother, Compliant Surrenderer, Bully and Attack, Self-Aggrandiser, Demanding Parent, Punitive Parent and Healthy Adult.

Schema healing is the ultimate goal of Schema Therapy (Young et al., 2003). The healing of schemas occurs by addressing the emotions, cognitions, bodily sensations and memories associated with a schema. Patients also learn to replace maladaptive behaviours with adaptive ones and to find healthy ways of meeting their own core emotional needs. Young and colleagues (2003) describe the therapy process as ‘waging war’ on the schema. Through behavioural, affective and cognitive strategies the schema is faced and diminished to the point that schema activation does not have the same detrimental impact it once did. Schemas are activated less frequently and less intensely although realistically they never completely disappear (Young et al., 2003). Through ‘limited re-parenting’ the therapeutic relationship partially provides what the patient did not receive in childhood. Unfortunately, schemas are based on the reality of often painful childhoods and no therapy can eradicate the memories associated with these. However, through schema healing patients learn to respond to schema activation in a healthy manner and are able to move on with their lives.

Purpose of Review

Schema Therapy is a clinically popular model being used by clinicians in a number of different settings. It is also clear that Schema Therapy is developing an increasingly broad evidence base for its efficacy (Masley et al., 2011). However, any psychological model must also have a sound *theoretical* basis and evidence must be available so that this theory can be evaluated. The purpose of this systematic review is therefore to explore the question: How empirically supported is the theoretical underpinning to Schema Therapy?

METHODS

Review Objective

The purpose of this review is to evaluate how empirically supported Schema Therapies' underpinning theoretical postulates are.

Search Strategy

The following search terms were used in this study: 'schema therap*', 'schema mode' and 'early maladaptive schema'. The following electronic databases were searched until 01 June 2012:

- PsychINFO (from 1806)
- MEDLINE (from 1948)
- EMBASE (from 1980)
- The Cochrane Central Register of Controlled Trials (CENTRAL)

Searching Other Resources

The reference lists of included and excluded studies were searched for additional findings. Prominent researchers were also approached for relevant ongoing research and unpublished data. Two schema therapy websites (The International Society of Schema Therapy Website, <http://www.isst-online.com> and Young's Schema Therapy Website, <http://www.schematherapy.com>) were also searched.

Study Selection

The search terms identified above yielded 255 articles excluding duplicates. These titles and abstracts were screened for applicability and those which were irrelevant or without novel data were excluded. This strategy yielded 94 articles for more thorough review, the full texts of which were obtained and reviewed according to identified inclusion and exclusion criteria. A further two articles were obtained through searching other resources. The selection process is described in Figure 1 below.

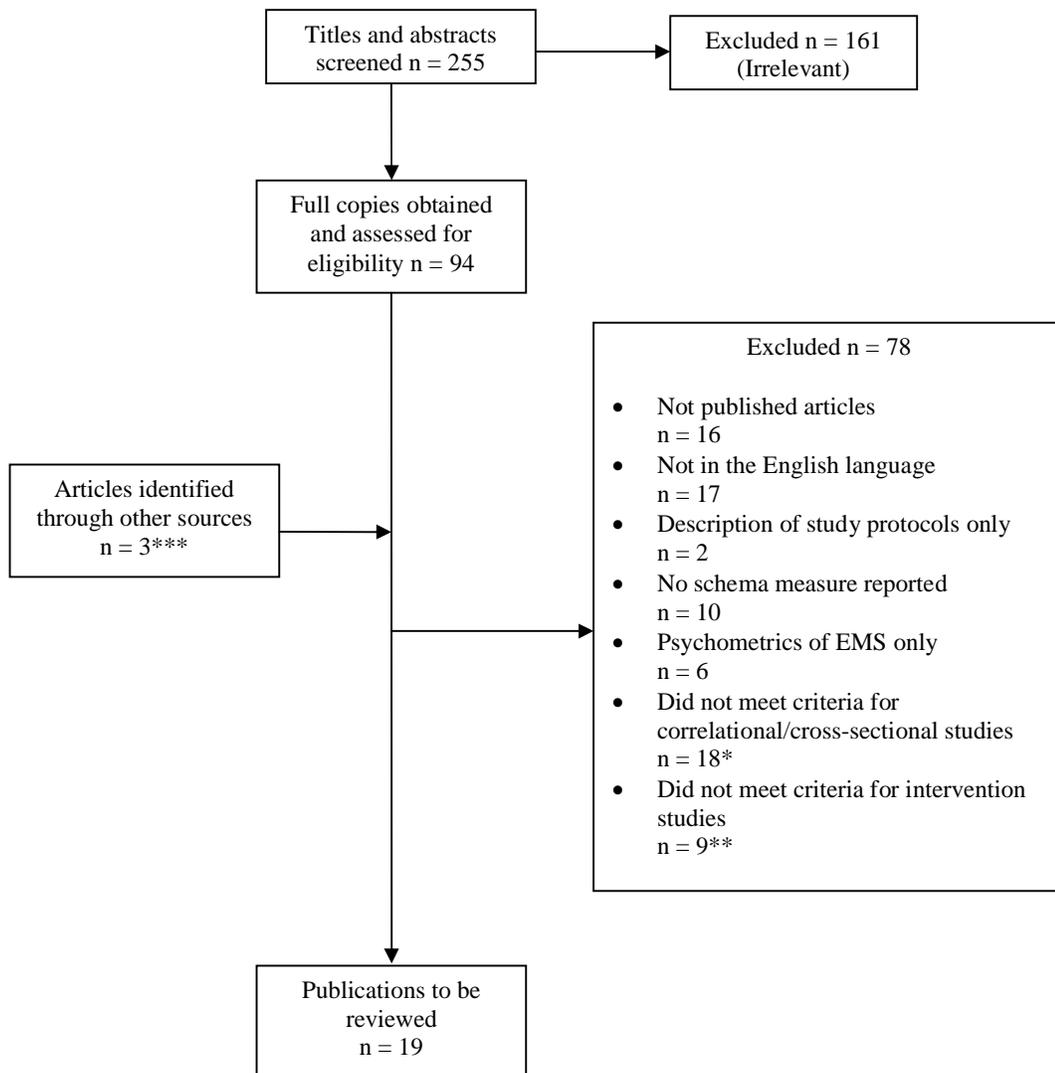


Figure 1: Flow Chart of the Selection Process

* Seven studies were excluded because they did not include two schema theory variables. 11 further studies reported variables not directly related to schema theory.

** Four studies excluded because the intervention was not Schema Therapy. Two further studies excluded because no post-intervention schema measure was reported. One excluded because it is a single case study. Two further studies were excluded because they were case series.

*** One article sourced from the reference list of Masley et al. 2011, one from <http://www.isst-online.com> and one identified by KP.

Inclusion/Exclusion Criteria

The identified articles were evaluated according to a number of variables. First, only articles available in the English language were considered due to a lack of translation resources. Second, only those resources in the format of peer-reviewed published articles were included to ensure a good basic level of quality. Third, as the purpose of the current review was to evaluate empirical evidence only articles with novel data were included. Fourth, so that a broad range of evidence for Schema Theory could be examined criteria related to participant age, sex and psychopathology were not restricted. Fifth, given the implicit assumption purported by Schema therapy is that it is effective because it encourages change at the schema level, only studies which record EMS or schema modes as processes were included. Finally, so as to cover the broadest possible evidence base studies included intervention, experimental, longitudinal, meditational and cross-sectional designs.

Within each study design the following basic criteria were applied:

- Intervention designs must not be single case or case series, Schema Therapy must be the therapeutic intervention and the article must report pre- and post-intervention EMS or schema mode measurements
- Experimental studies must report EMS or schema mode measurements according to the study design (i.e. pre/post or between group)
- Longitudinal studies must report EMS or schema mode measurements over at least two time points
- Mediation studies must include EMS or schema mode measurements as the mediator between two variables relevant to Schema Therapy
- Cross-sectional designs must include EMS or schema mode measurements in relation to two variables relevant to Schema Therapy

Table 1. Summary of included studies

Study	Aims	Design	Method	Results	Conclusions pertinent to Schema Therapy Theory
Arntz, Klokman & Sieswerda (2005)	To examine whether four hypothesised schema modes are specific to BPD and whether BPD-related stress increases one of the modes.	Experimental	18 BPD patients, 18 Cluster-C PD patients and 18 non-patient controls completed state and trait versions of the schema mode questionnaire (SMQ). In a cross-over design participants viewed a neutral and BPD-specific emotional film clip. Participants then again completed the SMQ state version.	The trait and state versions of the SMQ indicated that BPD patients were characterised by the four investigated schema modes. The emotional flip clip induced negative emotion in all groups but the Detached Protector mode increased significantly more in the BPD group.	In line with theoretical assumptions BPD is uniquely characterised by four schema modes. The increase in the Detached Protector mode in response to stress also supports Schema Therapy.
Carr & Francis (2010)	To test the hypothesis that EMS mediate the relationship between childhood experiences and avoidant PD (AVPD).	Mediation	178 non-clinical participants completed the YSQ, the Family Functioning Scale, Parental Bonding Instrument, Childhood Trauma Questionnaire and the Personality Diagnostic Questionnaire.	Abandonment and Subjugation schemas fully mediated the relationship between family sociability and AVPD symptoms. Subjugation and Emotional Inhibition fully mediated the relationship between mother (but not father) overprotection and AVPD symptoms. All EMS within the Disconnection/Rejection domain (except Abandonment) were associated with childhood maltreatment but these EMS did not account for AVPD.	EMS mediate the relationship between difficult childhood experiences and AVPD symptoms. This supports the assumption that it is schema development, not childhood experiences per se, that lead to psychopathology.
Cockram, Drummond & Lee (2010)	Study 1: To examine the role of EMS, adverse parenting and the development of PTSD in war veterans. Study 2: To investigate outcomes following ST versus CBT treatment for PTSD in veterans.	Cross-sectional & Intervention	Study 1: 220 war veterans completed and returned several questionnaires including the Young Schema Questionnaire (YSQ), a Measure of Parental Style and the Acute Stress Disorder Scale. Study 2: Over a two year period 54 veterans with PTSD completed ST treatment while 127 completed CBT.	Study 1: Veterans with high EMS scores and high negative parenting experiences were more likely to be diagnosed with PTSD than those with low scores on these measures. Study 2: PTSD scores and EMS were significantly lower at follow-up in the ST group.	Schema Therapy reduces schema severity in PTSD and this is associated with reductions in other clinical pathology. This effect was significantly greater in the ST group indicating that this intervention specifically alters schemas.
Dale, Power, Kane, Stewart & Murray (2010)	To examine the role of parental bonding and EMS in suicidal behaviour.	Mediation	60 individuals presenting to Accident and Emergency with suicidal behaviour completed the YSQ, Parental Bonding Instrument (PBI),	EMS mediated the relationship between parental bonding and risk of repetition behaviours. No significant differences on parental bonding were observed between	The mediatory role of EMS between parental bonding and suicidal behaviours supports the theoretical

			Beck Anxiety and Depression Scales and the Risk of Repetition Scale. These were compared to clinical (n=46) and non-clinical (n=48) comparison groups.	the suicidal behaviours and clinical groups.	assumption that schemas play a mediatory role between early experiences and adulthood pathology.
Deas, Power, Collin, Yellowlees & Grierson (2011)	To examine the relationship between disordered eating, parental bonding and perfectionistic schemas	Mediation	40 people with anorexia nervosa (AN), 44 non-eating disordered clinical controls (depression/anxiety) and 78 non-clinical controls completed the Eating Disorders Examination, the PBI and the YSQ.	Relative to controls, the AN group reported significantly lower maternal and paternal care and higher maternal control, and higher scores on perfectionistic schemas. In the AN group parental care was significantly negatively correlated with some elements of eating disordered behaviours. Mediatory models were not significant.	Negative parenting and perfectionistic schemas differentiated between AN and controls consistent with theoretical assumptions. However, the mediatory role of schemas between parental bonding and AN pathology was not supported.
Hoffart, Versland & Sexton (2002)	To examine process variables (self-understanding, empathy, guided discovery, convictions about EMS) in patients undergoing ST in an inpatient group programme.	Intervention	35 patients with Cluster C personality traits and panic disorder/agoraphobia completed an 11 week inpatient ST group programme. Process measures were completed before and after individual sessions. Outcome measures took place at evaluation, pre-treatment, mid-treatment, post-treatment and one year follow-up.	Significant reductions in a number of clinical outcome measures (EMS, panic/agoraphobia, anxiety, depression, personality disorder symptoms) were noted from evaluation/pre-treatment to follow-up. Greater therapist-rated empathic experience and patient-rated self-understanding in the first session was related to decreases in emotional distress.	Schema Therapy intervention reduces a number of clinical outcomes including schema severity. Certain process variables in Schema Therapy are particularly important in reducing patient distress. This latter finding highlights the importance of the therapeutic relationship which is central in Schema Therapy.
Johnston, Dorahy, Courtney, Bayles & O'Kane (2009)	To examine the relationship between dysfunctional schema modes, childhood trauma and dissociation in BPD.	Mediation	30 patients with BPD completed the SMQ, Childhood Trauma Questionnaire, Wessex Dissociation Scale and General Health Questionnaire.	The Angry/Impulsive and Abandoned/Abused Child Modes uniquely predicted dissociation scores. Childhood trauma did not predict dissociation.	Findings support the schema mode model of BPD and the theoretical assumption that schema modes are associated with dissociation.
Lobbestael, Arntz, Cima & Chakhssi (2009)	To examine the effects of induced anger on self-reported emotions, schema modes and	Experimental	147 participants (21 ASPD, 45 BPD, 46 CCPD, 35 NPC) completed an 'anger inducing interview'. Participants rated emotions (Profiles of Mood States) and schema modes	Self-reported anger increases were observed in all groups post-experiment and these were associated with increases in 'anger-related' schema modes. In contrast to the other groups, ASPD	The positive associations noted between anger and anger-related modes supports the construct validity of schema modes.

	physiological correlates in patients with antisocial personality disorder (ASPD), BPD, Cluster C personality (CCPD) disorder and non-patient controls (NPC).		(Schema Mode Inventory) after each of these blocks. Reaction time was also measured in an implicit association task ('self' and 'angry' vs. 'self' and 'peaceful' words). A number of physiological measures were also obtained.	patients showed significantly smaller physiological increases post-experiment compared to the other groups and reported stronger implicit self-anger associations.	
Lobbestael & Arntz (2010)	To examine direct and indirect indices of emotional reactivity to abuse-related stress in patients with BPD, ASPD, CCPD and NPC.	Experimental	The participants were the same as those outlined in Lobbestael et al. (2009a) described above. Participants viewed a neutral film clip before viewing an abuse-related stress induction film clip. Participants rated emotions (Profiles of Mood States) and schema modes (Schema Mode Inventory) after each of these blocks. Reaction time was also measured in an implicit association task ('self' and 'abuse' vs. 'self' and 'love' words). A number of physiological measures were obtained by attached electrodes and blood pressure cuffs.	BPD patients were hyper-responsive on measures of self-reported negative affect, schema modes, some physiological indices and implicit cognitive associations on 'self-abuse'. Although ASPD patients showed the same 'self-abuse' cognitive associations they did not show self-reported or physiological hyper-reactivity. Maladaptive modes were also found to be highest in the BPD group, followed by ASPD, CCPD and then non-patients. The opposite pattern was observed for adaptive modes.	Although BPD and ASPD patients share implicit self-abuse cognitive associations they differ in terms of their self-reported and physiological response patterns. This suggests some specificity between diagnostic and physiological processes. Mode differences between groups also support the specificity of the schema model.
Lobbestael, Arntz & Sieswerda (2005)	To test the applicability of the schema mode model to patients with ASPD and BPD.	Cross-sectional	32 patients (16 BPD, 16 ASPD) and 16 non-patient controls completed the SMQ. Participants were also interviewed to explore physically, sexually and emotionally abusive experiences in childhood.	The modes of Detached Protector, Angry Child, Abandoned/Abused Child and Punitive Parent were characteristic of BPD patients and to a lower degree ASPD patients. Non-patient controls scored lowest on these modes. The Healthy Adult mode was not significantly lower in ASPD than non-patient controls. ASPD did not display significantly higher Bully/Attack modes compared to BPD. Severity and frequency of childhood abuse was equal in patient groups and significantly higher than that reported by controls.	The characteristic nature in terms of severity of maladaptive schema modes in BPD supports theoretical assumptions. That schema modes are lowest in healthy controls also supports Schema Theory. The non-significant differences in abuse histories between patient groups also suggest that it is the effect of schema modes that determines psychopathology.

Lobbestael, van Vreeswijk & Arntz (2008a)	To examine the relationships between schema modes and PD pathology.	Cross-sectional	489 participants (390 patients and 99 non-patient controls) completed the SMI and were assessed by interview for PD dimensional pathology.	Unique patterns of modes were found for different PDs. However, a high number of correlations were observed for some PDs.	These findings support the hypothesis that schema mode profiles are unique in different PDs, although these profiles may include more modes than originally hypothesised.
Lumley & Harkness (2007)	To examine the relationship between specific types of childhood adversity (sexual abuse, physical abuse and emotional maltreatment) to EMS and symptom profiles in depression.	Mediation	76 adolescents with depression completed a diagnostic interview (child/adolescent Schedule for Affective Disorders and Schizophrenia), questionnaires (YSQ, Beck Depression Inventory, Mood and Anxiety Symptom Questionnaire) and the Childhood Adversity Interview.	Schemas with themes of loss/worthlessness preferentially mediated the relationship between childhood adversity and anhedonia, while childhood adversity and anxiety preferentially mediated schemas with themes of danger. Anxiety and depression were not significantly associated with sexual abuse.	This study indicates that childhood adversity is associated with both anxious and depressive symptoms, and that specific schemas may determine predominant symptom profiles.
Nordahl, Holthe & Haugum (2005)	To examine whether modification of EMS predicts symptomatic relief in patients completing a course of ST.	Intervention	82 patients undergoing ST completed a battery of measures (SCID-I&II, Symptom Checklist-90-Revised, YSQ, and Beck Anxiety/Depression scales) prior to treatment. The self-report measures were repeated at session 5 and in the final session.	EMS were significantly associated with PD symptoms. Modification of EMS predicted relief of symptoms by the end of treatment.	These findings support the model of ST by demonstrating that EMS modification predicts symptomatic relief.
Stallard (2007)	To explore the stability of EMS in children over a six month period and to compare EMS in a community-based and clinical sample.	Longitudinal	77 children aged 9-10 years completed the Schema Questionnaire for Children (SQC) twice over a six month period. A further 53 children recruited from a mental health service and 46 children from a local school aged 11-16 years completed the SQC on one occasion.	Significant moderate correlations were found on 8 of the 12 measured schemas on the SQC between the two measured time points in the first sample. Findings from the second study found significant differences in EMS severity in 10 out of 12 schemas in the clinic vs. community sample.	EMS are more prevalent in patients attending mental health services supporting the assumption that schemas are associated with psychopathology. It also supports the theory that schemas develop in childhood.
Specht, Chapman & Cellucci (2009)	To examine the relationship between EMS domains, childhood	Mediation	117 female prisoners were evaluated for BPD and ASPD using the SCID-II, the YSQ, Beck Depression Inventory and Childhood Trauma Questionnaire.	Disconnection/Rejection and Impaired Limits domains were associated with BPD symptoms. However, depression explained some of the variance between	These findings highlight the importance of EMS (rather than childhood maltreatment per se) in determining BPD

	maltreatment and BPD symptoms in incarcerated women.			Disconnection/Rejection and BPD, while ASPD accounted for variance between Impaired Limits and BPD. The above mentioned schema domains mediated the relationship between childhood maltreatment and BPD symptoms.	symptoms. This supports Schema Theory.
Thimm (2010a)	To examine the associations between EMS and psychosocial developmental task resolution as defined by Erikson's hypothesis of personality development.	Longitudinal	145 psychiatric outpatients completed the SQ-SF and the Measures of Psychosocial Development (MPD). 108 completed the measures again six months later.	A number of EMS were associated with unsuccessful developmental task resolution. Schema change between Time 1 and 2 also predicted some of the variance in changes in task resolution.	These results are consistent with the model of Schema Therapy by demonstrating that schema change is associated with resolution of developmental tasks.
Thimm (2010b)	To explore the relationships between parental rearing, EMS and symptoms of personality disorder in a clinical sample.	Mediation	108 patients attending a psychiatric outpatient clinic completed a measure of parental rearing (s-EMBU), the SQ-short form, the Beck Depression Inventory and the DSM-IV and ICD-10 Personality Questionnaire.	EMS mediated the relationship between the subjective experience of parental rearing and personality disorder pathology.	These findings provide support for the model of Schema Therapy by linking early parenting to EMS and personality pathology.
van Vlierberghe, Braet, Bosmans, Rosseel & Bogels (2010)	<i>Study 1:</i> To investigate the factorial validity of the YSQ in adolescents. <i>Study 2:</i> To explore the association between EMS and psychopathology in adolescents.	Cross-sectional	<i>Study 1:</i> 635 community-dwelling adolescents aged 12-18 years completed the YSQ. <i>Study 2:</i> 104 referred and 112 non-referred adolescents completed the Youth Self Report and the YSQ and were interviewed with the Structured Clinical Interview for DSM-IV-Child edition. Parents also completed the Child Behaviour Checklist.	<i>Study 1:</i> Confirmatory factor analysis indicated that Young's hypothesised 15 schema structure was applicable in this sample. Internal consistency levels ranged from very good to adequate although it was poor on one scale. <i>Study 2:</i> Referred adolescents' demonstrated greater severity of EMS compared to non-referred. Schemas were found to be associated with specific psychopathology.	These findings support the theoretical assumption that schemas develop in childhood and that specific psychopathology are associated with specific schemas.
Wang, Halvorsen, Eisenmann & Waterloo (2010)	To examine the stability of EMS, dysfunctional attitudes and depression over time	Longitudinal & cross-sectional	149 participants (61 CD, 46 ND, 42 PD) completed the YSQ, Dysfunctional Attitudes Scale (DAS) and the Beck Depression Inventory. Nine years later these measures were	Scores were elevated on all measures in individuals with CD and PrD as compared to ND participants. After controlling for depression EMS and DAS scores remained stable between Time 1 and Time	These findings suggest that DAS and EMS scores may mark a vulnerability to depression. This evidence also provides a degree of

	and to compare differences on these measures between individuals who are clinically depressed (CD), previously depressed (PrD) and never depressed (ND).		repeated.	2. Significant overlap in scores was observed between DAS and EMS scores.	convergent validity.
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RESULTS

Following the selection procedure described above, 19 studies met all of the study requirements (see Table 1). These studies were then evaluated on the basis of their methodological quality according to the criteria outlined below.

Quality Assessment

In order to evaluate the strength of the available evidence, quality assessments were carried out on all studies. Firstly, the studies were given a ‘hierarchy’ rating according to the study design (see Table 2).

Table 2. Hierarchy ratings for studies (adapted from Sharp et al., 2004).

Design	Description	Score
Experimental	Conditions are under the control of the investigator	5
Quasi-experimental	Allocation is controlled by the investigator but falls short of genuine randomisation and allocation concealment	4
Before-and-After	Comparison of findings before and after an intervention	3
Longitudinal	Repeated observations of the same variable over time	2
Cross-sectional	Relationships between variables observed at a specific point in time	1
Case series/study	Cases without control group comparison	0

All studies were then rated according to their ‘risk for bias’ which was rated using the method outlined in Table 3.

Table 3. Hierarchy ratings for studies (adapted from Sharp et al., 2004).

Risk for Bias	Description	Score
Very Low	Sufficient patient number, well-matched groups, well-validated outcomes	4
Low	One of the following: low patient number, narrow population spectrum, weakly matched groups, less well-validated outcomes	3
Risk	Two of the following: low patient number, narrow population spectrum, weakly matched groups, less well-validated outcomes	2
High	Low patient number, weakly matched groups, less well-validated outcomes	1
Very High	Single cases and case series	0

Given the varying methodological designs evaluated in this review, the additional quality ratings chosen by the researcher were done so based on their ability to allow comparison between different methodologies. Thus, studies were rated according to the: 1) overall quality of their selected measures; 2) appropriateness of statistical analysis; 3) appropriateness of selected approach; 4) attempts to control for design

issues; and 5) generalisability of findings. These criteria were rated as 'good' (2), 'acceptable' (1), or 'unacceptable' (0) to allow ease of comparison. The authors collectively agreed on how these terms should be interpreted. The total available quality score according to the critique was 19 and an overall quality description according to score was also given. Studies with a score over 17 were deemed 'excellent', a score of 15 to 16 was 'good', 14 was 'adequate', 13 was 'poor', and a score of 12 and below was 'very poor'. Studies rated as 'adequate' and above were considered to be reasonably methodologically reliable and studies rated 'poor' and below were considered unreliable.

In an attempt to reduce bias in ratings, six studies were co-rated by a second researcher (KP) and a further six studies rated by a third researcher (DTG). Agreement within two marks on overall quality criteria was found on 83% of co-rated articles for AS and KP and 83% for AS and DTG. All articles with differences greater than two marks were reviewed and amended through discussion. A summary of the quality criteria ratings for this study can be observed in Table 4.

Table 4. Quality assessment criteria

Study	Study hierarchy	Study bias	Overall quality of measures	Appropriateness of statistics	Appropriateness of approach	Control for design issues	Generalisability of findings	Quality score and description
Cockram et al. (2010)	Experimental	Very Low	Good	Good	Good	Good	Acceptable	18 (Excellent)
Arntz et al. (2005)	Quasi-experimental	Very Low	Good	Good	Good	Good	Acceptable	17 (Excellent)
Lobbestael & Arntz (2010)	Quasi-experimental	Very Low	Good	Good	Good	Good	Acceptable	17 (Excellent)
Lobbestael et al. (2009)	Quasi-experimental	Very Low	Good	Good	Good	Good	Acceptable	17 (Excellent)
Nordahl et al. (2005)	Before-and-after Intervention	Very Low	Good	Good	Acceptable	Good	Good	16 (Good)
Dale et al. (2010)	Cross-sectional	Very Low	Good	Good	Good	Good	Good	15 (Good)
Lobbestael et al. (2008a)	Cross-sectional	Very Low	Good	Good	Good	Good	Good	15 (Good)
Thimm (2010a)	Longitudinal	Very Low	Good	Good	Good	Acceptable	Good	15 (Good)
Thimm (2010b)	Cross-sectional	Very Low	Good	Good	Good	Good	Good	15 (Good)
van Vlierberghe et al. (2010)	Cross-sectional	Very Low	Good	Good	Good	Good	Good	15 (Good)
Deas et al. (2011)	Cross-sectional	Very Low	Good	Adequate	Good	Good	Good	14 (Adequate)
Johnston et al. (2009)	Cross-sectional	Very Low	Good	Good	Good	Good	Acceptable	14 (Adequate)
Lobbestael et al. (2005)	Cross-sectional	Low	Good	Good	Good	Good	Good	14 (Adequate)
Stallard (2007)	Longitudinal	Low	Good	Good	Good	Acceptable	Good	14 (Adequate)
Lumley & Harkness (2007)	Cross-sectional	Very Low	Good	Acceptable	Good	Acceptable	Good	13 (Poor)
Specht et al. (2009)	Cross-sectional	Low	Good	Good	Good	Good	Acceptable	13 (Poor)
Wang et al. (2010)	Longitudinal	Very Low	Good	Good	Acceptable	Acceptable	Acceptable	13 (Poor)
Hoffart et al. (2002)	Before-and-after Intervention	Risk	Good	Good	Acceptable	Acceptable	Acceptable	12 (Very Poor)
Carr & Francis (2010)	Cross-sectional	Very Low	Good	Acceptable	Acceptable	Acceptable	Acceptable	11 (Very Poor)

Summary of Findings

The studies included in the current systematic review are critiqued below and presented according to their study design.

Intervention Studies

The ultimate goal of Schema Therapy is the healing of maladaptive schemas through the process of limited re-parenting which meets unmet core emotional needs (Young et al., 2003). According to Young (1990) Schema Therapy is also efficacious for chronic Axis I disorders. The best available evidence in support of these theoretical assumptions is available from Cockram, Drummond and Lee (2010) who found significantly greater reductions in symptoms of PTSD, anxiety and depression in a Schema Therapy treatment group relative to a control group. Significant reductions in 17 EMS were also noted in the Schema Therapy group and these reductions were maintained three months post-therapy. This study was rated as methodologically 'excellent' and the findings can be considered highly reliable. A particular strength of the study was the inclusion of a control group which was similar in duration, content and structure to the Schema Therapy group. The only noted difficulty with the study is that generalisability to other PTSD populations may be problematic given the specificity of the sample.

In a study rated as 'good' in the current review Nordahl, Holthe and Haugum's (2005) explored the relationship between schema change and symptomatic relief in psychiatric outpatients undergoing Schema Therapy. Results revealed that all but three EMS were significantly related to a measure of symptomatic distress. Significantly higher scores on many EMS were also correlated with Axis II pathology. Modification of schemas also significantly predicted symptomatic relief post-treatment. The sampling method and representativeness of the sample in the study was good but there remains a difficulty with interpretation given that the study had no control condition. Thus, although the reported intercorrelations can be considered reliable, whether symptomatic relief was specific to Schema Therapy intervention cannot be elucidated.

In an intervention study rated as ‘very poor’ Hoffart, Versland and Sexton (2002) examined the efficacy of a Schema Therapy intervention in inpatients with panic disorder and/or agoraphobia and traits of Cluster-C PD, noting significant reductions on a number of outcome measures. Unfortunately these results are unreliable due to a number of methodological issues. Of particular note is the fact that the Schema Therapy intervention consisted of an initial five week cognitive-behavioural phase focused on panic and agoraphobia (Clark et al., 1994) raising the issue of whether noted changes are truly the result of Schema Therapy specific processes. The lack of control condition was also problematic as reported improvements may simply have been due to the inpatient environment.

In summary, the evidence in support of the efficacy of Schema Therapy is consistently supportive but the methodological rigour of this evidence is mixed. Given the ‘very poor’ methodological strength of the Hoffart et al. (2002) study this evidence must be discounted and some reservation should be given to Nordahl et al.’s (2005) findings in regard to whether the results shown are truly a reflection of Schema Therapy processes. Nevertheless, Nordahl et al.’s reported relationships between schema modification and symptomatic relief can be considered reliable and are good support for the theoretical underpinnings of Schema Therapy. Cockram et al.’s (2010) study also provides very strong support for the notion that Schema Therapy is particularly adept at evoking schema-level change. However, what is clearly missing from the literature is a methodologically strong study reporting schema change as an outcome in a Schema Therapy intervention for personality disorder.

Experimental Studies

In an ‘excellent’ quality rated study Arntz, Klokman and Sieswerda (2005) investigated a number of Schema Therapy postulates by comparing schema modes in individuals with BPD, Cluster-C PD and non-patient controls before and after experimentally induced abuse-related stress. Baseline results revealed that the BPD group scored significantly higher on the four BPD-related schema modes and significantly lower on the Healthy Adult mode compared to the control groups. Following stress-induction BPD participants uniquely reported a significant increase in the Detached Protector mode. Overall, the evidence from this study can be

considered as quite compelling due to the robustness of the methodological techniques used. Of particular note is that the state and trait versions of the Schema Mode Questionnaire (Klokman, Arntz & Sieswerda, 2001) showed good psychometric properties, increasing the likelihood that this instrument provided reliable results, the groups were matched on a number of variables and the experimental manipulation was well-conceived. The results from this study therefore provide good evidence for the outlined hypotheses about schema modes in BPD.

In another experimental study rated as ‘excellent’ in the current systematic review Lobbestael and Arntz (2010) explored direct and indirect emotional reactions to abuse-related stress in people with BPD, antisocial PD (ASPD), Cluster-C PD and non-patient controls. Following exposure to the abuse-related film, BPD participants were the only group to display a significant increase in the maladaptive modes and a significant decrease in adaptive modes. One of the main strengths of the study is the fact that PD pathologies were diagnosed according to clinical interview as was childhood abuse histories. The sample was also a good size for a clinical experimental study and a broad range of outcome measures were examined. Therefore, the results can be taken as good evidence for assumptions about maladaptive modes and mode switching in BPD.

In a final experimental study also rated as ‘excellent’, Lobbestael, Arntz, Cima and Chakhssi (2009) examined a number of indirect and direct measures of anger and anger-related schema modes in ASPD, BPD, Cluster-C PDs and non-patient controls. The authors noted a number of findings consistent with theories underlying Schema Therapy including the supposition that modes incorporate cognitive, emotional, behavioural and physiological experiences (Young et al., 2003). Particular strengths of the study include the use of an implicit association task to measure anger associations at a level below full conscious awareness and the fact that this task was developed from the Single Category Implicit Association Task which has previously been described as a reliable and valid tool (SC-IAT; Karpinski & Steinman, 2006). The ‘anger-inducing’ interview method used in the study has also been previously shown to generate high levels of self-reported anger and anger-related physiology (Lobbestael, Arntz & Weirs, 2008b).

In summary, the methodological rigour of the experimental studies can be considered 'excellent' overall. The Netherlands research group have reported three strong investigations all providing consistent support for a number of assumptions about schema mode activation in BPD. Specifically, that people with BPD possess a higher number of maladaptive modes (Arntz & van Genderen, 2009), they are prone to mode 'flipping', the Healthy Adult mode is weak, and in response to stress people with BPD are likely to show an overall increase in maladaptive modes and a decrease in adaptive modes (Young et al., 2003). They also provide good construct validity for schema modes. However, this research would benefit from expansion into other sources of stress hypothesised to be relevant to BPD such as the evocation of feelings of abandonment.

Longitudinal Studies

In a study rated as 'good' in the current review Thimm (2010a) explored the theoretical assumption that psychosocial task resolution is disrupted by EMS development (Young et al., 2003) in a sample of adult psychiatric outpatients over a six month period. Results revealed that all EMS (except Enmeshment and Self-Sacrifice) significantly correlated in a negative direction with resolution of developmental tasks. Schema change also significantly predicted developmental task resolution at Time 2 in a number of domains. A particular strength of the study includes the use of the Measures of Psychosocial Development (MPD; Hawley, 1988), which is a 112-item self-report questionnaire designed to capture negative attitudes and personality attributes associated with developmental conflict. This instrument is based on the normative data of 2430 individuals aged 13 to 86 collected over a seven year period and has good construct, convergent and discriminate validity.

In an 'adequate' quality strength study Stallard (2007) explored EMS in children and adolescents. This allowed a test of the hypothesis that EMS develop in childhood, with psychological difficulties emerging at this age (Young, 1990). In their first study, the authors noted relative stability on 8 of 12 measured schemas on the Schema Questionnaire for Children (SQC; Stallard & Rayner, 2005) over a six month period; while in a second study elevated schema scores were noted in a clinical versus community sample of children on this measure. A particular strength of the study was

the relatively large sample size. However, one difficulty with the study is the fact that the SQC was initially validated on children aged 11-16 years and then stability assessed on children aged 9-10 years. In the cross-sectional aspect of the research there was also a significant discrepancy on the mean age of the samples.

In a study rated as methodologically 'poor' Wang, Halvorsen, Eisenmann and Waterloo (2010) examined EMS in a 9-year follow up of clinically depressed (CD), previously depressed (PrD) or never depressed (ND) participants. This study tested the assumption that Schema EMS make individuals vulnerable to psychopathology in later life (Young et al., 2003). At Time 1 particular EMS patterns were observed between the groups, indicating that certain EMS may act as vulnerability markers for depression. At Time 2 test-retest correlations in several domains dropped considerably after controlling for depression, indicating that these scales may be more state dependent. This study benefited from a long duration of follow-up but generalisation of the results is difficult given that the sample mainly consisted of mildly depressed female participants. It also remains unclear whether particular EMS represent a unique vulnerability to depression since there were no control groups with other psychological disorders available for comparison.

In summary, the quality of longitudinal studies researching Schema Therapy processes is mixed. In a 'good' quality study Thimm (2010a) provides support for the supposition that EMS are associated with the hindrance of psychosocial task resolution (Young et al., 2003). The findings of Stallard (2007) also support the notion that EMS develop in childhood and that children with psychological problems possess a greater strength and number of schemas than their non-clinical counterparts. As this latter study was rated as 'adequate' these findings can be considered reasonably reliable. Overall, Wang et al.'s (2010) findings support the assertion that EMS are associated with psychopathology, at least in relation to depression. Yet, as this study was rated as methodologically 'poor' they are unreliable. Further high quality longitudinal studies are clearly required in this area in order to delineate these processes.

Mediational Studies

A key component of Schema Theory is the assumption that adverse experiences in childhood play a key role in the development of EMS and that these in turn are associated with adult psychopathology (Young, 2003). In a study rated as methodologically 'good' Dale, Power, Kane, Stewart and Murray (2010) explored the relationship between perceived parental bonding, EMS and suicidal behaviours. EMS mediated the relationship between parental care and risk of repetition and parental control and risk of repetition. A number of individual schemas were found to have a mediating effect including Social Isolation/Alienation (between parental care and risk of repetition) and Defectiveness/Shame (between parental control and risk of repetition). A particular strength of the study relates to the ecological validity of the sample although a degree of sampling bias may have been introduced by way of the selection method.

In a further study rated as 'good' in the current review Thimm (2010b) examined mediatory relationships between parental rearing styles, schema domains and PD symptoms in a sample of psychiatric outpatients. The schema domain Disconnection and Rejection was a significant mediator between parental rejection and low maternal warmth with symptoms of Cluster C PD symptoms. No significant direct effects were observed in this relationship. In contrast, maternal rejection and low maternal warmth showed significant direct effects on Cluster B PD symptoms, indicating that any observed relationships with schema domains as the mediator are only partial. Indirect effects included Disconnection and Rejection as the mediator between parental rejection and low maternal warmth with Cluster B symptoms. In addition, the Impaired Limits domain significantly mediated the relationship between paternal rejection and symptoms of Cluster B PD. In relation to Cluster C PD no significant direct effects of parental rearing were found. However, maternal rejection and low maternal warmth was significantly mediated by the Disconnection and Rejection domain in relation to Cluster C symptoms.

As a good quality study these findings provide reliable support for Schema Theory. The mediational aspect of this research is particularly relevant because it is consistent with the idea that although EMS stem from early childhood experiences it is EMS, not

childhood experiences per se, that lead to the development of psychological difficulties in adulthood. Although there are always difficulties in interpreting data based on self-reports and retrospective recollection, for a cross-sectional approach the chosen instruments are appropriate. The results were also unaffected by depression as this was controlled for in the analysis.

In a study rated as 'adequate' in terms of its quality, Deas, Power, Collin, Yellowlees and Grierson (2011) explored the relationships between perfectionistic schemas (Unrelenting Standards, Defectiveness, Failure), parental bonding and eating disordered attitudes and behaviours. The authors noted that individuals with anorexia nervosa (AN) reported significantly higher eating disordered beliefs and behaviours, lower parental care and greater strength of perfectionistic schemas relative to non-clinical and clinical controls. However, the assumption that perfectionistic schemas would mediate the relationship between parental bonding and eating disordered beliefs and behaviours was not supported by the data. Positive aspects of the study include the use of the Eating Disorders Examination (EDE; Fairburn & Cooper, 1993) which is considered the 'gold standard' measure in this field. However, given that there was insufficient power to test the mediational hypothesis, the lack of a significant relationship cannot be taken as evidence against the presence of this relationship.

In a study of 'adequate' methodological strength Johnston, Dorahy, Courtney, Bayles and O'Kane (2009) explored the theoretical assumption that although dysfunctional schema modes arise from experiences of childhood trauma, it is not childhood trauma per se but the modes that lead to dissociation. In this study, childhood abuse was not significantly associated with scores on the Wessex Dissociation Scale (WDS; Kennedy et al., 2004), however, dissociation scores was found to significantly correlate with several schema modes (namely, the Detached Protector, Punitive Parent, Angry/Impulsive Child and Abandoned/Abused Child). The dysfunctional schema modes were found to predict dissociation in a cumulative manner, with the addition of modes increasing the total variance in WDS scores. The two child modes also uniquely predicted dissociation scores. Some difficulties with this research include the relatively small sample size and the reliance on self-report measures. This

may be particularly problematic as childhood trauma is often under-reported (Hardt & Rutter, 2004).

In a study rated as methodologically 'poor' Lumley and Harkness (2007) examined EMS, childhood adversity and symptom profiles in depressed adolescents. Results revealed that childhood adversity was significantly associated with a number of EMS and symptom profiles. Specifically, the relationship between childhood physical abuse and emotional maltreatment with anxiety was mediated by the Vulnerability schema, while Social Isolation and Self-Sacrifice mediated the relationship between emotional maltreatment and depression. Although these findings were consistent with Schema Theory, they are less reliable due to methodological difficulties. In particular, symptom profiles were based on the results of the Mood and Anxiety Symptom Questionnaire (MASQ; Watson & Clark, 1991) which is an unpublished self-report questionnaire. The authors also did not have sufficient power to explore gender or age effects in their models.

Specht, Chapman and Cellucci (2009) provide further support for mediatory models of Schema Therapy in a study given an overall 'poor' quality rating. The authors noted that although the total score on the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1994) accounted for a significant proportion of the variance of BPD severity, this finding became non-significant when the Disconnection/Rejection and Impaired Limits domains were controlled for. This finding suggests that the association between childhood maltreatment and symptoms of BPD is mediated by the development of schemas. Particular difficulties with this study from the fact that ASPD was more prevalent than BPD in their sample and after controlling for ASPD only the Disconnection/Rejection domain remained significant in predicting BPD. Clinically significant depression was also present in 73% of the sample, which may have affected the extent to which schema items were endorsed. Generalisation of these findings to community samples is also problematic given the uniqueness of the chosen sample.

In a 'very poor' quality study Carr and Francis (2010) recruited a non-clinical sample to explore the relationship between childhood experiences, EMS and avoidant PD (AVPD). Mediation analysis showed that the pathway from mother overprotection

to AVPD symptoms was mediated by Subjugation and Emotional Inhibition, and the family sociability and AVPD relationship was mediated by Abandonment and Subjugation. Although this study is unique in exploring EMS in relation to AVPD, interpretation of the data is hampered by a number of methodological limitations. Of particular difficulty is the fact that the data is based largely on data from undergraduate students, making generalisation to clinical samples difficult.

In summary, the majority of the evidence from meditational studies is consistent with theoretical postulates in Schema Therapy. However, the methodological rigour of this evidence base is variable. The high quality studies of Thimm (2010b) and Dale et al. (2010) provide good evidence for the meditational role of schemas in the route from childhood experiences to psychopathology in adulthood, and are reliable indicators of this process. In a study achieving an ‘adequate’ quality rating Johnston et al. (2009) reported supportive preliminary evidence for the mediatory role of schema modes. Although this latter evidence is deemed reasonably reliable it is clear that additional research is required in this area. In an ‘adequate’ study Deas et al. (2011) failed to find a significant mediation but given that this study was underpowered this result can be discounted. Further consistent evidence for the mediatory role of EMS can be seen in the studies by Lumley and Harkness (2007) and Specht et al. (2009) although caution must be taken with the interpretation of these findings given their ‘poor’ methodological ratings. Finally, the supportive findings noted by Carr and Francis (2010) cannot be relied upon due to the ‘very poor’ quality of this study.

Cross-sectional Studies

A basic tenet of Schema Theory is that particular schema modes are associated with particular PD pathologies (Arntz & Young, 2007). This assumption was assessed in a ‘good’ quality large scale investigation by Lobbestael, van Vreeswijk and Arntz (2008a). The authors examined correlations between schema modes and PD pathology in 489 participants, 240 of whom had an Axis II diagnosis, 127 with Axis I disorder, 23 patients who were neither Axis I nor II and 99 non-patient controls. Comparisons between the hypothesised modes and the actual positive correlations between schema modes and PDs found by Lobbestael and colleagues (2008a) are outlined in Table 5. Positive aspects of the study include the large scale nature of the

investigation and the fact that diagnoses were confirmed by clinical interview. In the analysis other PD pathology was partialled out to allow consideration of singular PD pathology.

Table 5. Hypothesised modes described by Arntz and Young (2007) and actual modes as described by positive correlations in Lobbestael et al. (2008a)

Personality Disorder	Hypothesised Modes	Actual Modes
Paranoid	VC, AC	AC** , EC** , BA** , DTP* , DSS*
Schizotypal	-	HA*
Schizoid	DTP	UC* , DTP* , PP*
Histrionic	IC, VC	IC** , UC* , HC* , DSS* , SA*
Narcissistic	SA, DSS, EC, VC	SA** , BA** , UC*
Borderline	VC, AC, IC, UC, DTP, PP	VC** , AC** , EC** , IC** , UC** , CS** , DTP** , DSS** , PP** , BA*
Antisocial	EC, BA	EC** , BA** , IC*
Avoidant	DTP, VC, PP	VC** , UC** , CS** , DTP** , PP** , AC* , DSS* , DP*
Dependent	CS, DP, VC	VC** , UC** , CS** , DTP* , DSS* , PP*
Obsessive-Compulsive	DP, PP, VC	DSS** , SA** , DP** , BA*

Note: VC (Vulnerable Child), AC (Angry Child), DTP (Detached Protector), IC (Impulsive Child), SA (Self-Aggrandizer), DSS (Detached Self-Soother), EC (Enraged Child), UC (Undisciplined Child), PP (Punitive Parent), BA (Bully/Attack), CS (Compliant Surrenderer), DP (Demanding Parent), HA (Healthy Adult), HC (Happy Child). Items in bold show corroboration between hypothesised modes and actual modes.

* $p < .05$

** $p < .01$

Overall, the results indicate that many of the hypothesised modes and unique PD-mode profiles are corroborated by positive associations in the data. This supports the construct validity of schema mode conceptualisations in PDs. The high number of modes that correlated in the data questions the specificity of the model to some extent although this may be related to the fact that PD pathology was explored on a dimensional rather than categorical construct.

Schema Theory assumes that EMS develop during childhood and adolescence, yet the majority of studies exploring these assumptions have done so retrospectively in adult populations. In a second study rated as ‘good’ van Vlierberghe, Braet, Bosmans, Rosseel and Bogels (2010) attempted to address this limitation in two studies. In the first study, factorial analysis of the YSQ-short form (Young, 1998) in adolescents revealed adequate psychometric properties including intercorrelations for the schema scores between .18 and .62 and internal consistency of item subscales of .71 to .83. In their second study, the authors found that a clinical group of adolescents reported a significantly higher presence of EMS compared to the non-clinical group. EMS were

found to explain a significant proportion of variance in internalising (29.8%) and externalising (21.3%) problem behaviours. Significant positive associations were also reported in regression analysis between Emotional Deprivation and Failure to depressive symptoms; between Vulnerability to Harm/Illness and Unrelenting Standards and anxiety symptoms; between Defectiveness/Shame and symptoms of Oppositional Defiant Disorder; and between Unrelenting Standards and Entitlement to symptoms of Conduct Disorder.

These findings support the theoretical assumption that EMS develop during childhood and that they are associated with emotional problems. It also provides some evidence that specific schemas are associated with specific forms of psychopathology. Particular strengths of the study include the ecological validity of the sample and the use of other-rated measures on behavioural dimensions. However, one difficulty relates to the lack of information on the reliability of the behaviour checklist measure used in the study. Nevertheless, as this study has 'good' methodological properties overall, the results can be considered reliable and valid. They also indicate that Schema Therapy may be adaptable to an adolescent population.

In a study rated deemed to have 'adequate' methodological properties Lobbestael, Arntz and Sieswerda (2005) explored the relationship between childhood abuse and schema modes in individuals with BPD, ASPD and in non-patient controls. Consistent with Schema Theory, the authors found that people with BPD are characterised by four maladaptive modes (Detached Protector, Punitive Parent, Abandoned/Abused Child and Angry Child) and a weak Healthy Adult mode. The Bully/Attack mode was also found to be highest in people with ASPD, consistent with theoretical assumptions (Arntz & Young, 2007). However, this result did not reach statistical significance which may reflect the relatively small sample size. Interestingly, rates of childhood abuse were statistically higher in the BPD and ASPD groups than in the non-patient controls although they did not differ significantly from each other. This finding suggests that there is some mechanism aside from childhood abuse that is implicated in the development of different PDs. The data are consistent with the notion that this mechanism is schema modes.

One difficulty with the interpretation of the above findings is that the ASPD group also reported BPD-related schema modes albeit to a lesser extent than the BPD group. They also reported a high level of the Healthy Adult mode, not significantly different to the control group. Although these findings are inconsistent with the notion that PDs have distinctive schema mode profiles, the quality ratings of this study were relatively low compared to other cross-sectional investigations reviewed. This result may in part be due to the relatively small sample size and the authors noted a great diversity in terms of psychopathy in the ASPD group.

In summary, the cross-sectional evidence provides further support for a number of assumptions in Schema Therapy, with the quality of the evidence ranging from ‘good’ to ‘adequate’. Good quality evidence supports the construct validity of schema mode conceptualisations in PDs, although, the model may be less specific than originally defined (Lobbestael et al., 2008a). There is also good evidence to support the notion that EMS develop during childhood and that they are associated with emotional problems (van Vlierberghe et al., 2010). Finally, in an ‘adequate’ quality study Lobbestael et al. (2005) noted consistent evidence for the hypothesised BPD mode model although ASPD modes were not entirely consistent with proposed assumptions. Nevertheless, the results by Lobbestael et al. (2008a) should be considered the most accurate reflection of ASPD mode processes as this study was of better methodological quality.

DISCUSSION

The current systematic review evaluated for the first time the evidence base for the theoretical underpinnings of Schema Therapy. A summary of the evidence supporting 10 key theoretical facets is outlined below.

Key Theoretical Assumptions in Schema Therapy

- 1. Schema Development Begins in Childhood and is Associated with Psychopathology at this Age*

The evidence that supports this assumption is strong. Good quality evidence can be obtained from van Vlierberghe et al.'s (2010) investigation of 216 adolescents recruited from clinical and non-clinical backgrounds. Significant associations were observed between EMS and a number of psychological disorders as well as with some internalising and externalising behaviours. Consistent evidence for this axiom is also available from Stallard (2007) who noted higher levels of EMS in a sample of children attending a mental health service than in a non-clinical sample. This latter evidence is reasonably reliable given the 'adequate' rating allocated to this study.

2. Schemas are Associated with Psychosocial Task Resolution

The evidence in support of this postulate is moderate. Thimm (2010a) found that schema change over a six month period significantly predicted psychosocial task resolution. As a study of good quality this evidence can be considered reliable.

3. Psychopathology in Adulthood is Associated with Adverse Childhood Experiences and this Process is Mediated by Schemas

The evidence in support of this axiom is moderate. Good evidence in support of the above statement is that which can be obtained from Thimm (2010b) who found that schema domains significantly mediated a number of relationships between parental rearing style and symptoms of PD. In a second study rated as 'good' quality, Dale et al. (2010) found that EMS mediated the relationship between parental bonding and risk of repetition. A further excellent study providing partial support for the hypothesis is that conducted by Cockram et al. (2010) who found that a diagnosis of PTSD was more likely to be given in individuals who reported high EMS and high negative parenting experiences.

Less reliable albeit consistent, evidence can be obtained from the remaining studies. Specht et al. (2009) found that childhood maltreatment and symptoms of BPD was mediated by the development of schemas. Lumley and Harkness (2007) also highlighted the mediatory role of specific schemas in the relationship between childhood maltreatment and symptoms of anxiety and depression. Finally, Carr and

Francis (2010) noted that schemas mediated the pathway from mother overprotection to AVPD symptoms.

4. Schema Modes Incorporate Cognitive, Emotional, Behavioural and Physiological Experiences

The evidence in support of this statement is very strong. In an excellent study Lobbestael et al. (2009) found that anger-related schema modes, self-reported anger, self-anger implicit associations and some physiological indices significantly increased following anger induction. Given the methodological rigour of this investigation, these results can be considered as excellent evidence for the multi-faceted nature of schema modes. In a further methodologically strong investigation Lobbestael and Arntz (2010) noted significant correlations between schema modes, self-reported negative affect, implicit cognitive associations and some physiological indices following abuse-related stress induction, providing further evidence for this hypothesis.

5. There are Specific Schema Mode Profiles for Each Personality Disorders

The evidence in support of a specific schema mode profile for BPD is moderate to strong. Excellent quality evidence in support of BPD mode conceptualisations can be obtained from Arntz et al. (2005) who found that people with BPD scored significantly higher than Cluster-C PDs and non-patient controls on BPD-related modes. In an adequate quality strength investigation Johnston et al. (2009) also reported the presence of these modes in patients with BPD. A second adequate strength study providing consistent evidence is that by Lobbestael et al. (2005).

The evidence in support of other PD schema mode conceptualisations is moderate. Lobbestael et al. (2008a) found that BPD pathology was associated with Vulnerable Child, Detached Protector, Punitive Parent, Angry Child, Impulsive Child and Undisciplined Child modes, consistent with Arntz and Young (2007), although significant correlations were also noted on the Enraged Child, Bully/Attack, Detached Self-Soother and Compliant Surrenderer modes. This latter finding may reflect the

fact that PD pathology was explored as a dimensional rather than categorical construct.

6. *People with BPD have a High Number of Maladaptive Modes and the Healthy Adult Mode is Weak*

The evidence in support of the above supposition is very strong. Particularly compelling evidence was reported by Arntz et al. (2005) who found that maladaptive modes were stronger and adaptive modes weaker in individuals with BPD compared to those with Cluster-C PD and non-patient controls. Lobbestael and Arntz (2010) also reported that people with BPD displayed the highest level of maladaptive modes and the lowest level of adaptive modes in a sample also containing people with Cluster-C PDs, ASPDs and non-patient controls. Maladaptive modes were also strongest in people with BPD relative to Cluster-C PD, ASPD and non-patients in the investigation by Lobbestael et al. (2009). Given the methodological strength of these three studies the aforementioned hypothesis is well-supported by the literature. Slightly weaker, although consistent, evidence was also obtained by Lobbestael et al. (2005) who found that adaptive modes were weakest and maladaptive modes strongest in their sample in those persons with BPD.

7. *People with BPD are Prone to Mode ‘Flipping’*

The above statement is strongly supported by the available evidence. Excellent support for mode ‘flipping’ is available from the Netherlands research group. Individuals with BPD have been shown to report significant schema mode flips following exposure to abuse-related stress induction (Arntz et al., 2005; Lobbestael & Arntz, 2010) and anger induction (Lobbestael et al., 2009). These modes shifts were also reported as significantly greater than individuals with Cluster-C PDs and ASPDs, indicating that individuals with BPD are particularly prone to mode flipping. Given the methodological rigour of these studies, the findings can be considered as excellent support for this hypothesis.

8. *In Response to Emotional Triggers People with BPD Show an Increase in Maladaptive Modes (particularly the Detached Protector) and a Decrease in Adaptive Modes*

Excellent evidence in support of this postulate is also available from the Netherlands research group. Following emotional triggers individuals with BPD were found to experience a significant increase in maladaptive modes such as Angry Child and Enraged Child (Lobbestael et al., 2009) and Angry/Impulsive Child, Abused/Abandoned Child, Punitive Parent and Detached Protector (Arntz et al., 2005). This finding was particularly prominent for the Detached Protector mode (Arntz et al., 2005). Following exposure to emotionally distressing stimuli individuals with BPD were also found to be the only group to display a significant increase in the maladaptive modes and a significant decrease in the adaptive modes (Lobbestael & Arntz, 2010). These methodologically strong studies provide excellent support for schema mode conceptualisations in BPD.

9. *Schema Modes Mediate the Relationship between Childhood Experiences and Psychopathology in Adulthood*

The evidence in support of this assumption is adequate. Consistent with Schema Theory, Johnston et al. (2009) hypothesised that although dysfunctional schema modes arise from experiences of childhood trauma, it is not childhood trauma per se but the modes that lead to dissociation. In 30 individuals with BPD Johnston et al. found that childhood abuse was not significantly associated with dissociation, although it was significantly correlated with several schema modes. This data provides preliminary support to the above hypothesis although the study is rated only as adequate in strength.

10. *Schema Therapy Leads to Change at the Schema Level and this is Associated with Reduced Psychopathology*

The evidence that supports this postulate is very strong. In a randomised controlled trial Cockram et al. (2010) found that by following Schema Therapy intervention significant reductions in 17 EMS were noted and maintained at three-month follow-

up. These outcomes were also associated with a reduction in symptoms of PTSD, anxiety and depression and that these effects were significantly stronger in the Schema Therapy group compared to a group receiving CBT. Given the excellent methodological strength of this study we can be confident that Schema Therapy was responsible for the reported changes. Further strong evidence is available from Nordahl et al. (2005) who found that greater schema modification significantly predicted lower distress post-intervention. Slightly weaker but consistent evidence is also obtained from Hoffart et al. (2002) who noted significant reductions from pre- to post- treatment on 14 outcomes measuring a number of personality, distress and symptom based dimensions.

CONCLUSIONS

As a clinically popular model with an increasingly broad evidence base, Schema Therapy is fast becoming a good treatment option for individuals with chronic psychological difficulties. Yet, a psychological therapy must also have a sound *theoretical* basis. The current systematic review therefore attempted to evaluate the empirical basis of the theoretical underpinnings of Schema Therapy.

Overall, there is good evidence in the literature to support some of the key theoretical assumptions of Schema Therapy. Particularly compelling evidence can be derived for the notion that individuals with BPD have a high number and severity of maladaptive schema modes and a low number of adaptive modes (Arntz et al., 2005; Lobbestael & Arntz, 2010; Lobbestael et al., 2005; Lobbestael et al., 2009). Experimental research also suggests that people with BPD do experience the mode ‘flipping’ described by Young et al. (2003), particularly in response to emotional triggers (Lobbestael & Arntz, 2010; Lobbestael et al., 2009) and in response to perceived threat they are more likely to switch into a Detached Protector mode (Arntz et al., 2005). This may reflect the evidence suggesting that in BPD the Healthy Adult mode is particularly weak (Arntz et al., 2005; Lobbestael & Arntz, 2010; Lobbestael et al., 2005; Lobbestael et al., 2009). The literature also supports the notion that schema modes are characterised by cognitive, emotional, physiological and behavioural experiences (Lobbestael & Arntz, 2010; Lobbestael et al., 2009).

Clear and consistent evidence is available from the literature to support the assumption that psychopathology in adulthood is associated with adverse childhood experiences and that this process is mediated by schemas (e.g. Cockram et al., 2010; Dale et al., 2010; Thimm, 2010b). However, there is a dearth of literature investigating the mediatory role of schema modes between childhood experiences and psychopathology, though existing evidence does support this supposition (Johnston et al., 2009). Research exploring the relationship between schemas and psychopathology in childhood is also minimal, though preliminary results are supportive of Schema Theory (van Vlierberghe et al., 2010; Stallard, 2007).

The notion that particular personality disorders are characterised by specific schema mode profiles is largely consistent with Young et al.'s (2003) assertions. The best evidence is that available for BPD which can be said to be characterised by the Detached Protector, Punitive Parent, Vulnerable Child and Angry/Impulsive Child modes (Arntz et al., 2005; Johnston et al., 2009; Lobbestael et al., 2008a). However, the specificity of this model remains under question and the schema mode profiles of other PDs is unclear. It may be more helpful to conceptualise schema modes as being particularly prominent in certain pathologies rather than being characteristic of them.

Finally, in a systematic review Masley et al. (2011) found that although the evidence base for the efficacy of Schema Therapy is relatively small it is also fairly robust, with effect sizes being noted in the medium to large range. The hypothesis that positive outcomes in Schema Therapy can be attributed to change at the schema level is supported by at least two methodologically strong investigations (Cockram et al., 2010; Nordahl et al., 2005). Symptomatic relief has also been demonstrated following Schema Therapy intervention in these studies.

Schema Therapy is a psychological therapy with a growing evidence base, not only in relation to its efficacy in a wide range of conditions (Masley et al., 2011), but also in terms of its theoretical underpinnings. In order to strengthen the position of Schema Therapy amongst other similar psychological approaches, future research must focus on the following key areas:

1. High quality intervention studies investigating the efficacy of Schema Therapy in a range of psychological conditions are required. These should include a measure of schemas or schema modes pre- and post- intervention in order to support theoretical assumptions about the mechanism of change.
2. The potential mediatory role of maladaptive schema modes in the relationship between childhood experiences and psychopathology in adulthood needs further exploration.
3. Further research clarifying the association between schema modes and psychopathology is desirable, especially in relation to the hypothesised schema mode profiles purported for specific PDs.
4. Longitudinal studies measuring the development of schemas through childhood to adolescence and adulthood would be an excellent addition to the literature.
5. A significant expansion in the research of Schema Therapy processes in child and adolescent populations is required. Particularly in relation to hypothesised related variables.
6. Schema Therapy research should be extended to include older adult populations as there is a paucity of research in this domain at present.
7. Outcomes under investigation should expand to include behavioural indices such as deliberate self-harm, substance misuse and interpersonal functioning.

Finally, given that non-schema focussed psychological therapy may lead to schema change through common pathways (e.g. the therapeutic relationship), it is important to discern which aspects of Schema Therapy are important in evoking change. Theoretically, one might assume that limited re-parenting is the key component of Schema Therapy but further research is required to provide support for this supposition.

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PART II
EMPIRICAL STUDY

CHAPTER 3: INTRODUCTION TO EMPIRICAL STUDY

3.1. Deliberate Self-Harm Definitions

In its broadest sense the term ‘self-harm’ can be used to describe any type of behaviour that involves self-inflicted psychological or physical damage. This may include behaviours that are relatively culturally acceptable such as over-eating, dieting, smoking, recreational drug-use and excessive alcohol consumption or general risk-taking behaviours such as driving at excessive speed or driving whilst intoxicated. Self-harm practices can also take place as a form of religious, social or political practice. Although self-harm arguably covers a spectrum of behaviours, the current research pertains to the most common self-harm behaviours (e.g. cutting; Hawton *et al.*, 2002), that is, those behaviours which cause direct bodily harm without suicidal intent.

One of the main difficulties in the self-harm literature is the inconsistency in terms used to describe the same behaviour (Gratz, 2003). For instance, behaviours involving the intentional destruction of bodily tissue without conscious suicidal intent (e.g. skin-cutting, burning, prevention of wound healing) have been described as ‘deliberate self-harm’ (Pattison & Kahan, 1983) and ‘self-mutilation’ (Favazza, 1998). A second source of inconsistency is the frequent use of the same terms to describe different behaviours (Gratz, 2003). Some researchers have also used the same term (e.g. ‘parasuicide’) to describe behaviours where suicidal intent varies (e.g. Linehan, 1993).

Although self-harm without suicidal intent and intentional attempted or completed suicide have frequent co-morbidity they are distinct phenomena (Favazza, 1996). Primarily they are distinct because they serve different functions. In fact, self-harm without suicidal attempt has been described as ‘anti-suicide’ (Suyemoto, 1998) due to conceptualisations of self-harm as a coping behaviour which serves a variety of functions including emotion regulation, dissociation or communication of distress (see Mangall & Yurkovich, 2008 for a review).

Gratz (2001) described 'deliberate self-harm' as 'the deliberate, direct destruction or alteration of body tissue, without conscious suicidal intent but resulting in injury severe enough for tissue damage to occur'. Therefore, the defining characteristic of deliberate self-harm is the absence of suicidal intent (Gratz, 2001). In fact, non-fatal self-harm behaviours with suicidal intent would better be described as 'attempted suicide' (Magnall & Yurkovich, 2008). It has been suggested that the 'deliberate' part of the definition should be dropped as it implies due to the fact that many service-users harm themselves without conscious intent (NICE, 2004). Yet, 'deliberate self-harm' is still the most commonly used term in British research (Hawton *et al.*, 2003). The present research will use the term deliberate self-harm and self-harm interchangeably as terms to describe the behaviour noted by Gratz (2001).

3.2. Psychological Treatments for Deliberate Self-Harm

Two broad aims have been noted in treatment protocols for deliberate self-harm: 1) to prevent repetition of self-harm behaviours and 2) to prevent suicide. Although a large number of studies have explored the effectiveness of a variety of treatments for deliberate self-harm, no clear recommendations on particular psychological therapies can be made due to lack of consistent high quality evidence (Crawford *et al.*, 2007; Hawton *et al.*, 1998). Particular difficulty comes from the fact that many of the available studies include small numbers of highly specific groups, making general recommendations problematic. Individuals who self-harm are also a heterogeneous group within which different treatment strategies may be required.

The National Institute for Health and Clinical Excellence (NICE) guideline on the short-term physical and psychological management and secondary prevention of self-harm in primary and secondary care (NICE, 2004) concluded that there was insufficient evidence to support any recommendation for interventions specifically designed for people who self-harm. The guidance also highlighted that the treatment of deliberate self-harm should be determined by overall patient needs rather than the act of self-harm per se. It may be more helpful therefore to consider underlying causes and address these in longer term psychological interventions.

Recently, NICE produced guidelines for the longer-term management of deliberate self-harm (NICE, 2011). Key recommendations from this document include the need for health and social care staff to develop a trusting and supportive therapeutic relationship with the service-user, the development of multidisciplinary care plans and the treatment of associated co-morbid psychological conditions according to appropriate NICE guidance. Harm reduction plans may also be beneficial in the short-term. No specific psychological intervention is recommended for the treatment of deliberate self-harm although the guidance recommends that the provision of 3 to 12 structured sessions should be considered. This intervention should be tailored to the needs of an individual with suggested elements including cognitive-behavioural, psychodynamic or problem-solving techniques. Identified aims should be around reduction in self-harm behaviours and therapy should aim to address causal factors.

In 2011, the Scottish Government and the National Health Service Education Board published the 'The Matrix - a Guide to Delivering Psychological Therapies in Scotland'. This document summarises which psychological interventions are best supported by scientific evidence. Although no guidelines are available for the treatment of deliberate self-harm in adults, the documentation does provide B-level ('recommended') evidence for Cognitive Behaviour Therapy (CBT) for deliberate self-harm in adolescents (Slee *et al.*, 2008a; Slee *et al.*, 2008b).

Given that borderline personality disorder (BPD) has high rates of deliberate self-harm (Shearer *et al.*, 1988) it is also relevant to consider the evidence base for psychological treatments of this condition. The Matrix concludes that there is 'highly recommended' (Grade A) evidence for BPD treatment using CBT (Davidson *et al.*, 2006), Transference-focused psychotherapy (Clarkin *et al.*, 2007), Dialectical Behaviour Therapy (Linehan *et al.*, 1991) and Systems Training for Emotional Predictability and Problem Solving (Blum *et al.*, 2008). Schema Therapy has also been highly recommended as a treatment for BPD (Giesen-Bloo *et al.*, 2006).

3.3. Schema Therapy and Deliberate Self-Harm

There is mounting evidence to support the use of Schema Therapy for the treatment of a variety of complex psychological conditions including personality disorder (see

Masley *et al.*, 2011 for a systematic review). These studies have demonstrated statistically and clinically significant improvements in a number of areas including general psychopathology (e.g. Cockram *et al.*, 2010), symptoms of personality disorder (e.g. Giesen-Bloo *et al.*, 2006), interpersonal functioning (e.g. Gude & Hoffart, 2008) and maladaptive schemas (e.g. Simpson *et al.*, 2010) following Schema Therapy intervention. In a high quality randomised controlled trial significantly greater clinical improvement, BPD recovery and quality of life following Schema Therapy intervention was reported compared to Transference-focused Therapy (Giesen-Bloo *et al.*, 2006).

Although it is reasonable to assume that the clinical improvements evident in BPD would also extend to the reduction of self-harming behaviours, these have not been reported as outcomes in Schema Therapy trials. Yet, given the success of Schema Therapy in a number of outcome variables, it is worth considering whether it may be an appropriate treatment for deliberate self-harm and whether this can be extended beyond the BPD diagnosis. In order to explore this possibility the first step that must be taken is to gain a better understanding of how the theoretical constructs underlying Schema Therapy relate to deliberate self-harm.

One of the core concepts in Schema Therapy is that of early maladaptive schemas (EMS; Young, 1990). In a sample of 25 participants with a history of deliberate self-harm and 80 non-self-harming controls Castille *et al.* (2007) investigated patterns of reported EMS using the Young Schema Questionnaire – long version, second edition (YSQ-L2; Young & Brown, 1990). In the deliberate self-harm group skin-cutting was the most commonly reported self-harm behaviour (36%), followed by carving words into the skin (36%), sticking sharp objects into the skin (36%), punching oneself (36%), carving designs into the skin (24%), head-banging (24%), self-burning (20%), preventing wounds from healing (16%), severe scratching (12%) and self-biting (4%). Of the self-harm sample 16% reported one episode of self-harm while 84% reported self-harm on two or more occasions. The number of self-harm episodes ranged from one to 44 (mean = 7) with the majority of participants (60%) reporting more than one method of deliberate self-harm. Time since last episode of self-harm included within the last year (12%), from one to five years (12%), and more than five years ago (32%).

Castille and colleagues (2007) found significant differences between the self-harm group and non-self-harm group on the Social Isolation/Alienation schema and on the Insufficient Self-Control/Self-Discipline schema, with the self-harm group scoring significantly higher than controls on these measures. When mean EMS scores were entered in the analysis as a function of whether or not self-harm was repetitive, the self-harm group scored significantly higher than controls on the schemas of Emotional Deprivation, Defectiveness/Shame, Social Isolation/Alienation and Insufficient Self-Control/Self-Discipline. The authors also found a significant positive correlation between the number of episodes of deliberate self-harm and the Social Isolation/Alienation schema. These findings indicate that EMS are associated with deliberate self-harm.

3.4. The Role of Parental Bonding in Deliberate Self-Harm

Schema Therapy theorises that EMS develop from unmet core needs in childhood and that parental rearing styles play a key role in this process (Young, 1990). Parental rearing styles and associated bonding is assumed to develop according to two orthogonal parenting styles. The first of these pertains to the level of 'care' involved in parenting; that is, the amount of love, warmth and affection exhibited from the parent toward the child. The second relates to parental 'control'; that is, the amount of overprotection and restraint exhibited by the parent. Parental care ranges on a dimension from low (where there is parental coldness and rejection) to high (where there is a lot of expressed love and care), and parental control, low (where freedom and independence is encouraged) to high (where there is parental prohibition and fostering of dependence).

Previous research has demonstrated associations between perceived parental bonding and a variety of psychopathology including depression (Enns *et al.*, 2002), anxiety (Turgeon *et al.*, 2002) and suicidal ideation (Lai & McBride-Chang, 2001). Dale *et al.* (2010) also reported significant associations between perceived parental bonding and risk of repetition of suicidal behaviour. In their analysis low parental care and high parental control was related to higher risk of repetition.

Marchetto (2010) investigated perceptions of parental bonding in a sample of 81 individuals with deliberate self-harm by skin-cutting and 62 comparison participants without any self-harm behaviours. Skin-cutting was defined as self-laceration on at least five occasions with the last occasion occurring within the previous six months. Results revealed that parental bonding experiences differentiated individuals who self-harm by skin-cutting and individuals with no history of self-harm. Specifically, skin-cutting was associated with significantly higher parental control and with significantly lower maternal care relative to non-clinical participants. These findings indicate childhood experiences of parental bonding is associated with deliberate self-harm in adulthood, at least in reference to skin-cutting behaviour.

3.5. Levels of Perceived Stress in Deliberate Self-Harm

There is a wealth of research linking stressful life events to psychological conditions including depression (Kessler, 1997), alcohol misuse (Allan & Cooke, 1985), generalised anxiety (Blazer *et al.*, 1987) and schizophrenia (Norman & Malla, 1993). A positive association has also been demonstrated between the number of critical life events and deliberate self-harm among adolescents (Portzky *et al.*, 2008). This research suggests that life events are in themselves the cause of psychological difficulties. Yet, this is in contrast to research suggesting that it is the interpretation of stressful life events in relation to available coping resources that is crucial in determining outcome (Lazarus, 1966). This perspective is consistent with research indicating that people who self-harm report lower coping resources and more maladaptive coping styles (De Leo & Heller, 2004; Fliege *et al.*, 2004). Therefore, it may be more pertinent to examine perceived stress as opposed to objective stress in relation to deliberate self-harm.

Perceived stress is defined as the degree to which situations in one's life are appraised as stressful (Cohen *et al.*, 1983). Previous research exploring perceived stress has noted significantly higher levels in individuals with anxiety disorders (Connor *et al.*, 2007), post-traumatic stress disorder (Besser *et al.*, 2009) and depression (Willner *et al.*, 1990). In a sample of 361 psychiatric inpatients higher levels of perceived stress were evident in those people who also reported a history of self-harm (Fliege *et al.*,

2006). This research indicates that perceived stress is associated with deliberate self-harm.

3.6. The Present Investigation

In summary, there is evidence available in the literature to suggest that EMS (Castille *et al.*, 2007), parental bonding (Marchetto, 2010) and perceived stress (Fliege *et al.*, 2006) are all influential in predicting deliberate self-harm behaviour. These findings provide preliminary indications that Schema Therapy may be an important avenue of treatment for deliberate self-harm. However, there is a key construct in Schema Therapy that has not been reported in relation to deliberate self-harm and which may be particularly important in understanding this behaviour: schema modes.

‘Schema modes’ were initially described by Young and colleagues (2003) as a way of understanding the sudden and rapid emotional changes evident in individuals with BPD. These primarily emotional states encompass EMS and coping behaviours, thus providing an indication of how an individual presents in a particular moment (Young *et al.*, 2003). Although particular patterns of schema modes have been reported in a number of personality disorders (Lobbestael *et al.*, 2008), no previous research has explored the schema modes associated with deliberate self-harm.

The present study used a cross-sectional within-subjects design to explore the relationship between deliberate self-harm, schema modes, parental bonding and perceived stress in a clinical sample of psychiatric outpatients with a history of deliberate self-harm. This research attempted to provide a better understanding of how these variables interact, thus providing preliminary evidence that Schema Therapy and the schema mode concept in particular, may be relevant for individuals who self-harm. Specific aims and hypotheses in relation to this research are outlined in the following chapter.

CHAPTER 4: AIMS AND HYPOTHESES

4.1. Aims

The empirical study aimed to explore a clinical population with a history of deliberate self-harm. Preliminary aims included exploration of deliberate self-harm in relation to: type of behaviours; frequency of behaviours; age of onset; time since last episode; duration of behaviour; and severity of behaviour. The research also aimed to evaluate whether participants met criteria for ‘Non-suicidal Self-Injury’ (NSSI) disorder as currently in proposal by the Diagnostic and Statistical Manual – fifth edition (DSM-V) working group (see Selby *et al.*, 2012). However, the key aim in the present research was to determine the relationships between schema modes, parental bonding and perceived stress with deliberate self-harm pathology. In order to fulfil this key aim, a number of hypotheses were derived.

4.2. Hypotheses

Hypothesis 1

There will be a significant relationship between maladaptive schema modes, parental bonding, perceived stress and duration, age of onset and number of methods of deliberate self-harm.

Hypothesis 2

Maladaptive schema modes, perceived stress and parental bonding will predict duration, age of onset and number of methods of deliberate self-harm.

Hypothesis 3

Maladaptive schema modes will mediate the relationship between parental bonding and duration, age of onset and number of methods of deliberate self-harm.

CHAPTER 5: METHODOLOGY

5.1. Statistical Power and Sample Size

The key aim of the study was to explore the relationship between maladaptive schema modes, parental bonding, perceived stress and deliberate self-harm. However, no previous research has used the Schema Mode Inventory (SMI; Young *et al.*, 2008) in a deliberate self-harm sample. Therefore, sample size calculations were based upon the effect size of similar studies using the conceptually similar instrument of the Young Schema Questionnaire (YSQ; Young & Brown, 1990). In a sample reporting deliberate self-harm by skin-cutting a large effect size ($r = .72$) was noted between the Social Isolation/Alienation schema and the number of self-harm episodes (Castille *et al.*, 2007). In a suicidal behaviours sample Dale *et al.* (2010) reported a medium effect size ($r = .38$) between total early maladaptive schema score on the YSQ and the risk of repetition of suicidal behaviour.

The present study used an amalgamated measure on the SMI. Therefore, the ability of the SMI to predict deliberate self-harm was assumed as a conservative medium effect size. The sample size calculation was based upon Cohen's (1992) recommendations for detecting statistically significant effects. Multiple regression was the main statistical analysis of choice in the study with three predictors (namely, maladaptive schema modes, parental bonding and perceived stress) being present in the model. Cohen's (1992) power primer suggests that to detect a medium effect size at significance level .05 with a power of .8, using three predictors in a multiple regression analysis, approximately 76 participants are needed.

5.2. Participants

70 participants (57 female; 13 male) with a history of self-harm took part in the present study. All were outpatients receiving care from a community mental health team (CMHT). The mean age was 35.03 years (age range 17-65 years) with a standard deviation of 10.17 years. A further 15 individuals were approached but chose not to take part, indicating an 82% uptake in the sample.

Primary psychiatric diagnoses in the sample included: borderline personality disorder (n = 20), bipolar affective disorder (n = 13), depressive disorder (n = 13), mixed anxiety and depressive disorder (n = 6), post-traumatic stress disorder (n = 6), schizoaffective disorder (n = 2), avoidant personality disorder (n = 2), generalised anxiety disorder (n = 1), social phobia (n = 1), panic disorder (n = 1), schizophrenia (n = 1), dissociative identity disorder (n = 1), psychotic disorder not otherwise specified (n = 1), avoidant and dependent personality disorder (n = 1) and paranoid personality disorder (n = 1). 54 participants had one psychiatric diagnosis and 16 had two reported psychiatric diagnoses. Secondary psychiatric diagnoses included depressive disorder (n = 4), generalised anxiety disorder (n = 3), post-traumatic stress disorder (n = 2), fibromyalgia (n = 2), obsessive compulsive disorder (n = 1), dysthymic disorder (n = 1), social phobia (n = 1), bulimia nervosa (n = 1) and eating disorder not otherwise specified (n = 1).

5.2.1. Inclusion and Exclusion Criteria

The following inclusion and exclusion criteria were adopted in the current investigation:

Inclusion criteria

- The patient is currently under the care of an Angus or Dundee community mental health team (CMHT) and residing in the community
- They are aged 16-65 years
- They have a history of self-harm, that is, they have previously engaged in 'the deliberate, direct destruction or alteration of body tissue, without conscious suicidal intent but resulting in injury severe enough for tissue damage to occur' (Gratz, 2001)

Exclusion criteria

- The patient is an inpatient or has been an inpatient in the last 8 weeks
- They are in an acute psychotic state

- They are currently in a highly distressed state (as determined by case worker clinical opinion)
- The presence of a learning disability
- The presence of a significant head injury
- The presence of significant substance misuse problems

5.3. Measures

5.3.1. Semi-structured Interview

Demographic data was collected on the following information: Age; Gender; Postcode (for Socio-Economic Status); and Psychiatric Diagnosis. Deliberate self-harm was explored within the context of the proposed DSM-V criteria for a new category: NSSI disorder (Appendix 2).

5.3.2. Deliberate Self-Harm Inventory (Gratz, 2001)

The DSHI (Appendix 3) is a 17 item self-report questionnaire based on the measurement of deliberate self-harm behaviours without suicidal intent. The instrument allows measurement of self-harm on both a dichotomous ('yes' vs. 'no' to presence of self-harm) and continuous variable ('how many times have you done this?') in relation to 16 different types of self-harm (plus the option to select 'other'). The questionnaire also allows measurement of the duration of self-harm ('how many years have you been doing this?'), the age of onset ('how old were you when you first did this?'), the time since last self-harm episode ('when was the last time you did this?') and severity ('has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?').

The DSHI has been validated in a number of large scale non-clinical samples (Gratz, *et al.*, 2002; Gratz, 2006; Lundh *et al.*, 2007; Brown *et al.*, 2007). In a recent systematic review the DSHI was described as one of the only well-validated instruments being used in self-harm research (Fliege *et al.*, 2009). Psychometric properties of the instrument include high internal consistency, adequate construct,

convergent and discriminant validity, and adequate test-retest reliability (Gratz, 2001). In a sample of 2844 psychiatric outpatients with mood, anxiety and somatoform disorders 55% reported a history of self-harm (Klerk *et al.*, 2011).

Self-harm behaviours as measured by the DSHI have been associated with a number of factors including: insecure attachment, childhood separation, emotional neglect, sexual abuse, dissociation (Gratz *et al.*, 2002), emotional dysregulation (Gratz & Roemer, 2008) emotional inexpressivity, childhood maltreatment, low positive affect intensity and reactivity (Gratz, 2006), low self-esteem, low mindfulness (Lundh *et al.*, 2007), greater levels of negative emotion (Brown *et al.*, 2007), EMS (Castille *et al.*, 2007) and with suicidal behaviours and psychiatric symptomatology (Fliege *et al.*, 2006).

5.3.3. Schema Mode Inventory - shortened version (Lobbestael *et al.*, 2010)

The original version of the SMI (Young *et al.*, 2008) is a 270-item inventory developed to assess the presence of maladaptive and adaptive schema modes. Participants are required to rate on a six-point scale ('Never or almost never' to 'All of the time') how often they feel or believe a list of statements (e.g. 'I feel lost') which correspond to particular schema modes (e.g. Vulnerable Child mode). The mean score on each mode type can then be obtained, allowing schema mode profiles for each participant to be discerned. An overall 'maladaptive' and 'adaptive' mode strength can also be derived from the instrument.

Lobbestael *et al.* (2010) assessed the reliability and validity of a shortened version of the SMI (Appendix 4) by administering the questionnaire along with a battery of additional measures assessing a range of beliefs, emotions and behaviours (see Lobbestael *et al.*, 2010 for details). Of 863 participants who took part in the study, 236 participants had a diagnosis of an Axis II disorder, 136 had an Axis I disorder and 319 were non-patient controls. Test-retest reliability was measured by re-administering the SMI to 50 participants four weeks after baseline.

Factor analysis revealed a 14-factor model (CFI = .98) with 118 items. For seven subscales (namely, Angry Child, Enraged Child, Happy Child, Self-Aggrandiser,

Punitive Parent, Demanding Parent, and Healthy Adult) 10 items were found to uniquely load on their hypothesised scale, while only four to nine items uniquely loaded for Impulsive Child, Undisciplined Child, Compliant Surrenderer, Detached Protector, Detached Self-Soother, Bully and Attack, and Demanding Parent. As unique item loading could not be obtained for the Abandoned Child and Abused Child modes and for the -Controller mode, these subscales were excluded. However, given the theoretical similarity of the Abandoned and Abused Child modes, and following Young *et al.*'s (2003) recommendations, these were combined to create a Vulnerable Child mode for which 10 items uniquely loaded.

The psychometric properties of the shortened SMI include good internal consistencies ($\alpha = .79$ to $\alpha = .96$) and adequate item loadings (all above .40). Mean item loadings per subscale also varied between .53 and .68. Positive intercorrelations were noted for the maladaptive and adaptive modes and test-retest reliabilities of between .65 and .92 were reported ($p < .01$). Moderate construct validity, discriminant and convergent validity were also obtained.

In a large scale investigation Lobbestael *et al.* (2008) used the SMI to examine the relationship between schema modes and personality disorder pathology. 489 participants took part in this research, 240 of whom had an Axis II disorder, 127 with Axis I disorder, 23 patients who were neither Axis I nor II and 99 non-patient controls. The authors found particular patterns between schema modes and personality pathology consistent with Young *et al.*'s (2003) theoretical assumptions (see Saldias *et al.*, in prep for a systematic review). Dysfunctional schema modes have been associated with childhood abuse (Lobbestael *et al.*, 2005; Johnston *et al.*, 2009) and with dissociation in borderline personality disorder (Johnston *et al.*, 2009).

5.3.4. Parental Bonding Inventory - shortened version (Pedersen, 1994)

The original version of the PBI is a 50 item self-report measure in which participants report the parental rearing styles they experienced in the first 16 years of life (Parker *et al.*, 1979). The rearing styles examined include the amount of perceived 'care' from the parent as well as the experience of 'control' (i.e. overprotection). In addition to

generating care and control scores for mothers and fathers, parents can be ‘assigned’ to one of four quadrants: ‘affectionate constraint’ (high care and high control); ‘affectionless control’ (low care and high control); ‘optimal parenting’ (high care and low control); and ‘neglectful parenting’ (low care and low control). Most of the previous literature using the PBI has preferred the dimensional method.

The shortened PBI (Appendix 5) is a 20 item version of this questionnaire developed by Pedersen (1994). There are 10 item questions, including 5 ‘care’ and 5 ‘control’ items, replicated in relation to maternal and to paternal parenting. Participants are required to rate on a four point scale (‘very like’ to ‘very unlike’) the extent to which statements about paternal rearing style are relevant to the way their mother (10 items) and father (10 items) responded to them as children. Scores for each item range from 0 to 3, with total parental scores for each dimension ranging from 0-30, with higher scores indicative of greater levels of care or control.

Parker *et al.* (1979) demonstrated that the PBI has good internal consistency and test re-test reliability, has satisfactory construct and convergent validity and is independent of mood effects. The PBI is a widely used instrument which has previously been applied in a number of clinical populations including adults with bipolar affective disorder (Joyce, 1984), suicidal adolescents (Freudenstein *et al.*, 2011), eating disorders (Turner *et al.*, 2005) and anxiety (Pedersen, 1994). In a large scale epidemiological study low maternal and paternal care was associated with suicidality (Heider *et al.*, 2007) and there is evidence to suggest that perceived parental bonding is associated with risk of repetition of suicidal behaviours (Dale *et al.*, 2010) and with deliberate self-harm by skin-cutting (Marchetto, 2010).

5.3.5. Perceived Stress Scale (Cohen *et al.*, 1983)

The 14-item version of the Perceived Stress Scale (PSS; Appendix 6) asks questions about a number of stress-related thoughts and feelings experienced over the previous month. With each statement the participant is asked to indicate how often they felt or thought a certain way according to a 4 point scale from ‘never’ to ‘very often’. A total PSS score is then derived. The PSS has adequate internal and test-retest reliability and

is correlated with a range of self-report and behavioural criteria according to the authors of the instrument (Cohen *et al.*, 1983).

The PSS has been used in a number of samples including occupational, clinical and non-clinical contexts. For instance, in a group attending a smoking-cessation programme, the PSS was shown to be a better predictor of outcome (e.g. depressive and physical symptomatology, social anxiety, and smoking-reduction maintenance) than life events (Cohen *et al.*, 1983). Higher levels of perceived stress have also been associated with deliberate self-harm in a sample of 361 psychiatric inpatients (Fliege *et al.*, 2006).

5.3.6. Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983)

The Hospital Anxiety and Depression Scale (HADS; Appendix 7) was initially developed to detect anxiety and depression in a non-psychiatric population. There are 14 items in total comprising the subscales of anxiety (7 items) and depression (7 items). Participants are required to rate on a three point scale the extent to which they agree with statements that tap one of the two subscales. Three scales can be derived from the measure namely anxiety, depression and total. A score of less than 7 indicates 'normal or minimal' pathology; a score of 8-10 denotes 'moderate' pathology whilst a score of 11 or more describes 'severe' pathology. Physical symptoms of anxiety and depression are not included in the HADS in an attempt to isolate these disorders from those that are somatic in nature.

In a review of the literature Bjelland *et al.* (2002) noted 747 articles that made use of the HADS as part of their design. This review demonstrated good concurrent validity and reliable internal consistency as well as good discriminant validity in psychiatric and non-clinical samples. The HADS has also been applied in a number of studies examining people who self-harm including investigations of its use as a screen for psychiatric disorders in inpatients (Hamer *et al.*, 1991) and in a randomized control trial examining brief problem solving therapy (Townsend *et al.*, 2001). This instrument was included in the current research in order to obtain an estimate of the level of anxiety and depression in the sample.

5.4. Procedure

Participants were recruited from over an eight month period from CMHTs across the Angus and Dundee Community Health Partnerships (CHP) within NHS Tayside. The researcher attended a number of CMHT meetings across the region and presented the rationale for the current thesis project over several time points. Case workers were given information about the study and were asked to approach anyone on their caseloads that fit eligibility criteria.

The case worker provided a Participant Information Sheet (Appendix 8) and Consent Form (Appendix 9) to appropriate potential participants. Participants were not required to make a decision about their participation at this stage but were asked if they would be willing to be contacted by the researcher to discuss the study. The participant then agreed for their contact details to be passed on to the researcher or they declined to be contacted about the study and were not asked again to participate.

Following telephone arrangement between the researcher and the participant a testing location and time was chosen. Testing took place in a local CMHT base, GP surgery or health centre and following substantial amendment to the protocol participants were given the opportunity to complete the research within their own home. Upon meeting, consent was taken by the researcher and the measures were completed. The average duration of participation was 30-40 minutes. The researcher was present at all times during testing and answered any questions that arose during this time period. At the end of the testing session the participant was thoroughly debriefed verbally and provided with a Debrief Sheet (Appendix 10). The debrief procedure proved successful as no adverse events or harm arose from the research.

5.5. Ethical Considerations

5.5.1. Ethical Approval

Ethical permission was sought from The East of Scotland Research Ethics Service (EoSRES), the Tayside Medical Sciences Centre (TASC) Research and Development (R&D) Office and the Clinical Psychology Ethics Committee at the University of

Edinburgh. Favourable opinion for the project to proceed was obtained from the University of Edinburgh on 10th March 2011. Provisional permission was received from EoSRES on 29th June 2011 with full permission being received on 5th August 2011 (Appendix 11). The TASC R&D Office gave permission for the project to proceed on 17th August 2011 (Appendix 12). On 28th February 2012 ethical permission was received from EoSRES in relation to a substantial amendment that was submitted to the committee (Appendix 13). This amendment was for the purposes of offering participants the opportunity to be tested at home. Approval of this amendment was supported by the TASC R&D Office (Appendix 14) and the Clinical Psychology Ethics Committee at the University of Edinburgh.

The study was insured under the Clinical Trials Liability insurance policy held by the University of Edinburgh.

5.5.2. Identified Risks to the Participant

Although the risk was considered minimal procedures were put in place to pre-empt any distress that might arise from study participation. This procedure included the following: 1) prior to testing participants were provided with a thorough Participant Information Sheet which noted potential risks; 2) following testing participants were given a Debrief Sheet with information about who to contact in the case of an emergency and information about available sources of support; 3) during testing the researcher was present throughout; and 4) testing took place within a setting that was familiar to and chosen by the participant.

If the above strategies were unsuccessful in preventing participant distress the following three tiered strategy took place: 1) in the first instance, the researcher as a Trainee Clinical Psychologist used clinical skills to reduce patient distress; 2) in the second instance, the researcher had the option to contact a nominated Clinical Psychologist for advice and input; 3) Finally, if further assistance was needed the researcher was able to contact an on-duty CMHT member. No strategy beyond step 1 was required during the testing phase.

5.5.3 Identified Risks to the Researcher

The researcher had regular supervision for both academic and clinical support. As all participants were known to the CMHTs, any risk issues were highlighted to the researcher in advance of testing. Home visits were conducted according to standardised CMHT health and safety procedures regarding risk assessment in the community.

5.5.4. Informed Consent and Confidentiality

Information was clearly stated on accessible and comprehensive Participant Information and Consent Forms and the participant was given ample opportunity to discuss any queries that they had with the researcher. Individuals were initially approached by their CMHT worker to whom they could also address questions. Those approached were informed that their participation or non-participation would have no adverse effect on the care they received from the CMHT. Participants were given at least 24 hours to consider their consent and only those who signed a declaration of their consent took part in the study. Participants were informed that they could withdraw from the study at any time and without having to give a reason for withdrawal.

5.5.5. Data Storage

No person identifiable information appeared on the questionnaires. The questionnaires and consent forms were kept separately in a locked drawer in a locked room of an NHS building and only the researcher was aware of the encryption linking individuals to data sets. Anonymous data was stored on an NHS password protected computer and hard data in a locked NHS filing cabinet for a maximum of 5 years in accordance with research guidelines. Access was limited to the research team and responsibility for the data held by the researcher.

5.5.6. Identified Risks to Completion of the Project

The main potential risk to the study was identified as the risk of not achieving adequate power for statistical analysis. This risk was managed by considering potential factors that may disrupt or delay recruitment and addressing these prior to commencement of the study. These factors are outlined below.

Availability of the Sample

Deliberate self-harm is relatively common in outpatient psychiatric samples with prevalence estimates at approximately 55% (Klerk *et al.*, 2011). Discussions with Team Managers for the CMHTs indicated that these prevalence rates were similar to their own patient samples. Given these observations and the fact that recruitment took place across seven separate CMHTs over an eight month period, the sample was deemed to be available.

Reliance on Team Members to Identify Participants

There is always an element of risk when researchers are required to rely on other individuals to obtain access to their sample. This risk was reduced by liaising with pivotal individuals in each team and conveying the long-term benefits of research in the area of self-harm. Many of the Team Managers were positive about the research due to the fact that for many team members patients who self-harm require extra input and risk management. Solid links were also built by the researcher by attending local team meetings wherever possible and by sending frequent study reminders. The teams were regularly updated on their recruitment progress and dissemination of the study results was offered to all participating CMHTs.

Engaging Individuals Who May Have Difficulties with Trust

The Team Managers highlighted that many of the patients they see with self-harm histories have difficulties with trust and therefore may be reluctant to take part. To help ease this anxiety it was agreed that any participants who wished to meet with the researcher prior to taking part were free to do so. Choice regarding location and time

of testing was also given to all participants to ensure a sense of safety and a degree of control. Nevertheless, there is also a wealth of evidence that people with a history of self-harm do take part in research (see Klonsky, 2007 for a review).

CHAPTER 6: EMPIRICAL STUDY JOURNAL ARTICLE

The Mediatory Role of Maladaptive Schema Modes between Parental Care and Deliberate Self-Harm

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THE MEDIATORY ROLE OF SCHEMA MODES BETWEEN PARENTAL CARE
AND DELIBERATE SELF-HARM

This article was written in accordance with *Cognitive Behaviour Therapy* author guidelines (Appendix 1)

ABSTRACT

Deliberate self-harm is being increasingly recognised as a behaviour with significant clinical importance. Yet, there remains uncertainty regarding which forms of psychological therapy are most effective for its treatment. Schema Therapy is a unified approach for the treatment of individuals with complex and chronic psychological conditions. The present study aimed to explore the Schema Therapy mode model and its association with deliberate self-harm. 70 psychiatric outpatients with a history of deliberate self-harm completed the Deliberate Self-Harm Inventory, Schema Mode Inventory, Parental Bonding Inventory and Perceived Stress Scale. Results revealed that maladaptive schema modes were significantly associated with low parental care and high perceived stress as well as an earlier age of onset, longer duration and higher number of methods of self-harm. Maladaptive schema modes significantly mediated the relationship between parental care and age of onset and between parental care and duration of deliberate self-harm. The Punitive Parent and Angry Child modes were also significant mediators. The clinical implications of this research are discussed.

Key words: Schema Therapy, Self-Mutilation, Self-Injury, Parental Bonding

INTRODUCTION

Deliberate self-harm can be defined as ‘the deliberate, direct destruction or alteration of body tissue, without conscious suicidal intent but resulting in injury severe enough for tissue damage to occur’ (Gratz, 2001). This constitutes a collection of behaviours of which skin-cutting is the most common (Hawton, Rodham, Evans & Weatherall, 2002; Horrocks, Price, House & Owens, 2003). The estimated rate of self-harm in Great Britain is between 4.6% and 6.6% (Meltzer, Lader, Corbin, Singleton, Jenkins et al., 2002) although this is likely to be an under-estimation since many individuals who self-harm never present to medical services (Hawton et al., 2002). Self-harm has been reported as most common in adolescence and young adulthood (Meltzer et al., 2002) with 13.8% of 15-16 year olds reporting a history of self-harm (O’Connor, Rasmussen, Miles & Hawton, 2009) while only 5% of reported episodes of self-harm are by people over 65 (Draper, 1996). Deliberate self-harm presentations in health-care are more commonly seen in women (Schmidtke, Bille-Brahe, DeLeo, Kerkhof, Bjerke, Crepet et al., 1996) although there is some evidence to suggest that it may be as common in men as in women (Gratz, 2001; Klonsky, Oltmanns & Turkeimer, 2003).

A number of psychiatric diagnoses have been associated with deliberate self-harm. The most common is borderline personality disorder (BPD) with approximately 80% of individuals with this diagnosis engaging in self-harm behaviour (Shearer, Peter, Quaytman & Wadman, 1988). Yet it is clear that deliberate self-harm is a transdiagnostic phenomenon with concurrent diagnoses including mood disorders, anxiety disorders, eating disorders, dissociative disorders, disruptive behaviour disorders, psychotic disorders, substance misuse disorders and other personality disorder pathology (e.g. Farber, 1997; Guertin, Llyod-Richardson, Spirito, Donaldson & Boergers, 2001; Meltzer et al., 2002).

Deliberate self-harm is also associated with a number of psychological characteristics. This includes the tendency to experience negative emotions as more intense, (Gratz, 2006) difficulties expressing emotions (Gratz, 2006; Pavo & McCulloch, 2004), somatic complaints (Bruner, Parzer, Haffner, Steen, Roos et al., 2007), anxiousness (Brown & Williams, 2007), low mood (Fliege, Kocalevent, Walter, Beck, Gratz et al.,

2006), aggressiveness (Brown & Williams, 2007), impulsivity (Herpetz, Sass & Favazza, 1997) dissociation/derealisation (Zlotnick, Mattia & Zimmerman, 1999), low self-esteem (Boudewyn & Liem, 1995), self-blame (Herpetz, Sass & Favazza, 1997), hopelessness (Milnes, Owens & Blenkinson, 2002), low self-efficacy (Fliege, Kocalevent, Rose, Becker & Walter, 2004), recent critical life events (Portzkey, de Wilde & van Heeringen, 2008), perceived stress (Fliege, Kocalevent, Walter, Beck, Gratz et al., 2006) and lack of coping skills (Brown & Williams, 2007).

A number of adverse childhood experiences have been associated with deliberate self-harm. In a systematic review of the literature Fliege, Lee, Grimm and Klapp (2009) reported a number of significant factors including: parental psychological problems, parental separation, early separation from the parent, emotional neglect, emotional abuse, physical abuse and sexual abuse. Although childhood abuse is one of the most commonly cited risk factors for deliberate self-harm, there is evidence to suggest that the attachment relationship between parent and child also has important risk implications for later psychopathology (Gratz, 2003).

Preliminary evidence suggests that insecure parental attachment may be independently related to self-harm behaviour in female college students (Gratz, Conrad & Roemer, 2002). Particular parental rearing styles have also been found to correlate with suicidal behaviours, with low parental care being significantly associated with suicidality (Heider, Bernert, Matschinger, Haro, Alonso et al., 2007) and risk of repetition of suicidal behaviour (Dale, Power, Kane, Stewart & Murray, 2010). Self-harm through skin-cutting has also been associated with maternal and paternal overprotection and with low maternal care (Marchetto, 2010).

Young (1990) hypothesised that adverse early childhood experiences are implicated in the development of core psychological themes he termed 'early maladaptive schemas' (EMS). According to Young EMS develop when core emotional needs go unmet in childhood. EMS are comprised of emotions, memories, cognitions and bodily sensations in response to which maladaptive behaviours develop. Young, Klosko and Weishaar (2003) described 18 EMS that can be grouped into 'schema domains' which correspond to five broad categories of unmet emotional needs (Young et al., 2003).

Young (1990) argued that adult psychopathology can be traced back to EMS that develop from unmet childhood needs. EMS and their domains have been associated with a number of conditions including personality disorders (Carr & Francis, 2010), post-traumatic stress disorder (Cockram, Drummond & Lee, 2010), substance misuse (Ball & Cecero, 2001), panic disorder (Hedley, Hoffart & Sexton, 2001), eating disorder (Deas, Power, Collin, Yellowlees & Grierson, 2011), depression (Lumley & Harkness, 2007) and suicidal behaviours (Dale et al., 2010). There is also evidence to suggest that particular EMS differentiate individuals who self-harm from those who do not (Castille, Prout, Marczyck, Shmidheiser, Yoder et al., 2007).

EMS are stable trait-like representations which help to explain how individuals present over time. However, this concept in itself does not fully explain moment-to-moment presentations particularly in reference to BPD in which emotional states can rapidly shift from one extreme to another. Young et al. (2003) developed the 'schema mode' concept to explain such clinical observations, allowing a means to better understand current emotional states. Schema modes are momentary emotional states that encompass EMS and coping responses (Young et al., 2003). Particular schema modes can arise suddenly in response to triggering circumstances to which we are oversensitive and at any given time a particular mode will be predominant while the rest lie dormant (Young et al., 2003). Individuals with psychological problems, particularly those which are categorical in nature, may experience more extreme schema modes with greater mode shifting or 'flipping' and less integration between modes.

14 schema modes have been described, some of which are adaptive and others maladaptive in nature (Young et al., 2003; Young, Arntz, Atkinson, Lobbestael, Weisheer et al., 2008). These modes can be grouped into four general categories: 1) Child Modes (comprised of the Vulnerable Child, Angry Child, Enraged Child, Impulsive Child and Happy Child modes); 2) Maladaptive Coping Modes (containing the Detached Protector, Detached Self-Soother, Compliant Surrenderer, Bully and Attack and Self-Aggrandiser); 3) Maladaptive Parent Modes (that is, the Punitive Parent and Demanding Parent modes); and; 4) the Healthy Adult Mode.

Maladaptive schema modes have been associated with a number of different personality disorder pathologies including BPD (Lobbestael, van Vreeswijk & Arntz, 2008) which is said to be characterised by the Detached Protector, Punitive Parent, Angry/Impulsive Child and Vulnerable Child modes and by a weak Healthy Adult mode (Young et al., 2003). This supposition has been supported by evidence in the literature (see Saldias, Gillanders & Power, in prep for a review). Schema modes may also mediate the relationship between childhood abuse and dissociation in BPD (Johnston, Dorahy, Courtney, Bayles & O’Kane, 2009). To the author’s knowledge no previous research has examined schema modes in a deliberate self-harm population.

The present research aimed to examine for the first time the relationship between schema modes and deliberate self-harm in a sample of psychiatric outpatients. The association between these variables and experiences of parental bonding in childhood and current levels of perceived stress were also explored. It was hypothesised that maladaptive schema modes, parental bonding and perceived stress would predict duration, age of onset and the total number of methods of deliberate self-harm, and that maladaptive schema modes would mediate the relationship between parental bonding and deliberate self-harm in these domains. The mediating role of individual schema modes was also explored.

METHOD

Participants

70 participants (57 female; 13 male) with a history of self-harm took part in the study. All were outpatients receiving care from a community mental health team (CMHT). The mean age was 35.03 years (age range 16-65 years) with a standard deviation of 10.17 years. Primary psychiatric diagnoses in the sample included: BPD (n = 20), bipolar affective disorder (n = 13), depressive disorder (n = 13), mixed anxiety and depressive disorder (n = 6), post-traumatic stress disorder (n = 6), schizoaffective disorder (n = 2), avoidant personality disorder (n = 2), generalised anxiety disorder (n = 1), social phobia (n = 1), panic disorder (n = 1), schizophrenia (n = 1), dissociative identity disorder (n = 1), psychotic disorder not otherwise specified (n = 1), avoidant and dependent personality disorder (n = 1) and paranoid personality disorder (n = 1).

A further 15 individuals were approached but chose not to take part, indicating an 82% uptake.

Measures

Deliberate Self-Harm Inventory (DSHI). The DSHI (Gratz, 2001) is a 17 item self-report questionnaire based on the measurement of intentional self-harm behaviours without suicidal intent. The instrument asks the respondent to rate on both a dichotomous ('yes' vs. 'no') and continuous ('how many times have you done this?') variable how often an individual has engaged in 16 different types of self-harm. The last item allows the individual to add a method not listed in the questionnaire. Further questions on the DSHI relate to chronicity (i.e. duration) of self-harm, the age of onset, the time since last self-harm episode and severity (i.e. need for hospital treatment). The DSHI has been validated in a number of large scale non-clinical (Gratz et al., 2002; Gratz, 2006; Lundh, Karim & Quilisch, 2007; Brown, Williams & Collins, 2007) and clinical (de Klerk, van Noorden, van Giezen, Spinhoven, den Hollander-Gijsman et al., 2011) samples. Psychometric properties of the instrument include high internal consistency, adequate construct, convergent and discriminant validity, and adequate test-retest reliability (Gratz, 2001).

Schema Mode Inventory (SMI). The SMI used in the current study is a 118-item shortened version developed by Lobbestael, van Vreeswijk, Spinhoven, Schouten and Arntz (2010). Participants are required to rate on a six-point scale ('Never or almost never' to 'All of the time') how often they feel or believe a list of statements (e.g. 'I feel lost') which correspond to particular schema modes (e.g. Vulnerable Child mode). The mean score on each mode type can then be obtained, allowing schema mode profiles for each participant to be discerned. An overall 'maladaptive' and 'adaptive' mode strength can also be derived from the instrument. The shortened SMI has been validated in a large scale study (n = 863) of clinical (n = 236 Axis II disorder; n = 136 Axis I disorder) and non-clinical (n = 319) participants. Factor analysis revealed a 14-factor model (CFI = .98). The psychometric properties of the shortened SMI include good internal consistencies ($\alpha = .79$ to $\alpha = .96$) and adequate item loadings (all above .40). Mean item loadings per subscale also varied between

.53 and .68. Positive intercorrelations were noted for the maladaptive and adaptive modes and test-retest reliabilities of between .65 and .92 were reported ($p < .01$). Moderate construct validity, discriminant and convergent validity were also obtained. Particular schema modes have been associated with personality disorder pathology (Lobbestael, van Vreeswijk & Arntz, 2008) as well as childhood abuse (Lobbestael, Arntz & Sieswerda, 2005) and dissociation (Johnston et al., 2009) in BPD.

Parental Bonding Instrument (PBI). The shortened PBI (Pedersen, 1994) is a 20 item version used in the current study. It is a self-report measure in which participants report the parental rearing styles they experienced in the first 16 years of life. These rearing styles then allow measurement of the amount of perceived 'care' (5 items) and 'control' (5 items) experienced by the participant. Participants are required to rate on a four point scale ('very like' to 'very unlike') the extent to which statements about paternal rearing style are relevant to the way their mother (10 items) and father (10 items) responded to them as children. Scores for each item range from 0 to 3, with total parental scores for each dimension ranging from 0-30, with higher scores indicative of greater levels of care or control. The psychometric properties of the PBI include good internal consistency and test re-test reliability, satisfactory construct and convergent validity (Parker, Tupling & Brown, 1979). In a large scale epidemiological study low maternal and paternal care was associated with suicidality (Heider et al., 2007). Dale et al. (2010) also reported significant associations between perceived parental bonding and risk of repetition of suicidal behaviour. Self-harm through skin-cutting has also been associated with significantly higher parental overprotection and significantly lower maternal care (Marchetto, 2010).

Perceived Stress Scale (PSS). The 14-item version of the PSS (Cohen, Kamarck & Mermelstein, 1983) asks questions about a number of stress-related thoughts and feelings experienced over the previous month. With each statement the participant is asked to indicate how often they felt or thought a certain way according to a 4 point scale from 'never' to 'very often'. A total PSS score is then derived. The PSS has adequate internal and test-retest reliability and is correlated with a range of self-report and behavioural criteria (Cohen et al., 1983). The PSS has been used in a number of samples including occupational, clinical and non-clinical contexts. For instance, in a group attending a smoking-cessation programme, the PSS was shown to be a better

predictor of outcome (e.g. depressive and physical symptomatology, social anxiety, and smoking-reduction maintenance) than life events (Cohen et al., 1983).

Procedure

This study was conducted following ethical approval from The East of Scotland Research Ethics Service, The Tayside Medical Sciences Centre Research and Development Office and the Clinical Psychology Ethics Committee at the University of Edinburgh. Participants were obtained by asking staff members of seven CMHTs to approach patients with a history of self-harm. Potential participants were provided with an information sheet about the study and asked if they would be happy to be contacted by the researcher who then contacted them by telephone. The participant and researcher met on one occasion to complete the battery of measures listed. Participants were thoroughly debriefed following completion of the study. No participants found the study unduly upsetting.

RESULTS

Nature and Extent of Deliberate Self-Harm

All 70 participants reported a history of deliberate self-harm. Age of onset of deliberate self-harm ranged from 3-32 years of age (mean = 15.87; SD = 8.08), duration from 1-45 years (mean = 17.46; SD = 11.21) and the time since last episode of self-harm ranged from 1 to 400 days (mean = 132.53; SD = 158.35). 59% of the sample (n = 37) reported an episode of deliberate self-harm within the last month, 72.9% (n = 51) within the last six months and 82.9% (n = 58) within the last year. 61.4% (n = 43) of participants reported that they had harmed themselves severely enough to require hospitalisation or medical treatment.

The most frequently used method of deliberate self-harm reported by participants was cutting (95.7%), followed by severe scratching (67.1%), head-banging (55.7%), preventing wounds from healing (54.3%), sticking sharp objects into the skin (52.9%), burning with a lighter or match (42.9%), punching self (40%), rubbing glass into the skin (31.4%), burning with a cigarette (25.7%), carving words into the skin

(24.3%), self-biting (22.9%), using cleaning products such as bleach on the skin (20%), carving pictures in the skin (17.1%) and rubbing sandpaper on skin (12.9%). A further 40% reported 'other forms of self-harm' on the DSHI. No significant differences were noted on any items between male and female participants.

The DSHI offers a method of measuring deliberate self-harm on a number of dimensions including: frequency (i.e. the total number of episodes of self-harm), multiplicity (i.e. the total number of methods of self-harm), severity (i.e. whether hospitalisation has ever been required to treat self-harm), chronicity (i.e. the duration of self-harm), onset (i.e. the age of onset of self-harm) and last episode (i.e. time since last episode of self-harm). The frequency measure was not chosen due to significant difficulties expressed by participants at the time of testing regarding their memory for the number of episodes they had engaged in. Therefore, this variable was deemed inaccurate. Hospitalisation was not chosen as an outcome variable because a number of participants expressed that although they did not have their wounds tended to by a medical professional, in hindsight the wounds were severe enough to require hospital treatment. This measure was therefore deemed inaccurate. Finally, the time since last episode of self-harm was not chosen as an outcome due to it being less relevant to the central aims of the study, which concentrated more on causal factors and onset of self-harm. This variable was also likely to be affected by psychological intervention which was not measured in the study. Therefore, the variables chosen as outcome measures in the current study related to the duration, age of onset and number of methods of deliberate self-harm.

Parental Bonding

In order to determine whether maternal and paternal dimensions should be combined on the care and control scales of the PBI two paired samples t-tests were undertaken. On the care dimension, no significant differences were noted between maternal (mean = 5.11; SD = 3.96) and paternal (mean = 4.56; SD = 4.11) care ($t(69) = .93$; $p = ns$) domains. However, relative to paternal control (mean = 5.53; SD = 3.05), scores of maternal control (mean = 7.06; SD = 3.24) were significantly higher ($t(69) = 3.68$; $p < .01$). Therefore, correlations were undertaken with maternal and paternal care as an

amalgamated ‘total parental care’ dimension and maternal and paternal control as separate dimensions.

Correlational Analysis

For the correlational analysis a conservative p-value of .01 was chosen in order to manage the type 1 error rate related to the multiple reported correlations. This method was chosen over the Bonferroni method which is more likely to increase the type 2 error rate. A number of significant associations were noted between deliberate self-harm, parental bonding, perceived stress and maladaptive schema mode variables (see Table 1). Bivariate correlations were used throughout aside from the duration of self-harm variable for which a partial correlational analysis was used with age entered as a covariate.

Table 1. Correlation matrix to show correlation coefficients between the main variables

Variable	1	2	3	4	5	6	7
1. DSHI (Age of Onset)	–						
2. DSHI (No. of Methods)	-.51*	–					
3. DSHI (Duration)	-.78*	.56*	–				
4. PBI Total Parental Care	.37*	-.19	-.38*	–			
5. PBI Maternal Control	-.08	.01	.14	-.12	–		
6. PBI Paternal Control	.11	-.12	-.05	.27	.22	–	
7. PSS	-.32*	.42*	.41*	-.27*	.03	.05	–
8. SMI Maladaptive	-.58*	.47*	.51*	-.35*	.13	-.06	.54*

* p <.01

As can be seen in Table 1 correlational analysis revealed a number of interesting associations. Of particular note is the finding that a longer duration of deliberate self-harm was associated with lower parental care, higher perceived stress and heightened maladaptive schema modes. An earlier age of onset of deliberate self-harm was also associated with lower parental care, with increased perceived stress and heightened maladaptive schema modes. In addition, a higher number of reported methods of deliberate self-harm was associated with higher perceived stress and greater maladaptive schema modes. However, no significant relationship was noted between maternal and paternal control with any other variable.

Further correlational analysis was undertaken in order to explore whether specific maladaptive schema modes were associated with deliberate self-harm, perceived stress and parental care (Table 2).

Table 2. Correlations between individual schema modes and related variables

Maladaptive Schema Mode	DSHI Duration	DSHI Age of Onset	DSHI No. of Methods	PBI Total Care	PSS
Vulnerable Child	.36*	-.41*	.36*	-.37*	.57*
Angry Child	.40*	-.50*	.27	-.33*	.27
Enraged Child	.25	-.30	.33*	-.05	.13
Impulsive Child	.35*	-.44*	.44*	-.12	.26
Undisciplined Child	.22	-.31*	.25	-.15	.37*
Compliant Surrenderer	.20	-.24	.19	-.14	.36*
Detached Protector	.09	-.17	.23	-.37*	.34*
Detached Self-Soother	.30	-.17	.27	-.09	.25
Self-Aggrandiser	.24	-.38*	.10	-.07	-.05
Bully and Attack	.22	-.36*	.16	-.14	-.00
Punitive Parent	.50*	-.42*	.47*	-.32*	.59
Demanding Parent	.20	-.29	.18	-.22	.40*

* $p < .01$

This analysis revealed a number of significant associations between individual schema modes and deliberate self-harm variables. Specifically, a longer duration of self-harm was associated with heightened Vulnerable Child, Angry Child, Impulsive Child and Punitive Parent modes. An earlier age of onset of deliberate self-harm was associated with heightened Vulnerable Child, Angry Child, Impulsive Child, Undisciplined Child, Self-Aggrandiser, Bully and Attack and Punitive Parent modes. Finally, a higher number of methods of self-harm was associated with greater Vulnerable Child, Enraged Child, Impulsive Child and Punitive Parent modes.

Mediation Analysis

To examine any mediating effects of maladaptive schema modes on the relationship between parental care and deliberate self-harm variables (duration, age of onset, number of methods), simple mediation analysis was conducted. According to Baron and Kenny (1986) all variables in a mediation model must be intercorrelated. Significant intercorrelations were noted between duration of deliberate self-harm and parental care ($r = -.38$; $p < .01$) and maladaptive schema modes ($r = .51$; $p < .01$), and between the latter two variables ($r = -.35$; $p < .01$). Intercorrelations were also significant between age of onset of deliberate self-harm and parental care ($r = .37$; $p <$

.01) and maladaptive schema modes ($r = -.58$; $p < .01$). However, the number of methods of self-harm correlated with maladaptive schema modes ($r = .47$; $p < .01$) but not with parental care ($r = -.19$; $p = ns$). Therefore, the third model was not subjected to mediation.

The first analysis explored the mediatory effect of maladaptive schema modes between parental care and duration of deliberate self-harm. In this analysis age was entered as a covariate. In the mediation model the bootstrapped values of the 95% confidence interval that do not contain zero between their lower and upper limits are considered to be significant mediators (Preacher & Hayes, 2008). Simple mediation analysis of the bias corrected confidence interval (BC CI) at 95% indicated that after controlling for age maladaptive schema modes significantly mediated the relationship between parental care and duration of deliberate self-harm (lower BC CI = $-.21$; upper BC CI = $-.05$; $B = -.17$). The mediation model accounted for 46% of the amount of variance in duration of deliberate self-harm ($R^2 = .46$) where $F(3,66) = 18.43$ ($p < .01$), representing a medium effect size. This relationship is depicted in Figure 1 below.

The second mediation analysis explored the mediatory effect of maladaptive schema modes between parental care and age of onset of deliberate self-harm (see Figure 2). Simple mediation analysis of the bias corrected confidence interval (BC CI) at 95% indicated that maladaptive schema modes significantly mediated the relationship between parental care and age of onset of deliberate self-harm (lower BC CI = $.05$; upper BC CI = $.19$; $B = .11$). The mediation model accounted for 37% of the amount of variance in age of onset of self-harm ($R^2 = .37$) where $F(2,67) = 19.29$ ($p < .01$), representing a medium effect size.

A third analysis examined the mediating effect of individual schema modes between parental care and deliberate self-harm variables. Simple mediation analysis of the bias corrected confidence interval (BC CI) at 95% indicated that the Punitive Parent mode significantly mediated the relationship between parental care and duration of deliberate self-harm (lower BC CI = $-.17$; upper BC CI = $-.04$; $B = -.18$) with age as a covariate. The mediation model accounted for 46% of the amount of variance in

duration of deliberate self-harm ($R^2 = .46$) where $F(3,66) = 18.86$ ($p < .01$), representing a medium effect size. This relationship is presented in Figure 3 below.

Finally, multiple mediation analysis of the bias corrected confidence interval (BC CI) at 95% indicated that the relationship between parental care and age of onset of self-harm was significantly mediated by the Punitive Parent (lower BC CI = .01; upper BC CI = .10; $B = .10$) and Angry Child (lower BC CI = .02; upper BC CI = .15; $B = .10$) modes. The mediation model accounted for 35% of the amount of variance in age of onset of deliberate self-harm ($R^2 = .35$) where $F(3,66) = 11.73$ ($p < .01$), representing a medium effect size (see Figure 4).

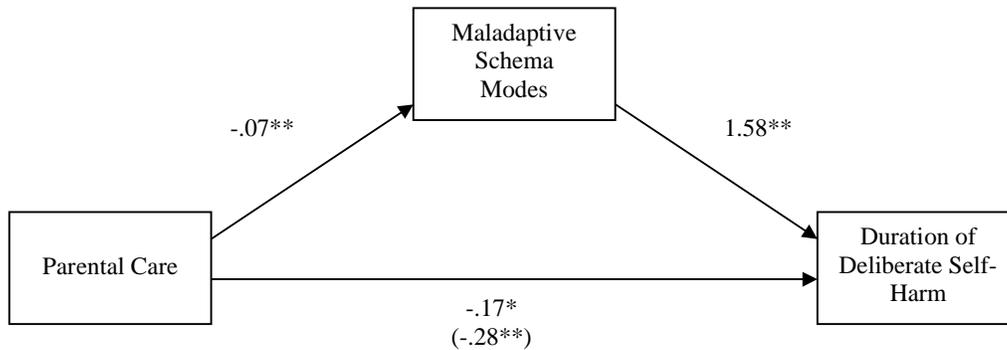


Figure 1. Mediation model of the pathway between parental care, maladaptive schema modes and duration of deliberate self-harm. Beta-coefficients and associated p-values (* is $p < .05$, ** is $p < .01$) are presented in the diagram. Data in parentheses are paths prior to the proposed mediators.

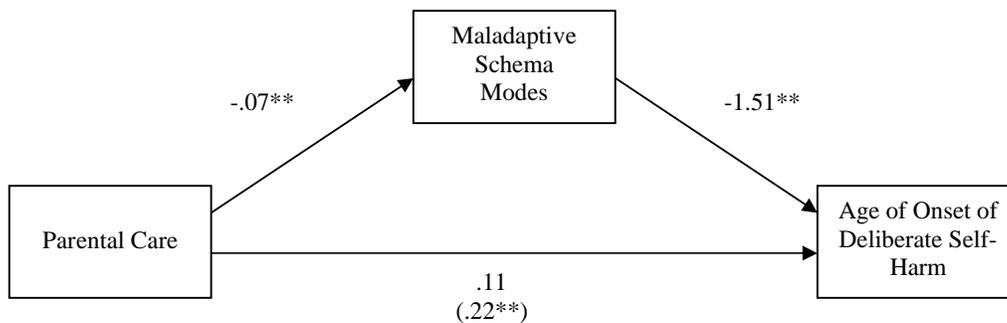


Figure 2. Mediation model of the pathway between parental bonding total care, maladaptive schema modes and age of onset of deliberate self-harm. Beta-coefficients and associated p-values (* is $p < .05$, ** is $p < .01$) are presented in the diagram. Data in parentheses are paths prior to the proposed mediators.

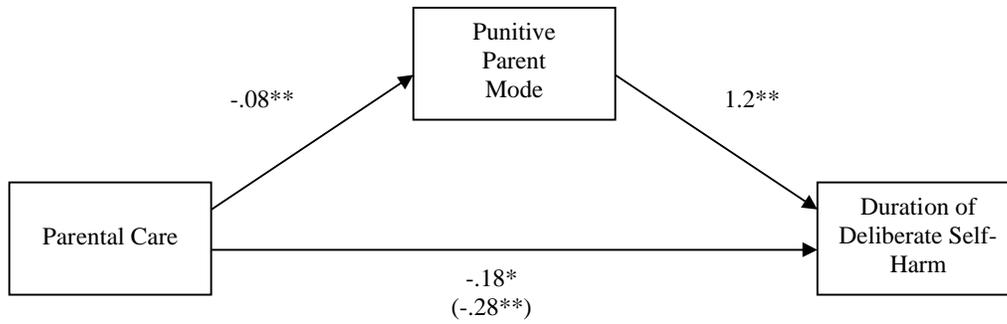


Figure 3. Mediation model of the pathway between parental bonding total care, Punitive Parent mode and duration of deliberate self-harm. Beta-coefficients and associated p-values (* is $p < .05$, ** is $p < .01$) are presented in the diagram. Data in parentheses are paths prior to the proposed mediators.

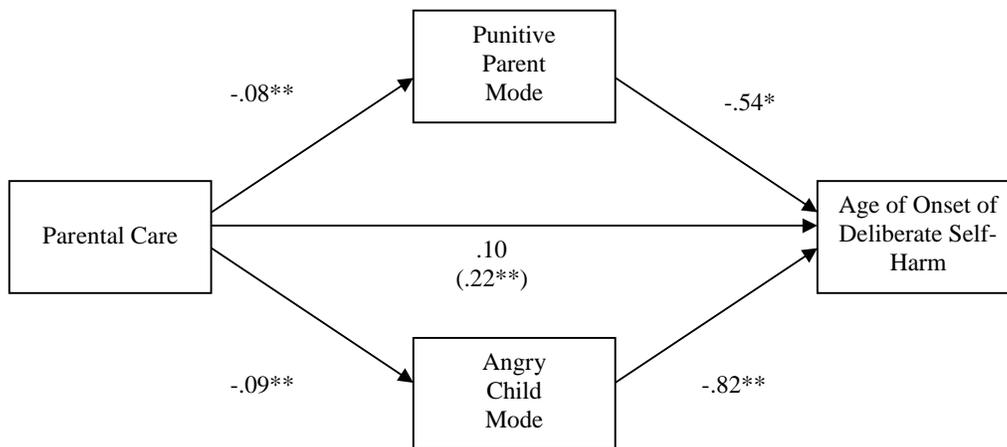


Figure 4. Mediation model of the pathway between parental bonding total care, Punitive Parent and Angry Child modes and age of onset of deliberate self-harm. Beta-coefficients and associated p-values (* is $p < .05$, ** is $p < .01$) are presented in the diagram. Data in parentheses are paths prior to the proposed mediators.

DISCUSSION

The results of this study provide empirical support for a number of theoretical assumptions in Schema Therapy (Young et al., 2003). Results indicated that there is a significant association between low parental care and heightened maladaptive schema modes as well as with a number of individual schema modes (namely, the Vulnerable Child, Angry Child, Detached Protector and Punitive Parent). This finding is consistent with Young's (1990) assertion that maladaptive schemas develop from adverse experiences in childhood, particularly in relation to attachment experiences

with early caregivers. Interestingly, while the association between maladaptive schema modes and parental care was noted to be significant at the .01 level, the maternal and paternal control dimensions showed no significant association with schema modes. This finding suggests that it is lack of parental care rather than over control that is particularly important in determining maladaptive schema mode development.

Although no previous research has explicitly examined the relationship between parental bonding and maladaptive schema modes, the above mentioned relationship between lack of parental care and maladaptive modes is consistent with findings for similar constructs. For instance, Orbach, Gilboa-Schechtman, Sheffer, Meged and Har-Even (2006) found that parental care was reported as significantly lower in a suicidal group than in comparison controls, but no significant differences were noted on parental control. Orbach (2007) hypothesised that lack of parental care in childhood is associated with feelings of rejection and abandonment, leading to insecure attachment styles and insufficient healthy coping mechanisms.

The total score on maladaptive schema modes was also found to significantly correlate with the number of methods, duration and with earlier age of onset of deliberate self-harm. A number of individual schema modes were also associated with deliberate self-harm variables, with the Vulnerable Child, Angry Child and Punitive Parent modes showing significant associations with all three dependent variables. This study is the first to demonstrate a relationship between maladaptive schema modes and deliberate self-harm.

In order to better understand the relationship between parental care, maladaptive schema modes and deliberate self-harm these variables were subjected to a series of mediation analyses. Maladaptive schema modes were found to mediate the relationship between parental care and duration of deliberate self-harm (Figure 1), highlighting the indirect association of early childhood experiences on self-harm in adulthood. Maladaptive schema modes also mediated the relationship between parental care and age of onset of deliberate self-harm (Figure 2), suggesting that people develop maladaptive schema modes in response to low parental care and that

this in turn leads to an early age of onset of deliberate self-harm, rather than low parental care leading directly to deliberate self-harm.

Following mediation analysis at the total maladaptive schema mode strength level, two individual schema modes were specifically found to play a significant role in the association between low parental care and self-harm. The Punitive Parent schema mode mediated the relationship between parental care and duration of deliberate self-harm (Figure 3) and between parental care and age of onset of self-harm (Figure 4). The Angry Child mode also mediated the relationship between parental care and duration of deliberate self-harm (Figure 4). These findings highlight the importance of specific schema modes in the relationship between early parenting experiences and deliberate self-harm.

That the Punitive Parent and Angry Child modes mediated the relationship between parental care and deliberate self-harm is also consistent with theories in the literature around the function of self-harm. In a sample of 243 participants who reported self-harm the majority of respondents believed that their self-harm was a means of expressing emotional pain and anger (Warm, Murray & Fox, 2003). Deliberate self-harm as a form of self-punishment has also been highlighted by a number of researchers (see Klonsky, 2007 for a review). The mediatory role of the Angry Child mode is also consistent with research indicating that those with a history of repeated self-harm have higher scores on trait anger than non-repeaters of self-harm (Hawton, Kingsbury, Steinhardt, James & Fagg, 1999) and the finding that anger is a reported risk factor for deliberate self-harm (Gratz, 2006).

The self-punishment model of self-harm suggests that self-harm is an expression of anger or denigration toward oneself. The Punitive Parent mode is also comprised of these self-punitive themes. In a review of the literature, Klonsky (2007) reported that the evidence for self-harm as self-punishment was strong. This finding is consistent with the assertion that individuals who have grown up in invalidating environments learn to punish or invalidate themselves (Linehan, 1993) which is again consistent with the low reported parental care in the sample.

The results of the present study suggest that under conditions of low parental care, maladaptive schema modes are strengthened, and that these lead to an earlier age of onset, longer duration and higher number of methods of deliberate self-harm. Furthermore, the specific themes of self-punishment and anger that embody the Angry Child and Punitive Parent modes are particularly salient in mediating this relationship between low parental care and self-harm. It may be that low parental care creates an environment where core emotional needs are unmet, leading to the development of maladaptive schema modes. It is noteworthy that the Angry Child mode was found to be a significant mediator between low parental care and deliberate self-harm as this mode has been described as emerging in response to conditions in which core emotional needs are not met and reacting with anger without consideration of consequences (Young et al., 2003). Lack of parental care may also be internalised in the form of the Punitive Parent mode which sees the self as not being worthy of care and therefore worthy of punishment, leading to an externalising of self-punishment in the form of self-harm.

The findings from the present study indicate that a schema mode approach may be helpful in individuals who self-harm as schema modes might be a treatment target that could mediate between historical variables and current behaviours. Particular attention toward the role of the Angry Child and Punitive Parent modes in regard to this behaviour may also be helpful. It also supports Young's (1990) assertion that Schema Therapy is a model that can be applied beyond the personality disorder diagnosis, to individuals with other chronic and complex problems.

Strengths of the study include the relatively large sample size which allowed sufficient statistical power to test mediation models. The study was also naturalistic in its decision to explore self-harm using a transdiagnostic approach. The research is also the first of its kind to find support for the relationship between parental bonding, maladaptive schema modes and deliberate self-harm, consistent with the Schema Therapy model. The sample chosen to take part in the study was selected from a Tier 3 service which provides support for individuals with severe and enduring mental health problems based within a CMHT. The results from this study can therefore be considered particularly clinically relevant and relevant to Schema Therapy which was developed for individuals with more complex presentations.

However, the chronic and complex nature of the presenting individuals in the sample may make generalisations to individuals with less severe presentations problematic. This issue may be particularly important given that deliberate self-harm is also present in a proportion of the general population (Meltzer et al., 2002). Previous research has also used frequency of deliberate self-harm as an outcome measure (e.g. Gratz et al., 2002) but this could not be obtained due to difficulties for participants to estimate the number of times they had engaged in self-harm. This can be explained by the fact that the duration of self-harm ranged from one to sixty years, which is in contrast to previous research where samples have generally reported self-harm on less than a dozen occasions (e.g. Gratz et al., 2002). There also remains an issue over the accuracy of self-report measures and whether bias was introduced by way of the selection method.

Future research would benefit from further exploration of how schema modes can be mapped in deliberate self-harm. It would be particularly interesting to delineate the schema modes experienced prior to, during and after deliberate self-harm. Future research could also examine schema mode differences between individuals who self-harm without suicidal intent and those who commit attempted suicide. An exploration of the relationship between schema modes, emotion dysregulation and deliberate self-harm would also be helpful. More generally, a clear gap in the literature relates to how schema modes present in populations other than working age adults. Indeed, Videler, van Royen and van Alphen (2012) has called for evidence for Schema Therapy in older adults and there is preliminary evidence in the literature to suggest that adolescents may benefit from a Schema Therapy approach (e.g. van Vlierberghe, Braet, Bosmans, Rosseel & Bogels, 2010).

To conclude, the results of the present study indicate that maladaptive schema modes provide a pathway to deliberate self-harm from low parental care. The results also suggest that the Angry Child and Punitive Parent modes may play a particularly important role in deliberate self-harm. These findings provide further support for the theoretical underpinnings of the Schema Therapy model and suggest the potential utility of this model in the treatment of deliberate self-harm.

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CHAPTER 7: EXTENDED RESULTS

7.1. Exploratory Data Analysis

Exploratory data analysis (prior to the hypothesis driven analysis) involved visual inspection of the data for outliers, central tendency and distribution. The subscales of all questionnaire measures were examined using box and whisker plots for the presence of significant outliers, a number of which were detected. The decision was made not to exclude outliers on the basis that this method was more likely to lead to decreased statistical power and an increase in the likelihood of type 2 errors. However, it was important not to retain outliers in the dataset as this may have led to distorted results, especially given that correlation and multiple regression methods are particularly sensitive to these effects (Field, 2001). Therefore, outliers were transformed by the Winsorization method which replaced all outliers with exact boundary values (see Dixon & Yuen, 1974 for a review).

7.2. Descriptive Statistics

Descriptive statistics for the main variables pre- and post- data truncation is available in Table 3. Summary data for additional variables can be found in Appendix 15.

Table 3. Summary of Descriptive Statistics for the Main Variables (Pre- and Post- Truncation)

Variable	Pre-truncation				Post-truncation			
	Min	Max	Mean	SD	Min	Max	Mean	SD
Age	17	65	35.03	10.17	17	65	35.03	10.17
HADS								
Anxiety	2	21	14.17	5.01	3	21	14.19	4.98
Depression	0	21	10.61	5.69	0	21	10.61	5.69
Total	2	41	24.79	9.47	2	41	24.79	9.47
PSS	5	40	28.81	7.42	5	40	28.81	7.42
PBI								
Total Care	0	30	9.67	6.34	0	25	9.60	6.14
Total Control	1	25	12.59	4.76	1	25	12.59	4.76
SMI								
Maladaptive Mode Strength	214	454	328.10	54.87	214	454	328.10	54.87
Adaptive Mode Strength	24	96	54.50	15.47	24	86	54.36	15.12
DSHI								
Age of onset (years)	3	44	16.31	9.10	3	32	15.87	8.08
Duration (years)	1	60	17.67	11.87	1	45	17.46	11.21
Time since last episode (days)	1	5110	345.77	804.24	1	400	132.53	158.35
Number of methods used	1	14	6.03	3.19	1	13	6.01	3.16

*HADS (Hospital Anxiety and Depression Scale); PSS (Perceived Stress Scale); PBI (Parental Bonding Inventory); SMI (Schema Mode Inventory); DSHI (Deliberate Self-Harm Inventory); SD (Standard Deviation)

Categorical descriptive statistics explored in the sample included: gender; psychiatric diagnoses; socio-economic status; and types of self-harm behaviour. Details of the gender proportions in the sample and psychiatric diagnoses are available in the method section. The Scottish Index of Multiple Deprivation (SIMD) decline point scale was used to determine socio-economic status (SES). This scale defined SES according to postcode along a 10 point scale, with 1 indicating greatest deprivation in Scottish communities (Scottish Government, 2009). 60% of the sample lived in the five most deprived SIMD areas (see Figure 1 below for a full breakdown of this distribution).

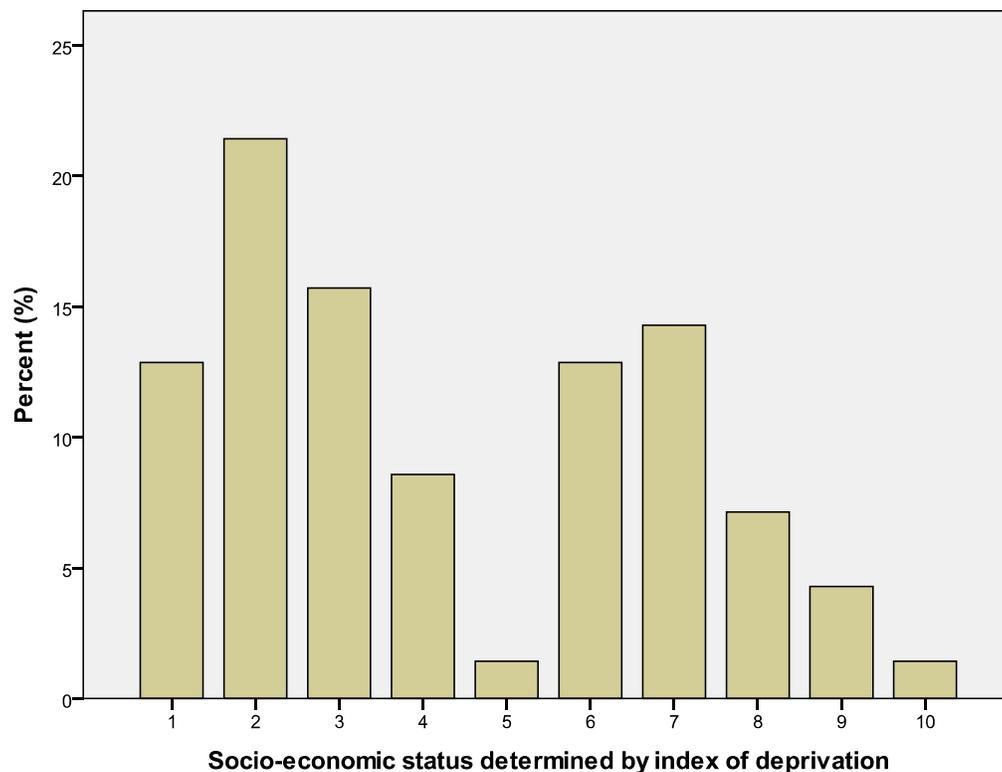


Figure 1. Percentage of participants living in each SIMD (Scottish Index of Multiple Deprivation) level

The frequency of types of self-harm behaviours reported in the sample is presented in Table 4 below. Other forms of reported self-harm included: taking too much medication (n = 13); ligature (n = 3); burning with boiling water (n = 3); hair pulling (n = 2); burning with petrol and lighter (n = 1); scrubbing skin with metal scourer (n = 1); pulling teeth out with pliers (n = 1); stabbing gums with knives (n = 1); ingesting rat poison (n = 1); ingesting glass (n = 1); and ingesting paper (n = 1). 61.4% of the sample (n = 43) reported that their self-harm had required hospitalisation or injury

severe enough to require hospital treatment. 61.4% of the sample (n = 43) met criteria for non-suicidal self-injury (NSSI) disorder and the remaining participants were sub-threshold for this diagnosis.

Table 4. Frequency of Individuals Endorsing DSHI items (n = 70)

Self-Harm Behaviour	Frequency	%
Cutting	67	95.7
Burning with Cigarette	18	25.7
Burning with Lighter or Match	30	42.9
Carving Words into Skin	17	24.3
Carving Pictures into Skin	12	17.1
Severe Scratching	47	67.1
Biting	16	22.9
Dripping Acid on Skin	0	0.00
Using cleaning products on Skin	14	20.0
Rubbing Sandpaper on Skin	9	12.9
Sticking Sharp Objects in Skin	37	52.9
Rubbing Glass into Skin	22	31.4
Breaking Bones	0	0.00
Banging Head	39	55.7
Punching Self	28	40.0
Preventing Wounds from Healing	38	54.3
Other Forms of Self-Harm	28	40.0

7.3. Inspection of Normality of the Data

A preliminary analysis was then carried out to assess the normality of the distribution of the data to ensure that assumptions for parametric testing were adhered to. This procedure involved testing for normality using the Kolmogorov-Smirnov (K-S) test and by visual inspection of histograms. A non-significant result on the K-S test indicates normality while a significant result indicates violation of the assumption of normality. The K-S analysis revealed that all the main independent and mediating variables were normally distributed, although a number of additional variables and the dependent variables were found not to be normally distributed. Clark-Carter (2009) noted that small deviations from normality can lead to significance on the K-S test, especially in large samples. Therefore an informed decision about normality should be made not on the basis of the K-S test alone, but also through visual inspection of the histogram and Q-Q plots and by calculating skew and kurtosis z-scores. The skew and kurtosis scores are converted into z-scores by the following formulae:

$$z\text{-skewness} = \frac{\text{skewness score} - 0}{\text{standard error of skewness}}$$

$$z\text{-kurtosis} = \sqrt{\frac{\text{kurtosis score} - 0}{\text{standard error of kurtosis}}}$$

Clark-Carter (2009) recommend that for skew and kurtosis the alpha level is treated as $p = .01$ meaning that z-scores would have to be at least 2.58 or -2.58 for the distribution to be treated as significantly skewed. Tests of normality for the main variables are presented in Table 5 below. Most of the main variables were displayed normal distributions; however, the ‘age of onset of self-harm’ and ‘time since last episode of self-harm’ variables were non-normal in their distribution. All additional variables were deemed normal (see Appendix 16).

Table 5. Tests of normality for the main variables

Variable	Visual Inspection	K-S-Z/ p-value	Skew/ z-score	Kurtosis/ z-score	Conclusion
HADS					
Anxiety	Normal	.13/.00	-.65/-2.26	-.22/.62	Normal
Depression	Normal	.08/.20*	-.18/-.64	-.80/1.19	Normal
Total	Normal	.08/.20*	-.43/-1.49	-.30/.73	Normal
PSS	Normal	.09/.20*	-.28/-0.97	-.61/1.04	Normal
PBI					
Total Care	Normal	.08/.20*	.37/1.30	-.26/.67	Normal
Total Control	Normal	.09/.20*	.15/.52	-.02/.18	Normal
SMI					
Maladaptive Mode Strength	Normal	.07/.20*	.24/.83	-.42/.86	Normal
Adaptive Mode Strength	Normal	.08/.20*	.21/.73	-.43/.87	Normal
DSHI					
Age of onset (years)	Not normal	.17/.00	.74/2.58	-.28/.70	Not normal
Duration (years)	Normal	.10/.07	.69/2.40	-.22/.63	Normal
Time since last episode (days)	Not normal	.28/.00	.80/2.79	-1.08/1.38	Not normal
Number of methods used	Normal	.14/.00	.61/2.13	-.21/.61	Normal

* This value is a lower bound of the true significance; K-S-Z (Kolmogorov-Smirnov- z-score)

7.4. Data Transformation

Field (2001) recommends that all variables in the dataset should be transformed when there is a variable with a non-normal distribution. This procedure ensures that all variables maintain a constant relationship to each other variable. Therefore, all data to be analysed were subjected to a log transformation which involved adding 1 to the score and then taking the logarithm, thus avoiding the problem of a logarithm of 0. Following this transformation the non-normal variables were inspected again in order to determine if the transformation had improved the normality of the data. Inspection revealed that following logarithmic transformation the ‘age of onset of self-harm’ variable appeared normal according to visual inspection of the histogram and Q-Q plots, and according to skew ($s = -.27$; $z = .93$) and kurtosis ($k = -.31$; $z = .74$) transformed scores. Normality was also seen following transformation of the ‘time

since last episode' variable, with relative normality on histogram and Q-Q plots and on skew ($s = -.12$; $z = -.43$) and kurtosis ($k = -1.46$; $z = 1.61$) scores. Given that logarithmic transformation improved normality of these data variables, the decision was made to transform all data and retain these for use in subsequent analyses. The transformed variables were all normally distributed.

7.5. Hypothesis Driven Analysis

7.5.1. Hypothesis 1: There will be a significant relationship between maladaptive schema modes, parental bonding, perceived stress and duration, age of onset and number of methods of deliberate self-harm.

Correlational analysis was used to explore the above hypothesis. To prevent repetition of information these results are not presented here but are available in full in the empirical study journal article (Chapter 6, p. 83).

7.5.2. Hypothesis 2: Maladaptive schema modes, perceived stress and parental bonding will predict duration, age of onset and number of methods of deliberate self-harm.

Multiple regression was carried out in order to determine the relationship between the above mentioned variables further. This allowed comparisons between, the total relationship of the independent variable (IV) with the dependent variable (DV), the unique relationship of the IV with the DV and the correlations of the IVs with each other. In this analysis the IVs were maladaptive schema modes, perceived stress and parental care and the DVs were duration, age of onset and multiplicity of method (i.e. number of types) of deliberate self-harm. All data met the assumptions of normality, linearity and homoscedasticity and there were no significant outliers. Although all IVs were correlated this was far below the .7 level suggested by Tabachnick and Fidell (1989) as being problematic for regression analysis. Therefore, multicollinearity was not present.

Three separate multiple regression models were tested for their overall predictive value. This involved an exploration of the IVs in predicting 1) duration of self-harm,

2) age of onset of self-harm and 3) number of types of self-harm. This analysis tested the theory that perceived stress, schema modes and parental care would predict various aspects of deliberate self-harm. Field (2001) recommends that when there is no clear theory on the order in which predictor variables should be entered into a multiple regression then all variables should be forced into the model simultaneously. As no research has previously explored the aforementioned variables in terms of predicting deliberate self-harm the enter method was chosen for multiple regression analysis. The only exception to this approach was in Model 1 in which the hierarchical method was used in order for age to be entered as a covariate in prediction of duration of deliberate self-harm.

Model 1: The role of maladaptive schema modes, perceived stress and parental care in predicting duration of deliberate self-harm

This model tested the predictive ability of the dependent variables in their relationship with duration of deliberate self-harm. Hierarchical multiple regression was chosen to control for the effect of age as a covariate. Age was entered as the first step, followed by the three dependent variables (maladaptive schema modes, perceived stress and parental care). The results of this multiple regression are available in Table 6 below.

Table 6. Prediction of duration of deliberate self-harm from age, perceived stress, parental bonding total care and maladaptive schema modes

Predictors	Duration of Deliberate Self-Harm		
	B	SE B	B
Step 1			
Constant	-.56	.40	
Age	1.13	.26	.47**
R²	.22		
Step 2			
Constant	-4.18	1.17	
Age	1.14	.22	.47**
Perceived Stress	.41	.29	.15
Parental Total Care	-.16	.08	-.19
Maladaptive Schema Modes	1.25	.47	.30**
R²	.47		

* p < .05

** p < .01

The first model (Step 1) explained 22% of the variance ($R^2 = .22$) in duration of deliberate self-harm where $F(1,68) = 18.94$ ($p < .01$). Age made a significant unique contribution ($B = 1.13$; $SE B = .26$; $p < .01$). In the second model, perceived stress

and parental care were poor predictors of duration of deliberate self-harm. However, maladaptive schema modes made a unique significant contribution ($B = 1.25$; $SE B = .47$; $p < .01$). This model explained 47% of the variance ($R^2 = .47$) in duration of deliberate self-harm where $F(3,65) = 10.43$ ($p < .01$). This represents a medium effect size.

Model 2: The role of maladaptive schema modes, perceived stress and parental care in predicting age of onset of deliberate self-harm

This model tested the predictive ability of the dependent variables in their relationship with age of onset of deliberate self-harm. Simple multiple regression was chosen where the dependent variables (maladaptive schema modes, perceived stress and parental care) were entered together in the analysis. The results of this multiple regression are available in Table 7 below.

Table 7. Prediction of age of onset of deliberate self-harm from age, perceived stress, parental bonding total care and maladaptive schema modes

Predictors	Age of Onset of Deliberate Self-Harm		
	B	SE B	B
Constant	4.87	.81	
Perceived Stress	.00	.22	.00
Parental Total Care	.11	.06	.19
Maladaptive Schema Modes	-1.51	.36	-.51**
R²	.37		

* $p < .05$

** $p < .01$

As can be seen from Table 7, perceived stress and parental care were poor predictors of age on onset of deliberate self-harm. However, maladaptive schema modes made a unique significant contribution ($B = -1.51$; $SE B = .36$; $p < .01$) where this model explained 37% of the variance ($R^2 = .37$) in age of onset of deliberate self-harm where $F(3,66) = 12.67$ ($p < .01$). This represents a medium effect size.

Model 3: The role of maladaptive schema modes, perceived stress and parental care in predicting number of methods of deliberate self-harm

This model tested the predictive ability of the dependent variables in their relationship with the number of types of deliberate self-harm. Simple multiple regression was

chosen where the dependent variables (maladaptive schema modes, perceived stress and parental care) were entered together in the analysis. The results of this multiple regression are available in Table 8 below.

Table 8. Prediction of multiplicity of methods of deliberate self-harm from age, perceived stress, parental bonding total care and maladaptive schema modes

Predictors	Number of Types of Deliberate Self-Harm		
	B	SE B	B
Constant	-2.31	.84	
Perceived Stress	.42	.23	.23
Parental Total Care	-.00	.06	-.00
Maladaptive Schema Modes	.99	.37	.35**
R²	.26		

* p < .05

** p < .01

Similar to the previous reported models, perceived stress and parental care were poor predictors of the number of types of deliberate self-harm. However, maladaptive schema modes made a unique significant contribution (B = .99; SE B = .37; p < .01) where this model explained 26% of the variance (R² = .26) in the number of methods of deliberate self-harm where F(3,66) = 7.80 (p < .01). This represents a medium effect size.

Model 4: The role of individual schema modes in predicting duration, age of onset and number of methods of deliberate self-harm

Individual schema modes were chosen for inclusion in multiple regression analysis on the basis of their theoretical importance in relation to deliberate self-harm. These modes included the Impulsive Child, Angry Child, Detached Self-Soother and Punitive Parent modes. All data met the assumptions of normality, linearity and homoscedasticity, there were no significant outliers and no correlation above the .7 level. Variables were entered into the regression analysis using the enter method for the prediction of age of onset and multiplicity of method of deliberate self-harm and using hierarchical regression for prediction of duration of self-harm because age was entered as a covariate. Findings for the three dependent variables are presented in Table 9 below. For ease of presentation only the second step of the model is presented for the duration of deliberate self-harm variable.

Table 9. Prediction of duration, age of onset and multiplicity of methods of deliberate self-harm from impulsive child, angry child, detached self-soother and punitive parent modes

Predictors	Deliberate Self-Harm								
	Duration			Age of Onset			No. of Methods		
	B	SE B	B	B	SE B	β	B	SE B	B
Constant	-1.83	.46		2.21	.21		-.22	.20	
Impulsive Child	.30	.32	.11	-.39	.24	-.20	.67	.23	.35**
Angry Child	.63	.35	.20	-.71	.28	-.32*	-.15	.27	-.07
Detached Self-Soother	-.22	.29	-.07	.05	.23	.02	.24	.22	.11
Punitive Parent	1.15	.32	.36**	-.58	.25	-.26*	.78	.24	.36**
R²	.48			.35			.33		

* $p < .05$

** $p < .01$

In the prediction of duration of deliberate self-harm, the first model explained 22% of the variance ($R^2 = .22$) where $F(1,68) = 18.94$ ($p < .01$). Age made a significant unique contribution ($B = 1.13$; $SE B = .26$; $p < .01$). In the second model, Impulsive Child, Angry Child and Detached Self-Soother were poor predictors of self-harm duration, however, the Punitive Parent mode made a unique significant contribution ($B = 1.15$; $SE B = .32$; $p < .01$). This model explained 48% of the variance ($R^2 = .48$) in duration of self-harm where $F(4,64) = 7.87$ ($p < .01$). This represents a medium effect size.

In the prediction of age of onset of deliberate self-harm, the Impulsive Child and Detached Self-Soother modes were poor predictors, although the Angry Child ($B = -.71$; $SE B = .28$; $p < .05$) and Punitive Parent ($B = -.58$; $SE B = .25$; $p < .05$) modes made unique significant contributions. This model explained 35% of the variance ($R^2 = .35$) in the age of onset of self-harm where $F(4,65) = 8.73$ ($p < .01$). This represents a medium effect size.

Finally, in the model predicting multiplicity of method of deliberate self-harm, the Angry Child and Detached Self-Soother modes were poor predictors. However, unique significant contributions were found in the Punitive Parent ($B = .78$; $SE B = .24$; $p < .01$) and Impulsive Child ($B = .67$; $SE B = .23$; $p < .01$) modes. This model explained 33% of the variance ($R^2 = .33$) in number of types of self-harm where $F(4,65) = 8.09$ ($p < .01$), representing a medium effect size.

7.5.3. Hypothesis 3: Maladaptive schema modes will mediate the relationship between parental bonding and duration, age of onset and number of methods of deliberate self-harm.

To examine the above hypothesis mediation analysis was conducted. To prevent repetition of information these results are not presented here but are available in full in the empirical study journal article (Chapter 6, p. 83).

CHAPTER 8: EXTENDED DISCUSSION

8.1. Discussion of Main Findings

The key aim of the current empirical study was to determine the relationships between schema modes, parental bonding and perceived stress with deliberate self-harm. In order to fulfil this aim, a number of hypotheses were tested. The extent to which these hypotheses are supported by the present findings is evaluated below.

8.1.1. Hypothesis 1: There will be a significant relationship between maladaptive schema modes, parental bonding, perceived stress and duration, age of onset and number of methods of deliberate self-harm.

The above hypothesis was partially supported by the results of the study. First, an earlier age of onset of deliberate self-harm was associated with lower parental care, with increased perceived stress and heightened maladaptive schema modes. Second, a higher number of reported methods of deliberate self-harm was associated with higher perceived stress and greater maladaptive schema modes. Third, after controlling for age a longer duration of self-harm was associated with lower parental care, higher perceived stress and heightened maladaptive schema modes. Finally, no significant relationships were noted between maternal or paternal control with any other variable.

No previous research has explored associations between deliberate self-harm with maladaptive schema modes. However, there is evidence to suggest that early maladaptive schemas (EMS), a construct closely related to schema modes, are associated with deliberate self-harm (Castille *et al.*, 2007). There is also evidence to suggest that EMS are associated with suicidal behaviours (Dale *et al.*, 2010). The association in the present study between deliberate self-harm (age of onset, duration and number of methods) and maladaptive schema modes is therefore consistent with previous similar research.

In the current study higher perceived stress was associated with an earlier age of onset, longer duration and greater number of methods of deliberate self-harm. This finding is consistent with previous research conducted by Fliege and colleagues

(2006) who explored levels of perceived stress between individuals with and without a history of self-harm. These authors noted significantly higher levels of perceived stress in individuals with a history of self-harm relative to those with no self-harm history.

That lower parental care was associated with deliberate self-harm is also consistent with previous research. For instance, in a sample of individuals with self-harm by skin-cutting maternal care was significantly lower than in a non-clinical comparison group (Marchetto, 2010). Low parental care has also been associated with risk of repetition for suicidal behaviours (Dale *et al.*, 2010). However, significantly higher parental control was also associated with self-harm (Marchetto, 2010) and repetition of suicidal behaviours (Dale *et al.*, 2010). Given the similarity between Marchetto's (2010) self-harm sample and the sample obtained in the present study it is important to consider why there are differences in the results of these studies.

In Marchetto's (2010) study the sample for which significant differences were noted between skin-cutters and non-skin cutters contained no participants with a diagnosis of BPD. However, the current study included individuals with this diagnosis. The non-BPD sub-sample was also reported as having no history of trauma, while in the present study a history of trauma was not measured. It may be that the significant effect of parental control in Marchetto's (2010) study reflects differences between the two samples. Future research exploring these variables further may be helpful to delineate the reason for the differences between these findings.

The current study also found a number of significant correlations between individual schema modes and deliberate self-harm variables. Of particular note is the fact that heightened Vulnerable Child, Angry Child and Punitive Parent modes were significantly associated at the .01 level with an earlier age of onset, longer duration and greater number of methods of deliberate self-harm. As no previous research has explored individual schema modes in relation to deliberate self-harm there is no comparative data available in the literature. However, given the historical association between BPD and self-harm, it is interesting to note that these three schema modes have also been shown to be elevated in BPD (e.g. Lobbestael *et al.*, 2008). The finding that the Vulnerable Child, Angry Child and Punitive Parent modes are

associated with a number of variables of self-harm is also consistent with everyday clinical experience of working with individuals who self-harm.

8.1.2. Hypothesis 2: Maladaptive schema modes, perceived stress and parental bonding will predict duration, age of onset and number of methods of deliberate self-harm.

Hypothesis 2 was partially supported by the empirical findings. First, maladaptive schema modes significantly predicted duration of self-harm, although perceived stress and parental bonding were poor predictors in this relationship (see Table 6). Second, maladaptive schema modes made a unique significant contribution to the prediction of age of onset of self-harm, although perceived stress and parental bonding were not significant predictors (see Table 7). Third, similar to the previous reported models, perceived stress and parental care were poor predictors of the number of types of deliberate self-harm. However, maladaptive schema modes made a unique significant contribution (see Table 8). Finally, in the exploration of the predictive ability of individual schema modes, the Punitive Parent mode predicted duration of self-harm, the Angry Child and Punitive Parent modes predicted age of onset of self-harm, and the Punitive Parent and Impulsive Child modes significantly predicted the number of types of deliberate self-harm (see Table 9).

That the Angry Child, Punitive Parent and Impulsive Child modes predicted deliberate self-harm is consistent with clinical experience of working with individuals who self-harm. Anecdotally speaking, themes of punishment and anger are often described by patients who self-harm and impulsiveness is also a key feature of this behaviour. The predictive role of the Angry Child mode is consistent with research indicating that those with a history of repeated self-harm have higher scores on trait anger than non-repeaters of self-harm (Hawton *et al.*, 1999) and the finding that anger is a reported risk factor for deliberate self-harm (Gratz, 2006). The self-punishment model of self-harm is also a popular method of conceptualising this behaviour with a recent review of the literature providing empirical support for this theory (Klonsky, 2007). There is also considerable evidence in the literature to suggest that impulsiveness is associated with deliberate self-harm (e.g. Hawton *et al.*, 2002).

8.1.3. Hypothesis 3: Maladaptive schema modes will mediate the relationship between parental bonding and duration, age of onset and number of methods of deliberate self-harm.

The above hypothesis was partially supported by the results of the current study. First, maladaptive schema modes were found to mediate the relationship between parental care and duration of deliberate self-harm. Second, maladaptive schema modes significantly mediated the relationship between parental care and age of onset of deliberate self-harm. Third, the Punitive Parent mode was found to be a significant mediator between parental care and duration of self-harm. Finally, the Punitive Parent and Angry Child modes were mediators in the relationship between parental care and age of onset of deliberate self-harm.

As no previous research has explored the mediatory role of schema modes between parental bonding and deliberate self-harm, no direct comparisons can be made to previous findings available in the literature. However, in the broadest sense the results of the current study are consistent with those obtained by Johnston *et al.* (2009) who noted that in a sample of individuals with BPD maladaptive schema modes mediated the relationship between childhood abuse and dissociation. The finding of Johnston and colleagues (2009) as well as those in the current investigation support Young *et al.*'s (2003) supposition that maladaptive schema modes are key constructs associated with psychopathology in adulthood and that these stem from adverse childhood experiences. The results of this study are also consistent with the mediatory models reported by Dale *et al.* (2010) who found that individual EMS mediated the relationship between parental bonding and risk of repetition for suicidal behaviours.

8.2. Strengths and Limitations of the Study

The current study is the first to explore the relationships between schema modes, parental bonding and perceived stress in a sample of psychiatric outpatients with a history of deliberate self-harm. A particular strength of the study includes the relatively large sample size which allowed sufficient statistical power for regression and mediation analysis to take place. A further strength relates to the nature of the selected sample. The participants were recruited from community mental health

services which specialise in supporting individuals with severe and enduring mental health problems. That 70 individuals with complex mental health presentations and a history of self-harm took part in the study is an asset, especially given that these are typically two hard to access demographics in research.

That a transdiagnostic approach to deliberate self-harm was adopted in the current study is also a relative strength. This is because a naturalistic sample of individuals with self-harm is more likely to be representative of the self-harm population, thus allowing greater clinical applicability of the research. However, although generalisations from the sample may easily be made to other transdiagnostic severe and enduring mental health samples, generalising the data to individuals with less severe presentations may be problematic. This issue may be particularly important given that deliberate self-harm is also present in a proportion of the general population (Meltzer *et al.*, 2002). The lack of specificity that a transdiagnostic approach entails also means that the results cannot be generalised to specific psychiatric populations.

One of the main limitations of the study relates to the fact that frequency of self-harm could not be measured despite it being one of the main outcome measures of deliberate self-harm used by Gratz and colleagues in their research (e.g. Gratz *et al.*, 2002). Although this was not one of the primary hypotheses it would have been interesting to explore this outcome. In the current study participants were unable to provide an accurate account of how many times they had self-harmed due to the very high number of episodes. Previous research using the DSHI has tended to explore frequency of self-harm in non-clinical populations where the number of instances of self-harm was easier to recall (e.g. Gratz, 2001). Frequency of self-harm could not be operationalised in other terms (e.g. number of self-harm episodes per day, per week or per month) because the DSHI does not provide such a measure.

There also remains an issue around the accuracy of self-report measures especially in relation to the SMI which is reliant upon verbal descriptions of schema modes which are primarily emotional constructs. Some researchers have introduced more objective methods such as schema modes rated by others and physiological indices as an adjunct to self-rated schema modes on the SMI (e.g. Lobbestael *et al.*, 2005). Bias

may also have been introduced by way of the selection method as case workers may have only approached those individuals who they thought would take part.

8.3. Clinical Implications

The findings from the current study indicate that Schema Therapy using the mode approach may be helpful in the treatment of individuals with deliberate self-harm. The findings suggest that maladaptive schema modes may be a promising intervention target in treating individuals with deliberate self-harm. As the primary goal of Schema Therapy is the healing and reintegration of schema modes, this could suggest that Schema Therapy using the mode approach may be a valuable treatment for people with self-harm. They also suggest that, consistent with Young's (1990) assertions, Schema Therapy can be applied beyond the personality disorder diagnosis to individuals with other complex and chronic presentations. This model may also be helpful during clinical formulation and when planning targets for intervention.

The mediation analysis indicated that the Angry Child and Punitive Parent modes are particularly important in the relationship between parental care and self-harm. Therefore, these modes may be particularly helpful targets for change. It was noted in the results section that the Vulnerable Child mode was associated with lower parental care and with deliberate self-harm variables. However, this mode did not mediate the relationship between parental care and self-harm. Whilst speculative, it may be the case that the Vulnerable Child is triggered in response to circumstances which activate associations of a lack of parental care, leading to feelings of emotional deprivation, rejection, abandonment or neglect. In reaction to the Vulnerable Child which feels the full pain of unmet emotional needs the Angry Child may take this out in the form of self-harm. The Punitive Parent mode may also punish the Vulnerable Child for feeling negative emotions in the first place.

If the above theory is correct it then follows that Schema Therapy intervention which focuses on strengthening the Healthy Adult mode so that it can comfort the Vulnerable Child mode, may also reduce self-harm. It also highlights that when working with individuals who self-harm, it may be particularly beneficial to target the Angry Child and Punitive Parent modes during intervention. Using formulation skills

to educate patients to consider which mode they are in prior to their self-harm episode may also help the individual to shift into a healthier mode, thus making self-harm less likely.

8.4. Directions for Future Research

As this study is the first to explore schema modes in deliberate self-harm, future research is required to gain a better understanding of this relationship. In particular, it would be helpful to delineate schema mode shifts in the process of self-harm more accurately, that is, by measuring activated schema modes before, during and after an episode of deliberate self-harm. Theoretically, one might assume that the Vulnerable Child mode is present prior to self-harm, the Angry Child and Punitive Parent during self-harm and the Detached Protector following self-harm. However, without empirical data to provide evidence for this claim it remains unsupported at present.

It would also be helpful for future researchers to explore whether there are schema mode differences between individuals who self-harm without suicidal intent and those who attempt suicide. This line of research would allow a better understanding of the particular schema modes that are involved in vulnerability for suicide. Theoretically one might assume that the Impulsive Child mode may be key to this process but again without empirical support this assumption remains untested. This research is particularly important given that deliberate self-harm and attempted suicide have high co-morbidity (Favazza, 1996). An exploration of the relationship between schema modes, emotion dysregulation and deliberate self-harm would also be helpful, especially given the evidence that emotion dysregulation and self-harm are associated (Gratz & Roemer, 2008).

More generally, a clear gap in the literature relates to how schema modes present in populations other than working age adults. According to Young (1990) schemas develop during childhood and adolescence and one can assume that schema modes also develop during this time. Preliminary evidence suggests that schemas can be measured in a child and adolescent population and that young people with mental health problems report more schemas than their non-clinical counterparts (e.g. van Vlierberghe *et al.*, 2010). However, there remains at present a stark lack of evidence

regarding Schema Therapy and its applicability to the older generation despite the fact that this approach would be theoretically apt for older adults with complex presentations. Recently, a group of researchers in the Netherlands has called for research in Schema Therapy in older adults to be applied (Videler *et al.*, 2012).

8.5. Overall Discussion of the Thesis

Schema Therapy is a clinically popular method of working with individuals with complex and chronic mental health presentations. It is highly recommended as a treatment for BPD (Scottish Government, 2011) and a recent review of the literature concluded that Schema Therapy is clinically effective for the treatment of a variety of conditions (Masley *et al.*, 2011). Overall, the results of the present doctoral thesis also support the notion that Schema Therapy is a promising psychological intervention. The systematic review in Part I of the thesis indicated that Schema Therapy has good theoretical underpinnings, with particularly compelling evidence being available for a number of assumptions about the role of schema modes in BPD. The empirical study described in Part II of the thesis also attempted to expand the knowledge base around schema modes, specifically in its relationship with deliberate self-harm. The results of the empirical study indicated that maladaptive schema modes play a mediatory role between low parental care and a number of deliberate self-harm variables, which has implications for treatment strategies. Together, the thesis findings suggest that Schema Therapy is a solid therapeutic model with good theoretical underpinnings and an expanding evidence base. Preliminary indications tentatively suggest that this model may also be effective in the treatment of deliberate self-harm. This has implications for service development in terms of access to psychological treatments in the NHS.

8.6. Conclusion to the Thesis

The systematic review indicated that Schema Therapy has good theoretical underpinnings. However, there remain a number of gaps in the literature which require further investigation. The empirical study attempted to fill one of these gaps by exploring the relationship between parental bonding, schema modes and perceived stress in a sample of participants with a history of deliberate self-harm. The research

demonstrated that maladaptive schema modes mediate the relationship between low parental care and deliberate self-harm variables. The results also highlighted individual mediator roles for the Punitive Parent and Angry Child modes. These findings are consistent with previous research which suggests that self-punishment and anger are important themes in self-harm. This study is the first to provide empirical support for the notion that a Schema Therapy approach using the mode concept may be applicable to individuals with deliberate self-harm.

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APPENDICES

1. Cognitive Behaviour Therapy Journal Article Guidelines
2. Semi-structured Interview
3. Deliberate Self-Harm Inventory
4. Schema Mode Inventory – shortened version
5. Parental Bonding Instrument – shortened version
6. Perceived Stress Scale
7. Hospital Anxiety and Depression Scale
8. Participant Information Sheet
9. Participant Consent Form
10. Participant Debrief Sheet
11. Ethical Approval: East of Scotland Research Ethics Committee
12. Research and Development Approval: NHS Tayside
13. Ethical Approval: Amended Protocol
14. Research and Development Approval: Amended Protocol
15. Descriptive Statistics for Additional Variables
16. Tests of Normality for Additional Variables

Appendix 1: Cognitive Behaviour Therapy Journal Article Guidelines

General guidelines

- Papers are accepted only in English. Any consistent spelling style may be used.
- A typical article will not exceed 5500 words, or 8000 words for a theoretical or review article. Papers that greatly exceed this will be critically reviewed with respect to length. Authors should include a word count with their manuscript. As a guideline, each table and figure is approximately equal to 150 words of text.
- Abstracts of 250 words are required for all papers submitted.
- Each paper should have up to five keywords.
- Search engine optimization (SEO) is a means of making your article more visible to anyone who might be looking for it.
- All the authors of a paper should include their full names, affiliations, postal addresses, telephone numbers and email addresses on the cover page of the manuscript. One author should be identified as the corresponding author. The affiliations of all named co-authors should be the affiliation where the research was conducted. If any of the named co-authors moves affiliation during the peer review process, the new affiliation can be given as a footnote. Please note that no changes to affiliation can be made after the article is accepted.
- Biographical notes on contributors are not required for this journal.
- For all manuscripts non-discriminatory language is mandatory. Sexist or racist terms should not be used.
- Authors must adhere to SI units. Units are not italicised.
- When using a word which is or is asserted to be a proprietary term or trade mark, authors must use the symbol ® or TM.

2. Style guidelines

- The 6th edition of the APA manual should be consulted. Be sure that the reference list is complete and accurate. Also make sure that statistical material follows the guidelines of the manual.

- Double-space the entire manuscript -- even the reference list -- and leave an all-around margin of 1 inch or 2.5 cm. The Title page should include: 1) A brief but informative title, 2) First name, middle initial and surname of each author, 3) institution(s) to which the author(s) are affiliated, 4) full name and address, including telephone, fax and e-mail address, of the corresponding author, 5) word count including number of tables and figures (see below for word equivalent approximations) but excluding title pages and abstract.
- Page 2 should carry the title only. Page 3 should include an abstract, not exceeding 250 words, stating the purpose of the study, methods and main results. List up to five key words (avoid words already used in the title).
- Organise the Main text under the following headings if possible: Introduction, Methods, Results, Discussion, Acknowledgements and References.
- Figures, figure captions and tables should be printed on separate pages.

3. Figures

- It is in the author's interest to provide the highest quality figure format possible. Please be sure that all imported scanned material is scanned at the appropriate resolution: 1200 dpi for line art, 600 dpi for grayscale and 300 dpi for colour.
- Figures must be saved separate to text. Please do not embed figures in the paper file.
- Files should be saved as one of the following formats: TIFF (tagged image file format), PostScript or EPS (encapsulated PostScript), and should contain all the necessary font information and the source file of the application (e.g. CorelDraw/Mac, CorelDraw/PC).
- All figures must be numbered in the order in which they appear in the paper (e.g. Figure 1, Figure 2). In multi-part figures, each part should be labelled (e.g. Figure 1(a), Figure 1(b)).
- Figure captions must be saved separately, as part of the file containing the complete text of the paper, and numbered correspondingly.
- The filename for a graphic should be descriptive of the graphic, e.g. Figure1, Figure2a.

Appendix 2: Semi-structured Interview

Demographics

Age _____

Gender _____

Postcode _____

Psychiatric Diagnosis _____

Non-Suicidal Self-Injury (Tick if present)

- A. In the last year, the individual has, on 5 or more days, engaged in intentional self-inflicted damage to the surface of his or her body, of a sort likely to induce bleeding or bruising or pain (e.g., cutting, burning, stabbing, hitting, excessive rubbing), for purposes not socially sanctioned (e.g., body piercing, tattooing, etc.), but performed with the expectation that the injury will lead to only minor or moderate physical harm. The absence of suicidal intent is either reported by the patient or can be inferred by frequent use of methods that the patient knows, by experience, not to have lethal potential. (When uncertain, code with NOS 2.) The behaviour is not of a common and trivial nature, such as picking at a wound or nail biting.
- B.** The intentional injury is associated with at least 2 of the following:
1. Negative feelings or thoughts, such as depression, anxiety, tension, anger, generalized distress, or self-criticism, occurring in the period immediately prior to the self-injurious act.
2. Prior to engaging in the act, a period of preoccupation with the intended behaviour that is difficult to resist.
3. The urge to engage in self-injury occurs frequently, although it might not be acted upon.
4. The activity is engaged in with a purpose; this might be relief from a negative feeling/cognitive state or interpersonal difficulty or induction of a positive feeling state. The patient anticipates these will occur either during or immediately following the self-injury.
- C. The behaviour and its consequences cause clinically significant distress or impairment in interpersonal, academic, or other important areas of functioning.

- D.** The behaviour does not occur exclusively during states of psychosis, delirium, or intoxication. In individuals with a developmental disorder, the behaviour is not part of a pattern of repetitive stereotypies. The behaviour cannot be accounted for by another mental or medical disorder (i.e., psychotic disorder, pervasive developmental disorder, mental retardation, Lesch-Nyhan Syndrome).

Probable Classification (Tick one)

- 1. Non-Suicidal Self-Injury Disorder**

The patient meets criteria for NSSI.

- 2. Non-Suicidal Self-Injury Disorder, Not Otherwise Specified (NOS), Type 1, Sub-threshold:**

The patient meets all criteria for NSSI disorder, but has injured him or herself fewer than 5 times in the past 12 months. This can include individuals who, despite a low frequency of behaviour, frequently think about performing the act.

- 3. Non-Suicidal Self-Injury Disorder, Not Otherwise Specified (NOS), Type 2, Intent Uncertain:**

The patient meets criteria for NSSI but insists that in addition to thoughts expressed in B4 also intended to commit suicide.

Appendix 3: Deliberate Self-Harm Inventory

This questionnaire asks about a number of different things that people sometimes do to hurt themselves. Please be sure to read each question carefully and respond honestly. Often, people who do these kinds of things to themselves keep it a secret, for a variety of reasons. However, honest responses to these questions will provide us with greater understanding and knowledge about these behaviours and the best way to help people. Please answer yes to a question only if you did the behaviour intentionally, or on purpose, to hurt yourself. Do not respond yes if you did something accidentally (e.g., you tripped and banged you head on accident). Also, please be assured that your responses are completely confidential.

1. Have you ever intentionally (i.e., on purpose) cut your wrist, arms, or other area(s) of your body (without intending to kill yourself)? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

2. Have you ever intentionally (i.e., on purpose) burned yourself with a cigarette? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

3. Have you ever intentionally (i.e., on purpose) burned yourself with a lighter or a match? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

4. Have you ever intentionally (i.e., on purpose) carved words into your skin? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

5. Have you ever intentionally (i.e., on purpose) carved pictures, designs, or other marks into your skin? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

6. Have you ever intentionally (i.e., on purpose) severely scratched yourself, to the extent that scarring or bleeding occurred? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

7. Have you ever intentionally (i.e., on purpose) bit yourself, to the extent that you broke the skin? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

8. Have you ever intentionally (i.e., on purpose) rubbed sandpaper on your body? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

9. Have you ever intentionally (i.e., on purpose) dripped acid onto your skin? (Circle one):

1. Yes 2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

10. Have you ever intentionally (i.e., on purpose) used bleach, comet, or oven cleaner to scrub your skin? (Circle one):

1. Yes 2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

11. Have you ever intentionally (i.e., on purpose) stuck sharp objects such as needles, pins, staples, etc. into your skin, not including tattoos, ear piercing, needles used for drug use, or body piercing? (Circle one):

1. Yes 2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

12. Have you ever intentionally (i.e., on purpose) rubbed glass into your skin? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

13. Have you ever intentionally (i.e., on purpose) broken your own bones? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

14. Have you ever intentionally (i.e., on purpose) banged your head against something, to the extent that you caused a bruise to appear? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

15. Have you ever intentionally (i.e., on purpose) punched yourself, to the extent that you caused a bruise to appear? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

16. Have you ever intentionally (i.e., on purpose) prevented wounds from healing? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

17. Have you ever intentionally (i.e., on purpose) done anything else to hurt yourself that was not asked about in this questionnaire? (Circle one):

1. Yes

2. No

If yes,

How old were you when you first did this? _____

How many times have you done this? Please write an actual number (e.g., 1, 5 or 15 NOT some, many, or few) _____

When was the last time you did this? _____

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behaviour _____

Has this behaviour ever resulted in hospitalization or injury severe enough to require medical treatment? _____

Appendix 4: Schema Mode Inventory – shortened version

INSTRUCTION: Listed below are statements that people might use to describe themselves. Please rate each item based on **how often** you believe or feel each statement **in general** using the frequency scale.

FREQUENCY: In general	
1= Never or Almost Never	4= Frequently
2= Rarely	5= Most of the time
3= Occasionally	6= All of the time

<u>Frequency</u>	<u>In general...</u>
	1. I demand respect by not letting other people push me around.
	2. I feel loved and accepted.
	3. I deny myself pleasure because I don't deserve it.
	4. I feel fundamentally inadequate, flawed, or defective.
	5. I have impulses to punish myself by hurting myself (e.g., cutting myself).
	6. I feel lost.
	7. I'm hard on myself.
	8. I try very hard to please other people in order to avoid conflict, confrontation, or rejection.
	9. I can't forgive myself.
	10. I do things to make myself the centre of attention.
	11. I get irritated when people don't do what I ask them to do.
	12. I have trouble controlling my impulses.
	13. If I can't reach a goal, I become easily frustrated and give up.
	14. I have rage outbursts.
	15. I act impulsively or express emotions that get me into trouble or hurt other people.
<u>Frequency</u>	<u>In general...</u>
	16. It's my fault when something bad happens.
	17. I feel content and at ease.
	18. I change myself depending on the people I'm with, so they'll like me or approve of me.
	19. I feel connected to other people.
	20. When there are problems, I try hard to solve them myself.
	21. I don't discipline myself to complete routine or boring tasks.
	22. If I don't fight, I will be abused or ignored.

	23. If you let other people mock or bully you, you're a loser.
	24. I physically attack people when I'm angry at them.
	25. Once I start to feel angry, I often don't control it and lose my temper.
	26. It's important for me to be Number One (e.g., the most popular, most successful, most wealthy, most powerful).
	27. I feel indifferent about most things.
	28. I can solve problems rationally without letting my emotions overwhelm me.
	29. I won't settle for second best.
	30. Attacking is the best defence.
	31. I feel cold and heartless toward other people.
	32. I feel detached (no contact with myself, my emotions or other people).
	33. I blindly follow my emotions.
	34. I feel desperate.
	36. In relationships, I let the other person have the upper hand.
	37. I feel distant from other people.
	38. I act impulsively or express emotions that get me into trouble or hurt other people.
	39. I work or play sports intensively so that I don't have to think about upsetting things.
<u>Frequency</u>	<u>In general...</u>
	40. I'm angry that people are trying to take away my freedom or independence.
	41. I feel nothing.
	42. I do what I want to do, regardless of other people's needs and feelings.
	43. I don't let myself relax or have fun until I've finished everything I'm supposed to do.
	44. I throw things around when I'm angry.
	45. I feel enraged toward other people.
	46. I feel that I fit in with other people.
	47. I have a lot of anger built up inside of me that I need to let out.
	48. I feel lonely.
	49. I like doing something exciting or soothing to avoid my feelings (e.g., working, gambling, eating, shopping, sexual activities, watching TV).
	50. Equality doesn't exist, so it's better to be superior to other people.
	51. When I'm angry, I often lose control and threaten other people.
	52. I let other people get their own way instead of expressing my own needs.
	53. If someone is not with me, he or she is against me.
	54. In order to be bothered less by my annoying thoughts or feelings, I make sure that I'm always busy.
	55. I'm a bad person if I get angry at other people.

<u>Frequency</u>	<u>In general...</u>
	56. I don't want to get involved with people.
	57. I feel that I have plenty of stability and security in my life.
	58. I know when to express my emotions and when not to.
	59. I'm angry with someone for leaving me alone or abandoning me.
	60. I don't feel connected to other people.
	61. I can't bring myself to do things that I find unpleasant, even if I know it's for my own good.
	62. I break rules and regret it later.
	63. I feel humiliated.
	64. I trust most other people.
	65. I act first and think later.
	66. I get bored easily and lose interest in things.
	67. Even if there are people around me, I feel lonely.
<u>Frequency</u>	<u>In general...</u>
	68. I don't allow myself to do pleasurable things that other people do because I'm bad.
	69. I assert what I need without going overboard.
	70. I feel special and better than most other people.
	71. I don't care about anything; nothing matters to me.
	72. It makes me angry when someone tells me how I should feel or behave.
	73. If you don't dominate other people, they will dominate you.
	74. I say what I feel, or do things impulsively, without thinking of the consequences.
	75. I feel like telling people off for the way they have treated me.
	76. I'm capable of taking care of myself.
	77. I'm quite critical of other people.
	78. I'm under constant pressure to achieve and get things done.
	79. I'm trying not to make mistakes; otherwise, I'll get down on myself.
	80. I deserve to be punished.
	81. I can learn, grow, and change.
	82. I want to distract myself from upsetting thoughts and feelings.
	83. I'm angry at myself.
	84. I feel flat.

	85. I have to be the best in whatever I do.
	86. I sacrifice pleasure, health, or happiness to meet my own standards.
	87. I'm demanding of other people.
	88. If I get angry, I can get so out of control that I injure other people.
	89. I am invulnerable.
	90. I'm a bad person.
	91. I feel safe.
	92. I feel listened to, understood, and validated.
	93. It is impossible for me to control my impulses.
	94. I destroy things when I'm angry.
	95. By dominating other people, nothing can happen to you.
	96. I act in a passive way, even when I don't like the way things are.
<u>Frequency</u>	<u>In general..</u>
	97. My anger gets out of control.
	98. I mock or bully other people.
	99. I feel like lashing out or hurting someone for what he/she did to me.
	100. I know that there is a 'right' and a 'wrong' way to do things; I try hard to do things the right way, or else I start criticizing myself.
	101. I often feel alone in the world.
	102. I feel weak and helpless.
	103. I'm lazy.
	104. I can put up with anything from people who are important to me.
	105. I've been cheated or treated unfairly.
	106. I feel left out or excluded.
	107. I belittle others.
	108. I feel optimistic.
	109. I feel I shouldn't have to follow the same rules that other people do.
	110. I'm pushing myself to be more responsible than most other people.
	111. I can stand up for myself when I feel unfairly criticized, abused, or taken advantage of.
	112. I don't deserve sympathy when something bad happens to me.
	113. I feel that nobody loves me.
	114. I feel that I'm basically a good person.
	115. When necessary, I complete boring and routine tasks in order to accomplish things I value.
	116. I feel spontaneous and playful.

<u>Frequency</u>	<u>In general...</u>
	117. I can become so angry that I feel capable of killing someone.
	118. I have a good sense of who I am and what I need to make myself happy.

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 Schema Therapy Institute, 130 West 42nd St., Ste. 501, New York, NY 10036, or for the Dutch version: J.
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Appendix 5: Parental Bonding Instrument – shortened version

THE PARENTAL BONDING INSTRUMENT (PBI) – MOTHER

For each item, please underline the alternative that best describes how you remember your mother* in the first 16 years of your life.

*Or the individual who you regarded in that role (e.g., grandmother, aunt, step-mother, etc.).

She did not talk with me very much

Strongly agree Agree Disagree Strongly disagree

She was affectionate to me

Strongly agree Agree Disagree Strongly disagree

She appeared to understand my problems and worries

Strongly agree Agree Disagree Strongly disagree

She did not help me as much as I needed

Strongly agree Agree Disagree Strongly disagree

She did not understand what I needed and wanted

Strongly agree Agree Disagree Strongly disagree

She liked me to make my own decisions

Strongly agree Agree Disagree Strongly disagree

She let me decide things for myself

Strongly agree Agree Disagree Strongly disagree

She tried to control everything I did

Strongly agree Agree Disagree Strongly disagree

She tended to baby me

Strongly agree Agree Disagree Strongly disagree

She was overprotective

Strongly agree Agree Disagree Strongly disagree

THE PARENTAL BONDING INSTRUMENT (PBI) – FATHER

For each item, please underline the alternative that best describes how you remember your father* in the first 16 years of your life.

*Or the individual who you regarded in that role (e.g., grandfather, uncle, step-father, etc.).

He did not talk with me very much

Strongly agree Agree Disagree Strongly disagree

He was affectionate to me

Strongly agree Agree Disagree Strongly disagree

He appeared to understand my problems and worries

Strongly agree Agree Disagree Strongly disagree

He did not help me as much as I needed

Strongly agree Agree Disagree Strongly disagree

He did not understand what I needed and wanted

Strongly agree Agree Disagree Strongly disagree

He liked me to make my own decisions

Strongly agree Agree Disagree Strongly disagree

He let me decide things for myself

Strongly agree Agree Disagree Strongly disagree

He tried to control everything I did

Strongly agree Agree Disagree Strongly disagree

He tended to baby me

Strongly agree Agree Disagree Strongly disagree

He was overprotective

Strongly agree Agree Disagree Strongly disagree

Appendix 6: Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts **during the last month**. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? **0 1 2 3 4**
2. In the last month, how often have you felt that you were unable to control the important things in your life? **0 1 2 3 4**
3. In the last month, how often have you felt nervous and “stressed”? **0 1 2 3 4**
4. In the last month, how often have you felt confident about your ability to handle your personal problems? **0 1 2 3 4**
5. In the last month, how often have you felt that things were going your way? **0 1 2 3 4**
6. In the last month, how often have you found that you could not cope with all the things that you had to do? **0 1 2 3 4**
7. In the last month, how often have you been able to control irritations in your life?
0 1 2 3 4
8. In the last month, how often have you felt that you were on top of things? **0 1 2 3 4**
9. In the last month, how often have you been angered because of things that were outside of your control? **0 1 2 3 4**
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? **0 1 2 3 4**

Appendix 7: Hospital Anxiety and Depression Scale (HADS)

The HADS is a copyrighted measure. For this reason it is not presented here. To obtain a copy of this instrument please see:

<http://www.gi-assessment.co.uk/products/hospital-anxiety-and-depression-scale-0>



**Participant Information Sheet
Version 1.3 (12/03/2012)**



Project: The role of schemas, stress and parental bonding in self-harm

You are being invited to take part in a research study. Before you decide if you would like to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. If there is anything that is not clear or you would like more information then please ask. Thank you for taking the time to read this.

What is the purpose of this study?

The study aims to understand the relationship between self-harm and the beliefs an individual has, the way emotions are managed and experiences of being parented in childhood. It is hoped that greater understanding of these relationships will lead to the development of better treatments for self-harm. This research is being conducted as part of a Doctorate in Clinical Psychology.

Why have I been chosen?

You have been chosen because you are in contact with an Angus or Dundee Community Mental Health Team (CMHT) and you have harmed yourself in the past.

What will I have to do?

If you choose to take part you would meet with me, Amber Saldias, Trainee Clinical Psychologist, at a local GP surgery or your local CMHT premises. Should attendance at either of these locations be difficult you also have the option of meeting at your home. You would complete a short interview about your self-harm and complete several questionnaires. These questionnaires are designed to assess your beliefs about yourself, about others and the world, about the way you manage emotion. They also ask about your relationship with your parents in childhood and your current mood and stress levels. In total it should take about 30-40 minutes.

Do I have to take part?

No. Participation in this project is entirely voluntary. If you do not contact me I will assume you do not wish to participate and you will not be contacted again. Participation or non-participation in this study will in no way affect the treatment you receive from your CMHT. If you decide to take part, you are still free to withdraw at any time and without giving a reason.

What are the potential disadvantages of taking part?

The disadvantages or risks of taking part are minimal. However, it is possible that some of the questions in the questionnaires may identify areas of difficulty or feelings that you had not considered before. If you require support you can phone your local CMHT and discuss any concerns that you have. If you are concerned about this or have any additional questions about participating in the study I am more than happy to discuss this with you before deciding on your participation in the study.

What are the possible benefits of taking part?

There is unlikely to be individual benefit of taking part in this study but the information you give will help in understanding self-harm and hopefully lead to the development of better treatments.

What will happen to the information I give?

Any information you give will be treated with the strictest confidence. All information will be anonymised and held in a locked drawer in a secure office in a CMHT base. Your name will not be used on any of the information and instead you will be given a research code number to ensure confidentiality. Only the research team mentioned below will have access to the data. However, if you inform me that you are making active plans to end your life or to hurt someone else then I may need to contact the CMHT. If you disclose any criminal behaviour I might also have to inform my clinical supervisor who would then consult with his colleagues to determine whether or not this should be reported to the Police. You would be fully informed of such decisions and your data would remain anonymous.

What will happen to the results of this study?

The anonymised results of this research study will be written up and submitted as part fulfilment of my Doctorate in Clinical Psychology at the University of Edinburgh. The results of the research will also be disseminated to the Angus and Dundee CMHTs and other interested parties including at local, national and international conferences. The anonymised results of this study may also be written up for a scientific article.

What do I do next if I want to take part?

If you do decide to take part then please inform the person from the CMHT who contacted you. I will then phone you directly to arrange an appointment. Please also complete the consent form attached and bring it with you to this appointment.

Who has reviewed this study?

The Tayside Committee on Medical Research Ethics A, which has responsibility for scrutinising all proposals for medical research on humans in Tayside, has examined the proposal and has raised no objections from the point of view of medical ethics. It is a requirement that records in this research, together with any relevant records, are made available for scrutiny by monitors from the University of Edinburgh and NHS

Tayside, whose role is to check that research is properly conducted and the interests of those taking part are adequately protected.

What can I do if I would like to make a complaint?

If you have any concerns about any aspect of this study you should contact myself in the first instance and I will do my best to answer any questions or queries that you may have.

If you believe that you have been harmed in any way by taking part in this study, you have the right to pursue a complaint and any resulting compensation through the University of Edinburgh who are acting as the research sponsor. Details about this are available from the research team. Also, as a patient of the NHS, you have the right to pursue a complaint through the usual NHS process. To do so, you can submit a written complaint to the Patient Liaison Manager, Complaints Office, Ninewells Hospital (Freephone 0800 027 5507). Note that the NHS has no legal liability for non-negligent harm. However, if you are harmed and this is due to someone's negligence, you may have grounds for a legal action against NHS Tayside but you may have to pay your legal costs.

Contact Details

Researcher: Amber Saldias
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Clinical Supervisor: Professor Kevin Power
Head of Service
NHS Tayside Psychological Therapies Service
7 Dudhope Terrace
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Thank you for taking the time to read this Participant Information Sheet and for considering taking part.



**Participant Consent Form
Version 1.2 (07/07/2011)**



Project: The role of schemas, stress and parental bonding in self-harm

Researcher: Amber Saldias, Trainee Clinical Psychologist

If you have read the Information Sheet (Version 1.2., 07/07/2011) and would like to take part in the study please complete this form and **return to the researcher at your appointment.**

Please complete the boxes below.

Please put
your initials in
each box:

A. I confirm that I have read and understand the information sheet for this study.

B. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.

C. I understand that relevant sections of my medical notes and data collected during the study may be looked at by individuals from University of Edinburgh or from NHS Tayside, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.

D. I agree to take part in this study

Date _____

Print Name _____ Signature _____

Researcher Name _____ Researcher Signature _____



**Participant Debrief Sheet
Version 1.2. (07/07/2011)**



Project: The role of schemas, stress and parental bonding in self-harm

Thank you for your participation in this project.

This study aims to better understand self-harm by investigating related factors. There is research to suggest that childhood experiences of being parented are associated with anxiety, depression and suicidal behaviours. We are examining for the first time whether parenting experiences in childhood are associated with self-harm. We also hope to understand how stress and emotions are associated with self-harm. A better understanding of these factors can help us extend and adapt psychological therapies (e.g. 'Schema Therapy') so that we can better help people who self-harm.

If you have any questions, concerns or comments, then please feel free to ask. You can also request information about the overall results of the study once it is completed. If you think of any questions in the future, you can contact me at the address provided below. If you are interested in learning more about similar research please visit: <http://www.schematherapy.com/>.

Understandably, talking and thinking about self-harm can be upsetting. If you are feeling at all distressed by any of the topics brought up in this research then please feel free to discuss these with me now. You can also get in touch with the person whom you regularly see from your local Community Mental Health Team (CMHT). The following website is also a useful resource for self-help: www.selfharm.org.uk. If you find that you are distressed after leaving the research session then remember you can contact your CMHT out of hours service 24/7.

Contact Details

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Appendix 11: Ethical Approval: East of Scotland Research Ethics Committee

Please see attached document.

Appendix 12: Research and Development Approval: NHS Tayside

Please see attached document.

Appendix 13: Ethical Approval: Amended Protocol

Please see attached document.

Appendix 14: Research and Development Approval: Amended Protocol

Appendix 15: Descriptive Statistics for Additional Variables

Variable	Pre-truncation				Post-truncation			
	Min	Max	Mean	SD	Min	Max	Mean	SD
PBI								
Maternal Care	0	15	5.11	3.96	0	15	5.11	3.96
Maternal Control	1	15	7.06	3.24	1	15	7.06	3.24
Paternal Care	0	15	4.56	4.11	0	15	4.56	4.11
Paternal Control	0	15	5.53	3.05	0	11	5.39	2.68
SMI								
Vulnerable Child Mode	2.60	6.00	4.48	0.91	2.60	6.00	4.48	0.91
Angry Child Mode	1.40	5.00	2.92	0.85	1.40	5.00	2.92	0.85
Enraged Child Mode	1.00	5.22	2.34	1.10	1.00	5.22	2.34	1.10
Impulsive Child Mode	1.13	5.63	3.26	1.04	1.13	5.63	3.26	1.04
Undisciplined Child Mode	1.60	6.00	3.67	0.91	2.00	5.40	3.66	0.84
Happy Child Mode	1.00	4.80	2.30	0.89	1.00	4.10	2.28	0.85
Detached Protector Mode	2.00	5.89	3.92	0.89	2.00	5.89	3.92	0.89
Detached Self-Soother Mode	1.50	6.00	3.69	1.08	1.50	6.00	3.69	1.08
Compliant Surrenderer Mode	2.29	6.00	3.93	0.96	2.29	6.00	3.93	0.96
Bully and Attack Mode	1.00	3.56	1.82	0.66	1.00	3.56	1.82	0.66
Self-Aggrandiser Mode	1.11	5.22	2.56	0.84	1.11	4.00	2.50	0.72
Punitive Parent Mode	1.90	6.00	4.11	1.05	1.90	6.00	4.11	1.05
Demanding Parent Mode	1.86	6.00	3.96	1.00	1.86	6.00	3.96	1.00
Healthy Adult Mode	1.30	4.90	3.15	0.83	1.30	4.90	3.15	0.83

* PBI (Parental Bonding Instrument); SMI (Schema Mode Inventory); SD (Standard Deviation)

Appendix 16: Tests of Normality for Additional Variables

Variable	Visual Inspection	K-S-Z/ p-value	Skew/ z-score	Kurtosis/ z-score	Conclusion
PBI					
Maternal Care	Normal	.15/.00	.46/1.61	-.61/1.04	Normal
Maternal Control	Normal	.15/.00	.22/.75	-.85/1.23	Normal
Paternal Care	Normal	.15/.00	.53/1.86	-.67/1.09	Normal
Paternal Control	Normal	.13/.00	.09/.32	.10/.40	Normal
SMI					
Vulnerable Child Mode	Normal	.08/.20*	.06/.21	-.96/1.30	Normal
Angry Child Mode	Normal	.09/.20*	.17/.57	-.71/1.12	Normal
Enraged Child Mode	Normal	.12/.01	.70/2.43	-.40/.84	Normal
Impulsive Child Mode	Normal	.10/.09	.26/.92	-.65/1.07	Normal
Undisciplined Child Mode	Normal	.11/.04	.32/1.10	-.27/.70	Normal
Happy Child Mode	Normal	.10/.09	.64/2.23	-.29/.72	Normal
Detached Protector Mode	Normal	.06/.20*	-.19/-.65	-.15/.51	Normal
Detached Self-Soother Mode	Normal	.12/.01	.44/1.53	-.34/.78	Normal
Compliant Surrenderer Mode	Normal	.07/.20*	.32/1.12	-.56/1.00	Normal
Bully and Attack Mode	Normal	.16/.00	.60/2.08	-.65/1.07	Normal
Self-Aggrandiser Mode	Normal	.12/.01	.48/1.67	-.09/.40	Normal
Punitive Parent Mode	Normal	.08/.20*	-.23/-.82	-.70/1.11	Normal
Demanding Parent Mode	Normal	.10/.19	.20/-.71	-.62/1.05	Normal
Healthy Adult Mode	Normal	.07/.20*	-.04/-.12	-.56/1.00	Normal

* This value is a lower bound of the true significance
