THE IMPACT OF CHILDHOOD ADVERSITY ON
OUTCOMES IN ADULT DEPRESSION

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ABSTRACT

OBJECTIVES

This thesis examined three types of childhood adversity, low parental care, overprotection and abuse, as predictors of response to two types of depression treatment: antidepressant medication and psychotherapy. These three types of childhood adversity were also examined in association with adults who made a lifetime suicide attempt or engaged in non-suicidal self-injury (NSSI). Post-hoc analyses were conducted to explore for associations between patients who selected the most extreme responses, lowest or highest, on a pre-treatment measure of depression cognitions and their response to psychotherapy. These analyses were termed the “extreme responder hypothesis.”

METHOD

Two outpatient groups, recruited for separate but sequential clinical trials, comprised a sample of 372 adults with a primary diagnosis of major depressive episode. The first trial compared the antidepressant medications fluoxetine to nortriptyline (n = 195), and the second compared interpersonal psychotherapy (IPT) to cognitive behavioural therapy (CBT) (n = 177).

At baseline, all patients underwent a detailed clinical interview. The structured assessment was conducted by a trained clinician who asked a range of diagnostic questions including incidence of suicide attempts or self-harm; the research nurse asked about childhood abuse. Outcome data were gathered from these interviews, the clinician-rated Montgomery Åsberg Depression Rating Scale (MADRS), and the Clinical Global Impression Scale (CGI), as well as the self-report Parental Bonding Instrument (PBI).
OUTCOMES

In the medication trial, three outcomes were examined: whether or not the patient had an adequate trial of medication; the percentage improvement at six weeks as measured against MADRS baseline; and whether or not the patient achieved two months of sustained recovery, measured by the CGI at six months. In the psychotherapy trial, two outcomes were examined: whether or not the patient achieved a ≥60% improvement on the MADRS and percentage improvement at end-of-treatment as measured against MADRS baseline. Responses to suicide and NSSI questions were dichotomized outcomes.

KEY RESULTS

Medication trial:

- Low paternal care predicted an inadequate trial of medication.
- Maternal overprotection predicted poor patient response to treatment at six weeks and a lower rate of achieving two months of sustained recovery, measured at six months.

Psychotherapy trial:

- Maternal care showed a non-linear relationship with response across both therapies. Patients reporting intermediate levels of maternal care (versus low or high levels of care) responded best to psychotherapy.
- Across therapies, the interaction effect of maternal care by therapy and paternal protection by therapy were statistically significant.
- Maternal care and paternal protection levels were associated with a differential response to IPT but not CBT.
- The extreme responder hypothesis did not explain the downward response trend in patients who reported high maternal care.
Suicide attempts and NSSI:

- Low maternal care was associated with higher rates of lifetime suicide attempts.
- Low paternal care was associated with higher rates of NSSI.

Overall:

- Abuse — whether psychological, physical, or sexual — was not a robust predictor of any of the outcomes measured.

**Discussion**

This thesis finds a modest association among low parental care, overprotection, and poor outcomes for adults with depression. The results suggest it is appropriate to conceptualize parental care and protection levels as contextual factors in treating a patient’s depression.

The experience of low parental care (emotional neglect) or overprotection in childhood, as measured by the Parental Bonding Instrument, has a greater impact on treatment response for adult depression and a stronger association with lifetime suicide attempts and NSSI than childhood abuse. These findings are supported by the literature on childhood attachment.
PREFACE

The data for this thesis have come from two randomized clinical trials of outpatients with depression conducted at the Clinical Research Unit within the Department of Psychological Medicine, University of Otago, Christchurch, New Zealand.

This thesis examines the role of childhood adversity as a predictor of response to two types of depression treatment: medication and psychotherapy and in relation to lifetime suicide attempts and non-suicidal self-injury (NSSI). In the first trial, the treatments offered were the antidepressant medications fluoxetine and nortriptyline. In the second trial, Interpersonal Psychotherapy and Cognitive Behavioural Therapy were offered. The analyses of childhood adversity in relation to lifetime suicide attempts and NSSI were completed on the combined patient sample from the two trials. From the results of the psychotherapy trial, the concept of an “extreme responder” was explored based on earlier research from Teasdale et al., (2001). Extreme patient responses on a baseline cognitive measure of depression, either low or high, were analysed in relation to psychotherapy response.

I joined the Clinical Research Unit as a full-time PhD student, under the supervision of Professor Peter Joyce, Associate Professor Sue Luty and Associate Professor Janet Carter, who also lectures at the University of Canterbury. Prior to beginning my PhD, I completed a Master’s degree in Counselling Psychology in the United States. From this training, one of my interests was the impact of childhood experiences on adults who seek treatment for depression, an interest which intersected with trials conducted within the Department of Psychological Medicine. My supervisors encouraged me to pursue this topic as my research focus, using the datasets from the medication and psychotherapy trials which will be described herein. Within six months of starting my PhD, I began the Post Graduate Diploma in Clinical Psychology at the University of Canterbury, a degree which would allow me to
practice as a clinical psychologist in New Zealand. During this time, the ground beneath Christchurch began to shake. While my research was not affected by the earthquakes, the whole city was turned on its side. With support from supervisors, family and friends, I completed my post-graduate clinical training and PhD studies, all the while riding the 10,000+ aftershocks.

With input from my supervisors, I conceptualized the thesis research questions and proposed the methods to examine these questions. I have undertaken all the statistical analyses described in this thesis, with guidance and direction from Professor Peter Joyce, my primary supervisor, and Associate Professor Chris Frampton, biostatistician. I have also been responsible for the interpretation and write up of all of the results, which include two published papers and one under review, that form the basis of this thesis.
ACKNOWLEDGEMENTS

Without the support of so many others, this thesis would not have been possible. To my primary supervisor, Professor Peter Joyce, for your tireless, patient, and faithful commitment to supervision, week after week, even when you had more pressing commitments, I am forever grateful. I have been impressed with the breadth and depth of your knowledge and appreciative of your willingness to share it with me. And to the fantastic duo of Associate Professors Janet Carter and Sue Luty, for your able and consistent support, astute insights and encouragement throughout the research, I extend my deep gratitude.

To the primary investigators who made their datasets available to me for analyses, I appreciate your willingness to share these valuable resources.

To those who participated in the research studies, thank you for giving your time and trusting the process.

To Associate Professor Chris Frampton and Peter Joyce, thank you for generously answering my statistical questions as though they were original. I’m grateful to you both for your input which resulted in me developing a new-found appreciation for the beauty and power of statistics.

To Carole Acheson, I’m very appreciative of your ability to give structure and meaning to incomplete thoughts and for helping me get past the writer’s block and actually put words on paper. It’s been a pleasure getting to know you.

To Judith Stone for your work in ably formatting the thesis and attending to its finishing touches, I am deeply indebted.

I have enjoyed and appreciated being part of the very supportive Department of Psychological Medicine here in Christchurch and I have felt fortunate to be in the
company of so many talented, dedicated, and creative individuals. It was a joy to come to work each day.

Many thanks go to the University of Otago for Doctoral and Fanny Evans Postgraduate Scholarships which provided the financial means to allow me to undertake this research and to the Royal Society of New Zealand, Canterbury branch, for awarding a travel grant which enabled me to present a paper at an international conference in Newcastle, Australia. As well, I appreciated the extra support provided by the Department and the University following the earthquakes. The funding for both clinical trials was provided by the Health Research Council.

To my family and friends around the globe, I am very grateful for your support and encouragement to focus on the task at hand. One friend described this as a degree of perseverance; indeed it is! In particular, I would like to acknowledge the efforts of Dr Carolyn Doughty who in addition to friendship, offered organizational guidance, proofreading skills, and general sanity-saving advice, as well as to Dr Virginia “Gini” McIntosh who likewise shared her expertise and enthusiasm with me at particularly crucial moments, which helped me start data analysis and get through to submission. To fellow PhD students Lynere Wilson and Deirdre Richardson, I enjoyed our camaraderie and weekend away. And, to dear friend and fellow-PhD candidate, Peshali Fernando, the journey would not have been the same without you. Here’s to being done, my friend.

To Dr Mary Anne Fifield, I am deeply grateful to you because you encouraged me to start this journey. Thank you for being an excellent role model.

And last, but definitely not least, I send my love and gratitude to James, Emma, and Ian for your ongoing encouragement throughout my years in graduate school and during the thesis writing phase, particularly in the final months. I am very grateful for and proud of your efforts. Like stars in the sky you are always there, shining brightest in the darkness.
**PUBLICATIONS**

**PUBLICATIONS AND PRESENTATIONS ARISING FROM THIS THESIS**


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## Study Names

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<tbody>
<tr>
<td>CODS</td>
<td>Christchurch Outcome of Depression Study</td>
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<tr>
<td>CPDS</td>
<td>Christchurch Psychotherapy for Depression Study</td>
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## Treatments

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<tbody>
<tr>
<td>IPT</td>
<td>Interpersonal Psychotherapy</td>
</tr>
<tr>
<td>CBT</td>
<td>Cognitive Behaviour Therapy</td>
</tr>
<tr>
<td>TAU</td>
<td>Treatment-As-Usual</td>
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## Measures

<table>
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<th>Abbreviation</th>
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<tbody>
<tr>
<td>MADRS</td>
<td>Montgomery Åsberg Depression Rating Scale</td>
</tr>
<tr>
<td>DSM</td>
<td>Diagnostic and Statistical Manual of Mental Disorders</td>
</tr>
<tr>
<td>SCID-P</td>
<td>Structured Clinical Interview for DSM-III, IV</td>
</tr>
<tr>
<td>CGI</td>
<td>Clinical Global Impression Scale</td>
</tr>
<tr>
<td>PBI</td>
<td>Parental Bonding Instrument</td>
</tr>
<tr>
<td>BDI</td>
<td>Beck Depression Inventory</td>
</tr>
<tr>
<td>MOPS</td>
<td>Measure of Parental Style</td>
</tr>
<tr>
<td>CECA-Q</td>
<td>Childhood Experiences of Care and Abuse-Questionnaire</td>
</tr>
<tr>
<td>DAS</td>
<td>Dysfunctional Attitude Scale</td>
</tr>
<tr>
<td>CSPRS</td>
<td>Collaborative Study Psychotherapy Rating Scale</td>
</tr>
<tr>
<td>SCL-R-90</td>
<td>Symptom Checklist-Revised 90</td>
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## Other

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<tr>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>CSA</td>
<td>Childhood Sexual Abuse</td>
</tr>
<tr>
<td>PTSD</td>
<td>Post-Traumatic Stress Disorder</td>
</tr>
<tr>
<td>MDE</td>
<td>Major Depressive Episode</td>
</tr>
<tr>
<td>NSSI</td>
<td>Non-Suicidal Self-Injury</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for the Social Sciences</td>
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THE IMPACT OF CHILDHOOD ADVERSITY ON OUTCOMES IN ADULT DEPRESSION

CHAPTER 1: INTRODUCTION

1.1 OVERVIEW

Childhood adversity has been well-established as a risk factor for developing depression in adulthood. Whether childhood adversity is measured as neglect, abuse, or any of a range of other detrimental experiences, the experience predisposes its child victims to numerous mental health issues in adulthood (Collishaw et al., 2007, Tonmyr et al., 2005). However, despite the strong evidence for childhood adversity as a risk factor, there is limited research investigating the impact of childhood adversity on treatment outcomes in adult depression. An even smaller body of research examines childhood adversity, in particular low parental care, in relation to lifetime suicide attempts and non-suicidal self-injury (NSSI) in depressed adults. This thesis addresses those gaps and also highlights the methodological and definitional challenges associated with examining a broad research topic such as childhood adversity. Recognizing these challenges is important in interpreting the data to draw conclusions about the role of childhood adversity in depression outcomes.

1.2 DEFINING CHILDHOOD ADVERSITY

In this thesis, childhood adversity is defined three ways: as low parental care, conceptualized as emotional neglect; overprotection; and abuse. The low parental care and overprotection measures are derived from the well-validated Parental Bonding Instrument (PBI), which asks patients to self-rate the perceived level of care and protection received from their mother and father before the age of 16. Childhood abuse, also occurring before age 16, is defined using the common research definitions of
psychological, physical, or sexual abuse, measured by patient responses to a clinical interview.

Despite the frequent use of the term “abuse and neglect,” research and media-driven public opinion tend to focus largely on the role of abuse and overlook that of neglect (Gilbert et al., 2008). In this context, the thesis addresses the important issue of “the neglect of neglect” (McSherry, 2007, p. 607). In particular, emotional neglect, defined by low parental care on the PBI, is examined for its role in outcomes for adult depression, along with overprotection and abuse.

1.3 Defining Outcomes

The depression outcomes examined in this thesis were broadly divided into two categories. The first was response to depression treatment, measured in a number of ways which will be explained in detail in subsequent chapters. Briefly, response to treatment was examined with an intention-to-treat sample as well as a completer’s sample using continuous and dichotomous outcomes derived from clinician-rated and self-report measures. The second category recorded whether a patient reported making a lifetime suicide attempt and/or engaging in non-suicidal self-injury (NSSI). This second category is characterized by definitional and methodological challenges. Historically, researchers’ definitions of suicidal behaviours have varied, with overlapping terminology and means of measurement that confuse the distinctions. To aid in understanding terms, when referencing another researcher’s study, the word designated for the behaviour in that study will be used.

Finally, this thesis explored a post-hoc hypothesis concerning patients who selected the most extreme responses on a measure of depression cognitions prior to treatment. Patients selecting either the lowest or highest responses were termed “extreme responders.” The hypothesis explored whether this particular response style might predict patients’ response to psychotherapy prior to receiving treatment. The potential links between extreme maternal care levels, lowest or highest, and extreme responding are also investigated. To contrast the extreme responders’ hypothesis, traditionally-
scored responses on the measure of depression cognitions, as well as traditionally-scored maternal care levels, were examined.

1.4 Thesis Structure

The structure for this thesis is as follows: Chapter 2 presents a comprehensive review of the literature on childhood adversity, including an historical perspective on the topic. Reviewing the literature on childhood attachment offers context for the importance of examining childhood adversity, and provides a framework for understanding why parental care and protection levels are significantly related to outcomes. The literature addressing the associations between childhood adversity and mental health outcomes in adults is presented, as is the relationship of childhood adversity to suicide attempts and NSSI. The animal literature provides further support for attachment as a mediating or moderating factor in relation to depression outcomes. The literature review chapter concludes with the thesis goals, the research questions addressed in this thesis, the hypotheses and their rationale. Chapter 3 outlines a review of the methodology used in the thesis including details of the patient sample, background on the clinical assessment and specifics regarding the measurements and treatments provided. Chapters 4 through 7 present the results, beginning with the associations between childhood adversity and response to antidepressant medication. Childhood adversity in relation to psychotherapy response is presented in Chapter 5, and the contribution of childhood adversity to lifetime suicide attempts and NSSI in Chapter 6. Chapter 7 reports on the results examining the extreme responder hypothesis. Finally, Chapter 8 provides a summary and discussion of the key findings, highlights the clinical implications, and offers suggestions for the direction of future research.
CHAPTER 2: LITERATURE REVIEW, THESIS GOALS AND HYPOTHESES

2.1 AN HISTORICAL PERSPECTIVE ON CHILDHOOD ADVERSITY

In modern mental health research, “childhood adversity” is a broad term used to describe a wide range of adverse experiences that may have occurred in a child’s life before the age of 18. However, the definition of what constitutes an adverse experience and the research on its impact is an evolving subject fuelled by changing attitudes about children’s role in society, as well as an increased awareness of the potential long-term impact of negative childhood experiences. An historical review provides context for the evolution of the study of childhood adversity.

“Give me the child until he is seven and I will show you the man.” This quote, attributed to a sixteenth-century Jesuit priest (Brierley, 1994), Saint Francis of Xavier, suggests the psychological concept that early life experiences shape a child well into adulthood. Sigmund Freud, the founder of psychoanalysis, echoed this notion in his theory of personality development, positing that a child’s early life experiences played a significant role in influencing behaviour and personality traits throughout life (Fisher and Greenberg, 1996). Although psychological theories of child development have been bandied about for centuries, the criminalization of child mistreatment did not occur until the late nineteenth century, when child protection laws were legislated (Korbin, 1981). Even then, in many adults’ eyes, children were still considered chattels and subjected to unlimited cruelty (Korbin, 1981). As late as the 1950s, industrialized societies believed that child neglect and abuse incidents were rare (Korbin, 1981).

In the 1960s paediatrician C. Henry Kempe challenged this belief by publically identifying and describing for the first time the “battered-child syndrome,” which highlighted the poor clinical condition of children who were subjected to serious physical abuse (Kempe, 1962, p. 17). A few years later, social worker Dexter Bullard,
along with his medical colleagues, reported on “failure to thrive,” (FTT) a term used to describe infants and young children who fell below the third percentile in height and weight yet lacked an organic cause for their deficits (Bullard et al., 1967, p. 680). Bullard was the first to postulate childhood neglect, specifically “an interactional affective problem between the mother and her child,” as a causal factor for FTT (Bullard et al., 1967, p. 688). It was not until the 1970s, however, that children in the United States were granted entitlement to protection from harm at a governmental level when the U.S. Congress passed the Child Abuse Prevention and Treatment Act (CAPTA), making child abuse a crime in all 50 states (Stein, 1984).

A decade later, the United Nations (UN) declared 1981 as the “Year of the Child,” galvanizing member countries worldwide to focus on the urgent needs of their children (McCord, 1983). This declaration represented a major perspective change globally in terms of viewing children as having rights and requiring protection, and was considered to be “a landmark in the history of child welfare” (Korbin, 1981, p. 73). Taking governmental protections for child welfare further, the UN General Assembly, in 1989, adopted the Convention on the Rights of the Child (CRC) as international law (Santos Pais and Bissell, 2006). The universal standards established by the CRC describe broad principles for children’s rights in many facets of life (Bennett et al., 2009) including the right to have a name, to be raised by one’s parents or cultural group, to express an opinion, to have privacy, and to experience protection from abuse or exploitation (Santos Pais and Bissell, 2006). The nearly unanimous adoption of the CRC by UN member countries (all except Somalia and the US) challenged governments around the globe to promote and protect the rights of children (Bennett et al., 2009).

Taking a local approach to providing care and protection for children, New Zealand gained international attention with its adoption of the Child, Young Persons and Their Families Act of 1989 (Levine, 2000). Ushering in a new era of family-focused care for children, this Act introduced the novel concept of Family Group Conferences which required the input of extended family and community representatives, as well as professionals, in the care and protection of abused and
at-risk children. Previous to this, decisions about these children’s welfare were determined primarily by government organizations (Levine, 2000). The inclusion of the family and local community in the decision-making and therapeutic process concerning child protection and care was a forward-thinking approach at that time. The Act was based on principles valued by the Maori, the indigenous people of New Zealand, which acknowledge the central role that extended family (whanau), the clan (hapu) and the tribe (iwi) play in raising children (Duncan and Worrall, 2000, Levine, 2000).

In 2001, seeking to understand the global nature of child abuse, three international organizations — UNICEF, the UN High Commissioner for Human Rights, and the World Health Organization — collaborated on a study examining violence against children around the world. However, for the first time ever, children were included in the process and consulted directly about their experiences (Bennett et al., 2009). The study’s findings revealed the global prevalence and severity of the abuse problem and the constraints of the current efforts at prevention (Bennett et al., 2009). In response to the study’s deeply disturbing findings, The International Society for the Prevention of Child Abuse and Neglect (ISPCAN) and the International Institute for Child Rights and Development (IICRD) sought to design and promote much-needed improvements in child-protection legislation (Bennett et al., 2009). The two organizations, ISPCAN and IICRD, joined together to develop a child-rights approach to protecting children worldwide. This joint proposal, submitted to the UN Committee on the Rights of the Child, was accepted and became known as CRC Article 19 (Bennett et al., 2009). This child-rights approach expands child-protection measures beyond mere survival to focus on the benefits of life, including human dignity, well-being, health, and personal development. Despite the unfortunate prevalence of childhood adversity around the globe, encouraging data come from a three-year study by UNICEF documenting the impact of the implementation of the CRC (Santos Pais and Bissell, 2006). Summing up their examination of 62 countries, researchers report a “considerable process of social change set in motion” (Santos Pais and Bissell, 2006, p. 689), with a “positive effect on the rights of children” (Santos Pais and Bissell, 2006, p. 689).
In 35 years since the CRC was established, 24 countries around the world have voted to ban parents’ right to use corporal punishment on their children (Zolotor and Puzia, 2010). This number contrasts with the 192 nations that adopted the UN’s CRC (Schluter et al., 2007). While the original CRC text did not address corporal punishment specifically, the CRC advocated to protect children from “all forms of physical and mental violence, injury or abuse” (Detrick, 1999). In 2007, New Zealand became the first English-speaking country (Kelly, 2011) to ban the use of corporal punishment with its Amendment to Section 59 of the 1961 Crimes Act, (Schluter et al., 2007, Taylor and Smith, 2008, Zolotor and Puzia, 2010). The “anti-smacking bill,” as it became known locally, abolished the “use of parental force for the purpose of correction except in circumstances to prevent or minimise harm to the child or another person” (Justice, 2007, p. 1, Taylor and Smith, 2008). Despite the passing of this amendment, more than 80% of New Zealanders responding to a population-based survey had previously endorsed a parent’s right to use an open hand to smack their child (Carswell, 2001, Maxwell, 1995). These public opinions align with the prevalence rates of corporal punishment of children reported in the United States and elsewhere around the world (Benjet, 2003).

The academic study of childhood adversity arose from the research focus on the physical abuse of children, which was initiated in the early 1960s (Erickson and Egeland, 2002), and brought to professionals’ attention by the work of Kempe and others (Bullard et al., 1967; Kempe, 1962). Fuelled by the media coverage of substantiated cases of child physical abuse, professionals, as well as the general public, began to acknowledge that sexual abuse against children was a reality as well (Leventhal, 2005). Previously, accusations of child sexual abuse were viewed as stories confabulated by the child (Leventhal, 2005). Moves to prosecute those who committed childhood sexual abuse (CSA), however, took decades. In Ireland, for example, the first case of child sexual abuse was not publically tried until 1991 (Buckley, 1997).

As CSA became recognized as an issue, the topic, along with physical abuse, dominated media and research attention (Erickson and Egeland, 2002, Gilbert et al.,
2008, Pianta et al., 1990). Although the definition of childhood adversity has expanded over the years to include more than a dozen types of adverse experiences (Kessler et al., 2010), a bias towards focusing on abuse (Pianta et al., 1990), and CSA in particular, is reflected in the literature (Egeland, 1987). This abuse focus often occurs at the expense of other forms of childhood adversity such as neglect (Gilbert et al., 2008, Kaplan et al., 1999, Thabrew et al., 2012). However, childhood neglect has been associated with a range of negative outcomes, including physical and psychological consequences which extend into adulthood (De Bellis, 2005, Ney et al., 1994).

2.2 DEFINING CHILDHOOD ADVERSITY

2.2.1 Literature definitions

Over the decades since childhood neglect and abuse were first acknowledged publicly as issues to address and eventually research, the definition of childhood adversity has centred around the experiences of psychological, physical or sexual abuse or neglect (Leventhal, 2005). The general term “maltreatment,” has been used to denote psychological, physical, or sexual abuse and emotional or physical neglect, including the experiences of low parental care or parental overprotection. Over time, however, societal views and norms have changed, thus expanding the definition and understanding of psychological issues. Factors such as an increased divorce rate and a better understanding of childhood development and mental illness have contributed to broadening the experiences which are considered potentially psychologically or physically detrimental to children. The literature on childhood adversity now includes familial maladjustment issues such as a parent’s mental illness, addiction or criminal behaviour; interpersonal loss, such as divorce or the death of a parent; economic poverty, including insufficient funds for food or healthcare; and witnessing domestic violence (Gilbert et al., 2008, Kessler et al., 2010). The broadening of childhood adversity’s definition and research focus reflects a more comprehensive psychological understanding of the experiences which may negatively impact children than those that were considered in the past.
2.2.1.1 Defining neglect

Neglect was first formally defined with abuse, as a single concept, within the context of the Child Abuse Prevention Treatment Act 1989 (CAPTA) as “the physical or mental injury, sexual abuse or exploitation, negligent treatment, or maltreatment of a child under the age of 18 years” (Erickson and Egeland, 2002). Perhaps because of neglect’s intangible nature and the issues surrounding how it is reported, neglect has historically lacked a definitive, unifying operational definition (Dubowitz et al., 2005, Kinard, 1994). In part, the issue of threshold contributes to the problem, as it is difficult to define what constitutes a minimal level of care (McSherry, 2007). When reporting neglect to a child protection agency, some cases may not meet the minimum threshold required (Dubowitz et al., 2004). Substantiating neglect requires evidence to be gathered over time, thus making it a longer-term developmental issue rather than a discrete incident (Minty and Pattinson, 1994, Stone, 1998). In the absence of an operational definition, neglect is generally defined as comprising three primary subtypes: emotional, physical, and environmental (Dubowitz et al., 2004). Researchers agree, however, that neglect represents an act of omission (Barron and Jenny, 2011) which typically reflects a pattern of inadequate or low parental care in one or more of the areas (Leventhal, 2005). Governmental agencies have become, in recent years, more precise about the definition of neglect in terms of its physical and environmental aspects, but still give cursory mention to the emotional component. The United States’ Centers for Disease Control and Prevention define neglect as “the failure to meet a child’s basic physical, emotional, medical/dental, or educational needs; failure to provide adequate nutrition, hygiene, or shelter; or failure to ensure a child’s safety” (Gilbert et al., 2008).

While the adversity literature tends to emphasize the physical or environmental aspects of neglect, some awareness and acknowledgement exists for the emotional aspects of neglect, (Pederson and Wilson, 2009, Zweig and Paris, 1991), measured in this thesis by low parental care on the PBI. Pianta et al., 1990 reported that children who experienced either emotional or physical neglect were found to have the same emotional vulnerabilities and behavioural deficits, including internalizing
and externalizing behaviours. This finding suggests the importance of considering the emotional aspects of neglect, not merely the physical. Within the literature, emotional neglect is defined variously as parenting deficits (McSherry, 2007); characteristics such as low parental warmth and care (Slack et al., 2004); failure to provide adequate nurturance or affection (Barron and Jenny, 2011, Kaplan et al., 1999); lack of parental attention (McSherry, 2007); or “psychologically unavailable” parents who are “unresponsive to their children’s bids for care and attention” (Egeland, 1987, p. 115).

2.2.1.2 Defining overprotection

The original research on parental overprotection was conducted by DM Levy in 1943, in his examination of overprotective mothers whose children were seen at a paediatric clinic for emotional disturbance (Parker and Lipscombe, 1981). Levy described the adverse childhood experience of maternal overprotection, thought to contribute to a range of child psychopathologies, as behaviours including excessive physical or social contact with the child; treating the child in a manner that is developmentally or emotionally below the child’s age level; preventing independent behaviour; and, lack of, or excessive control of, the child’s behaviour (Parker and Lipscombe, 1981). Typically characterized by a controlling, intrusive, or demeaning manner, parental overprotection discourages a child’s independent thought or action (Parker, 1983b). In creating the Parental Bonding Instrument (PBI) (Parker et al., 1979), Parker refined and expanded the study of overprotection from Levy’s work in two ways. First, the PBI provided an instrument to measure two principle dimensions of parental bonding behaviour: care and protection (Parker et al., 1979) and second, the PBI examined the role of fathers separate from mothers (Parker, 1983b).

2.2.1.3 Defining abuse

In contrast to neglect, researchers generally agree on the definition of abuse. It is an act of commission that may harm the child at the time of occurrence (Leventhal, 2005). Operational definitions include descriptions of the types of abusive
behaviours which may be committed against children in three categories: psychological, physical, and sexual abuse. According to the Centers for Disease Control and Prevention, psychological abuse is characterized by “intentional behaviour that conveys to a child that s/he is worthless, flawed, unloved, or unwanted” (Gilbert et al., 2009, p. 69). Physical abuse involves the “intentional use of physical force against a child that results in or has the potential to result in physical injury” (Gilbert et al., 2009, p. 69) and is usually inflicted as a result of a beating or inappropriately harsh physical discipline (Santa Mina and Gallop, 1998). Sexual abuse involves “any completed or attempted sexual act, sexual contact, or non-contact sexual interaction with a child by a caregiver or substitute caregiver” (Gilbert et al., 2009, p. 69). More recent classifications of abuse include drug-taking activities committed in front of children and allowing or forcing an under-aged person to take drugs or drink alcohol (United States Department of Health and Human Services, 2013a).

2.3 MEASURING CHILDHOOD ADVERSITY

Childhood adversity is an important area of research in understanding the consequences of maltreatment on adult mental health outcomes, but a number factors impact the measurement of this topic. Challenges in the analysis and comparison of data within the childhood adversity literature include the varied scope of the adverse experiences measured and definitional, measurement and data collection differences which result in inconsistencies among studies. While a wide variety of experiences may be considered adverse in childhood, this thesis focuses on the two primary constructs measured by the PBI: parental care and protection, along with abuse. In the context of adversity, low parental care, overprotection and three types of abuse are the adverse experiences examined.

2.3.1 The two PBI constructs: care and protection

The Parental Bonding Instrument (PBI) (Parker et al., 1979) was used in this thesis as a primary measure of the degree to which a patient reported the adverse childhood
experiences of low parental care and/or overprotection. The PBI was designed to measure retrospectively an adult’s perceptions of being parented (Parker, 1981a, Parker et al., 1979). The PBI asks the respondent to reflect on the perceived levels of care and protection received from one’s mother and father during the first 16 years of life. The care and protection scales are inversely correlated for both mothers and fathers, with approximately 10% of the variance in care explained by protection (Lopez and Gover, 1993). Typically, as care increases protection decreases; however, other care and protection combinations exist. In some research, the PBI outcomes are reported with respect to four quadrants (Avagianou and Zafiropoulou, 2008, Parker et al., Parker, 1983b, Rey, 1995):

- high care + low protection = optimal parenting;
- high care + high protection = affectionate constraint;
- low care + low protection = neglectful parenting;
- low care + high protection = affectionless control.

High protection is also referred to as “overprotection” in the literature (Parker, 1979). In this thesis, a patient who rates a parent highly on protection will be termed as having experienced overprotection.

The PBI, created more than 30 years ago, has been used around the world with community and clinical samples: in Australia (Parker et al., 1995); Japan (Narita et al., 2000, Otani et al., 2012, Sato et al., 1998); China (Jinyao et al., 2012); the Netherlands (Overbeek et al., 2007); Norway (Ryum et al., 2008); New Zealand (Carter et al., 2001, Oakley-Browne et al., 1995); the United States (Enns et al., 2002); and throughout Europe (Heider et al., 2006).

2.3.1.1 Measuring low parental care as emotional neglect with the PBI

In this thesis, low parental care is measured using the PBI and is conceptualized as the construct of emotional neglect. Defining emotional neglect in this manner requires an understanding of what constitutes caring behaviour. Demonstrations of care, as measured by the PBI, include behaviours such as showing affection for the child through words of praise, conversational exchanges, a pleasant tone of voice,
and smiling facial expressions (Parker et al., 1979). Care is also defined by the parent’s ability to understand and attend to the child’s worries or problems. The sum of these experiences is the child feeling appreciated and loved by the parent. Conversely, the childhood experiences which reflect low parental care include feeling unwanted, disliked, unsupported, and misunderstood (Parker et al., 1979), resulting in a sense of emotional distance from one’s parent. These adverse experiences, representing the essence of emotional neglect, focus on the relational and behavioural deficits experienced in the context of low parental care which may contribute to a poor parental attachment. This definition of emotional neglect contrasts the more tangible aspects of physical neglect as described in the literature, which includes not having the availability of, or access to, sufficient food, clothing, shelter, or medical care (Kessler et al., 2010).

2.3.1.2 Measuring overprotection with the PBI

Parental overprotection is defined in this thesis as reports of high parental protection behaviours as measured by the PBI (Parker et al., 1979). Understanding the concept of overprotection is best achieved by considering the parental behaviours that constitute a desired level of protection in the context of a child’s development. Ideally, parents will allow their children to make their own decisions as appropriate for their age and developmental stage, encouraging the child to engage in activities they enjoy (Parker, 1983b). These parental behaviours foster a sense of independence in the child as s/he grows and matures. In contrast, overprotective parents are characterized by controlling, intrusive, or patronizing behaviours. These behaviours might include dictating what clothing should be worn or limiting a child’s freedom to make age-appropriate decisions. Patients who had overprotective parents report feeling that their privacy was invaded and their parents did not want them to grow up (Parker, 1983b). Parental overprotection is also characterized by excessive proximity and authority (Parker, 1983b), as the child’s psychological autonomy from the parent is discouraged (Enns et al., 2002).
2.3.2 Challenges collecting and comparing data on childhood adversity

Collecting and comparing data on childhood adversity poses a number of challenges for researchers. As research designs vary, the means to collect data and the sources vary as well. The experiences which fall into the category of childhood adversity are interrelated, and in some cases, overlapping. A consensus definition of what constitutes “childhood adversity” does not exist. This ambiguity creates discrepancy among studies in the way childhood adversity is defined and measured. The inconsistency is reflected in the variety of ways the term is used and the differing experiences that are included or excluded when studying this broad topic, making data interpretation and comparison across childhood adversity studies a challenge.

2.3.2.1 Research designs

The majority of studies on childhood adversity use a retrospective approach, asking adult participants about childhood experiences and examining the participants’ responses in association with outcomes (Dong et al., 2004, Gilbert et al., 2008, Kessler et al., 2010). While concerns exist regarding the reliability of retrospectively collected self-report data (Alloy et al., 2006, Green et al., 2010, Maniglio, 2010), some researchers believe that the bigger issue is underestimation, either from official reports (Gilbert et al., 2008) or undercounting due to recall failure (Moffitt et al., 2009). Self-reports tend to be closer to true approximations, particularly if participants are asked on more than one occasion, such as with a prospective research design (Moffitt et al., 2009). While prospective, longitudinal studies are generally considered more rigorous than retrospective designs (Maniglio, 2010), in the case of asking about and recording experiences of childhood adversity, researchers typically employ an observational model and refrain from asking child participants specifically about parenting experiences until these participants are adults and have left home (Fergusson et al., 2008, Moffitt et al., 2009). This methodology avoids the potential issue of having to report neglectful or abusive parenting and risk losing the family’s participation in the study, an issue that will be discussed further in Section 2.3.2.7.
2.3.2.2 Data sources

One of the challenges of studying childhood adversity is the discrepant ways of collecting data on the adverse experiences (Fergusson et al., 2003). Three primary means exist for documenting the experiences of childhood adversity: medical or social services reports, a clinical interview, or a self-report measure (Kinard, 1994), and each source has its own bias. Third party reports from agencies providing support to maltreated children and their families may be a potential source of data but these data may be constrained by the categories of inquiry as dictated by the agency’s mandate (Kinard, 1994) or reflect only the most serious cases due to resource allocation issues (McSherry, 2007). When participants are questioned directly about adverse experiences, the questioning may take one of two forms: a clinical interview or a self-report questionnaire. As there is no standardized system of questioning for childhood adversity, a wide range of questions may be asked (Thabrew et al., 2012). As well, the clinical interview may rely on the perspectives of different responders: the adult retrospectively reporting on his or her experience as a child, the child reporting at or near the time of the adverse experience, or the parent reporting on incidents involving the child (Kinard, 1994). Each responder may provide a slightly different account or impression of the event which leaves the clinician or researcher to piece together and classify the story. Clinician-rated and self-report measures vary widely in terms of their structure and purpose. A review of 43 clinician-rated and self-report instruments for measuring childhood adversity highlights the range of tools available (Thabrew et al., 2012).
With respect to the specific measures of childhood adversity used in this thesis, the PBI and the childhood abuse questionnaires ask patients retrospectively about past experiences. These types of questions require drawing upon one’s memory for the information. While it is important to note that the accuracy of one’s memory may be coloured by one’s past or present mood state (Brewin et al., 1993), or subject to erosion over time, thus creating reporting inaccuracies (Brewin et al., 1993) reports of memory imprecision may be exaggerated. In a study of severely depressed inpatients, the accurate reporting of past abuse was reportedly not influenced by mood (Douglas and Porter, 2012). Some researchers argue that regardless of the accuracy of specific incidents, “the recollection of central features of events has been found to be accurate and reasonably stable over time” (Brewin et al., 1993, p. 87). In a birth cohort of nearly 1,000, structural equation modelling of retrospective reports on abuse and CSA in relation to current mental health status that potential errors in measurement of childhood adversity did not pose a significant threat to study validity (Fergusson et al., 2011). With respect to the PBI, this measure is noted for its reliability and validity because rather than asking a patient to recall specific events, the measure asks about “global judgments” of the experience of being parented (Gerlsma et al., 1994, p. 165; Sakado et al., 1999). Longitudinal studies support the stability of parental behaviour memories over time, irrespective of mood state (Gerlsma et al., 1993, Gerlsma et al., 1994, Gerlsma, 1994) particularly as measured by the PBI (Chambers et al., 2004, Wilhelm and Parker, 1990, Wilhelm et al., 2005).

2.3.2.3 Interrelatedness of childhood adversity experiences

Other methodological issues complicate the collection of childhood adversity data. Categorizing the type of childhood adversity which has occurred can be difficult as different forms of maltreatment frequently occur in tandem with another (Kinard, 1994, Thabrew et al., 2012) or are highly inter-correlated (Green et al., 2010). In particular, emotional or physical neglect often occurs together with other types of childhood adversity (Mennen et al., 2010, Ney et al., 1994, Spinhoven et al., 2010). Ninety-five percent of respondents who endorsed neglect reported experiencing at least one other form of childhood adversity (Green, et al., 2010). In the context of
being unresponsive to a child’s needs, a neglectful parent may fail to protect a child from harm, suggesting neglect is a precursor to abuse (Alloy et al., 2006). Some researchers argue that an element of psychological abuse is a component of all forms of maltreatment (Claussen and Crittenden, 1991, Glaser, 2002, Wright, 2007). To describe the relationship between neglect and abuse in another way, one researcher (Gunnar, 2008), summing up more than three decades of childhood adversity research stated simply, “It is difficult to find a child who has been abused but not neglected.” Despite the interrelatedness of childhood adversity, failure to document multiple forms of neglect and abuse may lead to the underestimation of some types of maltreatment (Fallon et al., 2010).

2.3.2.4 Discrepancy among childhood adversity definitions
Adding to the challenge of collecting and comparing data on childhood adversity is the discrepant definitions of the term. As an example, one comprehensive, scholarly review purporting to evaluate instruments measuring “childhood adversity” focused primarily on the traumatic, physical aspects of childhood maltreatment (Thabrew et al., 2012). Few instruments assessing for the emotional aspects of child maltreatment were reviewed, and the ones that were included focused primarily on the overt experiences of witnessing or experiencing childhood trauma. Instruments which measured parental attachment or bonding in particular were not included. Excluding the parental attachment aspects of childhood adversity in this review was a particularly notable oversight in light of the fact that the authors commented directly on the need for this type of research (Thabrew et al., 2012). Specifically, the authors stated that parental attachment and disrupted development “were not yet rigorously investigated” (Thabrew et al., 2012, p. 37) in relation to their connection between childhood maltreatment and adult psychopathology. If a measure such as the Parental Bonding Instrument (PBI) is not conceptualized as evaluating behaviours and relationship patterns central to the study of childhood adversity, the connection between parental bonding, attachment styles and adult psychopathology will not be readily clarified. However, within this same review, credibility for the PBI’s measurement validity was acknowledged in relation to the
Childhood Experience of Care and Abuse Questionnaire (CECA-Q) (Bifulco et al., 1994).

One example of the way discrepant terminology confounds data comparison among studies and impacts accurate interpretation of the childhood adversity research comes from a community mental health study conducted by Enns et al., 2006. As a starting point, this group of researchers listed “neglect” under the category of “childhood abuse,” (Enns et al., 2006). Further, this dichotomized “neglect” variable represented responses to three questions which were nearly identical to questions asked on the PBI, which itself was a separate variable examined in the study and appropriately listed under the category, “parental bonding” (Enns et al., 2006). Reading the abstract without combing through the details of the results or discussion sections would leave the casual reader to draw inaccurate conclusions about the impact of certain types of childhood adversity based on the discrepant definition of terms and the way the concepts were measured (Enns et al., 2006). The specific results from the Enns et al. (2006) paper will be discussed in Section 2.7.1 below, as well as in the Discussion in Chapter 8.

2.3.2.5 Assessment sensitivities
Another important confounding issue in collecting childhood adversity data is the sensitivity some researchers associate with asking participants potentially upsetting or embarrassing questions. Today, childhood physical and sexual abuse receives substantial attention in the literature (Teicher et al., 2006), but there was a time when the subject was ignored due to concerns about respondent embarrassment. Twenty-five years ago, researchers questioned the acceptability of asking adult study participants about childhood abuse, and opted not to ask (Bushnell et al., 1992). As recently as 2006, the asking-about-abuse debate re-emerged (Becker-Blease and Freyd, 2006, Becker-Blease and Freyd, 2007). Fortunately, current professional opinion reinforced need to ask (Gleaves et al., 2007, Read, 2007, Black and Black, 2007, Ullman, 2007, Edwards et al., 2007) citing the many benefits of this line of questioning and noting the pitfalls of not asking.
2.3.2.6 Cultural and socioeconomic sensitivities

Despite the professional consensus supporting the need to ask about abuse, cultural and socioeconomic sensitivities appear to play a role in how childhood adversity is measured in population-based studies, particularly when it comes to neglect. In the WHO study of childhood adversity in 21 countries, questions about sexual abuse were omitted in two countries, Iraq and the People’s Republic of China, out of “concern for respondent embarrassment” (Kessler et al. 2010, p. 379). Even more notable, though, is that in the same WHO study, neglect was omitted from the questioning in 40% of the countries surveyed (Kessler, 2010), also due to potential responder embarrassment. The neglect question was not asked in South Africa, Belgium, France, Germany, Italy, the Netherlands, Spain, or Israel. Of the eight countries in which neglect was omitted, seven were classified as “high income” by the World Bank; South Africa was the only “high-middle income” country in which the question was excluded. The exclusion of neglect in this study appears related to socioeconomic status more than strictly a consideration of cultural sensitivities, as neglect was asked about in all the countries classified as “low/low-middle income” and all but one “high-middle income” country. In contrast, only two “high income” countries included neglect in their line of questioning. Considering neglect as more embarrassing to ask about in high rather than low income countries demonstrates a bias that may skew the dataset and lead to inaccurate conclusions.

2.3.2.7 Ethical concerns

While valuable data may be lost by not asking respondents about adverse childhood experiences, researchers’ reluctance to ask may be driven by more than just a consideration of the respondent’s feelings. In some cases, ethical concerns may limit how much is asked of individuals. One researcher, sharing his experience conducting longitudinal studies on child maltreatment, commented that it was difficult to know how much to ask because once the data are received, professionals may be required to act on the information, as in the case of reported abuse or neglect (Kinard, 1994). Intervening in this situation may limit subsequent data collection. When child research participants report ongoing abuse, particularly
if the perpetrator is a parent, the family’s continued participation in the longitudinal study may be jeopardized or their willingness to continue diminished (Kinard, 1994). In countries with mandatory reporting of child maltreatment, such as the United States, the implications of labelling behaviour as neglectful or abusive may be more punitive to the family than in countries where child protection is intervened with more flexibility, such as the United Kingdom (Glaser, 2002).

2.4 LOW CARE AND OVERPROTECTION IN THE CONTEXT OF ATTACHMENT

In psychology and psychiatry, as in other scientific pursuits, it is essential for clinicians to consider the individual in the context of his or her environment because life experiences, particularly those of early life, substantially contribute to an individual’s psychological and emotional development (Bowlby, 1977). This concept, first suggested by Henry Maudsley at the end of the nineteenth century, was expanded on and refined by psychologists John Bowlby, Mary Ainsworth and others to form and develop attachment theory (Ainsworth, 1969, Bowlby, 1969, 1982, Bowlby, 1977). Freud recognized the foundational attachment significance of the infant-mother bond in the 1930’s when he described a mother’s love as “unique, without parallel, established unalterably for a whole lifetime as the first and strongest love-object and as the prototype of all later love relations” [as quoted in (Ainsworth, 1969, p. 972)]. Although attachment theory has focused on the relationship between mother and child, Bowlby clarified that his use of the term “mother” meant the person who “mothered” or cared for the child and to whom the child was attached, not merely the child’s natural mother (Bowlby, 1958). In the past, it was accepted that fathers had less engagement with their children, which was not viewed as low care or emotional neglect (Dubowitz, 2006). In today's society, researchers recognize that mothers and fathers, whether natural or surrogate, play a distinct but vital role in shaping children’s development. While the importance that fathers play in their children’s lives is increasingly acknowledged, a father’s role is still not well studied or understood (Alloy et al., 2006, Dubowitz, 2006, Guterman and Lee, 2005, Lee et al., 2009).
2.4.1 Role of attachment in healthy child development

In an optimal attachment experience, a primary caregiver displays high levels of sensitivity, responsiveness, and attunement towards the child, which fosters the development of a sense of personal security and the ability to connect with others (Ainsworth, 1969). A strong, supportive primary relationship provides a secure base from which the child may explore the world (Ainsworth, 1978, Bowlby, 1969, 1982). The security of attachment offers the child an ideal environment in which to develop healthy personality processes and affect regulation (Fitton, 2012). Mature personality development is characterized by the presence of two interrelated, reciprocal processes: attachment to others and individuation from others (Blatt and Blass, 1990). These two dimensions operate in tandem, providing an individual with a sense of being able to balance feeling connected to others and being securely independent (Blatt and Blass, 1990). Through the experience of a secure attachment relationship, a child develops a positive internal working model of self and others which reflects the quality of the parent-child relationship (Fitton, 2012). This internal model includes a set of beliefs which influence behaviour, affect, and perceptions of self in relation to others (Benoit and Parker, 1994, Weinfield et al., 1999). In the context of experiencing a secure parental attachment, a child typically develops personality features such as self-reliance, trust, and cooperation with others and conceptualizes a mental model of him/herself as independent, and worthy of being helped by others should the need arise (Blatt and Blass, 1990). These personality features provide individuals with adaptive qualities which may be of benefit throughout life.

2.4.2 Role of attachment in psychopathology

In addition to providing a model of healthy relational development, attachment theory also offers a view of the developmental processes associated with psychopathology (Sroufe et al., 1999). Disturbed early attachment is theorized to occur in an attempt to elicit proximity to a caregiver. While ultimately maladaptive, the behaviours are intuitively initiated by the child for survival, and appear to serve as markers for the beginnings of pathological processes that may lead to mental
health issues later in life (Sroufe et al., 1999). Bearing in mind the adaptive function of behaviour, children with an anxious attachment style may be viewed as attempting to maximize the potential to maintain proximity and connection to a caregiver who is unavailable or inconsistent in caregiving, a process sometimes referred to as “seeking a secure base” (Bowlby, 1977, p. 203). A child with an avoidant style may have learned to minimize his or her distress signals in an attempt to maintain caregiver closeness out of fear of rejection (Bowlby, 1977). Even the disorganized attachment style, characterized by simultaneous approach and avoidance behaviour, may have served a child in maintaining caregiver connection in the context of unsafe caregiving behaviour (J Bowlby, 1977).

2.4.3 Attachment through the lifespan
Attachment theory provides the framework for understanding the importance of early childhood experiences in terms of initiating processes which lay the foundation for future relationships. The mental models of self that are developed in childhood through early parental interactions, along with beliefs about others, tend to be relatively stable into and throughout adulthood. Attachment stability is thought to occur because an individual’s attention is directed to information and interpretations which are consistent with early expectations (Taylor et al., 2014). In turn, these biased information sources influence an individual’s behaviour and elicit responses from others which are consistent with expectations (Taylor et al., 2014). However, even in Bowlby’s earliest volume on attachment (Bowlby, 1969, 1982) the theory was not suggesting merely outcome, but also explaining the process of attachment. Specifically, Bowlby postulated that attachment occurs in the interaction between an organism (the person) and its environment (Bowlby, 1973) and as such, attachment is susceptible to change and adaption over time.

2.4.3.1 Attachment stability
Supporting the stability of attachment, some research highlights the longevity of attachment relationships over time, noting that an individual’s early childhood attachment experiences can create a lasting blueprint for personality development,
mental health, and behavioural and relationship patterns that impact childhood, adolescence, and beyond (Shorey and Snyder, 2006). In a longitudinal study of mother-child relationships across three generations (Kretchmar and Jacobvitz, 2002), mothers internalized the relationship strategies experienced with their own caregivers and recreated these patterns with their 18-month-old children. In another study, adolescents who reported high quality relationships with their parents at 14 to 15 years of age displayed higher levels of warmth, sensitivity, and effective child management with their own children 15 to 16 years later (Friesen et al., 2012). In a New Zealand birth cohort, positive parent-child attachment in adolescence mitigated the risk of later developing internalizing disorders such as anxiety and depression (Jakobsen et al., 2012). Finally, in children who experienced little affection prior to age six, associations were found with externalizing behaviours and social problems in later childhood and adolescence (Dubowitz et al., 2005).

2.4.3.2 Attachment adaptability

Despite the continuity of attachment from childhood through to adulthood described in the literature, there is evidence that attachment patterns may change over time (Thompson, 2000). Attachment styles adapt in the course of an individual’s life for a variety of reasons. New family circumstances, such as a change in socioeconomic status, may bring about attachment-style changes (Fish, 2004). Likewise, adjustments in interaction patterns or the gain or loss of a family member can impact attachment (Fish, 2004). Specific interventions, such as therapy, can bring about adaptive change as well (Taylor et al., 2014, Thompson, 2000). In a study of adults with posttraumatic stress disorder (PTSD), changes in attachment style were examined following inpatient therapy (Muller and Rosenkranz, 2009). In patients who received the treatment, the frequency of a secure attachment style increased compared to those who were waitlisted (Muller and Rosenkranz, 2009). Further, the adaptive change in attachment was maintained at six months post discharge (Muller and Rosenkranz, 2009). In a meta-analysis of fourteen studies, the majority reported improvement in attachment relationships, whether through
increased security or decreased anxiety, following psychotherapy (Taylor et al., 2014).

Research supports Bowlby’s premise that early attachment styles provide a foundation upon which future relationships are conducted; however, attachment is an evolving process. The stability of attachment patterns throughout life varies among individuals (Shorey and Snyder, 2006). In some situations and for some people, the patterns remain stable over time, but for others, changing situations, dynamics and new experiences alter attachment patterns. With corrective experiences such as psychotherapy, insecure or anxious early attachment patterns may transform into a more secure style of attachment characterized by trusting others and believing in oneself (Sroufe et al., 1999).

2.4.4 **Relationship between childhood adversity and adult attachment**

Childhood adversity in the form of low parental care, overprotection, and abuse impacts the formation of an attachment style through the parental behaviour patterns experienced by the child (Gittleman et al., 1998). The PBI, from which the parental care and overprotection measures come, is not a measure of attachment per se, but rather a measure of parental behaviours that may impact the quality of a child’s attachment. However, research links reported parental behaviours, as measured by the PBI, with adult attachment styles. Manassis et al., (1999) compared the convergent validity of the PBI (Parker et al., 1979) and the Adult Attachment Interview (AAI) (George et al., 1985), considered by some to be the gold standard in assessing adult attachment. These researchers concluded that the attachment profiles generated from both were reasonably approximate: high levels of parental care and low levels of overprotection were associated with optimal attachment histories (Manassis et al., 1999). In a longitudinal community study of 1,000 pregnant women and their parents, secure adult attachments were associated with high parental care, as measured by the PBI, from both parents (Gittleman et al., 1998, Hyde et al., 1996). In examining the specific behaviours, attitudes and interactions asked about on the PBI, (see Appendix 4) it is evident that
the resulting care and protection patterns reported by patients impacted the quality of the parent-child attachment relationship.

2.5 Prevalence of Childhood Adversity

Despite the knowledge that experiencing a safe, supportive, nurturing childhood benefits all children, the prevalence rates for adverse childhood experiences are quite high. In one study on the prevalence of childhood adversity, reporting on more than 51,000 people in 27 countries, the proportion of the sample who reported experiencing at least one among a dozen adverse childhood experiences was approximately 38% (Kessler et al., 2010).

2.5.1 Prevalence of neglect, abuse and overprotection

The estimated prevalence rates for neglect range from 3.6 to 5.2%, for physical abuse, 5.3 to 14.8%; and for sexual abuse, 1.6 to 2.4%, within a global survey (Gilbert et al., 2008, Kessler et al., 2010). In a birth cohort of more than 1,000 people born in Christchurch, New Zealand, harsh physical punishment was reported by 4.5% of the participants while childhood sexual abuse (CSA) was reported by up to 6.3% (Fergusson et al., 2008). Of the nearly 10% of children in the United States referred for reports of alleged maltreatment including both neglect and abuse (United States Department of Health and Human Services, 2013b, United States Department of Health and Human Services, 2011, Krugman, 2013), neglect was the most common form of child maltreatment, representing more than 75% of the cases (United States Department of Health and Human Services, 2013b, Barron and Jenny, 2011). In contrast, 17% of the child victims suffered physical abuse, while fewer than 10% experienced sexual abuse or psychological abuse (United States Department of Health and Human Services, 2013b). In 2011, of the 1,570 children who died from maltreatment in the U.S., 70% suffered neglect alone or in combination with another type of maltreatment; 48% suffered physical abuse alone or in combination with other maltreatment, and 8% suffered medical neglect alone or in combination with another form of maltreatment (United States Department of
Health and Human Services, 2013a). Despite the high rates of reported, confirmed, and fatal cases, neglect receives less attention than abuse (United States Department of Health and Human Services, 2013a, Mennen et al., 2010, Wright, 2007). Overprotection is not conceptualized in the epidemiology research as an adverse childhood experience in the same way as neglect and abuse. As such, the concept receives little attention and prevalence rates are not readily reported.

2.6 IMPACT OF CHILDHOOD ADVERSITY ON ADULT MENTAL HEALTH

In spite of the challenges of defining childhood adversity and comparing outcomes across studies, there is little doubt about the negative impact of adverse childhood experiences in later life. Childhood adversity in its many forms, is associated with the onset of numerous types of adult psychopathology (Kessler et al., 1997, Kessler et al., 2010) including mood disorders (Korkeila et al., 2005), anxiety, suicidal ideation and attempt, and substance dependence (Gilbert et al., 2008). In two studies involving more than 60,000 people in 21 countries, exposure to even one of a range of adverse childhood experiences was associated with 25% to 45% of first-onset mental health disorders. The higher percentage was associated with childhood-onset disorders, 32% associated with adolescent-onset disorders, and 26 to 29% associated with adult-onset disorders (Green et al., 2010, Kessler et al., 2010). Supporting these figures, estimates of population-attributable risk proportions among a Chinese community sample indicated that childhood adversity explained 39% of all first-onset DSM-IV mental health disorders (Lee et al., 2011).

2.6.1 Impact of childhood neglect on adult mental health

Childhood neglect, defined generally in the literature, or as measured specifically by the Child Trauma Questionnaire (CTQ) (Bernstein et al., 1994), the Child Experience of Care and Abuse – Questionnaire (Bifuco, 1994) or by investigator-authored questions, has been linked to a range of mental health issues. Neglect in childhood has been found to be associated with posttraumatic stress, eating disorders, and obesity (Pederson and Wilson, 2009), as well as affective disorders and social
phobia (Spinhoven et al., 2010). In comparison to abuse, much less research focuses on the role of neglect as a risk factor for adult mental health issues (Garbarino and Collins, 1999, McSherry, 2007). Although childhood neglect is often overlooked in research outcomes (De Bellis, 2005), when it is examined, the literature suggests that neglect is an equally important aetiological factor in a variety of disorders (Hill et al., 2001, Spinhoven et al., 2010, Thabrew et al., 2012). The impact of low parental care, as measured by the PBI and conceptualized as neglect in this thesis, is reviewed in Section 2.6.5.2.

2.6.2 Impact of parental overprotection on adult mental health

Parental overprotection is not typically measured as a distinct adverse childhood experience, except when examined using the PBI. The associations between overprotection and adult mental health issues will, therefore, be covered in the subsequent section which specifically reviews the PBI literature.

2.6.3 Impact of childhood abuse on adult mental health

Abuse, whether psychological, physical or sexual in nature, has been implicated in predisposing child victims to adult mental health issues (Anda et al., 2006, Collishaw et al., 2007, Hill et al., 2001, Tonmyr et al., 2005), including suicide attempts and suicidal ideation (Fergusson et al., 2008, Enns et al., 2006). The threatening nature of abuse is thought to contribute to anxiety disorders in particular (Brown and Harris, 1993), but the relationship is not found in all studies (Spinhoven et al., 2010). The impact of CSA appears particularly sinister, accounting for approximately 13% of the mental health problems experienced by a longitudinal cohort (Fergusson et al., 2008). In the Fergusson et al. study, which followed participants to age 30, exposure to CSA was associated with increased risks of illicit substance dependence, PTSD, sexual risk-taking behaviours, and psychological vulnerabilities, including low self-esteem and reduced life satisfaction (Fergusson et al., 2013). These associations were found even after controlling for a range of potential socio-demographic confounders. However, not researchers find specific associations between abuse and negative outcomes (Maniglio, 2010). In a systematic review of 60,000 subjects
from 160 studies, Maniglio reported that CSA conferred a general, non-specific risk for depression. Further, he suggested that other variables, notably family environment, may act independently or interact with CSA to increase risk for depression.

2.6.4 Impact of childhood adversity on adult depression
Well-established associations exist between the adverse childhood experiences of low parental care and abuse and the development of depression in adulthood (Bifulco et al., 2002, Carter et al., 1999, Enns et al., 2002, Fergusson et al., 2013, Heim et al., 2008, Oakley-Browne et al., 1995, Parker, 1983b). In two retrospective studies involving more than 25,000 adult members of a large health maintenance organization, a number of adverse childhood experiences were found to increase the risk for depressive disorders and depressed affect (Chapman et al., 2004, Dube et al., 2003). A dose-response relationship was found between the number of adverse events experienced and the probability of lifetime depressive disorder (Chapman et al., 2004). Even the often downplayed experience of being called names as a child, when perpetrated by one’s parents, has been found to contribute to higher levels of depressive symptoms in adulthood (Sachs-Ericsson et al., 2006). In addition to the onset of depression, childhood adversity, and in particular, maladaptive family functioning, is associated with disease persistence for depression as well as a range of mental health disorders (McLaughlin et al., 2010).

2.6.5 PBI care and protection levels in association with adult psychopathology
Since Parker developed the PBI in the late 1970s to define and measure the specific parental behaviours and attitudes that contributed to the “parent-child bond” (Parker et al., 1979), a considerable amount of research has been conducted around the globe using the PBI. The research has focused on the degree to which parental care and protection levels are associated with adult mental health, with depression receiving particular attention. Given the focus of this thesis and the volume of research examining the PBI in relation to adult mental health outcomes, this section will review a number of the pertinent PBI studies, primarily related to mood and
anxiety disorders. PBI care and protection levels in relation to inflammatory bowel disease (IBD) will be included as well. In addition, the PBI literature in relation to suicide attempts and NSSI will be discussed in Section 2.8.3.1.

2.6.5.1 Impact of affectionless control on adult psychopathology

Parker's early research with the PBI highlighted the combination of low parental care and high overprotection, termed “affectionless control” (Parker et al., 1979), as a particularly determinant combination in the development of a range of adult mental disorders in clinical samples for depression (Parker, 1979a, Parker et al., 1987, Parker, 1983a, Gotlib et al., 1988, Parker, 1979b), anxiety (Parker, 1979a, Parker, 1981b), including panic disorder (Parker, 1990), and agoraphobia and social phobia (Parker, 1979c). Depression and anxiety have been associated with low care and overprotection in non-clinical samples as well (Parker, 1979b), although the association was stronger for maternal rather than paternal care or protection levels. Associations between affectionless control and psychopathology have been found by other researchers in a variety of populations. Among a group of adolescents, Martin & Waite (1994) reported that affectionless control was associated with a five-fold increase in the risk for depression. In the context of a range of anxiety disorders, Chambers et al. (2004) reported that patients who reported an affectionless control parenting style from either parent were more likely to retain a diagnosis at long-term follow-up (Chambers et al., 2004). Not all researchers find a specific association between affectionless control and mood or anxiety, however. For example, elevated rates of these disorders were not found in a community sample reporting affectionless control (Mackinnon et al., 1989). Affectionless control, also characterized by low care from one parent combined with overprotection from the other, has been associated with personality disorders as well. Paternal overprotection combined with low maternal care has been associated with psychopathic personality disorder (Gao et al., 2010). A comparison of a group of psychiatric outpatients showed that those with Borderline Personality Disorder (BPD) reported significantly less care and higher levels of overprotection from both parents than those without the diagnosis (Nickell et al., 2002). In addition to
psychiatric risk factors, low parental care and overprotection have been associated with poor physical health. Adult patients with IBD were found to endorse lower levels of parental care and higher rates of overprotection in comparison to a matched population of healthy controls (Agostini et al., 2010a, Agostini et al., 2010b). While the direction of causality cannot be determined in this study, the authors postulated that experiences of inadequate parenting led to later-life psychological distress, correlating with symptoms of IBD (Agostini et al., 2010a).

2.6.5.2 Impact of low parental care on adult psychopathology

Some researchers have found that parental care is the primary PBI factor associated with adult mental health disorders — mood and anxiety conditions in particular. Enns et al. and Mackinnon et al. found that low parental care rather than overprotection was the primary risk factor for a range of adult psychopathologies in two large community samples (Enns et al., 2002, Mackinnon et al., 1993), as did Oakley-Brown et al. who reported low maternal care increased risk for depression four-fold (Oakley-Browne et al., 1995). Even Parker et al., studying community samples more than a decade after the original research was published, found only low care from either parent associated with depression (Parker et al., 1995, Parker et al., 1992). Likewise, in an epidemiological, non-clinical sample in Japan, low parental care was identified as the primary predictor of adult depression (Sato et al., 1998). There were gender differences though; in secondary analyses, the affectionless control combination in either parent was found to predict depression in males, but for females, the association was with fathers only (Sato et al., 1998). Chambers et al. (2004) also found gender differences, with poor parenting affecting the opposite gendered child (e.g. mothers and sons). In addition to depression onset, low parental care has also been associated with the recurrence of depression (Carter et al., 1999). Highlighting the role of fathers, in a community sample the quality of paternal care was a better predictor of overall life satisfaction than was childhood maltreatment (Rikhye et al., 2008). Among a group of Chinese undergraduates, an insecure attachment style in childhood, characterized by either low parental care or high protection, increased the risk of developing symptoms of
depression and anxiety (Jinyao et al., 2012). This association was thought to be related to interpersonal vulnerabilities which, in combination with the hassles of daily life, contributed to the depression and anxiety symptoms (Jinyao et al., 2012). Comparing groups of clinic-referred adolescents with a variety of psychopathologies, only those with a diagnosis of major depression demonstrated an association with low maternal care (Rey, 1995). Finally, comparing recovery phases among a group of women with a history of anorexia nervosa, women who remained chronically ill were distinguished by lower maternal and paternal care scores on the PBI (Bulik et al., 2000).

2.6.5.3 Impact of overprotection on adult psychopathology

When parental overprotection, as measured by the PBI, has been studied in relation to adult mental health disorders, this adverse childhood experience has shown associations most often with disordered personality processes. Overprotection has consistently demonstrated an association with high individual dependency needs in general, and dependent personality in particular (Bornstein, 1992, Parker, 1983b). In comparing PBI scores among four groups of patients, paternal overprotection levels were significantly higher in patients with severe obsessive compulsive disorder (OCD) and in patients with depression combined with milder OCD traits (Yoshida et al., 2005). These researchers concluded that over-controlling and interfering parenting patterns were linked to the development of OCD, as well as depression with OCD traits, rather than being linked to developing depression itself.

2.7 Impact of Childhood Adversity on Treatment Response for Depression

Despite the substantial evidence for links between adverse childhood experiences such as neglect and abuse with adult depression, only a small amount of literature examines these adverse childhood experiences as predictors of treatment response in adults. The first meta-analysis examining the relationship between childhood adversity and depression outcomes following medication and/or psychotherapy was
only recently published (Nanni et al., 2012). The authors reviewed epidemiological studies and clinical trials and reported that, in general, childhood adversity predicted an unfavourable course of illness and poor treatment outcomes for depression (Nanni et al., 2012). A discussion of all the studies included in the meta-analysis and their findings follows in the next section, as well as a review of other published studies. Given the paucity of research available, papers reporting on outcomes in adolescents will be included as well.

2.7.1 Impact of childhood adversity on antidepressant medication and psychotherapy

A small number of clinical trials have examined the association between childhood adversity and response to depression treatment, either antidepressant medication alone or with psychotherapy. Sakado et al. (Sakado et al., 1999) examined remission rates at four months for tricyclic antidepressant medication using the Hamilton Rating Scale for Depression (HAM-D) (Hamilton, 1960) as the outcome measure. The authors reported that among the PBI variables, low paternal care was the only one associated with a poorer response to treatment; however, they did not include abuse variables in their analyses.

Nemeroff et al. (2003) treated 681 chronically depressed patients with nefazodone, Cognitive Behavioral Analysis System of Psychotherapy, or a combination of both. Patients who reported childhood adversity responded better to psychotherapy alone than to an antidepressant alone, and the combination of the two was only marginally better than psychotherapy alone. Further examination of these data revealed that the likelihood of achieving remission from depressive symptoms was two times higher with psychotherapy for those with an adverse childhood history (Heim et al., 2008). These findings suggest that psychotherapy may be an essential component of treatment in patients reporting adverse childhood experiences (Heim et al., 2008). Other studies report that childhood adversity is associated with decreased response to pharmacotherapy treatment for adult depression (Douglas and Porter, 2012, Kaplan and Klinetob, 2000) and dysthymia (Hayden and Klein,
2001), although the evidence is not unequivocal. In Miniati (2010), patients who reported any childhood abuse or neglect took longer to remit with treatment when a survival analysis was examined, but not when remission was analysed dichotomously with chi-square analyses. In a naturalistic study of persistence versus remission in major depressive disorder (Enns and Cox, 2005), patients were treated for twelve months by their general physician using an individually prescribed antidepressant, psychotherapy or CBT. Only CSA was associated with poor treatment response and depression persistence. While parental care and overprotection were not found to be related to response or remission, the PBI care and protection variables were combined for the maternal and paternal behaviours.

Klein and colleagues examined medication response in 808 patients with chronic major depressive disorder (Klein et al., 2009). Childhood adversities related to parenting were assessed using a modified version of the PBI, the Measure of Parental Style (MOPS) (Parker et al., 1997). Maternal overcontrol, paternal abuse, paternal indifference, and sexual abuse all predicted a lower probability of remission. In addition, maternal abuse, maternal indifference, and paternal overcontrol predicted longer duration of illness. Interestingly, and in keeping with the over-emphasis on the role of abuse, the only figure provided in the paper showed the association between abuse and remission rates, although abuse was not more significant than other variables in this comparison. Mirroring the over-emphasis on abuse, in the meta-analysis examining childhood adversity and treatment response (Nanni et al., 2012), the only significant relationship reported for the Klein et al., 2009 paper was childhood abuse and remission, thus giving the impression that abuse was the only, or the most significant, association. The other childhood variables and their significant associations with remission and other outcomes were not mentioned.

Finally, in two studies of adolescents, Asarnow et al. (2009) and Lewis et al. (2010) reported that childhood abuse and trauma were associated with a lack of response
to CBT but not to antidepressant medication (fluoxetine or venlafaxine) or to a combination of the two treatments (Asarnow et al., 2009, Lewis et al., 2010).

Few studies have examined the impact of childhood adversity on response to psychotherapy alone. Three studies reported on combined medication and psychotherapy treatments for adults (Enns et al. 2005, Nemeroff et al. 2003 and Miniati et al. 2010); and two studies examined combined therapy for adolescents, Asarnow et al. (2009) and Lewis et al. (2010). Apart from the study reported in Chapter 5 of this thesis (Johnstone, 2013), only one other study examined childhood adversity in relation to psychotherapy as the sole treatment for adults. Ryum et al. (2008) combined data from four psychotherapy trials \( n = 105 \), examining a range of psychological diagnoses including anxiety, depression, personality disorders, obsessive-compulsive disorder (OCD), and somatoform disorders. The PBI was used as a predictor of outcome for individual and group psychotherapy treatments (Ryum et al., 2008). The psychotherapies included Pesso-Boyden System Psychomotor (PBSP) Group Therapy, a mind-body approach designed to address emotional deficits and trauma originating in childhood, CBT-Group Therapy (CBTG), CBT, and Treatment-as-Usual (TAU). The most intriguing finding overall was that no consistent pattern was evident for one type of childhood adversity predicting outcome, regardless of the psychotherapy offered. Specific findings reported that higher maternal and paternal care were related to poorer outcome in the PBSP group while higher paternal care was related to better outcome with CBT. Higher levels of maternal protection (overprotection) were associated with better outcomes with group CBT, while higher levels of paternal protection (overprotection) were related to better outcomes in the TAU condition (Ryum et al., 2008).

While the Ryum et al. (2008) paper is referenced in a number of instances throughout the thesis, the quality and strength of the outcomes reported in this paper are limited based on a number of methodological and sample issues. As well, the weight of the results should be interpreted in light of the fact that the paper
was published in a relatively low-impact journal with a small readership. These issues further limit the ability to meaningfully generalize and compare outcomes with other studies. However, because no other studies examined childhood adversity in relationship to psychotherapy outcomes by themselves, the paper is discussed in detail.

In the Ryum et al. (2008) paper, the four comparison psychotherapy groups were not equal on maternal or paternal care scores at baseline. Patients reported significantly lower care from both mother and father in the PBSP treatment group compared to the other three groups. Participants were not randomly assigned to treatment across the groups, and the diagnoses were divergent, running the gamut from affective disorders and anxiety to personality disorders and somatoform disorder. The duration and intensity of treatment varied widely across the groups (e.g. two hours of treatment twice per week for six weeks; one-and-a-half hours of treatment once a week for six months). Little information was provided about therapy protocol, and no measures of treatment adherence or fidelity were noted for the psychotherapies given. In addition, childhood abuse was not examined. The authors used a variety of outcome measures, some of which are not frequently reported in the research. For example, post-treatment self-report scores from the Symptom Checklist-90-Revised (SCL-90-R) and Inventory of Interpersonal Problems (IIP-64) were used as outcomes. These measures may have been appropriate given the multi-diagnostic sample examined, as the SCL-90-R measures change in mental health symptoms across diagnostic groups, but the use of different measures makes comparing outcomes with other studies difficult. Although participants reporting high maternal care in the Ryum et al. study (2008) had a poorer response to PBSP, the authors did not examine for a non-linear relationship. The poorer response to PBSP may also reflect the theoretical focus of the therapy on childhood issues that did not exist in the context of receiving high maternal care. In contrast, high paternal care was associated with a better outcome in CBT. Although the study examined a range of mental health issues, which reflected real-life practice, this
study had a number of sampling and methodological issues which rendered comparisons with other studies, and conclusive findings, difficult.

The two final studies examined childhood adversity in relation to treatment response with psychotherapy in adolescents. Barbe et al. compared adolescents with and without sexual abuse histories as a dichotomized “yes” or “no” variable. Adolescents who reported CSA had lower remission rates for both CBT and nondirective supportive therapy compared to those who were not abused (Barbe et al., 2004). No other adverse childhood experiences were measured. Shirk et al. (2009) examined school-based CBT for adolescents and reported that exposure to childhood trauma, also a “yes-no” variable, was associated with lack of remission when the outcome was measured as “no longer meeting criteria for depressive disorder” on the clinician-rated Computerized Diagnostic Interview Scale for Children (C-DISC-IV) (Shirk et al., 2009). However, trauma exposure was not significantly associated with change in self-rated BDI scores from pre- to post-treatment. In yet another example of over-emphasizing the role of abuse and trauma, this study highlighted the negative impact of trauma on treatment response, although the actual result demonstrated that trauma did not predict a poorer response to CBT when the outcome measure examined was the widely-used BDI change score.

Finally, looking at the association between childhood adversity and psychotherapy response another way, researchers reported on outcome as measured by a reduction in harmful behaviours. In a study of adolescents and young adults, participants who reported a history of CSA demonstrated a lower risk of repeated deliberate self-harm (DSH) when CBT was the treatment as compared to TAU (Spinhoven et al., 2009). In seeking to understand these findings, the authors hypothesized that the CBT intervention offered tailored treatment, which focused on current problem areas (Spinhoven et al., 2009). In particular, the treatment aimed to enhance emotional awareness, increase distress tolerance, and develop
alternative problem solving skills, all of which are vulnerabilities found to be associated with DSH (Linehan, 1993, van der Kolk, 1991).

2.7.2 Summary of childhood adversity’s impact on treatment response

The findings reported in this section underscore the limited amount of research examining childhood adversity as a predictor of response to depression treatment. The overarching theme of the literature appears to answer an implied question: Do all treatments work worse for patients who experienced childhood adversity? At this early stage of research on this topic, it seems that a tacit, global belief prevails, one which posits that outcomes will be poorer in those who experienced adverse childhood experiences, particularly abuse. If this prejudice exists, it may hinder an understanding of what works best. The gap is wide between the current literature and understanding precisely how childhood adversity impacts outcomes. This distance is fuelled by a number of factors, including the inter-correlation of the childhood adversity variables and the conflicting results. The overall impact of childhood adversity on response to depression treatment may be best described as general and varied depending on adversity type, how the adversity is defined and measured, which outcomes are examined, and the type of treatment provided.

2.8 THE IMPACT OF CHILDHOOD ADVERSITY ON SUICIDE ATTEMPTS AND NON-SUICIDAL SELF-INJURY

Before reviewing the role of childhood adversity on lifetime suicide attempts and non-suicidal self-injury (NSSI), the two behaviours require definition. Although suicide attempts and NSSI are viewed as separate but related behaviours in this thesis, historically the behaviours have been researched in tandem, or defined and measured ambiguously with considerable overlap between them.

2.8.1 Defining suicide attempts and NSSI

In this thesis, a suicide attempt denotes the act of intentionally trying to end one’s life and is measured according to lifetime attempts rather than suicidal ideation,
recent attempts, or repeated attempts as measured in other studies (Bruffaerts et al., 2010, Corcoran et al., 2006, Enns et al., 2006, Ystgaard et al., 2004). Non-suicidal self-injury (NSSI), also termed “self-mutilation” (Briere and Gil, 1998, American Psychiatric Association, 1994) “self-harm” or “self-injury” (Hawton et al., 2005, Skegg, Hawton et al., 2012), “parasuicide” (Henderson, 1974, Schmidtke et al., 1996), and “deliberate or repetitive self-injury” (Klonsky, 2007) is conceptualized in this thesis as behaviours related to affect regulation and tension relief, rather than a specific attempt to die. This distinction is supported by the most recent version of the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) (2013), as well as current research (Asarnow et al., 2012, Gratz, 2007, Horne and Csipke, 2009). In the DSM-5, NSSI is defined as “injurious bodily behaviour in the absence of an intent to die” (American Psychiatric Association, 2013), and included under the “Conditions for further study” section. NSSI is reportedly engaged in to “obtain relief from a negative feeling or cognitive state; to resolve an interpersonal difficulty; or, to induce a positive feeling state” (American Psychiatric Association, 2013). Prior to this detailed and descriptive definition, NSSI was identified as a characteristic of suicide attempts and Borderline Personality Disorder (American Psychiatric Association, 1994). The varied descriptions of NSSI denoted a range of meanings, from a behaviour occurring in the absence of a desire to die (Favazza, 1998, Klonsky, 2007, Mangnall and Yurkovich, 2008), to a definition that avoided ascribing intent (Hawton et al., 2012, Skegg). As an example of the overlapping and ambiguous nature of previous definitions of NSSI, then called “deliberate self-harm,” the National Health Centre in the United Kingdom defined it as “an act of intentional self-poisoning or injury irrespective of the apparent purpose of the act” (Cooper et al., 2005, p. 297).

Historically, terms for the two behaviours – a suicide attempt and NSSI – have been used interchangeably (National Institute for Clinical Excellence (NICE), 2004). However, patients citing different functions for making a suicide attempt versus engaging in NSSI have lent credence to distinguishing between them (Andover et al., 2012, Brown et al., 2002). Despite their differences, suicide attempts and NSSI share
psychiatric and childhood risk factors, such as a history of mental illness, alcohol use, parental death and adverse childhood experiences (Hawton et al., 2005, Hawton et al., 2012). As well, engaging in NSSI is associated with an increased risk for making a suicide attempt (Andover et al., 2012, Wilkinson et al., 2011).

2.8.2 Prevalence of suicide attempts and NSSI
Suicidal behaviours and NSSI are major public health issues. Suicide ranks among the top three causes of death for 15 to 35 year-olds (Soreff, 2012), with 700,000 people taking their own lives annually in the United States (National Institute of Mental Health (NIMH), 2012). A one-year prevalence estimate among community samples within 21 countries participating in the WHO survey estimated rates of suicide attempts at 0.3% and suicidal ideation at 2.0% (Borges et al., 2010). In a general population sample of adults in Europe, a three-year incidence of suicide attempts was estimated at 0.9% and suicidal ideation at 2.7% (ten Have et al., 2009), while among adolescents higher incidence rates were reported: 2% for suicide attempts and 2 to 14% for suicidal ideation (Bronisch et al., 2005). Data from Te Rau Hinengaro: The New Zealand Mental Health Survey, a nationally representative household survey of nearly 13,000 participants aged 16 years and older, reported one-year prevalence for a suicide attempt was 0.4% and 3.2% for suicidal ideation while lifetime prevalence for a suicide attempt was 4.5% and 15.7% for ideation (Beautrais et al., 2006).

The prevalence for NSSI among non-clinical adolescent and young adult samples ranged from 4 to 35% (Gratz, 2006, Klonsky et al., 2003). Clinical populations are at a higher risk for engaging in NSSI with prevalence rates for adolescents and young adults ranging from 38 to 67% (Asarnow et al., 2009). Although NSSI has been associated with higher rates in females than males (Kapur and Gask, 2009, Suyemoto, 1998), the gender rates were not found to be significantly different in studies of non-clinical populations including military recruits (Klonsky et al., 2003), college students (Favazza et al., 1989, Gratz et al., 2002), or high school students (Martin and Waite, 1994).
2.8.3  Risk factors for suicide attempts and NSSI

While the literature examining childhood adversity as a risk factor for suicide attempts and NSSI in adults is sparse, a few factors have been identified.

2.8.3.1  Childhood adversity as measured by the PBI

Six studies used the PBI (or a refinement, the MOPS) to examine risks for suicidal behaviour in adults. All studies reported an association between the experience of low parental care (maternal and paternal, or just maternal) and adult suicidality (Beautrais, 2002, Dale et al., 2010, Ehnvall et al., 2008, Goldney, 1985, Heider et al., 2007). Dale et al. (2010), in examining two clinical groups, found similar levels of parental care and protection between adults with anxiety or depression symptoms and those who made a suicide attempt. Within the group who attempted suicide, significant associations were found between the combination of low parental care and overprotection (affectionless control) and the risk of suicide repetition (Dale et al., 2010). Also among a clinical sample of 343 patients, affectionless control was associated with lifetime suicide attempts for women, but not men (Ehnvall et al., 2008). Klein et al. (2009) reported that among a group of patients with chronic depression, a range of parental behaviours, as measured by the MOPS, were correlated in bivariate analyses with a history of suicide attempts. However, in multivariate analyses, only maternal indifference, akin to low maternal care, and the dichotomized CSA variable were associated with suicide attempts. Interestingly, despite the significant associations, these findings were not highlighted in the paper. In the only non-clinical sample of adults, an epidemiological study of 7,740 respondents in six European countries, both low maternal and paternal care were significantly associated with suicidal ideation and attempt (Heider et al., 2007).

A larger body of research has reported associations similar to those for adults within an adolescent population. In all the adolescent studies reviewed, affectionless control characterized by the combination of low parental care and overprotection and suggestive of a poor attachment, was associated with an increase in suicidal behaviours (Adam et al., 1994, de Jong, 1992, Martin and Waite,
1994, Singh et al., 2012, Violato and Arato, 2004). Freudenstein reported the same association among suicidal adolescent inpatients, but with maternal care and protection levels only (Freudenstein et al., 2011). As well, Goldney reported an association between affectionless control and suicidal behaviour when comparing a group of suicidal women, age 18 to 30 years, with matched controls (Goldney, 1985).

Conceptualizing suicidal behaviours in the context of attachment theory, Bowlby agreed with Henderson’s definition of “parasuicide” (attempted suicide or acts of self-injury) as a “morbid form of care-eliciting behaviour,” (Henderson, 1974, p. 173). Bowlby suggested that these behaviours may manifest more readily in patients who lacked early care (Bowlby, 1977). Bowlby hypothesized that the care deficit in these patients created a need to engage in behaviours which might activate the attachment system and draw caregivers into closer proximity (Bowlby, 1977).

2.8.3.2 Childhood sexual abuse

Childhood sexual abuse (CSA) has been identified as contributing a particular risk for suicide attempts and NSSI (Briere and Gil, 1998, Gladstone et al., 1999, Gladstone et al., 2004, Maniglio, 2011, Romans et al., 1995, Santa Mina and Gallop, 1998, Ystgaard et al., 2004). A WHO survey conducted in 21 countries found that CSA was associated with an increase in the odds of making a suicide attempt, ranging from a 2.9 to a 10.9-fold increase, depending on victim’s age at the time of abuse (Bruffaerts et al., 2010). Weierich et al. (2008) reported that the significant association found between CSA and NSSI among adolescents in their study was mediated by the re-experiencing and avoidance/numbing symptoms of PTSD (Weierich and Nock, 2008). Not all research agrees on CSA’s role with respect to suicidal behaviour. In a sample of depressed outpatients, suicide attempts were not independently related to those with a history of CSA (Zlotnick et al., 2001). Similarly, in a meta-analysis of 45 studies reporting on “self-injurious” behaviour (SIB), defined the same as NSSI, researchers concluded that CSA does not play a causal
role in the development of SIB but is “modestly related,” due to correlations with the same psychiatric risk factors (Klonsky and Moyer, 2008) including mood disorders, borderline personality disorder, and dissociation.

2.8.3.3 Mental health and previous attempts
A diagnosable mental illness of some type is present in approximately 90% of people who commit suicide, with major depression the most common single disorder, occurring in 35 to 75% of suicides (Bridge et al., 2006, Wilkinson et al., 2011, Beautrais, 2002), depending on population studied. Hopelessness and low self-esteem, both frequently present in depression and conceptually linked to low parental care, are associated with suicide attempts (Bridge et al., 2006, Van Orden et al., 2010, Wilkinson et al., 2011). Previous suicide attempts increase the likelihood of making a suicide attempt, and NSSI predicts completed suicides (Bridges, 2006, Wilkinson et al., 2011). In one study, impaired family functioning, measured by the McMaster Family Assessment but not operationally defined, was the only variable, aside from higher suicidality at baseline, to significantly and independently predict a subsequent suicide attempt (Wilkinson et al., 2011). Finally, young women who had made a suicide attempt scored significantly higher on a scale measuring external locus of control (Goldney, 1982), suggesting that among this sample of women, belief in self-efficacy was low and may represent an additional risk factor for making a suicide attempt.

2.8.3.4 Methodological challenges drawing conclusions from the suicide/NSSI research
As with other aspects of researching childhood adversity, a number of challenges exist in relation to measuring its impact on suicide attempts and NSSI. Methodological differences in the measurement and definition of parental care, protection, CSA, and abuse, as well as the ambiguity around the definition of suicidal behaviours and NSSI, make comparisons among studies difficult and drawing conclusions from the results tentative. As well, the literature does not clearly delineate whether childhood adversity contributes an additional risk factor
above and beyond its association with adult depression, due to a paucity of studies specifically addressing this question. With respect to measuring the parental behaviours and attitudes of care and protection, researchers used a variety of instruments (de Jong, 1992, Ehnvall et al., 2008, Johnson et al., 2002). In addition, some researchers used the PBI to measure care and protection, but combined the data for both parents (Violato and Arato, 2004, Dale et al., 2010).

2.8.4 Differentiating risk factors for suicide attempts from NSSI

In terms of differentiating risk factors between suicide attempts and NSSI, some evidence exists for low maternal care, or the combination of low care and overprotection, to act as a particular risk for suicidal behaviours (Adam et al., 1994, Freudenstein et al., 2011, Ehnvall et al., 2008). Less is known about adverse childhood experiences which may contribute to NSSI because its status as a distinct phenomenon is relatively recent (Asarnow et al., 2012). One study, which explicitly examined NSSI in adolescents, qualified the association found between CSA and NSSI as being mediated by PTSD symptoms (Weierich and Nock, 2008). However, another study examining NSSI in adolescents and young adults reported that maternal antipathy and neglect, as measured by the CECA-Q (Bifulco et al., 1994), were significantly related to NSSI, over and above experiences of childhood abuse (Kaess et al.). The PBI care variable has been reported to measure similar constructs as the CECA-Q maternal antipathy and neglect scales (Thabrew et al., 2012).

In summary, drawing conclusions about the independent impact of childhood adversity on lifetime suicide attempts and NSSI in a sample of depressed adults is not easy. Definitional differences in the variables examined, as well as variations in the populations studied, mean that forming firm conclusions is challenging. The question of whether childhood adversity independently predicts lifetime suicide attempts and NSSI in a depressed sample, over and above the association between childhood adversity and depression, remains to be answered. This thesis aims to provide a response.
2.9 Impact of Childhood Adversity on Potential Mediators or Moderators of Outcome

A number of factors may act as mediators or moderators in an association between childhood adversity and the depression outcomes measured in this thesis. Three of the most salient factors are personality development, gene expression and the neurobiology of stress.

2.9.1 Impact of childhood adversity on personality development

The childhood experience of being parented is associated with normal personality development, as well as personality dysfunction. In a community-based sample of adults, researchers examined the contribution of parenting to the development of normal personality traits in adulthood (Reti et al., 2002). A small but significant correlation was found between the adverse parenting experiences of low care and overprotection, as measured by the PBI, and personality features thought to be precursors to later dysfunction (Reti et al., 2002). The participants who reported lower parental care and higher protection were more likely to endorse maladaptive personality features such as higher neuroticism, lower conscientiousness, lower self-directedness, and higher harm avoidance (Reti et al., 2002). Similarly, potential personality precursors to borderline personality disorder were compared between a group of maltreated children versus controls (Rogosch and Cicchetti, 2005). The children who experienced early maltreatment showed personality features and interpersonal relationship difficulties thought to be associated with vulnerability for later emerging borderline personality disorder (Rogosch and Cicchetti, 2005).

2.9.2 Impact of childhood adversity on personality disorders

Low parental care has been associated with the likelihood of having general personality dysfunction among a group of outpatients treated for depression (Carter et al., 2001). In addition, low parental care was associated with specific personality disorders: paranoid, borderline, avoidant, and dependent diagnoses were the most prevalent among a clinical sample (Carter et al., 1999). Likewise, an
endorsement of a dichotomous measure of combined emotional and physical abuse was associated with paranoid and avoidant personality disorders (Miniati et al., 2010). Enns et al. found higher rates of antisocial personality in males who experienced low parental care (2002). In a population-based study, the most consistent personality disorders associated with parental neglect and abuse were schizotypal, antisocial, borderline, and narcissistic (Afifi et al., 2011).

With respect to physical and sexual abuse, Fergusson et al. (2008) found associations between physical abuse, CSA, and personality disorders in a longitudinal cohort, as did Bierer and colleagues, who reported that physical abuse and CSA predicted paranoid and antisocial personality disorders (Bierer et al., 2003). However, Carter et al., did not find CSA as predictive of personality dysfunction, contrary to what is often reported (Carter et al., 2001).

Parental overprotection has consistently demonstrated an association with high individual dependency needs in general and dependent personality in particular (Bornstein, 1992, Parker, 1983b). Paternal overprotection combined with low maternal care has been associated with psychopathic personality disorder (Gao et al., 2010) and paternal overprotection by itself was associated with obsessive compulsive disorder (OCD) and depression with OCD-traits (Yoshida et al., 2005).

2.9.2.1 Impact of personality disorder on treatment response
Drawing together the associations found between specific childhood experiences and response to treatment, a possible mechanism impacting treatment response is the presence of a personality disorder. Few studies examine the impact of personality disorder on response to depression treatment. Of the studies that have, the reported outcomes vary depending on the personality disorder and the treatment provided. Mulder et al. (2003) reported that the presence of a comorbid personality disorder, in the context of treating depressed outpatients, did not affect overall response to medication treatment. However, a poorer response to
nortriptyline, in comparison to fluoxetine, was noted in patients diagnosed with Cluster B personality disorders (Mulder et al., 2003b). Joyce et al. (2007) found that personality disorder negatively impacted patients’ response to IPT, but not to CBT (Joyce et al., 2007).

2.9.3 Impact of childhood adversity on gene expression

The childhood experience of being parented, particularly maternal care behaviours, have been shown to influence gene expression. Animal research provides the foundation for understanding the impact of childhood adversity on epigenetic modifications. The study of rodents has provided a particularly fertile field of research on maternal care and genetic mutations. Rat pups who experienced low maternal care, in the form of reduced pup licking, grooming, and nursing, were found to have altered glucocorticoid receptor genes in the hippocampus and differences in DNA methylation compared to rat pups who experienced high levels of maternal care (Weaver et al., 2004). Similarly, rat pups exposed to early maltreatment by stressed mothers produced lasting changes in methylation of the brain-derived neurotropic factor (BDNF) DNA, thus altering subsequent gene expression (Roth et al., 2009). These observed genetic differences between the maltreated and the control rats are thought to impact the hypothalamic-pituitary-adrenal (HPA) stress response system (Heim et al., 2004, Weaver et al., 2004), with noted genetic changes persisting into rat adulthood (Roth et al., 2009, Weaver et al., 2004). Further, a subsequent generation of rat pups that were the offspring of the maltreated rat mothers showed genetic polymorphisms, suggesting that early adverse experiences may contribute to changes in gene expression across generations (Roth et al., 2009).

2.9.3.1 Maternal care mediates gene expression in childhood adversity

Altered gene expression in the context of experiencing childhood adversity is implicated in the onset of mental illness (Heim et al., 2004, McGowan et al., 2009). However, findings from rodent studies offer encouraging data. Rat pups exposed to low maternal care demonstrated genetic mutations (Weaver et al., 2004). However,
the biological offspring of these maltreated rats, cross-fostered to caring dams, displayed behaviours of normally raised rat pups (Weaver et al., 2006). These finding suggest that maternal behaviour may impact behavioural gene expression in rats (Weaver et al., 2006).

In an example of the interrelatedness of childhood adversity, gene expression and personality development, researchers who examined a population of Japanese volunteers found significant interactions between reports of maternal overprotection in childhood, the presence of specific genomes, and harm avoidant personality features (Nakamura et al., 2010).

2.9.4 Impact of childhood adversity on the neurobiology of stress

Non-human primate research provides evidence of the impact of adverse childhood experiences, low maternal care in particular (Dettling et al., 2002, Lyons et al., 1999, Sánchez et al., 2005), on the neurobiology of the stress response system, which may contribute to adult psychopathology (Heim et al., 2004, Penza et al., 2003). Infant monkeys exposed to maternal separation showed reduced cortisol responses to later stress (Lyons et al., 1999, Sánchez et al., 2005), acute increases in stress hormones including epinephrine and norepinephrine, together with decreased morning cortisol levels (Dettling et al., 2002), and increased glucocorticoid sensitivity (Lyons et al., 1999) compared to controls. Another group of infant monkeys, who experienced reduced maternal care from stressed mothers in the context of insecure access to food, demonstrated elevated levels of corticotrophin-releasing factor (CRF) in their cerebrospinal fluid (Coplan et al., 1996). As excess CRF has been associated with affective and anxiety disorders in humans (Coplan et al., 1996), this association suggests a possible neurobiological mechanism in which childhood adversity, in the form of low parental care, may contribute to adult psychopathology.
2.10 Summary

From the extensive body of literature, it is clear that childhood adversity plays a significant role in the aetiology of adult mental health in general, and depression in particular. Lifetime suicide attempts and NSSI, two depression-related behaviours examined in this thesis, are also impacted by adverse childhood experiences, notably abuse.

A much smaller body of research examines the role of childhood adversity in relation to the outcomes measured within this thesis: treatment response in adults with depression, lifetime suicide attempts, and NSSI. Even less research exists on whether parental care and protection in childhood is associated with these outcomes. When childhood adversity has been examined as a predictor in the literature, the focus is often on the role of childhood abuse and trauma, rather than emotional neglect. The result is an over-emphasis on the physical and traumatic aspects of childhood adversity in relation to outcomes. In some cases, significant results are not reported or are de-emphasized when the finding suggests low care or emotional neglect as a factor (Enns, 2006). This bias perpetuates the “neglect of neglect” in the childhood adversity literature (McSherry, 2007, p. 607). As well, attention has historically been on the role of mothers in the context of parental care and protection, or these PBI variables have been examined in general, without a particular consideration of the potentially unique contribution of fathers.

2.11 Thesis Goals

Given the limited research examining the impact of childhood adversity on treatment response, lifetime suicide attempts, and NSSI, this thesis will examine the impact of low parental care, and overprotection from either parent, as well as childhood abuse, on treatment response in adult depression. The impact of these adverse childhood experiences on lifetime suicide attempts and NSSI will be examined as well. While low parental care may be considered a form of abuse, in
this thesis low care is conceptualized as emotional neglect from a parent, a measurement distinct from physical or sexual abuse.

A particular pattern of patient response to questions measuring depression cognitions prior to treatment, referred to as “the extreme responder hypothesis,” will be considered in relation to some of the findings. This thesis provides evidence which may counter the tacit assumption of some clinicians and researchers that patients who experienced childhood adversity, abuse in particular, will not respond to depression treatment or will not respond as well as their non-abused counterparts. Further, the importance of the parent-child attachment relationship, in relation to the outcomes measured, will be highlighted.

2.12 RESEARCH QUESTIONS ADDRESSED IN THIS THESIS

The primary research questions that guided the investigation were:

1. What role do low parental care, overprotection, and abuse play in terms of response to antidepressant treatment in outpatients with depression?

2. What role do low parental care, overprotection, and abuse play in terms of response to psychotherapy in outpatients with depression?

3. Do low parental care, overprotection, and abuse contribute to lifetime suicide attempts and non-suicidal self-injury in outpatients with depression?

During the course of the thesis, and in light of the results reported in Chapter 5, an “extreme responder” hypothesis was explored. The questions specifically related to this hypothesis were:
1. Is there an association between treatment response and extreme responding—defined as a patient’s tendency to select the lowest or highest responses on a pre-treatment measure of depression cognitions?

2. Is the level of maternal care received in childhood associated with extreme responding on the pre-treatment measure of depression cognitions?

3. Are extreme levels of maternal care, either low or high, measured pre-treatment, associated with treatment response?

This thesis answers these questions and provides context for the results.

2.13 Specific Hypotheses

1. The experience of childhood adversity, as measured by low parental care, or overprotection on the PBI, or an endorsement of severe child abuse, will be associated with poor response to antidepressant medication and psychotherapy treatment in adults. In particular, the experience of low care or overprotection from one’s mother or an endorsement of severe childhood abuse is hypothesized to impart the strongest association with poor response to treatment.

2. The experience of childhood adversity, as measured by the variables listed above, will be associated with lifetime suicide attempts and non-suicidal self-injury (NSSI). In particular, childhood abuse is hypothesized to have the strongest association with lifetime suicide attempts.

3. In addition to the primary hypotheses, a post-hoc hypothesis is proposed: Extreme responders, as measured by patients who select the lowest or highest responses on a pre-treatment measure of depression cognitions, will
be associated with a poorer response to psychotherapy compared to patients who selected responses in the middle of this scale.

2.14 Hypotheses Rationale

The primary hypothesis, that childhood adversity is associated with poor response to depression treatment, is based on the well-established associations in the literature linking childhood adversity with depression (Bifulco et al., 2002, Chapman et al., 2004, Dube et al., 2003). Specifically, childhood adversity is linked with both early onset of depression (Green et al., 2010, Kessler et al., 2010) and depression persistence (McLaughlin et al., 2010), as well as suicide attempts (Dube et al., 2001, Enns et al., 2006, Fergusson et al., 2008, Fergusson et al., 2013) and NSSI (Kaess et al., 2013). Abuse is implicated as a key factor in the aetiology of depression (Alloy et al., 2006, Anda et al., 2006, Dong et al., 2003, Green et al., 2010, Thabrew et al., 2012), treatment response (Asarnow et al., 2009, Enns and Cox, 2005, Lewis et al., 2010) and suicide attempts (Bruffaerts et al., 2010, Kessler et al., 2010). As a result, abuse was hypothesized to confer a particular risk for poor treatment response and an association with the two depression-related behaviours studied.

In addition, much of the literature focuses on the particular role that mothers play, both in influencing the healthy socio-emotional development of their children (Ainsworth, 1969, Bowlby, 1958, Engert et al., 2010, Kretchmar and Jacobvitz, 2002, Pianta et al., 1990, Wareham and Salmon, 2006) and in relation to depression onset in their offspring (Feng et al., 2009, Myhr et al., 2004, Neale et al., 1994, Parker and Lipscombe, 1981, Plantes et al., 1988). The animal research focuses on the role of maternal behaviour as well (Roth, 2009; Weaver, 2004, 2006). As such, the hypothesized detrimental role of low parental care or overprotection in adult depression focuses specifically on the mother’s contribution.

The rationale for the post-hoc extreme responder hypothesis is explained in Chapter 5.
CHAPTER 3: METHODOLOGY

3.1 Overview

Two separate but sequential studies conducted within a university-based clinical research unit provide the data for this thesis. These studies were conducted from 1993-2003, prior to the start of the candidate’s PhD. The first study compared two antidepressant medications; the second compared two forms of psychotherapy. Both studies were designed to examine predictors of treatment response. The psychotherapy study compared the efficacy of the two treatments as well. For both studies, the sample was comprised of outpatients with depression. The patients were recruited over the course of several years, using similar recruiting strategies, investigators, and clinicians for both studies.

3.1.1 Candidate’s Contribution

The antidepressant medication and psychotherapy studies from which the data sets arose were planned and conducted prior to the candidate joining the department. The candidate’s role was to select the most appropriate predictor variables and outcome measures among those gathered in the original studies; and to analyse and interpret these predictors and outcomes in the most appropriate and effective way to answer the two primary thesis questions: What role does childhood adversity play in treatment response for adults with depression? What role does childhood adversity play in suicide attempts and non-suicidal self-injury (NSSI)? Secondary questions included: Do adverse childhood experiences impact response to antidepressant medication different from psychotherapy? And, do adverse childhood experiences impact suicide attempts different from NSSI? Rationale for the selection of individual variables and the analytic strategies used will be explained in Section 3.7.
3.2 **Research Studies**

The two studies outlined below comprised the patient data sets upon which this thesis is based.

3.2.1 **Christchurch Outcome of Depression Study (CODS)**

One hundred and ninety-five patients (111 women, 84 men) were enrolled in the Christchurch Outcome of Depression Study (CODS) and were randomized to receive an antidepressant medication, either fluoxetine or nortriptyline. The study was conducted from May 1993 to June 1999. The primary objective of the study was to examine predictors of treatment response in outpatients (Joyce et al., 2002) who were followed prospectively for six months while receiving medication treatment (Mulder et al., 2003a, Mulder et al., 2006).

3.2.2 **Christchurch Psychotherapy for Depression Study (CPDS)**

One hundred and seventy-seven patients (127 women, 50 men), were enrolled in the Christchurch Psychotherapy for Depression Study (CPDS) and were randomized to either Cognitive Behavioural Therapy (CBT) or Interpersonal Psychotherapy (IPT) for depression. The study was conducted from August 1998 to February 2003. The primary objectives for the study were to investigate predictors of treatment response (Joyce et al., 2007) and to compare the efficacy of the two psychotherapies (Luty et al., 2007).

3.3 **Patients**

3.3.1 **Inclusion criteria**

To be enrolled in either of the trials, patients had to be 18 years or older and have a current primary diagnosis of major depressive episode as defined by the DSM-III-R or DSM-IV. Eligible patients for both studies needed to be free of any medication aside from oral contraceptives and occasional hypnotics for a minimum of two weeks prior to study participation.
3.3.2 Exclusion criteria

Psychiatric exclusion criteria for both studies included schizophrenia; a history of mania, but not hypomania; severe alcohol and/or drug dependence which was deemed to be the principle diagnosis; and severe antisocial personality disorder which could interfere with study adherence. However, no patient assessed for possible inclusion was excluded due to alcohol or drug dependence or antisocial personality disorder. Patients with major medical illnesses, however, were excluded. For both of the clinical trials, patients were excluded if they had undergone a recent adequate trial of the treatment to which they were randomized. In the medication trial, if patients had received either fluoxetine or nortriptyline for six weeks or more in the last year, they were ineligible. In the psychotherapy trial, if patients had previously undergone a trial of either of the psychotherapies in the last year, they were ineligible.

3.4 PROCEDURES

3.4.1 Recruitment, screening, and ethics

Patients were recruited from a variety of sources, including community mental health clinics, the psychiatric emergency service, primary care physicians, and self-referrals. No patient advertising was used.

Patients were screened over the phone by a psychiatric research nurse who assessed them for potential eligibility using the inclusion and exclusion criteria noted. If appropriate, the patients were then seen for an initial clinical interview with a psychiatrist, senior psychiatric registrar, or a clinical psychologist. If these initial screening procedures deemed the patient to be eligible for the trial and consent was willingly given at that time, the patient underwent a detailed diagnostic research assessment. In most cases, however, patients returned, typically a week later, which allowed them time to discuss their decision to participate with trusted others. At this appointment, patients gave written consent and underwent a detailed diagnostic research assessment. All patients were provided with trial
details and gave written consent prior to participation. Both trials were approved by the Canterbury Ethics Committee, New Zealand.

3.4.2 Diagnostic research assessment and randomization

To ascertain patient diagnosis, the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (DSM)-III-R and DSM-IV (SCID–P) (Spitzer et al., 1992, Spitzer et al., 1988) was conducted by either a psychiatrist or clinical psychologist. The patient was asked about lifetime suicide attempts and NSSI, and a variety of other clinician-rated measures were completed at this time. The two measures related to this thesis were: the Montgomery-Åsberg Depression Rating Scale (MADRS) (Montgomery and Åsberg, 1979) and the Clinical Global Impression Scale (CGI) (Guy, 1976). The clinician who conducted the research assessment became the patient’s treating clinician.

As part of the assessment, the patients met with the research nurse, gave blood samples and were asked detailed questions about life events including childhood abuse. (See Appendix 6 for the abuse-related questions asked.) The patients completed self-report questionnaires, including the Parental Bonding Instrument (PBI) (Parker, 1979a, Parker et al., 1979) and the Dysfunctional Attitudes Scale (DAS) (Weissman, 1978b). After the assessment was completed, eligible patients were randomized to treatment using computer-generated, blocked-randomization in a ratio of 1:1. This design is one of the most frequently employed for clinical trials as it offers an improvement over simple randomization by forcing periodic balance in the number of patients assigned to each treatment group (Matts and Lachin, 1988). Patients were allocated to treatment by an individual who was independent of the studies. At the time of allocation, the clinician opened a sealed envelope that contained the name of the treatment, so neither patient nor clinician was blind to the treatment received. Depending on which study they entered, patients received one of two antidepressant medications or forms of psychotherapy.
3.5 MEASURES

3.5.1 Diagnostic

3.5.1.1 Structured Clinical Interview for DSM-III-R & DSM-IV (SCID–P)

The Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (DSM)-III-R & DSM-IV (SCID–P) (Spitzer et al., 1988, Spitzer et al., 1992), patient edition, was used by the treating clinician to assess and diagnose current and lifetime psychopathology according to DSM-III or DSM-IV criteria in both the medication and psychotherapy trials.

At multiple sites around the world, the SCID-P has been established as a valid and reliable measure of psychopathology in patients, with a weighted kappa of 0.61 for current and. 0.68 for lifetime diagnoses (Williams et al., 1992) indicating an approximate inter-rater agreement rating of 85% or more.

3.5.1.2 Montgomery-Åsberg Depression Rating Scale (MADRS)

In both the medication and the psychotherapy trials, depression severity was measured using the clinician-rated Montgomery-Åsberg Depression Rating Scale (MADRS) (Montgomery and Åsberg, 1979). Starting at baseline, the MADRS was assessed at regular intervals, with the specific timeframe depending on the trial. In the medication trial, the clinician repeated these ratings at weeks 3, 6, 9, 13, 20, and 26. Any clinician-reported improvements were validated by patient self-reports. In the psychotherapy trial, the MADRS was conducted at baseline by the treating clinician. The MADRS was repeated by the research nurse three other times: following six weeks of treatment, at the end of the block treatment sessions (mean 13 weeks) and following the final booster session (mean 25 weeks). The difference from baseline to six weeks was used to calculate improvement change scores. In this trial, the research nurse was blind to treatment, thereby reducing reporting bias.
The MADRS was selected because it provides a sensitive measure of depression severity, as well as depression change over the course of treatment. The MADRS has been shown to have good inter-rater reliability and sensitivity to change over time (Montgomery and Åsberg, 1979). A copy of the MADRS may be found in Appendix 3.

3.5.1.3 Clinical Global Impression Scale (CGI)
The Clinical Global Impression Scale (CGI) (Guy, 1976), a seven-point measure ranging from “very much improved,” to “very much worse,” was rated by the treating clinician in the medication trial at regular three-week intervals, on the same schedule as the MADRS, beginning at baseline until week 26. A copy of the CGI may be found in Appendix 1.

The CGI is a classic instrument for recording global assessments of a patient’s baseline and subsequent psychological condition and is frequently used in clinical research because of good face validity and practicality (Kadouri et al., 2007).

3.5.1.4 Self-harm and suicidal behaviour
Patients were asked structured questions by their treating clinician during baseline assessment regarding lifetime self-harm and suicidal behaviour. Specifically, patients were asked, “Have you ever deliberately harmed yourself to relieve tension or feel better?” If affirmative, the response was coded as a “one” and patients were asked how often they had engaged in such behaviour and what methods were used. A negative response was coded as “zero.”

Next, patients were asked, “Have you ever tried to kill yourself?” An affirmative response was coded as a “one” and followed by questions including number of attempts, intent and potential lethality. A negative response was coded as “zero.” See Appendix 5 for specific questions relating to self-harm and suicidal behaviour.
The suicide questions used in these studies are based on the questions from the SCID, while the self-harm questions were added based on the clinical belief that self-harm behaviour differs in its purpose from a suicide attempt.

**3.5.2 Childhood adversity**

**3.5.2.1 Parental Bonding Instrument (PBI)**

The adverse childhood experiences of low care and overprotection were assessed using the Parental Bonding Instrument (PBI) (Parker, 1979a, Parker et al., 1979). The PBI is a 25-question self-report questionnaire which asks patients to rate the level of care and protection received from their mother and father, separately, in the first 16 years of life. Sample care-related questions include, “Spoke to me with a warm and friendly voice,” and “Was affectionate to me.” Sample protection-related questions include, “Liked me to make my own decisions,” and “Gave me as much freedom as I wanted.” See Appendix 4 for a copy of the PBI.

Patient responses are coded 0-3: *very unlike, moderately unlike, moderately like,* and *very like,* with scores ranging from 0 - 36 on the care scale and 0 - 39 on the protection scale. In terms of care, patients with high scores reported experiencing a caring and affectionate relationship with that parent, while patients with low scores reported experiencing neglect or rejection. Conversely, overprotection scores, also referred to in the literature as “high protection,” indicated the experience of feeling controlled or dominated by the parent rated, while low scores indicated the patient felt able to make independent decisions and differentiate from the parent. The PBI care and protection scales were assessed for both parents, generating four variables: one for both parents on both scales.

Developed more than three decades ago, the PBI has been used with community and clinical samples around the globe and has been found to be stable across time and relatively independent of mood state (Gerlsma et al., 1993, Murphy et al., 2010, Wilhelm et al., 2005). The instrument has proven to be a valid and reliable self-
report measure of the perceived levels of care and protection received in childhood by one’s parent (Murphy et al., 2010, Parker, 1990, Qadir et al., 2005, Wilhelm and Parker, 1990). As well, the PBI has been found to be a valid measure of actual — rather than perceived — parenting behaviours (Parker, 1981a) and has shown inter-rater reliability between child and parent ratings (Parker, 1981a).

3.5.2.2 Childhood abuse

The measures of abuse were derived from a structured, nurse-administered interview which assessed for the presence, frequency, and type of abuse a patient may have experienced in childhood. Patients were asked open-ended questions about psychological, physical, or sexual abuse or threat of abuse they experienced before the age of 16. These questions were identical to the ones used by Fergusson et al. (1996) in a longitudinal study of more than 1,000 New Zealanders. Structural equation modelling was completed for these abuse questions in relation to predicting mental health outcomes. The findings revealed that, although substantial errors of measurement were detected, with reliability rates estimated at 0.50, these errors did not substantially impact the validity of the association between exposure to childhood abuse and adult mental health outcomes (Fergusson et al., 2011). See Appendix 6 for the specific questions asked. Responses were collapsed into three frequencies for each category questioned: 0 (no abuse), 1 (occurring 1-3 times), and 2 (occurring four or more times). Total abuse scores ranged from 0 (no abuse) to 12 (repeated abuse reported for all six questions). For analytical purposes, the abuse scores were collapsed into three categories: none for a 0 score, some for scores of 1-4, and severe for scores 5+.

The childhood sexual abuse (CSA) variable was derived from the same interview as the abuse variable, but included only those questions relating to sexual abuse. The three CSA categories asked about were: non-contact sexual abuse, such as exposure to or being forced to watch sexual activity; contact sexual abuse, such as unwanted sexual touching or attempted intercourse; and sexual intercourse/rape. In reporting the CSA variable, none was recorded if the patient reported no sexual abuse. Severe
was defined as any sexual abuse involving intercourse, more than three reports of contact sexual abuse, or a combined score of five or more instances of non-contact and contact sexual abuse. Some was defined by any report of non-contact sexual abuse and/or three or fewer incidents of contact sexual abuse. See Appendix 6 for the specific childhood sexual abuse questions.

3.6 TREATMENTS

3.6.1 Antidepressant medication
Fluoxetine and nortriptyline were selected as the two antidepressant medications because their efficacy was expected to be comparable, but both had a different mode of action, therefore predictors of response could be examined. Fluoxetine was chosen for its popularity as a serotonin reuptake inhibitor (SSRI), while nortriptyline was chosen as a favoured tricyclic with a primarily noradrenergic mode of action. Following the baseline assessment, patients were randomly assigned to either fluoxetine or nortriptyline. Medication was coupled with weekly clinical visits lasting 20-40 minutes, depending on the patient’s particular clinical need. Designed to optimize treatment response rather than offer formal psychotherapy, the clinical sessions were focused on providing patient support and psychoeducation. Patients randomized to fluoxetine received 20 mg per day for three weeks, after which time the psychiatrist could adjust the dose up to a maximum of 80 mg. At six weeks, the mean dose for the patients taking fluoxetine was 28.1 mg per day, with a range of 10-80 mg. Patients randomized to nortriptyline received 25 mg the first night with the dose increasing 25 mg each night, up to 75mg. Blood levels were taken after the patient completed one week on 75 mg of nortriptyline. Any dosing adjustments made were based on clinical response, side effects, and individual levels. At six weeks, the mean dose for the patients taking nortriptyline was 93.5 mg per day, with a range of 50 to 175 mg. All patients who showed symptom improvement were encouraged to continue taking the medication for the full six months. Further details regarding clinical characteristics of the patients, dosing, monitoring and follow-up care may be found elsewhere (Joyce et al., 2002, Joyce et al., 2003, Mulder et al., 2003a, Mulder et al., 2006).
3.6.2 Psychotherapy

The two psychotherapies were chosen for the study because both represent first-line treatments for depression, but with different modes of action. The psychotherapy trial was a study of efficacy as well as predictors of response. Following baseline assessment, patients were randomized to either IPT or CBT and scheduled for weekly 50-minute sessions for up to 16 weeks with their treating clinician. The minimum number of sessions required to be considered sufficient for treatment completion was eight, with a maximum of 19. The mean interval between the first and the final sessions was 13.75 weeks. Treating clinicians were psychiatrists, senior registrars, or clinical psychologists with at least two years of supervised experience treating outpatients with depression. Although manuals were used to guide treatment delivery for both of the psychotherapies, individual sessions were tailored to meet the patient’s particular needs.

3.6.2.1 Interpersonal Psychotherapy (IPT)

Interpersonal psychotherapy (IPT), based on the manual by Klerman (Klerman, 1984), focuses on identifying and exploring the patient’s interpersonal relationships that underlie and maintain depressive symptoms. Working collaboratively, the clinician and patient identify one of four key interpersonal problem areas thought to be associated with depression onset: grief, disputes, transitions, or interpersonal deficits. Subsequent sessions are designed to aid the patient in improving communication and relational patterns by using strategies and techniques to address the key problem area. An exploration of past relationships may be a component of the treatment. Specific techniques used by the clinician may include clarification of emotional states, perception testing, and role plays to improve interpersonal communication.

3.6.2.2 Cognitive Behavioural Therapy (CBT)

Cognitive Behavioural Therapy (CBT) is based on the manuals by Aaron and Judith Beck (Beck et al., 1979, Beck, 1987) and focuses on changing unhealthy thoughts and behaviours. Based on the cognitive model of depression, CBT aims to help the
patient identify and modify negative automatic thoughts about him/herself, the world, and the future which impact emotions and behaviour. The emphasis in CBT is on current life issues. Specific techniques include thought challenges, belief testing, and cognitive restructuring, in addition to therapeutic homework assignments given between sessions.

### 3.6.2.3 Assessment of therapist competence

In order to ensure a satisfactory level of competence was delivered for both psychotherapies prior to treatment, clinicians had to treat at least two patients under supervision. Sessions of both IPT and CBT were audiotaped and listened to by highly experienced clinical supervisors to ensure therapy adherence and competence with respect to the specific protocols for that treatment. The Collaborative Study Psychotherapy Rating Scale (CSPRS) (Hill, 1992), specifically developed to measure treatment adherence, was used in a modified 76-item format to reflect the two therapies provided. Analysis of CSPRS scores revealed strong adherence to treatment protocols, with 100% of sessions accurately classified and 90% adherence to strict protocol. Clinicians’ competence in the two therapies was measured using one of two scales depending on treatment, with scores reviewed by supervisors. All clinicians scored above the acceptable ‘red line’ for treatment competence. Further details about treatment integrity may be found in Luty (Luty et al., 2007).

### 3.7 Statistical Analyses, Outcome Measures, and Predictor Variables

All data analyses were performed using the Statistical Package for the Social Sciences (SPSS, V.15, 2006; V.19, 2011). A general description of the statistical method is reported in this section, with additional detail relevant to each study included in the appropriate results chapters. Descriptive statistics were used to quantify baseline variables using independent t-tests and Chi-square. Logistic regression was used along with a two-way, between groups Analysis of Variance for known interaction effects. For the continuous outcomes, univariate Pearson’s
correlations and one-way analyses of variance were used, followed by multiple regressions for multivariate analyses. The outcome measures and predictor variables selected for use in the two research trials are outlined below.

### 3.7.1 MADRS percentage improvement
In the medication and psychotherapy studies, the patient’s percentage improvement on the MADRS, measured as the difference from the baseline assessment to an endpoint in the trial, represented the continuous outcome in the short term. These analyses were undertaken with a completers’ sample. In the medication trial, percentage improvement was measured from baseline to six weeks of treatment. This measure was selected because it proved to be a clinically relevant predictor of longer term response to antidepressant medication (Mulder et al., 2006). In the psychotherapy trial, percentage improvement was measured from baseline to the end of treatment, with 13.75 weeks representing the mean treatment duration. For both studies, percentage improvement was chosen as an outcome variable because it offered a continuous measure of treatment response.

### 3.7.2 MADRS treatment response
Categorically, treatment response was also defined in the psychotherapy trial as a dichotomous measure of whether or not the patient attained ≥ 60% improvement on the MADRS. Although ≥ 50% improvement is traditionally used as the definition of response, a ≥ 60% improvement on the MADRS was found to be the optimal compromise between sensitivity and specificity in dividing treatment responders from non-responders in a sample of depressed outpatients undergoing medication treatment (Mulder et al., 2003a). As such, this variable was selected as a dichotomous measure of treatment response.

### 3.7.3 Two months of sustained recovery, measured at six months
Two months of sustained recovery was a categorical outcome examined in the medication trial. The “recovery” outcome was selected to measure longer-term
response to antidepressant medication treatment. The concept and terminology for this recovery variable was based on the seminal piece by Frank et al. which proposed and outlined consistent, empirically defined concepts associated with responses to depression treatment (Frank et al., 1991). This outcome was assessed at the end of six months in those who completed treatment. The variable recorded whether or not the patient sustained a “much improved” or “very much improved” score on the CGI for a minimum of two consecutive months, sometime during the six months of medication treatment, on the first antidepressant to which s/he was randomized. The assessment was based on the consensus of the treating psychiatrist as well as the research nurse, who was blind to the treatment received.

3.7.4 Adequate trial
Adequate trial was the categorical outcome variable also used only in the medication trial. Adequate trial measured whether or not the patient took the antidepressant to which s/he was first randomized for the majority of the first six weeks of the trial, in an intention-to-treat sample. This measure was selected as a means of examining treatment engagement. In the psychotherapy trial, this variable was considered initially as well, but as too few patients dropped out of the trial, there were insufficient numbers for appropriate analyses.

3.7.5 Suicide attempts and self-harm/NSSI
Assessed only at baseline, lifetime suicide attempts and self-harm/NSSI were two categorical outcomes examined in the combined sample of the medication and psychotherapy patients. The two study samples were combined because the base rate for suicide attempts and NSSI is very low, so in order to detect a significant outcome, a larger sample size was required. The dichotomized “yes-no” measure was based on whether or not a patient had made a lifetime suicide attempt or engaged in self-harm/NSSI.
3.7.6 Parental Bonding Instrument (PBI)

The PBI scores were used as the primary predictor variables to measure the adverse childhood experiences of low care and overprotection. In the initial analyses, the PBI scores were analysed as continuous variables to retain as much statistical power as possible. In reporting some of the results, the PBI scores were used as categorical variables for illustrative purposes. In the psychotherapy trial, computer-generated tertile scores, using 33% and 66% as cut-off points, were created for the PBI variables as well. This decision was based on initial analyses of the PBI scores measured continuously which suggested a non-linear relationship for maternal care. These outcomes supported previously analysed data (Sellman and Joyce, 1993) examining a sample of men with alcohol dependence following a three-week therapeutic inpatient program (Sellman et al., 1997). These data suggested that the highest remission rates occurred in those reporting an intermediate level of maternal care on the PBI (Sellman and Joyce, 1993). This finding raised the possibility of non-linear relationships for the PBI variables in relation to treatment outcomes, particularly in relation to maternal care. As such, the PBI scores were divided into tertiles and categorized as “low,” “intermediate,” and “high,” for statistical purposes. To confirm the validity of using tertiles, the maternal care moving average was calculated and plotted (see Figure 5.3). The increase in treatment response rates for patients who reported intermediate levels of care is visually apparent. In addition to being used as predictor variables, maternal care scores were used as outcome variables in the extreme responder hypothesis discussed in Chapter 7.

3.7.7 Childhood abuse

For each of the abuse categories: psychological, physical, and sexual abuse, separate variables were created and examined in univariate analyses with the outcome measures. In an effort to generate the most robust, inclusive measure of abuse, and bearing in mind that different forms of abuse are related (Anda et al., 2006), an overall abuse variable was created as well, which included the psychological, physical, and sexual abuse responses. Consideration was given to
examining abuse in relation to a range of other factors including the duration, age of occurrence, and relationship to perpetrator. As these measurements had been examined previously with no significant results other than whether or not the abuse took place, the combined categorical method, which accounted for frequency, was selected. The decision to separate out sexual abuse as its own category was based on the emphasis in the literature on the role of childhood sexual abuse (CSA). In the final presentation, the overall abuse variable and a separate CSA variable were used in the analyses presented.
CHAPTER 4: CONTRIBUTION OF CHILDHOOD ADVERSITY TO ANTIDEPRESSANT MEDICATION RESPONSE

4.1 INTRODUCTION

Little doubt exists about the negative impact of childhood adversity on adult mental health (Gilbert et al., 2008). However, few studies examine the impact of childhood adversity on treatment response in adults with depression. A recent meta-analysis (Nanni et al., 2012) reviewed seven papers, in addition to the one that will be reported on in this chapter. These papers examined the impact of childhood adversity on treatment response to medication-alone or in combination with psychotherapy. Five of the papers focused on adult patients (Enns & Cox, 2005; Klein et al., 2009; Miniati et al., 2010; Nemeroff, et al., 2003; Sakado et al., 1999), while two looked at adolescent patients (Asarnow et al., 2009; Lewis et al., 2010).

Of the three papers reviewed that included parenting variables as measures of childhood adversity (Enns & Cox, 2005; Klein, et al., 2009; Sakado et al., 1999), excluding the one reported on in this chapter, two found an association between childhood adversity, as measured by parenting experiences, and depression treatment outcomes. Sakado et al. reported an association between low parental care and a lack of remission with a tricyclic antidepressant; however abuse variables were not included in their analyses. Klein et al. (2009) also found associations between parenting experiences, specifically maternal overcontrol and paternal indifference, and a lower probability of depression remission. However, these results were not the ones emphasized in the paper. Instead, the associations between childhood abuse and poor outcome were highlighted. This emphasis was repeated in the meta-analysis (Nanni et al., 2012). Enns & Cox found no association between either low parental care or overprotection in relation to outcome. In this case, the absence of a finding may be influenced by the fact that the researchers used a combined parental PBI score as the predictor variable, rather than a separate score for mother and father. Among the papers reviewed, all reported an association between childhood abuse or trauma and poor outcomes for depression.
treatment. While the consensus reported this association, the childhood abuse predictor variables were defined in a variety of ways among the studies and the effect sizes reported were small. In this chapter, the impact of low parental care, overprotection, and abuse on response to antidepressant medication for adults with depression will be explored.

4.2 METHODS

Trial details including the patient sample, the treatment provided, and the procedures for data collection are all outlined in Chapter 3.

4.2.1 Treatment outcomes

As detailed in the previous Methods chapter, three treatment outcomes were examined in this study. The first measure, adequate trial, recorded whether or not the patient took an adequate dose of the antidepressant medication to which s/he was randomized for the first six weeks of treatment. These analyses were undertaken on the intention-to-treat sample. The second outcome was the patient’s percentage improvement in depression symptoms based on change in MADRS score from baseline to six weeks, analysed on those patients who completed treatment. Finally, two months sustained recovery, which was measured at six months, recorded whether or not the patient sustained a “much improved” or “very much improved” score on the CGI for a minimum of two consecutive months, based on the consensus assessment of the treating psychiatrist and the research nurse. These analyses were also conducted on those patients who completed treatment. For all three outcomes, non-linear relationships with PBI variables were examined, but none were found.
4.3 **Statistical Analyses**

For the categorical outcome, adequate trial, logistic regression was used for the analyses. In previous analyses (Joyce et al., 2002), drug and gender influenced completion of an adequate trial, with more patients randomized to nortriptyline failing to complete the trial than those assigned to fluoxetine. Furthermore, women were less likely to complete if prescribed nortriptyline; men less likely to complete if taking fluoxetine. Given these previously known effects, drug and gender were included as covariates along with the childhood variables, in two-way, between-groups Analysis of Variance.

For the continuous outcome variable, percentage improvement on the MADRS at six weeks, univariate Pearson’s correlations were used, followed by multiple regressions. As previous analyses have shown that patients under the age of 25 randomized to nortriptyline had poorer outcomes at six weeks (Joyce et al., 2002), these interaction effects were included as covariates, along with the childhood variables, in multiple regression analyses.

For the final categorical outcome — two months sustained recovery, measured at six months — previous data have shown an interaction effect between age and drug, with patients under the age of 25 less likely to achieve two months of sustained recovery when taking nortriptyline compared with fluoxetine (Joyce et al., 2002). Given these known interaction effects, age and drug were included as covariates in multiple regression analyses following logistic regression analyses.

4.4 **Results**

4.4.1 **Characteristics of the patient sample**

The descriptive characteristics including demographics, clinical features, lifetime comorbid diagnoses, baseline measures, and treatment, plus the outcomes examined in relation to the 195 outpatients with depression, are presented in Table
4.1. The mean age was 32 years (± 11) with 37% < 25 years old. Of the depressed patients, 57% were female, 64% had chronic depression, defined as lasting more than two years, while 62% had recurrent depression. Alcohol dependence and social phobia were the two most frequently reported comorbid diagnoses among this sample, with rates of 30% and 21% respectively.

Of the 195 patients, 10 did not rate their mother on the PBI, while 21 did not rate their father. As such, the maternal rating total was 185 and the paternal rating total was 174. The mean maternal care score was 21.5 (±9.3) and the mean paternal care score was 17.9 (±9.6). The mean maternal protection score was 16.1 (±8.4), and the mean paternal protection score was 14.7 (±8.1). The mean PBI scores of this sample are comparable to other depressed clinical and community samples, which show a pattern of lower care and higher protection scores, in contrast to never-depressed community norms. For example, the mean maternal care score in this study is nearly one standard deviation less than local community norms (Joyce 1984; Oakley-Browne et al., 1995).

When abuse is broadly defined to include physical, psychological, or sexual experiences, more than half of the sample (62%) reported abuse (58% of men and 63% of women). When abuse was defined specifically as sexual, 18% reported childhood sexual abuse (8% of men and 26% of women).
Table 4.1: Descriptive characteristics of the clinical sample of 195 outpatients with depression randomized to medication treatment

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>% or mean (± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESCRIPTIVE CHARACTERISTICS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age &lt;25 years</td>
<td>72</td>
<td>36.9%</td>
</tr>
<tr>
<td>Age ≥25 years</td>
<td>123</td>
<td>63.1%</td>
</tr>
<tr>
<td>Female</td>
<td>111</td>
<td>57%</td>
</tr>
<tr>
<td>Clinical features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melancholia</td>
<td>86</td>
<td>44%</td>
</tr>
<tr>
<td>Atypical</td>
<td>16</td>
<td>8%</td>
</tr>
<tr>
<td>Bipolar II</td>
<td>20</td>
<td>10%</td>
</tr>
<tr>
<td>Chronic</td>
<td>125</td>
<td>64%</td>
</tr>
<tr>
<td>Recurrent</td>
<td>121</td>
<td>62%</td>
</tr>
<tr>
<td>Lifetime comorbid diagnosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol dependence</td>
<td>59</td>
<td>30%</td>
</tr>
<tr>
<td>Panic disorder</td>
<td>29</td>
<td>15%</td>
</tr>
<tr>
<td>Social phobia</td>
<td>41</td>
<td>21%</td>
</tr>
<tr>
<td>Specific phobia</td>
<td>21</td>
<td>11%</td>
</tr>
<tr>
<td>Obsessive compulsive disorder</td>
<td>8</td>
<td>4%</td>
</tr>
<tr>
<td><strong>BASELINE MEASURES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MADRS Score</td>
<td>195</td>
<td>31.0 (± 6.6)</td>
</tr>
<tr>
<td>Parental Bonding Instrument (PBI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Care</td>
<td>185</td>
<td>21.5 (± 9.3)</td>
</tr>
<tr>
<td>Paternal Care</td>
<td>174</td>
<td>17.9 (± 9.6)</td>
</tr>
<tr>
<td>Maternal Protection</td>
<td>185</td>
<td>16.1 (± 8.4)</td>
</tr>
<tr>
<td>Paternal Protection</td>
<td>174</td>
<td>14.7 (± 8.1)</td>
</tr>
<tr>
<td>Childhood Abuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>73</td>
<td>38%</td>
</tr>
<tr>
<td>Some</td>
<td>88</td>
<td>45%</td>
</tr>
<tr>
<td>Severe</td>
<td>31</td>
<td>16%</td>
</tr>
<tr>
<td>Childhood Sexual Abuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>156</td>
<td>80%</td>
</tr>
<tr>
<td>Some</td>
<td>12</td>
<td>6%</td>
</tr>
<tr>
<td>Severe</td>
<td>24</td>
<td>12%</td>
</tr>
<tr>
<td><strong>TREATMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Randomized to fluoxetine</td>
<td>100</td>
<td>51%</td>
</tr>
<tr>
<td>Randomized to nortriptyline</td>
<td>95</td>
<td>49%</td>
</tr>
<tr>
<td><strong>OUTCOMES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate trial</td>
<td>154</td>
<td>79%</td>
</tr>
<tr>
<td>Percentage improvement(^b)</td>
<td>154</td>
<td>60% (± 31)</td>
</tr>
<tr>
<td>Two months sustained recovery(^c)</td>
<td>92</td>
<td>47%</td>
</tr>
</tbody>
</table>

\(^a\) Montgomery Åsberg Depression Rating Scale  
\(^b\) At six weeks, in the patients who completed treatment, n = 154  
\(^c\) Measured at six months in patients who completed treatment
More than three quarters of the sample (79%) completed an adequate trial of medication. In those who completed an adequate trial \( (n = 154) \), the mean percentage improvement on the MADRS after six weeks was 60.3\% (±31.5\%). Two months of sustained recovery, an outcome measured at six months, was achieved by 47\% of the 195 who enrolled in the trial.

4.4.2 Childhood predictors of an adequate trial of medication

Table 4.2 shows that of the six childhood adversity variables, low paternal care is the only one associated with failing to complete an adequate six-week trial of medication.

Given the known interaction effects between drug and gender which influenced completion of an adequate trial (Joyce et al., 2002), these variables were included as covariates along with the childhood variables, in multivariate analyses. The results showed that paternal neglect was the only significant childhood predictor of failure to complete an adequate trial, with the odds ratio changing from 1.05 in univariate (1.01-1.09, 95\% CI, \( P = .026 \)) to 1.07 (1.00-1.14, 95\% CI, \( P = .036 \)) in multivariate.

It should be noted that the scales for parental care (0-36) and protection (0-39) are considerably larger than the abuse scale (0-3). Therefore, odds ratios and their confidence intervals are not comparable across these childhood variables. To illustrate the effect of paternal neglect on completion of an adequate trial, for those with paternal care scores ≤17, nearly 30\% did not complete an adequate trial of medication, while only 11\% failed to complete an adequate trial with paternal care scores above 17.
Table 4.2: Univariate logistic regression of baseline childhood variables with an adequate trial of medication

<table>
<thead>
<tr>
<th></th>
<th>OR</th>
<th>(95% C.I.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBI scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Care</td>
<td>0.99</td>
<td>(0.95, 1.03)</td>
<td>NS</td>
</tr>
<tr>
<td>Paternal Care</td>
<td>1.05</td>
<td>(1.01, 1.09)</td>
<td>.026</td>
</tr>
<tr>
<td>Maternal Protection</td>
<td>1.01</td>
<td>(0.97, 1.06)</td>
<td>NS</td>
</tr>
<tr>
<td>Paternal Protection</td>
<td>0.99</td>
<td>(0.95, 1.04)</td>
<td>NS</td>
</tr>
<tr>
<td>Abuse b</td>
<td>0.82</td>
<td>(0.42, 1.60)</td>
<td>NS</td>
</tr>
<tr>
<td>CSA c</td>
<td>1.06</td>
<td>(0.63, 1.77)</td>
<td>NS</td>
</tr>
</tbody>
</table>

*a* The antidepressant to which the patient was first randomized, taken for six weeks

*b* Psychological, physical or sexual abuse or threat dichotomized into “none,” “some,” or “severe”

*c* Childhood Sexual Abuse dichotomized into “none,” “some,” or “severe.”

4.4.3 Childhood predictors of percentage improvement

Table 4.3 shows that maternal overprotection was inversely correlated with the percentage improvement in depression symptoms after six weeks of treatment. Patients who reported maternal overprotection experienced reduced symptom improvement.

Table 4.3: Univariate Pearson’s correlation of baseline variables with percentage improvement

<table>
<thead>
<tr>
<th></th>
<th>Pearson’s Correlation</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBI scores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal care</td>
<td>-.12</td>
<td>NS</td>
</tr>
<tr>
<td>Paternal care</td>
<td>.14</td>
<td>NS</td>
</tr>
<tr>
<td>Maternal protection</td>
<td>-.23</td>
<td>.003</td>
</tr>
<tr>
<td>Paternal protection</td>
<td>-.02</td>
<td>NS</td>
</tr>
<tr>
<td>Abuse</td>
<td>-.01</td>
<td>NS</td>
</tr>
<tr>
<td>CSA</td>
<td>-.10</td>
<td>NS</td>
</tr>
</tbody>
</table>

*a* Based on the patient’s Montgomery-Åsberg Depression Rating Scale change from baseline to six weeks of treatment in those who completed treatment, n = 154
Given the known interaction effects between age and drug impacting outcome at six weeks (Joyce et al., 2002), these interaction effects were included as covariates, along with the childhood variables, in multiple regression analyses. Results showed that maternal overprotection remained significant, even when controlling for age and drug interactions, in predicting a reduced improvement in depressive symptoms after six weeks of treatment.

To illustrate this relationship, of those reporting maternal overprotection (scores of >16), the mean improvement was 52%, compared with 67% improvement in those who did not report maternal overprotection.

4.4.4 Childhood predictors of two months sustained recovery at six months

Table 4.4 shows that maternal overprotection was the only childhood variable associated with fewer patients achieving two months sustained recovery, measured at six months, in those who completed an adequate trial of medication.

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR</th>
<th>(95% CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Care</td>
<td>1.02</td>
<td>(0.98, 1.05)</td>
<td>NS</td>
</tr>
<tr>
<td>Paternal Care</td>
<td>1.02</td>
<td>(0.99, 1.06)</td>
<td>NS</td>
</tr>
<tr>
<td>Maternal Protection</td>
<td>0.93</td>
<td>(0.89, 0.97)</td>
<td>0.001</td>
</tr>
<tr>
<td>Paternal Protection</td>
<td>0.97</td>
<td>(0.92, 1.01)</td>
<td>NS</td>
</tr>
<tr>
<td>Abuse</td>
<td>1.08</td>
<td>(0.80, 1.47)</td>
<td>NS</td>
</tr>
<tr>
<td>CSA</td>
<td>1.02</td>
<td>(0.64, 1.64)</td>
<td>NS</td>
</tr>
</tbody>
</table>

*a The antidepressant to which the patient was first randomized, taken for six weeks
Given the known interaction effect between age and drug, with patients under the age of 25 less likely to achieve two months of sustained recovery when taking nortriptyline compared with fluoxetine (Joyce et al., 2002), these covariates were included, along with all the childhood variables, in multivariate analyses. Even then, maternal overprotection was the only childhood variable which predicted fewer patients achieving two months sustained recovery. The odds ratio changed from 0.93 in univariate (0.89-0.97, 95% CI, \( P = <.001 \)), to 0.90 (0.84-0.96, 95% CI, \( P = <.001 \)) in multivariate analyses.

To illustrate the relationship between maternal protection and two months sustained recovery, of those who reported maternal overprotection (scores > 16), only 39% achieved two months sustained recovery in comparison to 61% of those who did not report maternal overprotection.

### 4.7 Adverse Childhood Experiences Predicted Response to Medication

The aim of this study was to examine whether adverse childhood experiences predicted response to antidepressant medication in adult outpatients. Three key findings emerged. The first notable finding was that low paternal care, conceptualized as emotional neglect of a child by his or her father, was associated with not completing an adequate six-week trial of medication. Secondly, in both the short and long term, maternal overprotection was associated with a poorer treatment response. Finally, the presence of abuse, whether defined broadly or specifically as sexual abuse, did not predict response to any of the treatment outcomes. These three findings, initially observed in univariate analyses, remained significant in multivariate analyses which included all the childhood variables as well as potential confounding variables such as age, drug, and gender.

The first finding, that low paternal care predicted failure to complete an adequate trial of medication, has not been reported. However, paternal behaviour has been implicated as a factor in poor medication response for depression in adults. In
Sakado et al. (1999), low paternal care was associated with lack of remission with tricyclic antidepressants. Similarly, Klein et al. (2009) reported that paternal indifference, analogous to low paternal care, predicted lower probability of remission with an algorithm-based antidepressant medication trial. In the Klein et al. study, the paternal indifference variable was measured by the MOPS scale, a refined, three-factor version of the PBI (Parker et al., 1997).

Researchers examining the number of patients who fail to complete an adequate trial or “dropout,” as it is often defined, suggest patient characteristics are the primary predictors of attrition. The patient characteristics implicated include comorbidities, age, and ethnicity. Tedlow and colleagues (Tedlow et al., 1996), comparing dropouts and completers in a fluoxetine-only trial, noted that dropouts had higher rates of histrionic or narcissistic personality disorder than completers, as well as higher anxiety levels. Higher rates of anxiety in dropouts have also been found by Arnow (Arnow et al., 2007). Younger patients and those belonging to an ethnic minority are also more likely to drop out (Arnow, et al., 2007; Warden et al., 2007).

In one study of women with bulimia, childhood experiences were examined in relation to dropouts. Those who withdrew from treatment rated their families as very poor at showing emotional concern for each other (Waller, 1997). Perhaps this finding is important in understanding why those patients reporting a neglectful father did not complete treatment. Psychodynamic theory posits that supportive, caring parental attachment is a foundation for forming and maintaining social relationships in adulthood (Bowlby, 1999), a concept supported by research (Kendler et al., 1993, Parker and Barnett, 1988, Parker et al., 1992). Carrying this notion beyond social constructs, the professional relationship between patient and psychiatrist may be negatively influenced by the patient’s experience of a neglectful father, to the extent that the patient is not sufficiently trusting of the psychiatrist to take the prescribed medication. Some support for this concept may be found in Hirschfeld et al. (1998) in a study examining predictors of response to imipramine
and sertraline. Although childhood adversity was not specifically examined as a response predictor, psychosocial factors associated with a secure attachment were related to improved medication outcomes: Living with a spouse or partner and reporting good social relationships were both associated with better response to the medication (Hirschfeld et al., 1998).

Maternal overprotection predicted a poorer response in both the short term (percentage improvement at six weeks), and long term (two months of sustained recovery, measured at six months). Klein et al. (2009) reported similar findings: maternal overcontrol, analogous to maternal overprotection, along with paternal indifference, CSA, paternal abuse and clinically significant abuse were all associated with lower probability of depression remission with antidepressant medication. Interestingly, the abuse associations were highlighted as the significant relationship in the Klein paper, a focus which was replicated in the Nanni et al., meta-analysis (2012). In addition to the childhood adversity variables, three patient characteristics are shown to predict poorer outcomes in antidepressant medication trials and mirror those for dropouts: lower educational levels (Hirschfeld et al., 1998, Trivedi et al., 2006), minority ethnicity, and concurrent anxiety issues (Trivedi et al., 2006). Other predictors of poor outcome in medication trials included living alone (Hirschfeld et al., 1998) and poorer functioning or quality of life at baseline (Hirschfeld et al., 1998, Trivedi et al., 2006).

While this study reported that certain adverse childhood experiences predicted response to treatment, the findings were not necessarily what might be intuitively expected. Given the consistent association between low maternal care (maternal neglect) and depression in adulthood (Oakley-Browne et al., 1995; Parker, 1981; Uehara et al., 1998) this association might be expected for depression treatment response, but it was not found. Instead, maternal overprotection predicted poorer outcome in the short and long term in this trial of medication. The reason for this finding is not readily answered.
The third finding, that abuse did not predict treatment outcomes in this pharmacotherapy trial, runs counter to our initial hypothesis. Research suggests strong evidence for the epidemiological role of childhood abuse in the development of adult depression but a weaker connection between childhood abuse and poorer response to treatment. A few studies have found childhood trauma associated with treatment-resistant depression (Lara et al., 2000) and dysthymia (Hayden and Klein, 2001) while another study found differential response to psychotherapy versus pharmacotherapy, with those patients reporting childhood adversity responding better to psychotherapy (Nemeroff et al., 2003, Heim et al., 2008). Given that abuse by itself did not predict any of the treatment responses, perhaps it is the quality of ongoing intra-familial relationships, such as those between parent and child as measured by PBI care and protection scores, that have a greater impact on treatment than experiences of discrete abuse in childhood, a hypothesis supported by others (Edwards et al., 2003).

With respect to the Enns et al., (2005) report on a lack of association between low parental care, overprotection, and antidepressant medication response, methodological and sampling differences may account for the divergent findings. Firstly, the maternal and paternal variables on the PBI were combined to create a single parental score for care and for protection, rather than examining them separately for both parents. The mean PBI scores of the patient sample were considerably lower in care and higher in protection compared to the sample reported here. Finally, in the Enns et al. study, the sample comprised treatment-resistant patients who demonstrated lower response rates on both of the outcomes measured (23% achieved remission and 30% showed improvement) in comparison to the sample reported here (47% achieved sustained recovery and 60% showed improvement). These methodological and sampling differences appear to be of sufficient magnitude to make a definitive understanding of the role of parental care in response to depression treatment difficult to ascertain when comparing the results of these two studies.
A general theme of these findings is that it is not the global experience of childhood adversity that predicts response to depression treatment, but rather that specific variables are associated with certain outcomes. As such, studies need to be clear what they are studying, both in terms of the predictor variables and the outcomes. It appears certain specific aspects of childhood adversity have an impact on outcomes; however these effects are modest in size. The results reported in this chapter and similar results found by others indicate that different adverse childhood experiences are associated with different outcomes. This chapter reported on an adequate trial and response to treatment in the short and long term as outcomes, while other studies examined age of depression onset, time-to-remission, or symptom severity. The specific adverse childhood experiences which may be associated with treatment outcomes need to be further studied to be understood. Childhood experiences appear to matter, but the pattern is not yet clear.

In summary, the results reported in this chapter indicate that those who reported having a neglectful father were less likely to take an adequate dose of the initially prescribed antidepressant medication for the first six weeks of treatment. Additionally, those who reported an overprotective mother had a poorer response to treatment in both the short and long term. Abuse, whether physical, sexual, or psychological in nature, did not predict treatment response to antidepressant medication in this sample. The childhood variables that were not significantly associated with outcome — maternal care and paternal protection — may be as important as those that were associated with outcome in terms of understanding the impact of childhood adversity on response to depression treatment. These findings do not necessarily impact upon clinical decision making in terms of selecting which treatment to use, but may inform clinicians that patients reporting low paternal care require a concerted effort on the part of the clinician to help enable the patient to remain in treatment, particularly if that treatment involves the patient taking medication.
CHAPTER 5: CONTRIBUTION OF CHILDHOOD ADVERSITY TO PSYCHOTHERAPY RESPONSE

5.1 INTRODUCTION

Given the well-established risk between childhood adversity in its many forms and the development of depression in adulthood, many researchers might hypothesize that experiencing neglect or abuse in childhood would lead to worse treatment outcomes in adulthood. However, the limited amount of research on the association between childhood adversity and psychotherapy response, including studies of adolescents, suggest a variable and somewhat counter-intuitive association, depending on the childhood adversities experienced and the treatment offered (Asarnow et al., 2009, Lewis et al., 2010, Ryum et al., 2008, Shirk et al., 2009).

As reviewed in previous chapters, three studies examined childhood adversity in relation to psychotherapy and medication treatment for adults (Enns and Cox, 2005, Miniati et al., 2010, Nemeroff et al., 2003) while two examined psychotherapy and medication treatment in adolescents (Asarnow et al., 2009, Lewis et al., 2010).

Only one study examined the association between childhood adversity and response to psychotherapy by itself (Ryum, et al., 2008). The methods and findings in this paper were thoroughly reviewed in Chapter 2. Briefly though, Ryum et al., in looking at four different types of psychotherapy in patients with a range of psychological diagnoses, found that response differed depending on the therapy offered and the childhood adversity variable measured. High paternal care was associated with a better response to CBT, but both high maternal and paternal care were related to poorer outcomes with Pesso-Boyden System Psychomotor group therapy (PBSP), a mind-body experiential therapy for healing early childhood trauma and unmet needs. Paternal overprotection was associated with better outcomes using group CBT, while maternal overprotection was associated with
better outcomes with TAU. Perhaps the most interesting finding is that no consistent pattern was evident for one particular type of childhood adversity predicting outcome in the Ryum et al., 2008 study. However, the outcomes reported in the Ryum study must be considered with caution, given the methodological limitations outlined in detail in Chapter 2. This thesis chapter explores the impact of low parental care, overprotection, and abuse on response to IPT and CBT for adults with depression.

5.2 METHODS

Trial details concerning the patient sample, the psychotherapies provided, clinician competency, and the procedures for data collection are all outlined in Chapter 3.

5.2.1 Psychotherapy outcomes

Response to psychotherapy was measured two ways: categorically, indicating whether or not the patient’s improvement was ≥ 60% on the MADRS, measured from baseline to the end of therapy (mean = 13 weeks), and continuously, showing the patient’s percentage improvement on the MADRS, also measured from baseline to the end of therapy.

5.3 Statistical Analyses

The Statistical Package for the Social Sciences (SPSS, V.19, 2011) was used for the analyses. The PBI variables were examined in tertiles, based on unpublished data (Sellman and Joyce, 1993), which suggested that the highest remission rates among a group of men with alcohol dependence occurred in those reporting an intermediate level of maternal care on the PBI (Sellman and Joyce, 1993). This finding raised the possibility of non-linear relationships, in particular for maternal care. The two abuse measures were classified as “none”, “some,” and “severe.” In light of the limited and variable research on childhood adversity variables as predictors of therapy response, each of the categorical childhood variables were
examined in relation to the categorical outcome measure, treatment response at six weeks, using Chi-square tests and forced-entry logistic regressions. The logistic regression analyses simultaneously included the main effects of treatment randomization with the relevant PBI variable and the interaction of the two factors. For the PBI and abuse variables, the ideal outcome (high care, low protection, and no abuse) was specified in the model as the reference category for comparison. A two-tailed p-value of <0.05 was taken to indicate statistical significance. One-way analyses of variance, along with linear regressions were used for the continuous outcome measure of percentage improvement.

5.4 RESULTS

5.4.1 Characteristics of 159 psychotherapy completers

Of the 177 patients randomized to psychotherapy, 159 completed at least eight psychotherapy sessions. Of the 91 patients randomized to IPT, eight (9%) did not complete the minimum number of weekly therapy sessions. Among the 86 patients randomized to CBT, ten (12%) did not complete minimum number of weekly therapy sessions. The difference between completers by therapy was not significant. The small number of non-completing patients resulted in insufficient power to analyse results for those who dropped out of therapy.

Table 5.1 presents the descriptive characteristics of the patients, the therapy to which they were randomized, the baseline measures examined, and the therapy outcomes. The completer’s sample was 74% female with a mean age of 35.4 years (± 10.3). The two therapy groups were comparable on demographic and clinical variables and baseline depression severity, as well as on PBI and abuse scores.

Of the 159 completers, one patient did not rate either parent on the PBI; six patients did not rate their fathers. These figures are reflected in the maternal care and protection scores (n = 158) and the paternal care and protection scores (n = 152).
Table 5.1: Demographic, clinical, and childhood variables in the sample of 159 outpatients with depression who completed psychotherapy

| DEMOGRAPHICS          |  |  |  |
|-----------------------|  |  |  |
| Gender                |  |  |  |
| Male                  | 41 | 26 |  |
| Female                | 118 | 74 |  |
| Age                   |  |  |  |
| < 25 years            | 28 | 18 |  |
| 25-39 years           | 77 | 48 |  |
| ≥ 40 years            | 54 | 34 |  |

| BASELINE MEASURES     |  |  |  |
|-----------------------|  |  |  |
| MADRS\(^1\) Score     | 159 | 23.7 (± 6.4) |  |
| PBI Scores            |  |  |  |
| Maternal Care         | 158 | 20.2 (± 10.2) |  |
| Paternal Care         | 152 | 18.1 (± 9.6) |  |
| Maternal Protection   | 158 | 16.8 (± 8.8) |  |
| Paternal Protection   | 152 | 14.7 (± 8.0) |  |
| Childhood Abuse       |  |  |  |
| None                  | 55 | 35 |  |
| Some                  | 77 | 48 |  |
| Severe                | 27 | 17 |  |
| Childhood Sexual Abuse|  |  |  |
| None                  | 128 | 81 |  |
| Some                  | 15 | 9 |  |
| Severe                | 16 | 10 |  |

| THERAPY RANDOMIZATION |  |  |  |
|-----------------------|  |  |  |
| Interpersonal Psychotherapy (IPT) | 83 | 52 |  |
| Cognitive Behavioural Therapy (CBT) | 76 | 48 |  |

| OUTCOMES              |  |  |  |
|-----------------------|  |  |  |
| Treatment response (Y/N)\(^2\) | 90 | 57 |  |
| Percentage improvement\(^3\) | 159 | 57.7 (± 31.4) |  |

\(^1\) Montgomery Åsberg Depression Rating Scale  
\(^2\) ≥ 60% improvement on the MADRS  
\(^3\) From baseline to end-of-treatment, mean = 13.75 weeks
The mean care scores were as follows: for maternal care, 20.2 (± 10.2); for paternal care, 18.1 (± 9.6). The mean protection scores were: for maternal protection, 16.8 (± 8.8); for paternal protection, 14.7 (± 8.0). The mean PBI scores in this sample are comparable to other depressed samples, which show a pattern of lower care and higher protection, in contrast to a general practice sample (Oakley-Browne et al., 1995, Joyce, 1984) or a never-depressed sample (Oakley-Browne et al., 1995).

Sixty-five percent of the sample (69% of women, 56% of men) reported "some" or "severe" levels of childhood abuse, when abuse was broadly defined to include physical, psychological, or sexual experiences. When abuse was defined specifically as sexual, 19% of the sample reported at least some CSA (24% of women, 7% of men).

Of those who completed at least eight psychotherapy sessions, 57% responded to treatment (n = 90). The mean baseline MADRS score was 23.7 (±6.4); the mean end MADRS score was 10.5 (±8.8). The mean percentage improvement in MADRS from baseline to end of treatment was 57.7% (± 31.4).

### 5.4.2 Childhood predictors of psychotherapy response in completers

Table 5.2 presents the six childhood variables in relation to psychotherapy response across and within the two therapies, in the 159 completers. Therapy response was measured categorically based on whether or not the patient’s improvement was ≥ 60% on the MADRS. Looking at the childhood variables independently across both treatments, the only significant association with psychotherapy response was maternal care, $X^2 (df = 2) = 11.5, P = 0.003$. Within the individual therapies, this finding is also noted for IPT but not CBT.

Within IPT, two significant variables were identified: maternal care and paternal protection. Looking first at maternal care levels for those receiving IPT, patients reporting low or high maternal care responded less well to treatment (29% and 48% response respectively) than patients reporting intermediate levels of maternal care.
(85% response). These differences were significant, $X^2 = 16.2$, $P < 0.001$, and demonstrate the non-linear relationship of maternal care to therapy response in relation to IPT.

Table 5.2: Number and percentage of psychotherapy responders based on the MADRS*, in patients completing the trial

<table>
<thead>
<tr>
<th>Maternal Care</th>
<th>Both Therapies Combined (n=159)</th>
<th>IPT (n=83)</th>
<th>CBT (n=76)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>%</td>
<td>$X^2$</td>
</tr>
<tr>
<td>Low $\leq 15$</td>
<td>25/58</td>
<td>43</td>
<td>.003</td>
</tr>
<tr>
<td>Intermediate 16-25</td>
<td>37/49</td>
<td>76</td>
<td>16.2</td>
</tr>
<tr>
<td>High 26+</td>
<td>28/51</td>
<td>55</td>
<td>0.2</td>
</tr>
<tr>
<td>Paternal Care</td>
<td>152</td>
<td>1.6</td>
<td>NS</td>
</tr>
<tr>
<td>Low $\leq 13$</td>
<td>27/54</td>
<td>50</td>
<td>9/25</td>
</tr>
<tr>
<td>Intermediate 14-23</td>
<td>31/50</td>
<td>62</td>
<td>14/27</td>
</tr>
<tr>
<td>High 24+</td>
<td>28/48</td>
<td>58</td>
<td>15/27</td>
</tr>
<tr>
<td>Maternal Protection</td>
<td>158</td>
<td>4.4</td>
<td>NS</td>
</tr>
<tr>
<td>Low $\leq 13$</td>
<td>32/60</td>
<td>53</td>
<td>16/32</td>
</tr>
<tr>
<td>Intermediate 14-21</td>
<td>35/51</td>
<td>69</td>
<td>12/22</td>
</tr>
<tr>
<td>High 22+</td>
<td>23/47</td>
<td>49</td>
<td>12/28</td>
</tr>
<tr>
<td>Paternal Protection</td>
<td>152</td>
<td>3.4</td>
<td>NS</td>
</tr>
<tr>
<td>Low $\leq 11$</td>
<td>37/59</td>
<td>63</td>
<td>19/31</td>
</tr>
<tr>
<td>Intermediate 12-18</td>
<td>26/43</td>
<td>61</td>
<td>12/20</td>
</tr>
<tr>
<td>High 19+</td>
<td>23/50</td>
<td>46</td>
<td>7/28</td>
</tr>
<tr>
<td>Childhood Abuse</td>
<td>159</td>
<td>0.4</td>
<td>NS</td>
</tr>
<tr>
<td>None</td>
<td>31/55</td>
<td>56</td>
<td>17/33</td>
</tr>
<tr>
<td>Some</td>
<td>45/77</td>
<td>58</td>
<td>20/38</td>
</tr>
<tr>
<td>Severe</td>
<td>14/27</td>
<td>52</td>
<td>3/12</td>
</tr>
<tr>
<td>Childhood Sexual Abuse</td>
<td>159</td>
<td>2.8</td>
<td>NS</td>
</tr>
<tr>
<td>None</td>
<td>72/128</td>
<td>56</td>
<td>33/68</td>
</tr>
<tr>
<td>Some</td>
<td>11/15</td>
<td>73</td>
<td>5/6</td>
</tr>
<tr>
<td>Severe</td>
<td>7/16</td>
<td>44</td>
<td>2/9</td>
</tr>
</tbody>
</table>

*Montgomery Åsberg Depression Rating Scale: $\geq 60\%$ improvement from baseline to end of treatment
In contrast, the percentage of patients who responded well to CBT ranged from 63-69% across the three levels of reported maternal care. These differences were not statistically significant. A forced-entry logistic regression including all six categorical childhood variables confirmed maternal care as the only significant predictor of psychotherapy response, wald = 12.5, df = 2, \( P = 0.002 \). Patients reporting low maternal care on the PBI (scores of ≤ 15) or high maternal care (scores of 26+) responded less well to therapy (43% and 55% response respectively) than those reporting an intermediate level of maternal care (scores of 16–25, 76% response). These findings underscore the non-linear relationship between maternal care and response to psychotherapy.

To confirm the consistency of the effect across therapies, maternal care was examined with therapy randomization and the interaction of the two in a logistic regression model with the categorical therapy response as the dependent variable. Within this model, there was a main effect for maternal care, wald = 10.7, df = 2, \( P = 0.005 \). In addition, there was a significant effect for the interaction of maternal care by therapy, wald = 7.0, df = 2, \( P = 0.031 \).

**Figure 5.1:** Percentage response by psychotherapy and maternal care levels
These results indicate that the effect of maternal care on psychotherapy response was related to which therapy a patient received. Figure 5.1 illustrates the differential response to therapy based on the level of maternal care reported.

As presented, the other significant childhood variable related to psychotherapy response within IPT was paternal protection. Among patients who received IPT, only 25% responded to therapy when paternal overprotection was reported, in contrast to 60-61% of patients who responded to therapy when low or intermediate levels of paternal protection were reported. These response differences were statistically significant, $\chi^2 = 9.28$, $P = 0.01$. To examine the potential interaction effect between paternal protection and therapy response, a logistic regression was used. The model included paternal protection, therapy randomization and the interaction of the two. There was a main effect for paternal protection, $wald = 8.8$, df = 2, $P = 0.012$. The interaction effect of paternal protection by therapy was significant as well, $wald = 6.8$, df = 2, $P = 0.034$. These findings demonstrate that the effect of paternal protection on therapy response was related to which psychotherapy the patient received. Figure 5.2 illustrates the differential response to psychotherapy based on the level of paternal protection reported.

Figure 5.2: Percentage response by psychotherapy and paternal protection level
Finally, both maternal care and paternal protection were included in one logistic regression model along with their interaction effects. Main effects for both variables were significant: maternal care, wald = 9.6, df = 2, $P = 0.008$; paternal protection, wald = 7.8, df = 2, $P = 0.020$. Their interaction effects remained significant as well: maternal care x therapy, wald = 6.0, df = 2, $P = 0.049$; paternal protection x therapy, wald = 6.4, df = 2, $P = 0.040$. These findings indicate that maternal care and paternal protection have both an independent effect, as well as a differential effect by therapy, on a patient’s response to psychotherapy treatment.

5.4.3 Childhood variables as predictors of mean percentage improvement

Table 5.3 presents the childhood variables in relation to the continuous therapy outcome measure, mean percentage improvement on the MADRS, across both therapies and within the two therapies. Maternal care again demonstrated a non-linear relationship to therapy response; patients reporting low or high maternal care responded less well (50% and 57% improvement respectively) compared to a 68% improvement in patients reporting an intermediate level of care. These differences were statistically significant $F(2, 158) = 4.74, P = 0.010$. 
Table 5.3: Mean percentage improvement on the MADRS\textsuperscript{1} in patients who completed psychotherapy

<table>
<thead>
<tr>
<th></th>
<th>Both Therapies Combined (n=159)</th>
<th>IPT (n=83)</th>
<th>CBT (n=76)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean % (± SD)</td>
<td>F</td>
<td>P</td>
</tr>
<tr>
<td>Maternal Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low ≤ 15</td>
<td>50% (± 33)</td>
<td>.010</td>
<td>82</td>
</tr>
<tr>
<td>Intermediate 16-25</td>
<td>68% (± 25)</td>
<td>.010</td>
<td>20</td>
</tr>
<tr>
<td>High 26+</td>
<td>57% (± 32)</td>
<td>.010</td>
<td>27</td>
</tr>
<tr>
<td>Paternal Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low ≤ 13</td>
<td>54% (± 30)</td>
<td>.010</td>
<td>25</td>
</tr>
<tr>
<td>Intermediate 14-23</td>
<td>62% (± 32)</td>
<td>.010</td>
<td>27</td>
</tr>
<tr>
<td>High 24+</td>
<td>59% (± 31)</td>
<td>.010</td>
<td>27</td>
</tr>
<tr>
<td>Maternal Protection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low ≤ 11</td>
<td>57% (± 32)</td>
<td>.010</td>
<td>32</td>
</tr>
<tr>
<td>Intermediate 12-18</td>
<td>64% (± 29)</td>
<td>.010</td>
<td>22</td>
</tr>
<tr>
<td>High 19+</td>
<td>54% (± 32)</td>
<td>.010</td>
<td>28</td>
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<td>Paternal Protection</td>
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<td>Low ≤ 11</td>
<td>62% (± 30)</td>
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<td>High 19+</td>
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<tr>
<td>Childhood Abuse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>57% (± 30)</td>
<td>.010</td>
<td>33</td>
</tr>
<tr>
<td>Some</td>
<td>59% (± 32)</td>
<td>.010</td>
<td>38</td>
</tr>
<tr>
<td>Severe</td>
<td>54% (± 33)</td>
<td>.010</td>
<td>12</td>
</tr>
<tr>
<td>Childhood Sexual Abuse</td>
<td></td>
<td></td>
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<tr>
<td>None</td>
<td>58% (± 31)</td>
<td>.010</td>
<td>68</td>
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<tr>
<td>Some</td>
<td>61% (± 36)</td>
<td>.010</td>
<td>6</td>
</tr>
<tr>
<td>Severe</td>
<td>52% (± 35)</td>
<td>.010</td>
<td>9</td>
</tr>
</tbody>
</table>

\textsuperscript{1} Montgomery Åsberg Depression Rating Scale: % improvement from baseline to end of treatment

Looking at the therapies individually, in patients who received IPT, the mean percentage improvement on the MADRS was 71\% for those reporting intermediate levels of maternal care, versus 45\% or 50\% in the low and high care tertiles respectively. These differences were statistically significant, $F (2, 82) = 4.96$, $P =$...
0.009. With CBT, the mean percentage of improvement ranged from 59% to 67% across the three levels of reported maternal care. These differences were not statistically significant. Further, conducting a two-way between-subjects analysis of variance revealed that, although the main effect of maternal care remained significant ($P = 0.029$), the interaction between maternal care and treatment randomization was not statistically significant ($P = 0.34$) suggesting that the influence of maternal care did not depend on treatment when outcome was measured continuously. None of the other childhood variables were associated with treatment response with the continuous outcome measure.

5.4.4 Exploring the non-linear relationship for maternal care

To further explore the non-linear relationship between maternal care and percentage improvement on the MADRS, the improvement was plotted for each of the maternal care scores with IPT. To smooth out the data and effectively multiple the data set, a moving average was used. Thus, each point represents the maternal care score ± 3. By using a moving average, the individual score variations decreased and the resulting figure provided a clear picture of the non-linear relationship between maternal care and IPT response at each level of percentage improvement. See Figure 5.3.

**Figure 5.3: Mean percentage improvement with IPT by maternal care moving average**
5.5 ADVERSE CHILDHOOD EXPERIENCES PREDICTED RESPONSE TO PSYCHOTHERAPY

This chapter demonstrated that the perceived levels of maternal care and paternal protection in childhood predicted treatment response to psychotherapy for adults with depression. The analyses show three positive findings: a main effect across both treatments for maternal care, demonstrating that patients responded best to intermediate levels of maternal care; a therapy-specific response with IPT for maternal care and paternal overprotection, demonstrating that patients responded best to intermediate levels of maternal care and responded worst with paternal overprotection; as well as an interaction effect by therapy when the outcome measure is categorical. The main effect of maternal care was non-linear, robust, and evident with both categorical and continuous outcome measures. Those reporting intermediate levels of maternal care demonstrated the best response to psychotherapy. Surprisingly, in light of the established connection between childhood abuse and adult depression, abuse did not impact on therapy response, in this sample.

While understanding the potential implications of these findings requires some consideration, research and psychological theory suggest tentative explanations. First is a consideration of the main, non-linear effect of maternal care across therapies. This study is not the first to find a non-linear relationship for maternal care with outcome. Engert and colleagues examined maternal care in relation to cortisol stress response in healthy subjects (Engert et al., 2010). The researchers found a non-linear relationship for maternal care, with lower stress cortisol response in the low and high care groups and a higher response in the medium care group following exposure to a laboratory-induced psychosocial stressor. The authors hypothesized that while the medium care group processed the stressor as a threat to self, evidenced by a rise in cortisol, the psychological profile of this group appeared stable based on the group’s self-esteem, depression, and anxiety scores. This group displayed what was considered an adaptive stress response. Those with high maternal care were thought to be resilient to viewing an everyday stressor as a
challenge, based on their reduced cortisol response combined with high self-esteem scores and low levels of depression and anxiety. The response of the low care group was believed to be related to a maladaptive hypo-responsive cortisol system linked to chronic early maternal stress.

The findings here are conceptualized in a similar fashion in relation to those who report low maternal care. In the context of attachment theory (Bowlby, 1969, 1982), appropriate maternal responsiveness provides the infant with an ideal environment for healthy development of self. In this case, optimal attachment may be conceptualized as a mother who is emotionally and physically attuned to her baby rather than neglectful or emotionally distant, as might be suggested by low maternal care scores. In the face of maternal deprivation in childhood, perhaps the adult patient lacks sufficient personal resources to benefit from therapy.

On the other end of the spectrum, patients who reported high maternal care also responded less well to treatment. This study is not the first to find that high parental care predicted worse treatment outcomes, as similar findings were reported in Ryum et al. (Ryum et al., 2008); high maternal and paternal care were related to a worse outcome with PBSP group therapy. Non-linear relationships did not appear to be considered in the Ryum study, however. In contextualizing the outcomes in this study, extremely high maternal care scores in the absence of responding to psychotherapy treatment may reflect a patient who presents an idealized view of his or her mother. A patient who selected the most extreme maternal care responses would answer, “very like” rather than “moderately like” to statements such as “my mother spoke to me with a warm and friendly voice,” or “enjoyed talking things over with me.” Another hypothesis which might provide an understanding of the high maternal care finding is that poor response to psychotherapy was related to the patient’s pre-treatment cognitive style, reflected in reporting the care received. This idea is suggested by Teasdale and colleagues (Teasdale et al., 2001) who examined outpatients with recurring depression who received cognitive therapy. Using five measures of depression-related cognitive styles, including the Dysfunctional Attitude Scale (Weissman, 1978b) and the
Attributional Style Questionnaire (Peterson, 1982), researchers found that the lowest depression relapse rates were reported by patients who responded in the middle range on these measures. Patients responding in either extreme on these depression-related measures, whether low or high, were more apt to relapse early. The researchers surmised that the extreme responding pattern may reflect black-and-white thinking. In this case, the form of the response, rather than its content, suggested dichotomous, absolutist beliefs. This cognitive style, even though reporting extremely positive responses as well, may reflect the characteristics of a treatment-resistant patient. Perhaps this concept applies to the high maternal care sample in this study.

This study also found a tentative but intriguing therapy-specific, non-linear relationship with IPT for maternal care, as well as a therapy-specific response with IPT for paternal overprotection, using the categorical outcome variable. Hypothesizing about possible mechanisms in relation to low maternal care first, perhaps a patient whose sense of self is compromised in the face of experiencing a neglectful mother is ill-suited to an interpersonally-focused treatment such as IPT. If the quality of the parent-child attachment relationship was extremely poor, as is suggested by low maternal care, a patient’s interpersonal deficits may be too great to benefit from a short course of therapy focused in this area. Perhaps IPT is ill-suited because its interpersonal emphasis focuses on the patient’s area of weakness. If psychotherapy is a conceptualized as a “corrective emotional experience” (Alexander, 1946, Bridges, 2006, Knight, 2005) aimed at helping patients to make change and develop skills, selecting a therapy targeted at a patient’s strengths, rather than weaknesses, may be more effective. On the other hand, if a patient’s relationship with his or her mother was warm and caring during childhood, as a high maternal care score suggests, perhaps IPT was insufficient to evoke change in the absence of early relational deficits. In essence, there was nothing to correct relationally. If interpersonal issues were not important in contributing to a patient’s depression, a specific focus in this area may offer minimal benefit.
In addition to low and high maternal care, those who reported paternal overprotection did significantly less well with IPT when examining the categorical outcome. Overprotection suggests a controlling relationship in which an individual is not encouraged to individuate from one’s parent (Parker, 1983b). Being overprotected by a parent has been associated with lower self-directedness in adulthood (Otani et al., 2012), and research has shown that low self-directedness was associated with a poor response to IPT (Joyce et al., 2007). As well, looking at medication response, Klein and colleagues reported that paternal overprotection predicted longer duration of illness following algorithm-guided pharmacotherapy for chronic depression (Klein et al., 2009). Similarly, Chambers et al. found that at long-term follow-up after treatment for anxiety, patients reporting parental overprotection were more likely to retain a clinical diagnosis (Chambers et al., 2004). Paternal overprotection was associated with interpersonal sensitivity, emotional lability and low self-esteem in two non-clinical populations (Avagianou and Zafiropoulou, 2008, Otani et al., 2009). These vulnerabilities, found in participants who reported overprotection from their fathers, are similar to the vulnerabilities associated with low maternal care. Perhaps these vulnerabilities render an interpersonally-focused therapy, such as IPT, less suitable. However, not all researchers find a negative outcome with parental overprotection. Ryum et al., (2008), reported that high maternal protection (overprotection) was associated with a better outcome in those who received the CBT group therapy. These researchers hypothesized that high levels of protection may have conferred benefit by giving patients the experience of having involved parents who were not overly permissive.

The last finding, that abuse, regardless of its form, did not impact response to psychotherapy in this group of patients, is thought-provoking. While research supports strong evidence for the epidemiological role of childhood abuse in the development of adult depression, few studies examined childhood abuse in relation to treatment response, and none were found which examined psychotherapy as the only treatment provided to adults. Two studies, Barbe et al., (2004) and Shirk et al.,
(2009) examined abuse in relation to psychotherapy response, but in a population of adolescents. The 2012 meta-analysis by Nanni et al. represented the first review of childhood adversity in relation to treatment response, with three studies that included response to psychotherapy as one of the treatments for adults (Enns and Cox, 2005, Miniati et al., 2010, Nemeroff et al., 2003). Overall, the studies reviewed found an association between childhood abuse and poor outcome.

Looking first at the response-to-medication literature in the context of childhood abuse, in a trial of algorithm-guided antidepressant medication (Klein et al., 2009) childhood abuse was associated with a reduced probability of remission and an increase in illness duration. However, in the antidepressant medication study presented in the previous chapter, no association was found between abuse and response to fluoxetine or nortriptyline (Johnstone et al., 2009). Considering studies which used both medication and psychotherapy, in Nemeroff, et al. (2003), comparing treatment response in adult patients who reported childhood adversity, researchers found that psychotherapy was more effective than an antidepressant medication, while combining the two treatments offered only a marginal improvement (Nemeroff et al., 2003). Longer time to remission was also found for patients reporting abuse, although not specifically childhood abuse, when the treatment was citalopram, escitalopram, IPT, or a combination (Miniati et al., 2010). Enns & Cox, (2005) reported sexual abuse was associated with lack of response to naturalistically-treated patients who received various antidepressants, individual psychotherapy, or CBT. While these researchers did not find response related to levels of parental care or protection, the PBI variables were combined in this study for mother and father, resulting in measures somewhat different than those reported in this chapter.

Also important to highlight was the fact that, although a differential response to psychotherapy treatment was evidenced in this study, CBT was less variable than IPT in terms of patient response to treatment. Irrespective of childhood adversities reported, 60-70% of patients responded when CBT was the treatment. Considering
the results of this study, when the emphasis of therapy was teaching patients how to change their thinking patterns, past relationships did not seem to matter in terms of responding to the psychotherapy. CBT’s focus on the negative cognitions which underpin and aggravate depressive symptoms may have a more universal application irrespective of childhood experiences.

Despite this trial being one of the largest ever conducted comparing IPT and CBT for depression, the study was not without its limitations. This study examined a group of patients who completed psychotherapy, which might have attenuated the findings. As well, the study measured two categories of childhood adversity as moderators of treatment response, although a range of other adverse childhood experiences exist.

These findings suggest that two of the measures of childhood adversity examined here, maternal care and paternal protection, may predict a response to psychotherapy and may also moderate response to psychotherapy in adults with depression, depending on the outcome measured and adversity experienced. These results need to be viewed as tentative until replicated and may benefit clinicians in selecting the appropriate psychotherapy based on a patient’s childhood history.
CHAPTER 6: CHILDHOOD PREDICTORS OF LIFETIME SUICIDE ATTEMPTS AND NSSI IN DEPRESSED PATIENTS

6.1 INTRODUCTION

As outlined in the Chapter 2 review of the childhood adversity literature, few studies examine the combination of low parental care and overprotection in association with suicide attempts, and even fewer in relation to NSSI, in adults with depression. The theme among the studies reviewed was an association between low parental care from either both parents, or just one’s mother, and adult suicidal behaviours (Beautrais, 2002, Dale et al., 2010, Ehnvall et al., 2008, Goldney, 1985, Heider et al., 2007, Klein et al., 2009). However, more studies examine abuse — psychological, physical or sexual — and the association with suicide attempts and NSSI. The literature draws a consistent association between abuse, most often CSA, and suicidal behaviours (Beautrais, 2002, Kessler et al., 2010, Ystgaard et al., 2004, Enns et al., 2006), but occasionally NSSI, termed “self-harm,” was mentioned as well (Romans et al., 1995). Kaess et al. suggested that the research findings associating abuse with suicide attempts and NSSI might be due to the influence of high-risk family environments on abuse rather than the abuse itself (2012).

Among adolescents, the body of research examining associations among low parental care, overprotection, and suicidal behaviour is larger than for adults. The general theme within this population is an association between affectionless control (low care combined with overprotection) and suicidal behaviour (Adam et al., 1994, de Jong, 1992, Freudenstein et al., 2011, Violato and Arato, 2004, Singh et al., 2012, Martin and Waite, 1994). With respect to abuse, CSA garners the most attention in association with suicidal behaviours and NSSI among adolescents (Lipschitz et al., 1999).
6.2 METHODS

Details regarding the two patient samples combined to create the patient data set for these analyses, as well as the measures used, may be found in Chapters 3-5.

6.2.1 Outcome measures

Two categorical outcome measures were examined: whether or not a patient had made a lifetime suicide attempt or ever engaged in NSSI. Details about the specific questions asked and coding of these two outcomes may be found in Chapter 3. See Appendix 5 for the actual questions. Further to the creation of the two categorical outcome measures, the relationships between these two behaviours were examined. This was accomplished by creating one new variable with four categories. The first category recorded the number of patients who did not report making a suicide attempt or engaging in NSSI. The second category recorded the patients who reported making a suicide attempt, but not engaging in NSSI. The third category recorded those who engaged in NSSI but never made a suicide attempt. Finally, the fourth category recorded those patients who reported engaging in both behaviours. The creation of this post-hoc variable was undertaken for informational purposes and to increase the understanding around these behaviours as separate, but interrelated. Formal comparative analyses were not performed on this post-hoc variable.

6.3 STATISTICAL ANALYSES

The analyses reported in this chapter represent an exploratory examination of childhood adversity as risk factors for lifetime suicide attempts and NSSI. Descriptive statistics were used to quantify baseline variables and the two outcome measures. Independent t-tests and Chi-square were used to compare the variables as appropriate. Yates Continuity Correction values for chi-square were used as a more conservative measure of outcome for 2x2 tables. Effect sizes were calculated using either phi coefficient or $r^2$, as appropriate. Initial analyses were conducted using univariate logistic regressions with the demographic, clinical, and childhood variables for the two outcome measures. Given the inter-correlations among
childhood adversity variables, partial correlations were used to examine whether an observed relationship between a childhood variable and an outcome measure was influenced by a confounding childhood variable. Partial correlations were also conducted for highly correlated demographic and clinical variables such as age, MDE onset, and MADRS. Based on results from the partial correlations, the variables shown to make a significant, independent contribution were included in the multivariate model. To further assess the variables’ predictive ability, forced entry multivariate logistic regressions with all the variables significant in univariate analyses were conducted for suicide attempts. A backward stepwise regression confirmed the results. To illustrate statistical findings, the maternal and paternal care variables were categorized into tertiles.

6.4 Results

6.4.1 Total sample characteristics
Table 6.1 presents the demographic, clinical, and childhood adversity variables and two outcome measures for the total sample of 372 outpatients with depression. These data are shown by gender as well. The mean age of the combined sample was 33 years (± 11). The mean age of depression onset for this sample was 22 years (± 11); the mean MADRS score at baseline was 28 (± 7). Twenty-seven percent of the total sample reported making a lifetime suicide attempt; 21% reported engaging in NSSI. For reference, the number and percentage of patients who reported none, one or both of these behaviours is presented as well. Sixty-two percent of the total sample denied making a suicide attempt or engaging in NSSI, while 10% of the sample reported both behaviours. Seventeen percent reported making only a suicide attempt, and 11% reported only engaging in NSSI.
Table 6.1: Demographic, clinical, and childhood adversity variables with outcome measures for the total sample (n=372) of depressed outpatients

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 372</td>
<td>n = 133</td>
<td>n = 239</td>
</tr>
<tr>
<td><strong>DEMOGRAPHIC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age&lt;sup&gt;a&lt;/sup&gt;</td>
<td>33.3 ± 10.8</td>
<td>33.2 ± 10.9</td>
<td>33.4 ± 10.8</td>
</tr>
<tr>
<td><strong>CLINICAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDE Onset&lt;sup&gt;b&lt;/sup&gt;</td>
<td>21.6 ± 10.7</td>
<td>21.5 ± 10.8</td>
<td>21.7 ± 10.7</td>
</tr>
<tr>
<td>MADRS Score</td>
<td>28.3 ± 7.3</td>
<td>29.6 ± 7.4</td>
<td>27.5 ± 7.1</td>
</tr>
<tr>
<td><strong>CHILDHOOD ADVERSITY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Bonding Instrument (PBI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBI Maternal Care</td>
<td>20.9 ± 9.7</td>
<td>21.7 ± 8.6</td>
<td>20.4 ± 10.3</td>
</tr>
<tr>
<td>PBI Paternal Care</td>
<td>17.8 ± 9.6</td>
<td>16.2 ± 9.3</td>
<td>18.7 ± 9.7</td>
</tr>
<tr>
<td>PBI Maternal Protection</td>
<td>16.5 ± 8.6</td>
<td>15.6 ± 7.9</td>
<td>17.0 ± 8.9</td>
</tr>
<tr>
<td>PBI Paternal Protection</td>
<td>14.7 ± 8.0</td>
<td>13.7 ± 7.2</td>
<td>15.3 ± 8.4</td>
</tr>
<tr>
<td><strong>Childhood Abuse</strong></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>None</td>
<td>134 (37%)</td>
<td>54 (41%)</td>
<td>80 (34%)</td>
</tr>
<tr>
<td>Some</td>
<td>174 (47%)</td>
<td>61 (47%)</td>
<td>113 (48%)</td>
</tr>
<tr>
<td>Severe</td>
<td>60 (16%)</td>
<td>16 (12%)</td>
<td>44 (18%)</td>
</tr>
<tr>
<td><strong>Childhood Sexual Abuse</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>298 (81%)</td>
<td>121 (92%)</td>
<td>177 (75%)</td>
</tr>
<tr>
<td>Some</td>
<td>38 (10%)</td>
<td>8 (6%)</td>
<td>30 (13%)</td>
</tr>
<tr>
<td>Severe</td>
<td>32 (9%)</td>
<td>2 (2%)</td>
<td>30 (13%)</td>
</tr>
<tr>
<td><strong>OUTCOME MEASURES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suicide Attempt – lifetime</td>
<td>99 (27%)</td>
<td>35 (26%)</td>
<td>64 (27%)</td>
</tr>
<tr>
<td>Non-Suicidal Self-Injury – lifetime</td>
<td>79 (21%)</td>
<td>28 (21%)</td>
<td>51 (21%)</td>
</tr>
<tr>
<td><strong>OUTCOME MEASURE RELATIONSHIPS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neither&lt;sup&gt;c&lt;/sup&gt;</td>
<td>230 (62%)</td>
<td>78 (59%)</td>
<td>152 (63%)</td>
</tr>
<tr>
<td>Suicide Attempt Only</td>
<td>63 (17%)</td>
<td>27 (20%)</td>
<td>36 (15%)</td>
</tr>
<tr>
<td>Non-Suicidal Self-Injury Only</td>
<td>43 (11%)</td>
<td>20 (15%)</td>
<td>23 (10%)</td>
</tr>
<tr>
<td>Both Behaviours&lt;sup&gt;d&lt;/sup&gt;</td>
<td>36 (10%)</td>
<td>8 (6%)</td>
<td>28 (12%)</td>
</tr>
</tbody>
</table>

<sup>a</sup> Age at entry into trial  
<sup>b</sup> Age of first Major Depression Episode (MDE)  
<sup>c</sup> Did not report making a suicide attempt or engaging in NSSI  
<sup>d</sup> Reported making both a suicide attempt and engaging in NSSI
6.4.2 Comparing variables by gender within the total sample

Also in Table 6.1, data is compared by gender within the total sample. No significant differences were found in demographic or clinical variables, or in the outcome measures. However, differences between the genders existed for two of the childhood adversity variables. Among the PBI scores, only paternal care was significantly different, with women reporting higher care from their fathers, at 18.6 compared to 16.2 for men, \( t(370) = -2.35, P = 0.02 \). In addition, more women reported experiencing CSA, 26%, compared to 8% of men, \( \chi^2(2, n = 368) = 18.79, P < 0.01 \). No significant differences were noted for the other childhood adversity variables in relation to gender within the total sample.

Table 6.2: Demographic, clinical, and childhood adversity variables with outcome measures comparing two clinical samples of depressed outpatients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Antidepressant Medication Trial ( n = 195 )</th>
<th>Psychotherapy Trial ( n = 177 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall ( n ) or mean (± SD)</td>
<td>M ( n ) or mean (± SD)</td>
</tr>
<tr>
<td>DEMOGRAPHIC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>84 (43%)</td>
</tr>
<tr>
<td>Age(^a)</td>
<td>31.2 ± 11.1</td>
<td>33.1 ± 11.8</td>
</tr>
<tr>
<td>CLINICAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluoxetine</td>
<td>100</td>
<td>47</td>
</tr>
<tr>
<td>Nortriptyline</td>
<td>95</td>
<td>37</td>
</tr>
<tr>
<td>Interpersonal Psychotherapy (IPT)</td>
<td>91</td>
<td>22</td>
</tr>
<tr>
<td>Cognitive Behaviour Therapy (CBT)</td>
<td>86</td>
<td>27</td>
</tr>
<tr>
<td>MDE Onset(^b)</td>
<td>22.1 ± 10.9</td>
<td>23.3 ± 11.2</td>
</tr>
<tr>
<td>MADRS Score</td>
<td>31.0 ± 6.6</td>
<td>32.0 ± 7.2</td>
</tr>
<tr>
<td>CHILDHOOD ADVERSITY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Bonding Instrument (PBI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBI Maternal Care</td>
<td>21.5 ± 9.3</td>
<td>21.1 ± 8.5</td>
</tr>
<tr>
<td>PBI Paternal Care</td>
<td>17.9 ± 9.6</td>
<td>15.9 ± 9.4</td>
</tr>
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</table>

101
Table 6.2: continued

<table>
<thead>
<tr>
<th>CHILDHOOD ADVERSITY</th>
<th>Antidepressant Medication Trial</th>
<th>Psychotherapy Trial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>M</td>
</tr>
<tr>
<td>Maternal Protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBI</td>
<td>n (%)</td>
<td>or mean (± SD)</td>
</tr>
<tr>
<td>16.1 ± 8.4</td>
<td>16.0 ± 8.2</td>
<td>16.1 ± 8.6</td>
</tr>
<tr>
<td>Paternal Protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBI</td>
<td>n (%)</td>
<td>or mean (± SD)</td>
</tr>
<tr>
<td>14.7 ± 8.1</td>
<td>14.2 ± 7.0</td>
<td>14.9 ± 8.8</td>
</tr>
</tbody>
</table>

**Childhood Abuse**

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>M</th>
<th>F</th>
<th>Total</th>
<th>M</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>73 (38%)</td>
<td>33 (40%)</td>
<td>40 (36%)</td>
<td>61 (35%)</td>
<td>21 (43%)</td>
<td>40 (32%)</td>
</tr>
<tr>
<td>Some</td>
<td>88 (46%)</td>
<td>39 (48%)</td>
<td>49 (45%)</td>
<td>86 (49%)</td>
<td>22 (45%)</td>
<td>64 (50%)</td>
</tr>
<tr>
<td>Severe</td>
<td>31 (16%)</td>
<td>10 (12%)</td>
<td>21 (19%)</td>
<td>29 (16%)</td>
<td>6 (12%)</td>
<td>23 (18%)</td>
</tr>
</tbody>
</table>

**Childhood Sexual Abuse**

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>M</th>
<th>F</th>
<th>Total</th>
<th>M</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>156 (81%)</td>
<td>75 (92%)</td>
<td>81 (74%)</td>
<td>142 (80%)</td>
<td>46 (94%)</td>
<td>96 (76%)</td>
</tr>
<tr>
<td>Some</td>
<td>21 (11%)</td>
<td>5 (6%)</td>
<td>16 (15%)</td>
<td>17 (10%)</td>
<td>3 (6%)</td>
<td>14 (11%)</td>
</tr>
<tr>
<td>Severe</td>
<td>15 (8%)</td>
<td>2 (2%)</td>
<td>13 (12%)</td>
<td>17 (10%)</td>
<td>0 (0%)</td>
<td>17 (13%)</td>
</tr>
</tbody>
</table>

**Outcome Measures**

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>Antidepressant Medication Trial</th>
<th>Psychotherapy Trial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide Attempt – lifetime</td>
<td>67 (34%)</td>
<td>27 (32%)</td>
</tr>
<tr>
<td>Non-Suicidal Self-Injury – lifetime</td>
<td>46 (24%)</td>
<td>15 (18%)</td>
</tr>
</tbody>
</table>

**Outcome Measure Relationships**

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Antidepressant Medication Trial</th>
<th>Psychotherapy Trial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neither</td>
<td>109 (56%)</td>
<td>61 (55%)</td>
</tr>
<tr>
<td>Suicide Attempt Only</td>
<td>40 (21%)</td>
<td>19 (17%)</td>
</tr>
<tr>
<td>Non-Suicidal Self-Injury Only</td>
<td>19 (10%)</td>
<td>10 (9%)</td>
</tr>
<tr>
<td>Both Behaviours</td>
<td>27 (14%)</td>
<td>21 (19%)</td>
</tr>
</tbody>
</table>

---

6.4.3 Comparing variables between trials with the total sample

As shown in Table 6.2, the demographic, clinical, childhood adversity, and outcome variables were compared between the trials for the total sample, as well as by gender. The results reported in this section compare the variables between the two trials, using the total sample. The medication trial enrolled a younger patient sample with a mean age of 31 years, compared to the psychotherapy trial with a
mean age of 35 years, \( t(370) = -3.20, P < 0.01 \). Patients in the medication trial were rated as significantly more depressed at baseline, with mean MADRS scores of 31 versus 25 in the psychotherapy trial, \( t(370) = 8.41, P < 0.01 \). No significant differences were found between the trials for the childhood adversity variables. Looking at outcomes, in the medication trial, significantly more patients reported making a lifetime suicide attempt, 34%, versus 18% in the psychotherapy trial, \( X^2(1, n = 372) = 11.77, P < 0.01 \). Although more patients also reported engaging in NSSI in the medication trial, 24%, versus 19% in the psychotherapy trial, these differences were not significant. Regarding the relationship between a suicide attempt and NSSI, Table 6.2 also shows the number and percentage of patients who reported none, one or both of these behaviours.

### 6.4.4 Comparing variables between trials by gender

Next, the variables were compared between the two trials by gender. These data are also shown in Table 6.2. More men were enrolled in the medication trial than in the psychotherapy trial, 43% versus 28% respectively, \( X^2(1, n = 133) = 8.91, P < 0.01 \). Women enrolled in the medication trial were younger than women in the psychotherapy trial with a mean of 31 versus 36 years, respectively, \( t(239) = -3.20, P = < 0.01 \). Men in the medication trial reported a significantly older mean age of onset for depression, 23 years, compared to men in the psychotherapy trial who reported onset at 18 years, \( t(131) = 2.6, P = 0.01 \). Depression severity at baseline was greater for both men and women in the medication trial as compared to the psychotherapy trial. For men, the mean MADRS score was 32 in the medication trial compared to 26 in the psychotherapy trial, \( t(131) = 5.3, P < 0.01 \). For women, the mean MADRS score was 30 in the medication trial, compared to 25 in the psychotherapy trial, \( t(237) = 6.1, P < 0.01 \).

The difference in the reported lifetime suicide rate for men, 32% in the medication trial, versus 16% in the psychotherapy trial, was not significant with Yates’ continuity correction, \( X^2(1, n = 133) = 3.22, P = 0.07 \). However, the difference in the reported lifetime suicide rate for women was significant, 36% in the antidepressant
trial, compared to 19% of women in the psychotherapy trial, $X^2(1, n = 237) = 8.20, P < 0.01$. Likewise, with respect to NSSI, significantly more women reported engaging in NSSI, 28% in the medication trial, compared to 16% of women in the antidepressant trial, $X^2(1, n = 237) = 4.65, P = 0.03$. The effect sizes are small to medium for all the reported relationships.

While the outcome measure relationship data showing the number and percentage of patients who engage in none, some or both of the behaviours is provided for reference rather than formal analyses, two comparisons are worthy of note. More men than women reported engaging in NSSI only in the psychotherapy trial, 22% compared to 10% respectively. This result is shown in Figure 6.1. Using the more stringent Yates’ Continuity Correction value, the difference was trending, $X^2(1, n = 372) = 3.58, P = 0.06$. Significantly more women compared to men in the medication trial endorsed engaging in both behaviours; that is, making a lifetime suicide attempt and engaging in NSSI, 19% of women in comparison to 7% of men, $X^2(1, n = 372) = 4.62, P = 0.03$. This result is shown in Figure 6.2

Figure 6.1: Comparing NSSI only rates between genders within the psychotherapy trial

* $X^2 = 3.58, p = 0.06$ with Yates’ continuity correction; $X^2 = 3.73, p = 0.05$ with Pearson chi-square
6.4.5 Childhood adversity predictors of suicide attempts within a depressed sample

Table 6.3 shows the univariate and multivariate associations for the demographic, clinical, and childhood adversity variables with lifetime suicide attempts in a sample of depressed outpatients. In univariate analyses, eight variables were significantly associated with suicide attempts: age, age of first major depressive episode (MDE onset), MADRS score, maternal care, paternal care, maternal protection, abuse, and CSA. The only two variables that were not significant were gender and paternal protection.

As the childhood adversity variables are inter-correlated, partial correlations among these variables with suicide attempts were conducted. Results indicated that only
maternal care had an independent influence on suicide attempts and any observed relationship among the other childhood adversity variables with suicide attempts could be explained by their association with low maternal care. Given that MDE onset and age are also highly correlated, a partial correlation between these two variables with suicide attempts was conducted. Results indicated that MDE onset had an independent influence on suicide attempts, and the observed relationship between age and suicide attempts was influenced by MDE onset. Partial correlations between MDE onset and MADRS showed that the two variables made significant, independent contributions to suicide attempts.

Table 6.3: Univariate and multivariate logistic regressions of demographic, clinical, and childhood adversity variables with lifetime suicide attempts for 372 outpatients with depression

<table>
<thead>
<tr>
<th></th>
<th>Univariate</th>
<th></th>
<th></th>
<th>Multivariate&lt;sup&gt;c&lt;/sup&gt;</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td>𝑃</td>
<td>OR (95% CI)</td>
<td>𝑃</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.98</td>
<td>(0.61, 1.58)</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.97</td>
<td>(0.95, 0.99)</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDE Onset&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.95</td>
<td>(0.93, 0.98)</td>
<td>&lt;0.01</td>
<td>0.95</td>
<td>(0.92, 0.97)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>MADRS</td>
<td>1.06</td>
<td>(1.03, 1.10)</td>
<td>&lt;0.01</td>
<td>1.07</td>
<td>(1.03, 1.11)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Maternal Care</td>
<td>0.96</td>
<td>(0.94, 0.98)</td>
<td>&lt;0.01</td>
<td>0.96</td>
<td>(0.94, 0.99)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Paternal Care</td>
<td>0.97</td>
<td>(0.94, 0.99)</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Protection</td>
<td>1.03</td>
<td>(1.00, 1.06)</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paternal Protection</td>
<td>1.02</td>
<td>(0.99, 1.05)</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abuse</td>
<td>1.50</td>
<td>(1.09, 2.11)</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSA</td>
<td>1.46</td>
<td>(1.03, 2.08)</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Age at entry into trial
<sup>b</sup> Age of first Major Depression Episode (MDE)
<sup>c</sup> Model contains the variables that were significantly and independently associated with lifetime suicide attempts.
To create the most parsimonious multivariate model to predict suicide attempts, we entered the three variables that demonstrated an independent association with suicide attempts: MDE onset, MADRS, and maternal care. The full model was significant, $X^2 = 40.94, P < 0.01$, and explained 11-16% of the variance in suicide attempts. The only independent adverse childhood predictor of suicide attempts was maternal care (OR = 0.96, 95% CI: 0.94, 0.99, $P < 0.01$). As maternal care was examined as a continuous variable, the odds ratio is small.

To quantify the association between the variables included in the multivariate analyses, a forward step-wise model was used. In step 1, MDE onset was the only variable included, $X^2 = 16.50, P < 0.01$, and the model explained 5-7% of variance for suicide attempts. Step 2 added MADRS to the model, $X^2 = 32.15, P < 0.01$, and explained 9-12% of variance. In step 3, maternal care was added to the model, $X^2 = 40.94, P < 0.01$ and this final model, containing all three variables, explained 11-16% of the variance. To verify these associations, the three variables were entered into a backward stepwise regression with the same results. To further confirm, all eight of the variables significant in the univariate analyses were put into forced-entry multivariate analyses. The full model, containing all the variables was significant, $X^2 = 42.48, P < 0.01$, but only the three variables mentioned previously made a significant contribution to predicting suicide attempts: MDE onset, MADRS, and maternal care.

To visually illustrate the association among maternal care levels and suicide attempts, maternal care was categorized into tertiles. Figure 6.3 shows the proportion of patients who reported a suicide attempt by maternal care levels in tertiles.
When maternal care in tertiles was included in the multivariate analyses with MDE onset and MADRS, the whole model was significant \( \chi^2 = 39.88, P < 0.01 \). Those who reported maternal neglect (scores ≤15) were 2.3 times more likely to have attempted suicide in comparison to those with high maternal care (scores ≥ 26) (95% CI: 1.26, 4.24, \( P = 0.01 \)).

### 6.4.6 Childhood adversity predictors of NSSI within a depressed sample

Table 6.4 presents the univariate and multivariate analyses for the demographic, clinical and childhood adversity variables with NSSI. In the univariate model, age, MDE onset, paternal care and abuse were associated with NSSI. Given their intercorrelations, partial correlations were conducted between paternal care and abuse with NSSI. The results showed that the observed univariate relationship between abuse and NSSI was no longer significant. The apparent association between the two could be explained by abuse’s association with low paternal care. A partial correlation was also conducted between age and MDE onset. The results showed that only MDE onset made a significant, independent contribution to NSSI.
Table 6.4: Univariate and multivariate logistic regressions of demographic, clinical, and childhood adversity variables with non-suicidal self-injury for 372 outpatients with depression

<table>
<thead>
<tr>
<th></th>
<th>Univariate</th>
<th></th>
<th></th>
<th>Multivariate</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>(95% CI)</td>
<td>P</td>
<td>OR</td>
<td>(95% CI)</td>
<td>P</td>
</tr>
<tr>
<td>Gender</td>
<td>0.98</td>
<td>(0.59, 1.65)</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (^a)</td>
<td>0.95</td>
<td>(0.93, 0.98)</td>
<td>&lt;0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDE Onset (^b)</td>
<td>0.93</td>
<td>(0.90, 0.96)</td>
<td>&lt;0.01</td>
<td>0.94</td>
<td>(0.91, 0.97)</td>
<td>0.01</td>
</tr>
<tr>
<td>MADRS</td>
<td>1.01</td>
<td>(0.97, 1.04)</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Care</td>
<td>0.99</td>
<td>(0.97, 1.02)</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paternal Care</td>
<td>0.96</td>
<td>(0.93, 0.99)</td>
<td>0.01</td>
<td>0.97</td>
<td>(0.94, 1.00)</td>
<td>0.05</td>
</tr>
<tr>
<td>Maternal Protection</td>
<td>1.00</td>
<td>(0.98, 1.04)</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paternal Protection</td>
<td>1.02</td>
<td>(0.99, 1.06)</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abuse</td>
<td>1.48</td>
<td>(1.04, 2.12)</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSA</td>
<td>1.37</td>
<td>(0.95, 1.99)</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) Age at entry into trial  
\(^b\) Age of first Major Depression Episode (MDE)  
\(^c\) The model contains the variables that were significantly and independently associated with NSSI.

Given the results of the partial correlations, only paternal care and MDE onset were entered in a forced-entry multivariate logistic regression as predictors of NSSI. The whole model was significant, \(X^2 = 25.56, P < 0.01\). The only independent childhood adversity predictor was paternal care (OR = 0.97, 95% CI: 0.94, 1.00, \(P = 0.05\)). The odds ratio is small because the level of paternal care was examined as a continuous variable.

For the purpose of illustration, Figure 6.4 shows the proportion of patients who reported NSSI by paternal care levels in tertiles. When this variable was included in the forced-entry multivariate analyses with MDE onset, the whole model was significant, \(X^2 = 29.71, P < 0.01\). Those reporting paternal neglect (scores ≤ 14) were
2.7 times more likely to engage in NSSI than those with high paternal care (scores ≥ 23), (95% CI: 1.30, 5.48, \(P = 0.01\)).

**Figure 6.4:** Non-suicidal self-injury by paternal care in tertiles

This study examined outpatients with depression and reported two key findings: low maternal care, or emotional neglect from one’s mother, was associated with increased suicide attempts, while low paternal care, or emotional neglect from one’s father, was associated with higher rates of NSSI. Indeed, low parental care, conceptualized as emotional neglect, was the only adverse childhood experience which remained significantly associated with suicide attempts and NSSI in the multivariate models. Abuse, regardless of its form, was not independently associated with either behaviour after adjusting for its correlations with low maternal or paternal care.

The association between low maternal care and increased suicide attempts, as reported in this chapter, aligned with the literature on adults, which also reported
an association between suicidal behaviour and low parental care (Beautrais, 2002, Dale et al., 2010, Ehnvall et al., 2008, Goldney, 1985, Heider et al., 2007).

Looking specifically at the maternal care finding, a psychological model which provides a construct for the association between low maternal care and suicide attempts is the Interpersonal Theory of Suicide (Van Orden et al., 2010). This theory posits that the highest risk for a suicide attempt occurs when an individual experiences a sense of thwarted belongingness and perceived burdensomeness, together with hopelessness regarding these two situations (Van Orden et al., 2008). Conceivably, thoughts of not belonging and being a burden to others may flourish in an adult who experienced low maternal care. Further lending support to the concept of perceived burdensomeness in relation to suicide attempts, as suggested by Van Order et al. (2008), women with borderline personality disorder (BPD) who made a suicide attempt reported their intention was to “make others better off” (Brown et al., 2002).

Another key finding was the association of low paternal care with NSSI. This finding is original in the literature, perhaps because NSSI has only recently been studied as a distinct phenomenon (Selby et al., 2012, Zetterqvist et al., 2013); when it is studied, it is typically examined within adolescent populations, not in adults. As well, the empirical literature rarely examines paternal risk factors specifically. The study which most closely approximated the low paternal care finding reported on here examined deliberate self-harm in a group of non-clinical undergraduate students. The experience of low care from both parents and paternal insecure attachment, as measured by an unpublished parental attachment questionnaire (Kenny, 1985), were independently associated with self-harm for women, but not men in multivariate analyses (Gratz et al., 2002). Also bearing some similarity, in a study of hospitalized adolescents, emotional neglect from either parent was associated with self-mutilating behaviour (Lipschitz et al., 1999). Interestingly, overprotection was not examined as a potential risk factor in either of these studies.
The Lipschitz et al., 1999 study also reported that age of first major depressive episode (MDE onset) was associated with suicide attempts and NSSI. This finding mirrors the results found in the larger body of suicide literature (Beautrais et al., 2006). A first depressive episode occurring in childhood, adolescence, or early adulthood increases the risk for a suicide attempt in comparison to a first episode occurring later in life (Nock et al., 2008). With respect to NSSI, if the self-harming behaviour is conceptualized as an attempt to regulate emotion and relieve tension in the context of early depression onset, a younger patient with depression may engage in these behaviours in the absence of more functional mood-coping strategies. Countering the typical finding that MDE onset is associated with suicide attempts and NSSI, a recent study examining an outpatient sample with bipolar disorder reported early depression onset predicted NSSI, but not suicide attempts (Moor et al., 2012). This paper counters the typical findings of the international literature and may reflect a unique aspect of the population studied, or it may be identifying a distinction between suicide attempts and NSSI.

Another finding worth noting was the absence of association between depression severity and engaging in NSSI. In contrast, depression severity was strongly associated with suicide attempts. In a suicide attempt, the patient reportedly wishes to die, a desire influenced by the severity of depression or mental state at the time (Beautrais et al., 2006, Nock et al., 2008). NSSI, however, is characterized more generally as a maladaptive attempt to regulate emotion (Gratz, 2007, Mangnall and Yurkovich, 2008) and as such, may be less influenced by a particular mood state as measured by depression severity.

The last key finding in this study that relates to this thesis was that abuse, whether measured broadly as psychological, physical, or sexual abuse, or specifically as CSA, was not independently associated with suicide attempts or NSSI in multivariate analyses. This result stands in contrast to a number of other studies which report an association between abuse, suicide attempts, and NSSI (Ystgaard et al., 2004, Romans et al., 1995, Spinhoven et al., 2009). Perhaps, as some researchers have
suggested, abuse occurs within a context of pre-existing low care or neglect (Bloom, 2000, Gunnar, 2008, Ney et al., 1994, Spinhoven et al., 2009) as evidenced by a longitudinal study of mothers at-risk for parenting problems. Neglectful mothers were found to do little to protect their child from danger (Egeland, 1987). In a review of 177 studies involving more than 65,000 participants, CSA was found to be one of several childhood risk factors for suicide and NSSI (Maniglio, 2011), however family dysfunction (Wilkinson et al., 2011) and high-risk family environments (Kaess et al.) were hypothesized to interact with CSA to increase risk.

Some of the results reported in this study are worthy of mention although their implications fall outside of the main scope of this thesis. An examination of the relationships between lifetime suicide attempts and NSSI by gender reveals different patterns for these behaviours. For example, overall more patients in the medication trial reported both behaviours that is, making a suicide attempt and engaging in NSSI than patients in the psychotherapy trial. However, when examining the data by gender within a trial and by gender between the trials, different patterns emerge. In the medication trial, the percentage of men versus women who engaged in NSSI was similar, but in the psychotherapy trial, more than twice as many men reported the behaviour. Statistically speaking, this difference was not significant when the more conservative continuity correction values were used, but the gender pattern was evident. This is an important finding which counters the literature reports of women engaging in NSSI more than men (Hawton et al., 2012, Kapur and Gask, 2009). Similarly, significantly more women than men reported both behaviours in the medication trial, while the percentages were similar between genders in the psychotherapy trial. By examining the behaviours separately, as well as how they interrelate, and looking at rates by gender, data are provided which may suggest different patient and gender profiles for the behaviour combinations.

These findings bring to light the association between low parental care, a form of emotional neglect, and increased suicide attempts and NSSI in adults with
depression. As well, different childhood risk factors for the two behaviours are delineated. This finding was possible because the patients were asked specifically and separately about suicide attempts and NSSI. Although abuse features prominently in the research as a risk factor for suicide attempts and NSSI, it was not independently associated with either of the behaviours. It appears that in this sample, the quality of ongoing, intra-familial relationships had a greater impact than abuse, a hypothesis echoed by others (Dubowitz, 2006, Lipschitz et al., 1999). These findings signal to clinicians the importance of asking specifically about suicide attempts and NSSI, as well as about levels of parental care in childhood. When endorsed, low parental care levels may be given weighted consideration in the context of formulating an adult patient’s depression and potential risk for suicide and NSSI.
CHAPTER 7: INVESTIGATING EXTREME RESPONDERS IN RELATION TO PREDICTING PSYCHOTHERAPY OUTCOME

7.1 INTRODUCTION

Teasdale and colleagues (Teasdale et al., 2001), seeking to test the mediator potential (Baron, 1986) of cognitive therapy on relapse prevention, examined treatment response to cognitive therapy among a group of patients with recurrent depression. They found that patients who selected extreme responses at either the lowest or highest end of a scale measuring depression-related cognitions, at pre- and post-treatment, relapsed earlier than patients who selected responses in the middle of the scale. Based on these findings, Teasdale et al. (2001) proposed the extreme responder theory. This theory postulated that the tendency of an individual to select extreme responses on depression-related cognitive measures may predict earlier relapse, more so than whether the responses themselves reflected highly depressotypic or undepressotypic cognitions. Teasdale et al. posited that the selection of extreme responses suggested an absolutist, black-and-white style of thinking or a tendency to categorize experiences into one of two polar opposite groups. If this thinking style was not remediated during a course of cognitive therapy, the patient was apt to relapse or remain only partially remitted in terms of depression symptoms. As such, cognitive therapy was shown to mediate relapse by reducing the tendency to select extreme responses (Teasdale et al., 2001). In the paper reporting on their attempt to replicate Teasdale et al.’s findings, Ching & Dobson (2010) described this form of thinking as a “dichotomous style of situational appraisal” (Ching & Dobson, p. 267) which may contribute to early depression relapse or symptom continuation following cognitive therapy.

Since Teasdale et al.’s 2001 paper, researchers attempting to reproduce the findings have reported equivocal results. Peterson et al. (2007) examined response style in recurrent and chronically depressed outpatients treated with fluoxetine for eight weeks and found that extreme responding predicted clinical outcome in two ways.
Patients selecting the lowest or highest (most extreme) responses on two depression-cognition measures at baseline, as well as after treatment, had poorer treatment response to medication at eight weeks. Further, patients who eventually responded to treatment selected fewer extreme responses at baseline and following treatment than patients who did not improve with medication (Peterson et al., 2007).

In the Peterson et al., 2007 paper, the two baseline measures used were the stable/unstable dimension of the Attributional Style Questionnaire (ASQ) (Peterson, 1982) and the social approval subscale of the The Dysfunctional Attitude Scale (DAS) (Weissman, 1978b). The stable/unstable dimension of the ASQ measures patients’ predictions about the likelihood of future change. The two most extreme responses on this dimension are that the situation “will never again be present” or “will always be present.” A response in the middle of the scale would be that the situation “may or may not” continue to be present in the future (Peterson et al., 2007). The theory underlying the extreme response hypothesis suggests that a patient’s ability to tolerate uncertainty, that is, a situation that may or may not occur, reflects an adaptive and flexible cognitive “set” that aids patients in their recovery from a depressive episode. Conversely, the inflexibility of a fixed or rigid cognitive set, reflected in selecting the most extreme response at either end of the scale, would hinder recovery. The DAS social approval subscale measures the degree to which a patient endorses statements indicating the need for approval from others. For example, patients were asked to consider their response to, “My value as a person greatly depends on what others think of me.” Patients who responded in either extreme as “totally agreeing” or “totally disagreeing” were less likely to respond to antidepressant medication at eight weeks (Peterson et al., 2007). The explanatory model behind why either of these extreme responses were associated with poor outcomes came from the idea that a patient’s inability to hold a balanced, moderate perspective, in this case about the importance of receiving others’ approval, indicated an emotional immaturity or rigidity characterized by poor self-
Esteem (Leary et al., 1995). This negative or rigid self-belief pattern appeared to impact response to depression medication.

Another set of researchers, Ching & Dobson (2010), reported on their attempt to replicate the findings of Teasdale et al.’s original extreme responder paper (2001), as well as the work of Peterson et al. (2007). Prior to treatment assignment, participants in the Ching & Dobson study completed a range of inventories. These measures were completed again post-treatment and the frequency with which the participants selected extreme scores was compared between the two time points. In terms of treatment, one group received cognitive therapy (CT), and the other behavioural activation (BA); both effective treatments for depression (Dobson et al., 2008). The results from the Ching & Dobson study differed from the two previous papers. While Ching & Dobson undertook a number of analyses, the finding most pertinent to this chapter was that extreme responses did not predict acute response to treatment at twelve weeks, and extreme responses were not found to mediate relapse in either of the groups (Ching and Dobson, 2010).

7.1.1 Extreme responder hypothesis, high maternal care, and psychotherapy response

In Chapter 5 of this thesis, a non-linear relationship between maternal care and response to psychotherapy was found whereby patients reporting low or high maternal care responded less well to therapy in comparison to patients reporting intermediate levels of care. For patients who reported low levels of maternal care, the poorer treatment response may be intuitively and theoretically understood. If a patient had a difficult childhood, characterized by maternal deprivation and a poor attachment, as reports of low maternal care might suggest (Agostini et al., 2010b, Gittleman et al., 1998, Manassis et al., 1999), a short course of psychotherapy may not be enough to improve the patient’s emotional functioning. The question remained, however, as to why patients who reported extremely good maternal care had a poorer response to psychotherapy. Even though the statistically significant difference was between low and intermediate levels of maternal care, the
interesting downward response trend in those who reported high maternal care merited further exploration.

In Chapter 5, two theories were proposed to explain why patients who reported very high levels of maternal care, indicating that they experienced a very loving and warm relationship with their mother, responded less well to psychotherapy. The first theory proposed that the patient may be idealising his or her maternal relationship. A patient who scored his or her mother highly on care would report “very like” (as opposed to “like,” or “unlike”) to statements such as: “Spoke to me with a warm and friendly voice”; “Was affectionate to me”; “Frequently smiled at me”; “Enjoyed talking things over with me.”

The second theory was the “extreme responder” hypothesis. This hypothesis postulated that patients who rated their mothers very highly in terms of care, yet responded poorly to psychotherapy, may be demonstrating an extreme-response state of mind. Aligning with Teasdale et al.’s (2001) description of an extreme responder, perhaps the tendency to select extremely positive responses pre-treatment, as shown by a report of very high maternal care, was indicative of an absolutist thinking style that was not remediated by a short course of psychotherapy. Therapy, as a complex cognitive task, requires a number of processes, including reflection, analysis, objectivity, and perspective-taking. An absolutist, black-and-white thinking style may inhibit the development and practice of some of these skills. The tendency to select extreme responses prior to treatment may predict poor therapy outcome due to the cognitive style associated with this type of response pattern. Further, this extreme response style or state of mind, measured prior to treatment, might be reflected in selecting extreme responses on other pre-treatment measures.

For the purposes of the analyses in this chapter, the hypothesis tested was that patients rating their mothers very highly in terms of care, yet responding poorly to psychotherapy, may be demonstrating an extreme-response state-of-mind. This
tendency to select extreme responses, suggesting a dichotomous, black-and-white thinking style, was thought to negatively impact treatment response. Further, this extreme response style, measured pre-treatment, might be reflected in selecting extreme responses on other depression-related measures.

7.1.2 Extreme responder research questions and hypotheses

In an effort to examine whether this post-hoc extreme responder hypothesis applied to this patient sample, three research questions were investigated. The first asked: In patients who completed psychotherapy ($n = 159$), did the Dysfunctional Attitude Scale (DAS), a self-report measure of depression-related cognitions given at baseline, predict therapy response? This question was examined two ways. First, therapy response was examined in relation to the DAS scored in the traditional way, that is, added together and computed without regard for extreme scores. Second, therapy response was examined in relation to extreme DAS responses, that is, either the lowest or highest responses on the DAS. Based on these questions, the hypothesis was that patients who selected extreme responses on the DAS would show a poor response to psychotherapy. A related hypothesis was that examining the DAS scored in the traditional way, without regard to lowest or highest responses, would not predict response to therapy.

The next question was, were extreme levels of maternal care, as measured by the lowest or highest responses on the PBI, associated with extreme responding on the DAS? Finally, did the selection of extreme maternal care scores, prior to treatment, predict response to psychotherapy?

7.2 METHOD

7.2.1 Sample

The sample consisted of the same 159 outpatients who completed treatment in the Christchurch Psychotherapy for Depression Study (CPDS) which compared
Interpersonal Psychotherapy (IPT) to Cognitive Behavioural Therapy (CBT). The study details are described in Chapter 5.

### 7.2.2 The Dysfunctional Attitude Scale (DAS)

The Dysfunctional Attitudes Scale (DAS) (Weissman, 1978b) is a 40-item self-report questionnaire that was used at baseline to identify the degree to which patients endorsed commonly held maladaptive beliefs related to depression. Higher total scores are indicative of more dysfunctional attitudes. Seven response choices are possible, ranging from “totally agree” to “totally disagree.” See Appendix 2 for a copy of the DAS. The DAS also comprises two sub-scales: perfectionism and social approval. The perfectionism subscale (Imber et al., 1990) consists of 15 questions which assess the degree to which a patient endorses maladaptive evaluative concerns or high personal standards (Floyd, 2004, Jacobs et al., 2009). The perfectionism subscale was examined because of its relationship with depression (Jacobs et al., 2009) and potential to hinder treatment response (Blatt, 1995). The social approval subscale (Floyd, 2004, Teasdale et al., 2001), also called “dependency” (de Graaf et al., 2009), includes 11 questions which ask patients to rate the degree to which personal happiness and self-worth is dependent on approval from others. The social approval subscale was examined in order to replicate the Teasdale et al. (2001) paper, and the (Peterson et al., 2007) paper.

From the DAS, a total of twelve variables were created. Three were traditional or non-extreme response variables that measured DAS responses summed in the traditional way for the total scale and the two subscales. Nine were extreme response variables – extreme functional, extreme dysfunctional, and a composite, which was a combination of both functional and dysfunctional responses – for the DAS total, the perfectionism and social approval subscales. The DAS has been shown to be a valid and reliable measure of dysfunctional attitudes among a variety of different depressed groups (Beck et al., Weissman, 1978a). It should be noted that as only pre-treatment data were available for the patient sample, the traditional and extreme responder variables reflect the patient’s state of mind at
the time of responding, as opposed to reflecting a repeated extreme responder trait. This one-time measurement limits the predictive power of the variables.

7.2.2.1 Traditionally scoring the DAS
To begin, three variables were created which reflected traditional DAS scoring. The first variable was a score for the whole DAS based on summing up the responses to each question to create a total score, summed in the traditional way. A functional response was reflected in a low score, with the most extremely functional response having a score of one. A dysfunctional response was reflected in a high score, with the most extremely dysfunctional score a seven. Next, totals for the specific questions which related to the two subscales, perfectionism and social approval, were summed in the same manner. These three traditionally-scored DAS variables (total, perfectionism, social approval) were used to examine whether patient responses to DAS content predicted response to psychotherapy treatment in this sample.

7.2.3 Identifying extreme responders
Identifying patients classified as extreme responders in these analyses involved creating extreme scores for the DAS, its subscales, and the PBI maternal care variable.

7.2.3.1 Extreme responses for the DAS
To create the nine extreme response variables for the DAS, the procedures described in Teasdale et al. (2001) were followed. Extreme response variables for the total DAS scale were created by adding up the number of times a patient selected the lowest, extremely functional - 1, or highest, extremely dysfunctional - 7, response. An example of an extremely functional response was selecting totally agree to a functional statement such as, “Happiness is more a matter of my attitude towards myself than the way other people feel about me.” An example of an extremely dysfunctional response was selecting totally disagree to a functional statement such as, “Making mistakes is fine because I can learn from them.”
The extremely functional response was created by counting up how often a patient responded totally agree (a score of one) to a functional item while the extremely dysfunctional score was created by counting up how often a patient responded totally disagree (a score of seven) to a functional item. These calculations resulted in three extreme DAS total variables:

- an extremely functional DAS total (representing the total number of 1’s),
- an extremely dysfunctional DAS total (representing the total number of 7’s),
- a “composite” variable, as referred to in Ching & Dobson (2010), created by counting up the number of 1’s or 7’s.

This method for creating the extreme response variables mirrors the procedure described in the original Teasdale et al. paper (2001), as well as the Peterson et al. (2007), and Ching & Dobson (2010) papers. The same method was used for the specific questions which comprised the two subscales of the DAS: perfectionism and social approval.

To correct for the non-normal distribution (positive skew) of the nine extreme variables and to replicate the original method described in the Teasdale et al. paper (2001) and duplicated in (Ching and Dobson, 2010), the variables were log transformed using natural log plus one to normalize.

Finally, for illustrative purposes, the extreme responses for the DAS total and its two subscales were divided into three groups using the original, non-log transformed variables, because the range for the log transformed variables was too small to group in this manner. To create the three groups, the frequencies for the DAS total and both of the subscales were examined individually. The patients included in the first group comprised those who reported no extreme responses on that particular scale. In order to identify patients who were truly extreme responders, the third group comprised patients in the top 10% based on the frequency of extreme responses reported for a particular scale. The rest of the patients were included in the second group. The number of patients in each of the
groups varied according to the individual subscale (DAS total, perfectionism, or social approval).

7.2.3.2 Extreme maternal care responses on the PBI
The next aspect of exploring the extreme responder hypothesis was examining the level of maternal care using the PBI maternal care variable as described in Chapter 5. First, all reverse scored items were corrected so that a high score, representing a caring response, was rated a 3, while a low score, representing an uncaring response, was rated a 0. The extremely low maternal care response was created by counting the number of times a patient rated his or her mother a 0 or extremely uncaring. A patient who endorsed an extremely uncaring response would select “very unlike” in relation to the statement, “Was affectionate to me.” The extremely high maternal care response was created by counting the number of times a patient rated his or her mother a 3 or extremely caring. For example, a patient who endorsed an extremely caring response would select “very like” in relation to the statement, “Spoke to me with a warm and friendly voice.”

7.2.4 Psychotherapy response
Using the same outcomes reported in Chapter 5, psychotherapy response was measured two ways: categorically as whether or not the patient achieved ≥ 60% improvement on the MADRS, and continuously, as percentage improvement on the MADRS from baseline to end-of-therapy.

7.2.5 Statistical analyses
Chi-square and logistic regression were used to examine and quantify the relationship between the DAS variables (traditionally-scored and extreme) and the categorical psychotherapy response, ≥ 60% improvement on the MADRS. Each of the traditionally-scored and extreme DAS variables was used as an independent variable in univariate analyses to examine whether it predicted response to psychotherapy. One-way analysis of variance (ANOVARAs) and linear regressions were used to examine and quantify the relationship between the DAS variables
(traditionally-scored and extreme) and the continuous response, percentage improvement on the MADRS.

To answer the question of whether extreme maternal care scores were associated with DAS extreme responses, the variables were entered into a logistic regression, with DAS responses as the dependent variable. Likewise, to examine whether extreme maternal care responses predicted psychotherapy response, the maternal care variables were entered into a logistic regression with the categorical treatment response as the dependent variable. To verify the strength and direction of noted associations, correlations and partial correlations were used to examine relationships among the extreme responses and between extreme responses and psychotherapy response. A two-tailed p-value of <0.05 was taken to indicate statistical significance.

As gender, depression severity, and age of depression onset may be associated with extreme or high scores on the DAS (Petersen et al., 2007; Teasdale et al., 2001), these variables were entered into the logistic regression for each of the categorical outcomes, to control for baseline depression severity and possible age of onset or gender effects.

7.3 Results

The demographic and descriptor variables associated with the sample may be found in Chapter 5, Table 5.1.

The results are presented in three parts. First, the traditionally-scored and extreme responses for the DAS and its subscales in relation to psychotherapy response are presented. Next, the results for extreme maternal care responses in relation to extreme DAS responses are presented. Finally, extreme maternal care in relation to psychotherapy response is examined.
Table 7.1: Response to psychotherapy measured categorically and continuously by the traditionally-scored Dysfunctional Attitude Scale (DAS) in tertiles

<table>
<thead>
<tr>
<th></th>
<th>Y or N: ≥60% MADRS Improvement</th>
<th>% MADRS Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>% of responders</td>
</tr>
<tr>
<td>DAS Total</td>
<td>159</td>
<td>8.82</td>
</tr>
<tr>
<td>Low DAS Total (≤ 134)</td>
<td>56</td>
<td>73%</td>
</tr>
<tr>
<td>Intermediate DAS Total (135-167)</td>
<td>51</td>
<td>49%</td>
</tr>
<tr>
<td>High DAS Total (168+)</td>
<td>52</td>
<td>48%</td>
</tr>
<tr>
<td>DAS Perfectionism Total</td>
<td></td>
<td>4.67</td>
</tr>
<tr>
<td>Low Perfectionism (≤ 49)</td>
<td>56</td>
<td>67%</td>
</tr>
<tr>
<td>Intermediate Perfectionism (50-63)</td>
<td>55</td>
<td>55%</td>
</tr>
<tr>
<td>High Perfectionism (64+)</td>
<td>48</td>
<td>48%</td>
</tr>
<tr>
<td>DAS Social Approval Total</td>
<td></td>
<td>1.50</td>
</tr>
<tr>
<td>Low Social Approval (≤ 43)</td>
<td>60</td>
<td>62%</td>
</tr>
<tr>
<td>Intermediate Social App (44-51)</td>
<td>46</td>
<td>50%</td>
</tr>
<tr>
<td>High Social Approval (52+)</td>
<td>52</td>
<td>58%</td>
</tr>
</tbody>
</table>

7.3.1 Traditionally-scored DAS with psychotherapy response

Table 7.1 presents the associations between the DAS total scale, its two subscales, and response to psychotherapy measured categorically and continuously. In this table, the DAS variables represent traditionally-scored, non-extreme variables which are divided into tertiles. The mean DAS total score for the 159 patients who completed treatment was 149.6 ± 37.3. The mean perfectionism subscale score was 55.6 ± 18.0, and the mean social approval subscale score was 47.8 ± 11.6.

A patient’s total on the traditionally-scored DAS was associated with response to psychotherapy such that functional responses yielded a better outcome. These findings were analysed first by using a logistic regression. The traditionally-scored DAS total was entered as a continuous independent variable with the categorical psychotherapy response as the dependent variable. Next, to better quantify response rates, chi-square tests were used with the traditionally-scored DAS in tertiles in relation to psychotherapy response. In Table 7.1, looking first at the DAS
total score in relationship to therapy outcome, 73% of patients in the low DAS total category, indicating functional attitudes, responded to psychotherapy. In comparison, 48% of patients with high DAS total scores, indicating dysfunctional attitudes, responded to therapy. The logistic regression model, which included the categorical measure of psychotherapy response as the outcome variable and the DAS score as the predictor, was significant, $X^2 = 8.82, P = 0.012$. The DAS total score explained 5-7% of the variance.

Patients’ DAS total scores examined in relation to therapy response, measured continuously as mean percentage improvement on the MADRS, were also significant. Patients with low DAS scores responded better to therapy, $F (2, 159) = 6.16, P = 0.003$. Linear regressions, with traditionally-scored DAS total as the independent variable and psychotherapy response as the dependent variable, were used. Post-hoc comparisons using the Least Significantly Different (LSD) test indicated that the significant differences were between the low and intermediate, $P = 0.002$, and low and high, $P = 0.005$, DAS total scores. Patients who endorsed the fewest number of dysfunctional attitudes demonstrated the greatest improvement on the MADRS (69% improvement), compared to those who endorsed an intermediate number (51% improvement), or the highest number of dysfunctional attitudes (53% improvement). A medium effect size of 0.07 was calculated using ETA-squared. Figure 7.1 provides an illustration.
Further, DAS perfectionism was also significantly associated with mean percentage improvement on the MADRS, $F (2, 158) = 4.12$, $P = 0.018$. Post-hoc comparisons using the LSD test indicated that the significant differences were between the low and high perfectionism scores, $P = 0.014$, and low and intermediate perfectionism scores, $P = 0.015$. Patients who endorsed low levels of perfectionism had a mean percentage improvement of 67% on the MADRS, compared to a 52% improvement among patients who endorsed high levels of perfectionism, or a 53% improvement for those who endorsed intermediate levels of perfectionism. A small-to-medium effect size of 0.05 was calculated using ETA-squared. Figure 7.2 provides an illustration.
To explore the strength and direction of the relationship between DAS total and its subscales with percentage improvement on the MADRS, Pearson product-moment correlations were conducted. DAS total responses were associated with a small negative response to treatment, $r = -0.220$, $n = 159$, $P = 0.005$. Likewise, perfectionism subscale responses were also associated with a small negative response to treatment, $r = -0.231$, $n = 159$, $P = 0.003$. These results indicate that patients who reported fewer dysfunctional attitudes in general, and reported less perfectionistic attitudes specifically, responded better to psychotherapy. The social approval subscale responses were not correlated with psychotherapy response.

Finally, to examine the potentially unique contribution of each of the DAS scales (total, perfectionism, and social approval), a forced-entry logistic regression including the DAS variables, gender, depression severity at baseline, and age of
depression onset was conducted. The model was significant, $X^2 = 15.35$, $P = 0.02$. DAS total was the only significant variable: $\text{wald} = 8.07$, df = 1, $P < 0.01$. The model explained 9-12% of the variance.

The descriptive information for the DAS extreme responder means are presented in Table 7.2. These data are provided as a comparison with previous and future extreme responder papers as the literature base on this topic is sparse.

Table 7.2: Mean and skewness of pre-therapy extreme responses on the Dysfunctional Attitude Scale (DAS)

<table>
<thead>
<tr>
<th>Extreme Responder Variable (Numeric Value)</th>
<th>Mean (95% CI)</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely Functional DAS (1)</td>
<td>5.25 (4.14, 6.36)</td>
<td>1.70</td>
</tr>
<tr>
<td>Extremely Dysfunctional DAS (7)</td>
<td>2.13 (1.47, 2.80)</td>
<td>3.82</td>
</tr>
<tr>
<td>Composite Extreme DAS (1 or 7)</td>
<td>7.38 (6.09, 8.68)</td>
<td>1.36</td>
</tr>
<tr>
<td>Extremely Functional Perfectionism (1)</td>
<td>2.30 (1.77, 2.82)</td>
<td>1.67</td>
</tr>
<tr>
<td>Extremely Dysfunctional Perfectionism (7)</td>
<td>0.64 (0.36, 0.92)</td>
<td>4.43</td>
</tr>
<tr>
<td>Composite Extreme Perfectionism (1 or 7)</td>
<td>2.94 (2.38, 3.50)</td>
<td>1.35</td>
</tr>
<tr>
<td>Extremely Functional Social Approval (1)</td>
<td>0.96 (0.67, 1.26)</td>
<td>2.24</td>
</tr>
<tr>
<td>Extremely Dysfunctional Social Approval (7)</td>
<td>0.96 (0.69, 1.23)</td>
<td>2.65</td>
</tr>
<tr>
<td>Composite Extreme Social Approval (1 or 7)</td>
<td>1.92 (1.53, 2.31)</td>
<td>1.43</td>
</tr>
</tbody>
</table>

### 7.3.2 DAS extreme responses in relation to psychotherapy response

Table 7.3 presents the associations between the nine DAS extreme responder variables, examined as independent variables, divided into three groups in relation to the categorical and continuous measures of psychotherapy response, examined as dependent variables.
7.3.2.1 **DAS extreme responses and categorical therapy response**

In relation to psychotherapy outcome measured categorically, patients who selected extreme responses on the DAS did not show a statistically significant differential response to therapy. None of the extreme response variables, whether the DAS total or its two subscales, were significant.

**Table 7.3: Percentage of patients who responded to psychotherapy by extreme responses on the Dysfunctional Attitude Scale (DAS)**

<table>
<thead>
<tr>
<th>Extreme Functional DAS Total (1)</th>
<th>Y or N : ≥60% Improvement</th>
<th>% Improvement on the MADRS</th>
<th>n</th>
<th>%</th>
<th>X²</th>
<th>P</th>
<th>Mean % (95% CI)</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Extremely Functional DAS Responses</td>
<td>47</td>
<td>49</td>
<td>1.70</td>
<td>NS</td>
<td>53 (43,63)</td>
<td>53</td>
<td>1.70</td>
<td>NS</td>
<td>53 (43,63)</td>
</tr>
<tr>
<td>1-14 Extremely Functional DAS Responses</td>
<td>93</td>
<td>59</td>
<td>1.05</td>
<td>NS</td>
<td>54 (46,62)</td>
<td>54</td>
<td>1.05</td>
<td>NS</td>
<td>54 (46,62)</td>
</tr>
<tr>
<td>15+ Extremely Functional DAS Responses</td>
<td>19</td>
<td>63</td>
<td>4.67</td>
<td>NS</td>
<td>67 (59,75)</td>
<td>67</td>
<td>4.67</td>
<td>NS</td>
<td>67 (59,75)</td>
</tr>
<tr>
<td>Extremely Dysfunctional DAS Total (7)</td>
<td>159</td>
<td>1.70</td>
<td>NS</td>
<td>3.16</td>
<td>.045</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Extremely Dysfunctional DAS Responses</td>
<td>71</td>
<td>58</td>
<td>4.67</td>
<td>NS</td>
<td>58 (51,66)</td>
<td>58</td>
<td>4.67</td>
<td>NS</td>
<td>58 (51,66)</td>
</tr>
<tr>
<td>1-4 Extremely Dysfunctional DAS Responses</td>
<td>70</td>
<td>61</td>
<td>3.90</td>
<td>NS</td>
<td>60 (52,67)</td>
<td>60</td>
<td>3.90</td>
<td>NS</td>
<td>60 (52,67)</td>
</tr>
<tr>
<td>5+ Extremely Dysfunctional DAS Responses</td>
<td>18</td>
<td>33</td>
<td>3.90</td>
<td>NS</td>
<td>47 (34,59)</td>
<td>47</td>
<td>3.90</td>
<td>NS</td>
<td>47 (34,59)</td>
</tr>
<tr>
<td>Composite Extreme DAS Total (1 or 7)</td>
<td>159</td>
<td>1.70</td>
<td>NS</td>
<td>3.16</td>
<td>.045</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Extreme DAS Responses</td>
<td>30</td>
<td>43</td>
<td>3.90</td>
<td>NS</td>
<td>49 (37,62)</td>
<td>49</td>
<td>3.90</td>
<td>NS</td>
<td>49 (37,62)</td>
</tr>
<tr>
<td>1-20 Extreme DAS Responses</td>
<td>112</td>
<td>62</td>
<td>3.90</td>
<td>NS</td>
<td>60 (54,66)</td>
<td>60</td>
<td>3.90</td>
<td>NS</td>
<td>60 (54,66)</td>
</tr>
<tr>
<td>21+ Extreme DAS Responses</td>
<td>17</td>
<td>47</td>
<td>3.90</td>
<td>NS</td>
<td>56 (44,68)</td>
<td>56</td>
<td>3.90</td>
<td>NS</td>
<td>56 (44,68)</td>
</tr>
<tr>
<td>Extremely Functional Perfectionism (1)</td>
<td>3.23</td>
<td>NS</td>
<td>3.30</td>
<td>.040</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Extreme Functional Perfectionism</td>
<td>73</td>
<td>49</td>
<td>3.23</td>
<td>NS</td>
<td>52 (44,60)</td>
<td>52</td>
<td>3.23</td>
<td>NS</td>
<td>52 (44,60)</td>
</tr>
<tr>
<td>1-7 Extreme Functional Perf. Responses</td>
<td>70</td>
<td>61</td>
<td>3.23</td>
<td>NS</td>
<td>60 (53,67)</td>
<td>60</td>
<td>3.23</td>
<td>NS</td>
<td>60 (53,67)</td>
</tr>
<tr>
<td>8+ Extreme Functional Perf. Responses</td>
<td>16</td>
<td>69</td>
<td>3.23</td>
<td>NS</td>
<td>73 (61,85)</td>
<td>73</td>
<td>3.23</td>
<td>NS</td>
<td>73 (61,85)</td>
</tr>
<tr>
<td>Extremely Dysfunctional Perfectionism (7)</td>
<td>3.64</td>
<td>NS</td>
<td>1.45</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Extreme Dysfunctional Perfectionism</td>
<td>120</td>
<td>59</td>
<td>3.64</td>
<td>NS</td>
<td>60 (54,66)</td>
<td>60</td>
<td>3.64</td>
<td>NS</td>
<td>60 (54,66)</td>
</tr>
<tr>
<td>1 Extreme Dysfunctional Perf. Response</td>
<td>24</td>
<td>58</td>
<td>3.64</td>
<td>NS</td>
<td>55 (45,65)</td>
<td>55</td>
<td>3.64</td>
<td>NS</td>
<td>55 (45,65)</td>
</tr>
<tr>
<td>2+ Extreme Dysfunctional Perf. Responses</td>
<td>15</td>
<td>33</td>
<td>3.64</td>
<td>NS</td>
<td>46 (28,63)</td>
<td>46</td>
<td>3.64</td>
<td>NS</td>
<td>46 (28,63)</td>
</tr>
</tbody>
</table>
7.3.2.2 DAS extreme responses and continuous therapy response

Looking at the DAS extreme response variables in relation to the continuous outcome revealed only two significant associations. Extremely functional DAS was associated with an increased percentage improvement on the MADRS, $F = 3.16, P = 0.045$. Post-hoc comparisons using the LSD test indicated that the significant differences were between patients endorsing the highest number of functional responses and the lowest number, $P = 0.030$, and between the highest and intermediate number of responses, $P = 0.029$. Patients who endorsed the highest number of extremely functional attitudes demonstrated the greatest improvement on the MADRS (67%) compared to those who endorsed an intermediate number (54% improvement), or the fewest number of extreme functional attitudes (53% improvement). The effect size was small (0.04). Pearson product-moment correlations using log transformed variables showed that extremely functional DAS responses were associated with a small, positive response to psychotherapy, $r =$
0.165, n = 159, P = 0.038, while extremely dysfunctional DAS responses were not associated with response to psychotherapy, r = -0.085, n = 159, P = NS.

Extremely functional perfectionism responses were also associated with a significantly higher percentage improvement, F = 3.30, P = 0.040. Post-hoc LSD comparisons indicated that the significant differences were between patients endorsing the highest number of functional perfectionism responses, indicative of non-perfectionistic attitudes, and the lowest number, indicating perfectionistic attitudes, P = 0.016. Patients who endorsed the highest number of extremely functional perfectionistic attitudes demonstrated the greatest improvement on the MADRS (73%), compared to those who endorsed no extreme functional perfectionistic attitudes (52% improvement). The effect size was small (0.04). A small positive correlation was found between log transformed extremely functional perfectionism and response to psychotherapy, r = 0.185, n = 159, P = 0.020, and conversely, a small negative correlation was found between log transformed extremely dysfunctional perfectionism and response to psychotherapy, r = -0.164, n = 159, P = 0.039. Both correlations indicate that patients who endorsed more extremely functional perfectionistic attitudes or fewer extremely dysfunctional perfectionistic attitudes responded better to psychotherapy. Extreme social approval responses were not associated with response to psychotherapy.

Multivariate analyses were conducted to examine psychotherapy outcomes with both traditionally-scored and extreme-scored DAS as independent variables. Traditionally-scored DAS remained significant while extreme-scored DAS did not add anything to the model.

### 7.3.3 Extreme maternal care associations

The next section of the results reports on the associations between extreme maternal care responses, as measured by the PBI, and two outcomes. The first comparison is extreme maternal care is in relation to DAS extreme responses, and
the second is extreme maternal care in relation to psychotherapy response. All data are reported using log transformed variables.

The descriptive information for the extreme maternal care variables are presented in Table 7.4. The mean value indicates the number of times a patient selected the lowest or highest maternal care response (a 0 or a 3) out of a possible 12 questions.

**Table 7.4: Extreme maternal care variables**

<table>
<thead>
<tr>
<th>Extreme Maternal Care Variable</th>
<th>Mean (95% CI)</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely Low Maternal Care (0)</td>
<td>2.33 (1.81, 2.86)</td>
<td>1.40</td>
</tr>
<tr>
<td>Extremely High Maternal Care (3)</td>
<td>3.57 (2.94, 4.20)</td>
<td>0.88</td>
</tr>
<tr>
<td>Composite Extreme Maternal Care (0 or 3)</td>
<td>5.91 (5.29, 6.52)</td>
<td>0.02</td>
</tr>
</tbody>
</table>

7.3.3.1 *Extreme maternal care and extreme DAS responses*

Pearson product-moment correlations were conducted to examine the association between extreme maternal care responses and extreme responding on the DAS, as shown in Table 7.5. Looking first at extreme DAS total responses, a small, positive correlation was found between extreme composite maternal care (0 or 3) and extreme composite DAS total (1 or 7), \( r = 0.157, n = 159, P = 0.048 \) (2-tailed). To examine this correlation further, the three extreme maternal care variables (low, high, and composite) were entered as predictors into a stepwise linear regression with extreme composite DAS (1 or 7) responses as the dependent variable. Covariates included gender, baseline depression severity, and age of depression onset to control for these factors. The model was significant and included only extreme composite maternal care (0 or 3), \( F = 3.97, P = 0.048 \). These results indicate that patients who reported extremely low or high maternal care (0 or 3) also tended to respond in either extreme (1 or 7) on the DAS.

Examining extreme DAS perfectionism responses in relation to extreme maternal care responses revealed similar findings. Correlations showed a small positive
association between extremely low maternal care (0) and extremely dysfunctional perfectionism (7), $r = 0.176, n = 159, P = 0.027$ (2-tailed). As well, extreme composite maternal care (0 or 3) was associated with extremely dysfunctional perfectionism (7), $r = 0.178, n = 159, P = 0.025$; and extreme composite perfectionism (1 or 7), $r = 0.171, n = 159, P = 0.031$. These results suggest that patients who reported extremely low maternal care (0) also endorsed extremely dysfunctional perfectionism (7). As well, patients who reported extremely low or high maternal care responses (0 or 3) also endorsed extremely dysfunctional perfectionism (7) or a composite of extremely functional or dysfunctional perfectionism (1 or 7). Extreme maternal care responses were not associated with any of the DAS social approval responses.

Table 7.5: Pearson product-moment correlations between log extreme maternal care responses and log extreme DAS total and the perfectionism and social approval subscales

<table>
<thead>
<tr>
<th>Log Extreme Maternal Care Variable</th>
<th>Log Extremely Functional DAS (1)</th>
<th>Log Extremely Dysfunctional DAS (7)</th>
<th>Log Extremely Composite DAS (1 or 7)</th>
<th>Log Extremely Functional Perfectionism (1)</th>
<th>Log Extremely Dysfunctional Perfectionism (7)</th>
<th>Log Extreme Composite Perfectionism (1 or 7)</th>
<th>Log Extremely Functional Social Approval (1)</th>
<th>Log Extremely Dysfunctional Social Approval (7)</th>
<th>Log Extreme Composite Social Approval (1 or 7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Extremely Low Maternal Care (0)</td>
<td>Correlation 0.067 2-tailed sig. NS</td>
<td>0.149 NS</td>
<td>0.129 0.061 NS</td>
<td>0.02 0.176 0.027</td>
<td>0.104 NS</td>
<td>0.065 NS</td>
<td>0.090 NS</td>
<td>0.123 NS</td>
<td></td>
</tr>
<tr>
<td>Log Extremely High Maternal Care (3)</td>
<td>Correlation 0.083 2-tailed sig. NS</td>
<td>-0.038 NS</td>
<td>0.049 NS</td>
<td>0.083 0.033 NS</td>
<td>0.095 NS</td>
<td>0.031 NS</td>
<td>-0.084 NS</td>
<td>-0.048 NS</td>
<td></td>
</tr>
<tr>
<td>Log Extreme Composite Maternal Care (0 or 3)</td>
<td>Correlation 0.139 2-tailed sig. NS</td>
<td>0.102 NS</td>
<td>0.157 0.048</td>
<td>0.084 0.178 0.025</td>
<td>0.171 0.031</td>
<td>0.087 NS</td>
<td>0.020 NS</td>
<td>0.071 NS</td>
<td></td>
</tr>
</tbody>
</table>
7.3.3.2 Extreme maternal care and psychotherapy response

Finally, the extreme maternal care variables, as independent predictors, were examined in relationship to psychotherapy response as the dependent variable. When response was measured categorically, entering the three extreme maternal care variables into a logistic regression with the covariates gender, baseline depression severity, and age of depression onset, the model was not significant, nor was any of the variables.

When the extreme maternal care variables were entered individually, only extremely low maternal care (0) showed any association with psychotherapy response, although this was not statistically significant, $X^2 = 3.71, P = 0.054$.

However, extreme low maternal care (0) was significantly associated with psychotherapy response measured continuously. In this case, the three extreme maternal care variables were entered into a stepwise linear regression as independent predictors, along with the covariates gender, baseline depression severity, and age of depression onset. Psychotherapy response was the dependent variable. Only extremely low maternal care (0) was significantly associated with outcome, $F = 4.00, P = 0.047$, 2-tailed level of significance. A small, negative correlation was found between extremely low maternal care (0) and continuous therapy response, $r = -0.158$. These results suggest that extremely low maternal care is the variable impacting psychotherapy response. Multivariate analyses that included extreme maternal care variables did not add anything beyond the significance of traditional maternal care scoring, with respect to the outcomes measured.

7.4 Discussion

The overarching purpose of these analyses was to test the post-hoc extreme responder hypothesis that was proposed in relation to patients who reported high maternal care yet did not respond to psychotherapy, as described in Chapter 5.
Initially, the DAS, given prior to treatment and scored in the traditional manner, was analysed for its ability to predict psychotherapy response. This involved adding together all the individual DAS responses to create a total score. A high DAS score indicated more dysfunctional attitudes than a low score. Next, extreme DAS responses were examined. Specifically, did a patient’s tendency to select an extreme response, at either end of the DAS, prior to treatment, predict therapy response? Taking the concept of an extreme responder further, additional questions were asked. Were extreme levels of maternal care associated with extreme DAS responses? Did extreme levels of maternal care, measured prior to treatment, predict therapy response?

A number of key findings resulted from these analyses. The DAS total, and its perfectionism subscale — scored in the traditional manner as a measure of the number of times a patient endorses dysfunctional cognitions — predicted psychotherapy response. Patients who reported more functional attitudes and fewer dysfunctional attitudes prior to treatment, responded better to psychotherapy. This finding supports other research (Hammen et al., 1980, Keller, 1983) and suggests that the content of pre-treatment DAS responses are potentially relevant factors in predicting outcome.

Although this finding was counter to the extreme responder hypothesis, it aligns with Beck’s cognitive theory of depression which proposes that negative thoughts and attribution styles are associated with poor emotional functioning and contribute to a depressed mood state (Beck et al., 1979). Keller found that subjects with more functional attitudes, as measured by the DAS, responded better to therapy than those with dysfunctional attitudes (Keller, 1983), a finding replicated by Sotsky and colleagues, who reported that less cognitive dysfunction predicted greater likelihood of a complete response to psychotherapy for depression (Sotsky et al., 1991). In addition, these findings reflect the psychological theory that the more extreme and pervasive the dysfunctional attitudes, the more challenging the patient is to treat (Hammen et al., 1980).
A second key finding was similar to the first: Extremely functional DAS responses and extremely functional perfectionistic attitudes (lack of perfectionism) were both associated with a better response to psychotherapy. In addition to the functional attitudes research, the literature supports a differential response to therapy based on pre-treatment perfectionism responses (Jacobs et al., 2009). Adolescents with depression who endorsed functional, non-perfectionistic beliefs responded better to cognitive therapy (Jacobs et al., 2009). While the findings associated with extreme functional DAS and perfectionism attitudes align with the literature, they counter the proposed extreme responder hypothesis. In fact, on the contrary, the composite extreme DAS variable, identified by responses at either end of the scale, was not associated with psychotherapy response.

To put these extreme responder findings into perspective, however, in multivariate analyses including both the traditionally-scored and the extreme-scored variables with therapy response as the outcome, only the traditionally-scored variables were significant. The extreme responses did not add anything to the model predicting therapy response.

The third key finding was the association between extreme maternal care responses and extreme DAS responses. Overall, extremely low maternal care was associated with extremely dysfunctional perfectionism, while the composite of low or high maternal care was associated with extremely dysfunctional perfectionism or the composite of either extremely functional or dysfunctional perfectionism. The association between extremely low maternal care and extremely dysfunctional perfectionism intuitively makes sense. The finding is also supported by research which suggests that extreme perfectionism reflects self-critical beliefs (Powers et al., 2004) which may develop in the context of experiencing low maternal care. The association between composite low and high maternal care and composite perfectionism may be the only finding that suggests an extreme response, with patients reporting in the extremes on both measures. However the direction of these findings could be either way: Extremely high maternal care, if it were
experienced as loving, maternal acceptance, may lead a patient to endorse lower levels of perfectionism as s/he feels accepted and accepting of herself or himself and others. On the other hand, reports of extremely low or high maternal care may be an indication that the patient judges situations and people in the extremes, reflected in the extreme responses on the perfectionism subscale. These findings require replication.

The fourth key finding was the association between extremely low maternal care, measured prior to treatment, and response to psychotherapy measured categorically and continuously. Patients who reported extremely low maternal care did not respond well to psychotherapy, but the correlation was small. Although this finding aligned with reported outcomes in Chapter 5, it countered the proposed extreme responder hypothesis, which suggested that extreme responses in either direction would be associated with poor response to psychotherapy.

Finally, social approval, the DAS subscale examined in at least two other papers (Peterson et al., 2007, Teasdale et al., 2001) and found to be associated with extreme responding tendencies predictive of reduced treatment remission, was not associated with any of the outcome measures examined here. One notable sample difference is that in the Peterson et al. paper (2007), the mean social approval composite response was 6.2 and 6.9, depending on therapy received. In the sample reported on here, the mean social approval composite score was only 1.9, despite having a similar-sized sample of outpatients with depression. Peterson et al. (2007) did not report a mean DAS total for their sample, but the mean DAS total of this patient sample, 149.6 ± 37.3, was comparable to the completers’ sample in Sotsky et al. (1991), who reported a mean DAS total of 141.6 ± 35.6. It is interesting to note that although the social approval subscale was examined in both Peterson et al., 2007, and Teasdale et al., 2001, neither study examined the DAS total scale or the perfectionism subscale. Both of these scales, however, were significantly associated with outcomes in this study.
These analyses have several limitations that should be considered. First, the analyses were based on a post-hoc hypothesis, not a priori, so they require replication. Patients rated themselves on the DAS and PBI at baseline only, so there was no opportunity to examine for potential changes post-therapy. This one-time state of mind measurement limits the predictive ability of these analyses. While these analyses were based on the concept of the extreme responder hypothesis, as originally proposed by Teasdale et al. (2001), the actual protocol and procedures followed differ from the Teasdale et al. paper and therefore do not constitute a replication. Other analytic methods, for example structural equation modelling, may be appropriate for testing the extreme responder hypothesis.

Future research examining the extreme responder hypotheses might include between therapies, as suggested by Ching and Dobson (2007), as well as examining for potential differences by gender. A consideration of the DAS total and the perfectionism subscale in future research is warranted based on the outcomes reported here.

The extreme responder hypothesis was proposed as an explanation for the downward response trend found in patients who reported high maternal care, and did respond well to psychotherapy, as reported in Chapter 5. However, the hypothesis was not supported by the analyses, as high maternal care responses were not associated with DAS extreme responses or with response to psychotherapy treatment.
CHAPTER 8: DISCUSSION OF MAJOR THESIS FINDINGS

8.1 SYNTHESIS OF MAJOR FINDINGS

The findings in this thesis will be discussed first in relation to the thesis hypotheses. For clarity, the hypotheses are reiterated here.

8.1.1 Findings in relation to the thesis hypotheses

**Hypothesis #1:** The experience of childhood adversity, as measured by low parental care, or overprotection on the PBI, or an endorsement of severe child abuse, will be associated with poor response to antidepressant medication and psychotherapy treatment in adults, measured in a number of ways. In particular, the experience of low care or overprotection from one’s mother, or an endorsement of severe childhood abuse, is hypothesized to impart the strongest association with poor response to treatment.

The findings in this thesis only partially support the Hypothesis #1. While childhood adversity, as measured in this thesis, is associated with poor treatment response in adults with depression, and with lifetime suicide attempts and NSSI, the associations are not global. No one particular adverse childhood experience is consistently associated with negative outcomes. A few specific adverse childhood experiences are associated with poor response to treatment, as well as with lifetime suicide attempts and NSSI. The associations depend on the childhood adversity experienced and the treatment or behaviour studied. Further, a consistent association is not evident between low maternal care or overprotection and poor depression outcomes, as hypothesized. Instead, the association between the patient’s level of care and protection and his or her response to depression treatment depends on the treatment received, and the parent examined.

**Hypothesis #2:** The experience of childhood adversity, as measured by the three variables listed above, will be associated with lifetime suicide attempts and non-
suicidal self-injury (NSSI). In particular, childhood abuse is hypothesized to have the strongest association with lifetime suicide attempts.

The findings in this thesis only partially support Hypothesis #2. Low parental care, but not overprotection or abuse, are associated with lifetime suicide attempts, but the associations differ depending on the parent and the behaviour examined.

In relation to the Hypotheses #1 and #2, abuse was proposed to have a significant association with poor treatment response or lifetime suicide attempts. However, abuse does not show this consistent association. Abuse, whether measured broadly to include psychological, physical, or sexual abuse, or narrowly, as CSA, is not associated with response to depression treatment in this group of patients. Further, abuse is only significant in univariate analyses with suicide attempts and NSSI.

**Hypothesis #3:** A post-hoc hypothesis proposed that extreme responders, as measured by patients who select the lowest or highest responses on a pre-treatment measure of depression cognitions, will be associated with a poorer response to psychotherapy compared to patients who selected responses in the middle of this scale.

The post-hoc extreme responder hypothesis is not true for this group of patients. Extreme responding on a pre-treatment measure of depression cognitions does not explain the downward response trend found in the psychotherapy trial in patients who reported the highest levels of maternal care.

A discussion of each of these findings, and their implications, follows.

**8.1.2 Contribution of childhood adversity to antidepressant medication response**

Parental care and protection levels were associated with response to antidepressant medication treatment. Paternal neglect predicted patient dropout from the
medication trial. Patients who reported low care from their fathers did not complete an adequate six-week trial of antidepressant medication. Maternal overprotection predicted a poor patient response to treatment at six weeks and fewer patients attaining two-month sustained depression recovery, measured at six months. Abuse was not associated with response to antidepressant medication.

8.1.3 Contribution of childhood adversity to psychotherapy response
Levels of parental care and protection were also associated with response to psychotherapy treatment for depression. Maternal care demonstrated a non-linear relationship with treatment response across both IPT and CBT. Patients who reported intermediate levels of maternal care responded best to treatment regardless of whether the response was measured dichotomously or continuously. Also across both treatments, the interaction of maternal care and paternal protection levels by treatment was statistically significant, demonstrating that the differential response depended on which treatment was received and the level of care or protection reported. Examining the two therapies separately, maternal care and paternal protection levels were associated with a differential response to IPT, but not CBT. For patients receiving IPT, those reporting low or high levels of maternal care did not respond as well to treatment as those reporting intermediate levels of care. Also with IPT, patients reporting paternal overprotection responded less well to treatment, in contrast to those reporting low or intermediate levels of paternal protection. The levels of abuse reported were not associated with response to psychotherapy treatment.

8.1.4 Contribution of childhood adversity to suicide attempts and NSSI
Finally, levels of parental care were associated with both lifetime suicide attempts and NSSI within this sample of outpatients with depression. Low maternal care was associated with higher rates of lifetime suicide attempts. Low paternal care was associated with higher rates of NSSI. The patient clinical factors associated with suicide attempts were age of first major depressive episode (MDE onset) and
depression severity at baseline. MDE onset was also associated with NSSI. Abuse was not a robust predictor of either suicide attempts or NSSI.

8.1.5 Lack of support for extreme responder hypothesis

As reported in Chapter 5, a downward response trend was found in patients who rated their mothers as providing high levels of care. In providing context for this finding, a post-hoc hypothesis was proposed and then tested about the role extreme responding might play in patients who reported high maternal care prior to treatment. As discussed in Chapter 7, the extreme responder concept was initially conceived by Teasdale et al. (2001) when researchers found that early relapse following depression treatment was predicted by a pattern of responding in the extremes, either positively or negatively, on a range of depression-related measures, taken pre- and post-treatment. From this finding, Teasdale et al. proposed that the form of extreme scoring rather than the content may be the mitigating factor in depression relapse.

In this thesis, it was hypothesized that patients rating their mothers very highly in terms of care, yet responding poorly to psychotherapy, may be demonstrating an extreme-response state of mind prior to receiving treatment. This tendency to select extreme responses suggests a dichotomous, black-and-white cognitive mindset which may negatively impact psychotherapy response. Further, this extreme response style may be reflected in selecting extreme responses on other pre-treatment measures. However, following analyses, the extreme responder hypothesis did not prove to be true for this patient sample with respect to predicting psychotherapy response. Instead, responses to a self-report cognitive measure of depression given prior to treatment predicted treatment response in the traditionally anticipated direction; that is, responding with more functional and less dysfunctional attitudes predicted better treatment response. Extreme responses on the DAS or maternal care PBI did not predict psychotherapy response or predict extreme responding on the other measures.
8.2 Contributions of This Thesis to the Literature

This thesis makes several important contributions to the literature. First, it highlights the particular associations between certain adverse childhood experiences in relation to treatment response for adult depression, lifetime suicide attempts, and NSSI. In contrast to the well-established association in the literature between low maternal care and childhood abuse as the key risk factors for developing depression in adulthood, neither of these factors demonstrates a consistent association with treatment response or outcomes in this thesis. However, an association between low parental care, conceptualized as emotional neglect, and a number of poor outcomes is apparent. These findings provide a counterpoint to the dearth of existing literature examining parental emotional neglect as a potential risk factor for outcomes. As well, the role of fathers is examined separately from mothers, providing a clarification that is lacking in much of the childhood adversity research. Alongside the low care finding, this thesis demonstrates the independent association of parental overprotection with poor treatment outcomes, in contrast to the empirical literature, which typically discusses overprotection in conjunction with low care. In early research on the correlates of depression, overprotection — particularly from one’s mother — was thought to confer greater risk for the disorder. Over the decades of research using the PBI, however, the role of low parental care, in particular from one’s mother, has emerged as a primary risk factor. The possible role of parental overprotection in treatment outcomes has not been studied. This thesis provides original and tentative evidence that parental overprotection negatively impacts some depression outcomes, depending on the treatment offered.

Second, the thesis identifies different patterns of low parental care associated with suicide attempts and NSSI within a sample of depressed outpatients. These differing patterns of care could have been obscured if patients were not asked separately about the two behaviours, or if the maternal and paternal care variables were combined, as in some studies (Enns and Cox, 2005). The identification of distinct patterns of low care as risk factors for suicide attempts and NSSI found in this depressed sample
highlights the value of distinguishing between these two behaviours as well as
distinguishing between maternal versus paternal parenting experiences.

Third, this thesis provides an examination of adverse childhood experiences associated
with NSSI in adults. Nearly all the other studies of NSSI focus on adolescents (Asarnow
et al., 2012, Gratz, 2006, Hawton et al., 2012, Klonsky and Olino, 2008, Nock and
Mendes, 2008) or do not delineate NSSI as distinct from suicidal behaviour (Hawton et
al., 2012). In particular, the finding that, among the adverse childhood experiences
examined, only low paternal care is independently associated with NSSI, is original in
the literature. Further, an exploration of gender differences in relation to NSSI
highlighted the fact that male patients examined in this thesis reported engaging in
this behaviour at a rate similar to or exceeding the rate of women, a finding that is
gaining support (Klonsky et al., 2003, Lloyd-Richardson et al., 2007). The findings also
counter earlier research which conceptualized NSSI as a behaviour occurring within
the context of BPD (American Psychiatric Association, 1994, American Psychiatric
Association, 2013, Tantam and Whittaker, 1992). Instead, the results align with the
DSM-5’s Proposed Criteria and Diagnostic Features of NSSI (American Psychiatric
Association, 2013). The DSM-5 states that NSSI is differentially diagnosed from BPD
and suicidal behaviour, a definition which identifies NSSI as a separate disorder

Finally, examining the extreme responder hypothesis demonstrated that in this
patient sample, extreme responding on the DAS, measured pre-treatment, did not
predict a poor response to psychotherapy. Instead, the DAS showed content validity:
The more functional and fewer dysfunctional responses a patient endorsed, the better
his or her response to psychotherapy. Examining DAS extreme responding in tertiles
revealed that those patients in the bottom tertile (those endorsing the fewest
extreme responses) responded best to treatment. Patient responses on the
perfectionism subscale of the DAS showed the same pattern for treatment outcome.
Further, extreme responding on the maternal care scale of the PBI did not consistently
predict extreme responding on the DAS, nor did extreme maternal care scores predict
response to psychotherapy.

8.3 **The Role of Low Parental Care and Overprotection in Outcomes**

In a range of outcomes examined in this thesis, one of the overarching findings was that the level of parental care or protection received from either one’s mother or father impacted response to depression treatment. The level of parental care was also associated with lifetime suicide attempts and NSSI. While the empirical literature looking at childhood adversity as a risk factor for treatment response is sparse (Nanni et al., 2012), psychological models provide a theoretical basis for conceptualizing the global findings presented in this thesis. In particular, attachment theory and Bandura’s social cognitive theory (Bandura, 1977) provide a framework for understanding the implications of low care and overprotection in relation to the thesis outcomes.

8.3.1 **Attachment theory in relation to low parental care and overprotection in treatment outcomes**

Attachment theory, as described in Chapter 2, offers an integrative framework for understanding the origins and implications of the low parental care and overprotection results found in both medication and psychotherapy trials. The concept of attachment is relevant because the PBI care and protection variables reflect parental behaviours that appear to impact the quality of parent-child attachment as perceived from the adult child’s point of view. An examination of the specific questions asked on the PBI reveals the inter-relatedness of the care and protection variables to the constructs of the parent-child attachment relationship. This relatedness is confirmed by the PBI’s convergent validity with the Adult Attachment Interview (AAI) (Manassis et al., 1999). However, the PBI is not a direct measure of attachment styles and as such, does not distinguish between the different types of insecure attachment, for example, preoccupied, dismissing or fearful (Bartholomew and Horowitz, 1991). Instead, the PBI care and protection variables may be viewed as a general proxy indicator of a secure versus an insecure attachment style, with low parental care and overprotection associated with an insecure style.
8.3.1.1 Role of an insecure parental attachment

Low parental care or overprotection, as measured by the PBI, characterize childhood experiences that may contribute to an insecure or inadequate parental attachment (Gittleman et al., 1998). Growing up with an insecure parental attachment increases the risk of cognitive, behavioural, and emotional vulnerabilities in adulthood (Glaser, 2002, Riggs, 2010). Key personal competencies, such as trusting others and having a healthy sense of self-esteem and self-efficacy, along with important developmental skills such as affect and emotion regulation, tend to be underdeveloped in an individual whose environment was characterized by low parental care or overprotection, resulting in personal vulnerabilities (Dubowitz et al., 2005, Fitton, 2012, Riggs, 2010). These vulnerabilities, in turn, may contribute to enduring patterns of maladaptive behaviour and cognition, which erode an individual’s ability to engage in and respond to treatment, as evidenced by the poor outcomes reported in this thesis. As well, poor emotion regulation (Linehan, 1993) is associated with lifetime suicide attempts and NSSI and may partially explain the association between low parental care and these two depression-related behaviours.

8.3.1.2 Low trust in others and self

According to Erikson’s stages of psychosocial development, the ability to trust others, as well as oneself, is a formative belief developed in very early childhood in response to the experience of positive, reliable caregiving from one’s parents (Egeland, 1987). When an individual’s childhood is characterized by the ongoing experience low parental care or overprotection, the ability to trust others and oneself may be compromised.

In the context of responding to depression treatment, the ability to trust the clinician is foundational in creating an alliance from which the patient can engage in and benefit from treatment, whether medication or psychotherapy. With respect to the antidepressant medication findings reported on in Chapter 4, more patients reporting low paternal care dropped out of the trial (Johnstone et al., 2009) than patients who reported adequate or high levels of paternal care. Given the paucity of data on
fathers, particularly in relation to low paternal care on outcome, speculations are necessary. One logical explanation for the association between low paternal care and higher rates of dropouts with medication may be that the experience of a neglectful father contributed to a distrust of authority, in this case, the psychiatrist. Patients who did not trust the psychiatrist were not likely to develop a doctor-patient alliance and thus may have been more prone to withdraw from treatment. Adding support to the idea that a lack of trust in the psychiatrist may result in higher dropout rates, findings from a study of pharmacotherapy, psychotherapy, or a combination of both for the treatment of depression (Arnow et al., 2007) reported that the pharmacotherapy-only group had higher rates of dropouts compared to the combined therapy group. The researchers hypothesized that the medication side effects were better tolerated in those who received psychotherapy in addition to medication. Perhaps the patient’s relationship with and trust in the psychiatrist, developed in the context of the psychotherapy sessions, mediated the patient’s tolerance for the medication side effects (Arnow et al., 2007). In the medication trial reported on in Chapter 4, about two-thirds of the patients were treated by male psychiatrists, one-third by female psychiatrists. Given that care from fathers, not mothers, predicted drop out, it may have been useful to examine patient and psychiatrist gender for differential effects, if the sample were larger.

Further support for the idea that certain types of childhood adversity impact the development of trust, particularly trust of a stranger, was found in a study on the effect of maltreatment in pre-schoolers’ attachment relationships (Aber et al., 1990). Children with a history of maltreatment were less secure and less prepared to learn when in the presence of unfamiliar, novel adults. These findings were over and above the effects of having an impoverished home environment. In the context of medication treatment, a patient may view the psychiatrist as a stranger or novel adult, at least initially, and respond as the children did: less prepared to engage in treatment and endure the unknowns of taking a new medication.
Finally, a developmental framework for understanding child maltreatment, broadly defined and proposed by Aber and Zigler (Aber and Zigler, 1981), provides context for the relationship between early childhood adversity and lack of trust. Researchers found that women who had unresolved interpersonal issues of trust and dependency were more likely to be highly stressed by the demands of parenting and potentially neglectful or hostile in the context of the parent-child relationship (Aber and Zigler, 1981). It follows that a mother (or father) with personal trust issues may perpetuate the same liabilities in his or her child. A patient low in trust may be hesitant to engage with a clinician, and a patient’s hesitancy to engage is known to lower the chance of response (Meyer et al., 2002). Even in the context of establishing a therapeutic alliance, a patient’s low level of trust may be reflected in a personal belief that she or he cannot or does not deserve to get better. In the context of receiving low parental care, it is conceivable that a patient may feel “unworthy” of improving his or her mood state.

8.3.1.3 Role of self-efficacy

In tandem with distrust of others, patients who experienced low parental care or overprotection may be more likely to have a poor sense of self-efficacy (Goldney, 1985) or a lack of trust in themselves. If a secure attachment fosters confidence in self-expression and an expectation that one’s actions will influence and be accepted by others (Ainsworth, 1978), an insecurely attached individual may lack the belief in his or her ability to successfully create or bring about change. This may hold true regardless of the treatment. Accepting the requirements of treatment and engaging in the therapeutic process in order to recover from depression, whether the treatment is antidepressant medication, psychotherapy, or a combination of both, requires fortitude, perseverance, and personal commitment. Low self-efficacy is known to reduce the ability to initiate behaviour and make behavioural changes (Bandura, 1977), which may include taking medication or challenging negative thoughts, thus negatively impacting treatment response.
Alongside low self-efficacy in the context of low parental care, patients who experienced parental overprotection tend to rely upon an external locus of control (Parker, 1983b), and, as such, feel disempowered to undergo the changes needed to recover from depression. Parental overprotection is known for its association with high dependency (Bornstein, 1992, Parker, 1983b), which is characterized by behaviours such as compliance and approval-seeking. These behaviours may reduce the possibility of receiving benefit from treatment, psychotherapy in particular, as clients desire to gain the clinician’s approval or praise instead of focusing on the behaviours necessary to effect a change. In the context of medication, a highly dependent patient may not have the personal resources to withstand the uncertainty of trialling a new medication.

8.3.1.4 Interpersonal sensitivity

Also in the context of parental overprotection, associated vulnerabilities including interpersonal sensitivity (Bornstein, 1992, Otani et al., 2009), increased sociotropy (Otani et al., 2012), or its opposite, avoidance and mistrust of others (Orbach, 2007), may hinder treatment engagement as well. In the context of an association between paternal overprotection and poor response to therapy, IPT in particular, perhaps the experience of paternal overprotection renders the patient too sensitive to withstand the emotional work required to benefit from psychotherapy if high interpersonal sensitivity is an issue. In addition, high personal dependency traits may interfere with the collaborative aspects of the therapy, as a highly dependent patient may not develop goals independent of the clinician, but instead focus on what s/he perceives to be the clinician’s goals or preferred therapeutic direction.

In summary, a variety of interpersonal and relational vulnerabilities are associated with an insecure attachment style. If low parental care and overprotection are general proxy indicators of an insecure attachment style, the interpersonal and relational vulnerabilities could be the mechanisms related to the poor treatment response and depression-related behaviours noted in this thesis.
8.3.1.5 Attachment style in relation to other outcomes

The association between attachment style and response to treatment is not limited to depression. In studies of patients receiving treatment for diabetes mellitus, those with a dismissing attachment style (a form of insecure attachment) had the worst blood-glucose levels and generally poorer adherence to treatment, particularly when patient-provider communication was rated as poor (Ciechanowski et al., 2001). This finding may parallel the disengagement found in patients who dropped out of the antidepressant medication trial (Johnstone et al., 2009).

Treatment utilization is another outcome relevant to the findings in this thesis. In a large study \( n = 701 \) of adult females belonging to a health maintenance organization, attachment styles were measured in relation to health care utilization (Ciechanowski et al., 2002). Patients with fearful attachment styles had the lowest primary care utilization, compared to patients with secure attachment styles. Despite reporting more physical symptoms than securely attached patients, the fearfully attached women utilized the services of their primary care physician less (Ciechanowski et al., 2002). Avoiding medical care despite myriad physical symptoms may reflect relational distrust associated with an insecure attachment style.

Similarly, in a study of undergraduate women, those who endorsed insecure attachment styles were less likely to engage in cervical screening exams and more likely to report barriers to screening, as compared to undergraduates with a secure attachment (Hill and Gick, 2013). These reported associations between an insecure attachment style and an inclination to avoid treatment appears to support the findings in this thesis that low parental care or overprotection is associated with poor response to depression treatment.

8.3.2 Benefits of a secure parental attachment

While much has been said in this thesis about the detrimental effects of an insecure parental attachment, impacted by a variety of adverse childhood experiences,
research is equally clear about the benefits of a secure attachment. Having a secure attachment to at least one parent, established through constructive parenting, contributes to an individual’s resilience (Collishaw et al., 2007, Fergusson and Horwood, 2003, Masten et al., 1999). A positive parent-child relationship appears to provide a protective element, even in the face of severe adversity. Fergusson and Horwood (2003), summarizing a number of studies, reported that a warm, supportive relationship with at least one parent may act as a prophylactic against the stressors of being raised in a high-risk environment. In addition, positive parent-child relationships have been found to reduce the risk of later-life anxiety, depression (Jakobsen et al., 2012), and externalizing behaviours (Dubowitz et al., 2005). Throughout the literature, the importance of a secure parental attachment in developing mature personality features and a range of personal competencies is highlighted (Davila and Levy, 2006).

8.3.3 Parental care associated with suicide attempts and NSSI
In this thesis, parental care levels were also associated with suicide attempts and NSSI. Specifically, low maternal care was associated with lifetime suicide attempts, and low paternal care was associated with NSSI. While not often studied, the role of low maternal care in relation to lifetime suicide attempts finds some support in the literature, namely the Enns et al., study (2006), a longitudinal, community-based sample examining adverse childhood experiences as predictors of suicidal behaviour in more than 7,000 people. However, the association between lifetime suicide attempts and low maternal care is buried under results focused on new incidents of suicidal ideation or attempt as the outcome variable and a description of “abuse” as the headlining predictor variable (Enns et al., 2006). A critique of the results, first focusing on the outcome variable then the predictor variable, follows.

As the researchers focused on new incidents, they excluded participants who had made previous suicide attempts (Enns et al., 2006), thereby selectively leaving out the group of highest interest — early suicide attempters — as these participants may well have been those who experienced the adverse childhood experiences studied. A close reading of the results, buried in a small paragraph at the end of the discussion section,
reveals that this speculation is true: the researchers found an association between low maternal care and *lifetime suicide attempts* (Enns et al., 2006). Supplementary analyses of the PBI variables examined in association with lifetime suicide attempts revealed that low maternal care was the *only* parental variable associated with lifetime suicide attempts, with an odds ratio of 2.7, which aligns with the finding reported in Chapter 6 of this thesis. The initial analyses in the Enns et al. paper excluded nearly 16% of the study participants with low maternal care because these participants reported making a lifetime suicide attempt.

Another result from the Enns et al. (2006) study, which supports a thesis finding, although not reported as such, is the association between an experience that the researchers term “childhood neglect” and new incidents of suicidal ideation and attempt. In the Enns et al. paper the term “childhood neglect” was measured by asking participants whether they felt “listened to, supported, or paid attention to,” questions very similar to those on the PBI which, if answered in the negative, would result in a low care score. However, in Enns et al.’s paper, this dichotomous “neglect” variable was classified under the category of “childhood abuse” and the findings were reported accordingly, as in “childhood abuse and multiple adversities are strongly associated with future suicidal behaviour” (2006, p. 1). Carefully comparing the Enns et al. results to the findings in this thesis illustrates the various ways that outcomes among studies appear to differ, although they may, in fact, be similar. Alternatively, findings may appear similar on the surface, but in fact be quite different.

### 8.4 The Role of Abuse in Outcomes

An overwhelming body of research underscores the negative effects of childhood abuse in its various forms on mental health outcomes for adults (Alloy et al., 2006, Chapman et al., 2004, Thabrew et al., 2012), but fewer studies examine abuse in association with treatment response in adults with depression (Nanni et al., 2012). In light of the evidence associating childhood abuse with the development of adult depression, an initial hypothesis for this thesis was that abuse would increase the risk
for poor outcomes in adult depression. However, this hypothesis was disproven. On the contrary, depending on the treatment received and the outcome measured, either abuse did not predict outcome at all, or the association was better explained by low care. Some support for this finding is evident in the literature. A study of patients with social anxiety also found that emotional neglect — but not physical or sexual abuse — were related to greater symptom severity (Bruce et al., 2012). Interestingly, among the socially anxious patients reporting emotional abuse, those who completed treatment improved, suggesting the early abuse did not negatively impact response if treatment was completed (Bruce et al., 2012).

Despite the established correlation between childhood abuse and adult psychopathology (Anda et al., 2006, Chapman et al., 2004, Green et al., 2010), including suicidal behaviours and NSSI (Bruffaerts et al., 2010, Kessler et al., 2010), abuse was not robustly associated with the outcomes measured in this thesis. In univariate analyses, abuse showed an association with both lifetime suicide attempts and NSSI, as reported in Chapter 6, however, in multivariate analyses, the associations disappeared. Several possibilities are presented as to why abuse may not have the robust association reported in some of the literature.

8.4.1 Over-emphasis of abuse

When abuse was first publically acknowledged as an offense occurring against children, that topic generally, and childhood sexual abuse specifically, became a primary focus for mental health research, sometimes at the expense of other forms of maltreatment such as low parental care or neglect (Gilbert et al., 2008, Pianta et al., 1990). For example, in a literature review on predictors of self-harm and suicidal behaviour, the variables considered were CSA and physical abuse, while severe neglect was not included (Santa Mina and Gallop, 1998). This concentrated attention may over-inflate abuse’s role while underestimating the role of neglect (McSherry, 2007, Santa Mina and Gallop, 1998) in depression treatment outcomes, suggesting that some researchers may analyse data with a focus on finding the association between abuse or trauma and poor outcomes (e.g. Enns et al., 2006; Shirk et al., 2009).
rather than exploring the extent to which it exists. This idea also applies to over-emphasizing the trauma and abuse results in a study at the expense of other findings (e.g. Klein et al., 2009).

The over-focus on abuse may also occur when researchers use agency reports as data sources, because the substantiated cases describe the most serious aspects of maltreatment, often focused on the physical, outward signs, thus creating a potential bias towards abuse (Dubowitz et al., 2005). Whether neglect is considered less severe than abuse, too difficult to quantify (Lipschitz et al., 1999), or too sensitive to ask about in some countries (Kessler et al., 2010), the topic does not garner the same attention as abuse in the literature (Kaplan et al., 1999, Pianta et al., 1990, Thabrew et al., 2012). As in depression research, anxiety researchers have reported on the tendency to over-focus on the effects of physical and sexual abuse (Bruce et al., 2012). This thesis provides some counterweight to the imbalance.

8.4.2 The challenges with abuse variables

The fact that abuse was not robustly associated with any of the outcomes measured in this thesis may be a function of the abuse variables themselves. In the meta-analysis reviewing ten studies of medication, psychotherapy, or a combination of both (Nanni et al., 2012), associations were explored between childhood adversity and outcomes for depression. Depending on the particular abuse variable used in a particular study, abuse or trauma was found to be associated with poorer response to depression treatment in all but two of the papers (see Johnstone et al., 2009 & Sakado et al., 1999). Sakado et al., however, did not include measures of abuse in the analyses.

Another possible factor for the differing results is the way abuse responses were recorded as a variable. In several studies, abuse was simply measured dichotomously as whether or not the abuse occurred (Barbe et al., 2004, Enns et al., 2006, Miniati et al., 2010, Shirk et al., 2009). In this thesis, abuse was questioned in some detail and quantified into three categories of severity, which may have provided more accurate
results. Epidemiology research emphasizes the dose-response aspect of abuse, which suggests that the more abuse experienced, the worse the outcome will be (e.g. Anda et al., 2006). Creating a three-category rating should be an advantage in terms of detecting a relationship between abuse and outcome. Dichotomous measures of abuse may unnecessarily simplify a potentially important severity rating.

8.4.3 Other factors related to discrepant abuse findings among trials
Reviewing the Nanni et al. (2012) meta-analysis further, factors besides the abuse variables themselves may account for the discrepant findings. Other influences may include differences in sampling, treatment, and response rates. Four of the studies focused on an adolescent population, while the other six studies focused on adult outpatients. Differences in the treatment offered may have contributed to the divergent findings with some studies offering medication only (Johnstone et al., 2009, Klein et al., 2009, Sakado et al., 1999), others psychotherapy only (Barbe et al., 2004, Shirk et al., 2009), and the rest, a combination of both (Asarnow et al., 2009, Enns and Cox, 2005, Lewis et al., 2010, Miniati et al., 2010, Nemeroff et al., 2003). The specific type of treatment offered may have impacted results. For example, the antidepressant used in Nemeroff et al. (2003) was nefazodone (serzone), which turned out to be a less-popular antidepressant that has not sustained a consistent role as a medication of choice in comparison to other antidepressant options. In contrast, the Klein study offered algorithm-guided pharmacotherapy with up to five different antidepressants (2009). Enns et al. used a naturalistic treatment for depression which included unspecified “antidepressant medication,” “psychotherapy,” and CBT (2005). Response rates in the Enns et al. study were lower than in other studies: 22.8% versus 44% in Klein (2009), and 52.6% in Miniati et al. (2010). These differences in sampling, treatment, and response rates may account for the varied association between childhood adversity and treatment response.

8.4.4 Low care explains abuse in this sample
A number of studies report an association between abuse and CSA in particular, in relation to a range of self-harming behaviours e.g. (Gladstone et al., 2004, Maniglio,
2011, Romans et al., 1995). However, in this thesis, the univariate relationship between abuse and a lifetime suicide attempt or NSSI could be better explained by abuse’s association with low parental care. The absence of a multivariate association between abuse and suicide attempts or NSSI suggested that parental care levels mitigated the univariate association. By including measures of low parental care (emotional neglect) and overprotection, as well as abuse, in multivariate analyses and correlations, it was possible to quantify the impact of low care versus abuse with respect to the suicide attempts and NSSI outcomes. These comparisons are not often made. It appears that the parental care measured in this thesis taps into important features not addressed by other measures or that low parental care compounds the effect of abuse such that low care predicts poor outcomes.

8.5 **THE MUTABILITY OF ATTACHMENT: BENEFITTING FROM TREATMENT IN THE CONTEXT OF CHILDHOOD ADVERSITY**

8.5.1 **Attachment as a developmental process**

Despite the demonstrated benefits of experiencing a secure early attachment and disadvantages of an insecure early attachment, an individual’s attachment style is susceptible to change over time. Attachment is a developmental process subject to modification and evolution, based on a number of factors. Individuals are the sum of all their experiences, and, as such, current experiences can alter the course of development, both productively and pathologically. Emotionally corrective experiences, such as one ideally experienced in therapy, have been found to provide the context and support for adaptive changes to occur (Bridges, 2006, Muller and Rosenkranz, 2009). A therapeutic relationship may allow or encourage a patient to interact differently, perhaps more adaptively, and, as a result, to experience him or herself behaving in new ways and receiving novel responses to current behaviour (Knight, 2005). Indeed, the goal of treatment, whether psychotherapy or medication, is to encourage the patient to respond more adaptively to the present situation. When the clinician maintains the belief that every patient, regardless of background, can benefit from treatment, and makes a concerted effort to engage each patient in that
treatment, adaptive change and benefit is possible, even in the context of experiencing childhood adversity.

8.5.2 Responding to treatment despite childhood adversity

Although this thesis has highlighted the negative impact of childhood adversity on treatment outcomes, a few studies offer an encouraging perspective on the potential for individuals who experienced childhood adversity to benefit from treatment. One example is a prospective, longitudinal study of mothers at-risk for poor parenting, The Mother-Child Interaction Project (Pianta et al., 1990). This study revealed that among a group of mothers who themselves experienced childhood adversity, some were able to overcome the “intergenerational continuity” of maltreatment (Pianta, et al., 1990, p. 248). These women, who were classified as having maltreated their children at two years of age, but not at six years, were found to have engaged in some form of therapeutic intervention, though the specifics of the treatment were not provided. The emotional stability and maturity of the therapy-receiving mothers differentiated them from the mothers who continued to maltreat their children (Pianta et al., 1990). When questioned about the effectiveness of therapy, the mothers reported that the therapeutic relationship provided the emotional security necessary to address the issues of their own childhoods and thereby parent their children differently (Pianta et al., 1990). This finding provides an optimistic view that, with the right intervention, patients may find the emotional strength to work through their issues, learn new skills, and replace their maladaptive parenting tendencies with more constructive behaviours. These findings suggest that even in the face of what appears to be poor attachment patterns that endured into adulthood, patients may engage in treatment and overcome their challenges to have productive, secure relationships. Providing the right intervention has two facets: matching the treatment to the patient’s strengths, and having a clinician who holds the optimistic belief that experiences of childhood adversity can be remediated with treatment. The results from the Pianta et al. study (1990) provide a counterpoint to the tacit expectation some clinicians hold that the experience of childhood adversity dooms treatment response.
Further supporting the efficacy of treatment, even in the context of childhood adversity, was the finding from a pharmacotherapy trial for social anxiety (Bruce et al., 2012). While childhood emotional abuse predicted patient dropout, similar to the finding reported in Chapter 4 of this thesis (Johnstone et al., 2009), a time-by-abuse interaction analysis showed that for patients who continued with treatment, anxiety symptoms improved (Bruce et al., 2012). Examined in the larger context, the results suggest that clinicians, including psychiatrists, may have to work hard to create and maintain an alliance with patients who have experienced certain types of childhood adversity. If this is achieved, and the patients remain in treatment, research suggests that they can and do respond successfully.

8.6 Clinical Implications

The findings of this thesis have important clinical implications for the assessment, formulation, and treatment of adult depression. In the assessment process, asking an adult patient about the quality of parental care and protection received in childhood provides a basis for understanding the features of the patient’s early attachment relationships and their possible role in shaping the patient’s cognitions, behaviours, and emotions (Davila and Levy, 2006). As such, the type and quality of attachment is appropriately considered in the formulation of the patient’s core issues and reason for seeking treatment (Shorey and Snyder, 2006).

8.6.1 Treatment Interventions

Targeting patient vulnerabilities that may be associated with the experiences of low parental care or overprotection, such as teaching distress tolerance and affect regulation (Linehan, 1993, Lynch et al., 2006, Spinhoven et al., 2009), may enhance treatment response (Hill et al., 2003, Nock and Mendes, 2008). These skills are components of an evidenced-based treatment for Borderline Personality Disorder (BPD), which is based on the principles of attachment theory (Bateman and Fonagy, 2003). The ability to understand one’s own emotion and recognize emotion in others, termed “mentalization,” is thought to be lacking in patients with BPD (Bateman and
These self- and other-mirroring skills may be appropriate learning tasks for patients who endorse low parental care or overprotection (Hill et al., 2003). This treatment modality encourages the development of stable internal representations of self and the understanding of one’s own and others’ motivations in order to develop more secure relationships (Bateman and Fonagy, 2003). Attending to the interactional processes of treatment, such as the patient’s ability to trust in the clinician, may provide a useful indicator of treatment engagement. Specific patient behaviours indicative of trust may include medication adherence or homework follow through.

8.6.2 Selecting a form of psychotherapy
Conceptualizing early parental care and protection levels as important considerations in guiding treatment choice may result in improved outcomes, as noted by the differential response to treatment shown with IPT. As well, selecting a therapy with a theoretical model befitting a patient’s strengths may lead to better outcomes. As reported in Chapter 5, for patients who report low parental care, which suggests an insecure attachment style, a course of IPT may be less suitable than other choices. IPT’s focus on interpersonal issues concentrates on the patient’s weakness at a vulnerable time, when a strengths-based approach may yield a better response. In contrast, CBT demonstrated a consistently better treatment response, 60-70%, independent of adverse childhood experiences. CBT has also been shown to be effective with personality dysfunction and disorders (Davidson et al., 2006, Emmelkamp et al., 2006), such as may be present in patients who experienced adverse childhood experiences. As such, CBT appears to be a good, general first-line psychotherapy treatment and may be a better choice in situations where patients report low parental care or parental overprotection.

8.6.3 Clinician self-awareness
Another clinical consideration, given the findings of this thesis, is the clinician’s awareness of his or her own parental care and protection experiences and attachment style, together with how they have shaped the clinician as an individual and as a treatment provider (Adshead, 2010). If therapy is viewed as offering a “corrective
emotional experience” (Alexander, 1946, Bridges, 2006, Knight, 2005), how is the clinician’s interaction with the patient facilitating that reparative experience? Some research suggests that an insecure attachment style, which is found in a percentage of the normal population according to epidemiological studies, is associated with “subtle deficits in care-giving sensitivity” (Adshead, 2010, p. 125). This care-giving deficit may manifest as poor self-care, as well as less effective patient care, potentially impacting the patient’s treatment engagement and, ultimately, response (Adshead, 2010). Essentially, a corrective emotional experience is the therapeutic part of therapy, according to Alexander and French (1946). Even in the context of a medication trial, a psychiatrist who balances the clinical administration and maintenance of medication with the interpersonal aspects of developing a doctor-patient alliance may find patients better tolerate medication treatment. A clinician, regardless of his or her training, is better able to engage with the patient, develop and maintain a therapeutic alliance, and provide appropriate support when aware of his or her own personal attachment profile.

8.6.4 Conceptualizing suicide attempts and NSSI

With respect to the findings related to suicide attempts and NSSI, this thesis adds to the growing body of research that suggests different functions for the two behaviours (Andover et al., 2012, Briere and Gil, 1998, Brown et al., 2002, Fliege et al., 2009, Mangnall and Yurkovich, 2008, Sun, 2011). Clinicians who view these behaviours as related but distinct may begin to understand and articulate patient factors contributing to the engagement and repetition of these behaviours, as well as distinguish between the unique antecedents and risk factors for suicide attempts apart from NSSI. In addition to the known risk factors such as low mood and previous suicide attempts, clinicians are well advised to consider low parental care as a factor for these behaviours, and in particular, low maternal care for suicide attempts and low paternal care for NSSI. Given that the number of men who reported engaging in NSSI was as high as or higher than the number of women, as reported in Chapter 6, a finding that aligns with some literature (Gratz et al., 2002, Lloyd-Richardson et al., 2007), clinicians may adjust their gender expectations for this behaviour to reflect a
more equal gender distribution. The number of males reportedly engaging in NSSI in this study may reflect the adult population sample, as compared to adolescent samples that are the focus of most other NSSI studies. As well, the gender ratio may more accurately reflect the behaviour when NSSI is considered separately from a suicide attempt.

8.6.5 Summary of clinically relevant guidelines for treatment

In summarizing the findings presented in this thesis, a number of clinically relevant guidelines emerge which are appropriate for a psychiatrist, psychologist, or other mental health provider who desires to improve outcomes in patients who experienced childhood adversity. Though equally, these guidelines would suit most patients, regardless of childhood background, as they represent good general clinical practice:

- Consider the patient’s attachment style in his or her formulation;
- Engage the patient in treatment, particularly in circumstances where medication is the only treatment offered;
- Select a form of psychotherapy with a theoretical basis that utilizes the patient’s strengths;
- Conceptualize suicide attempts and NSSI as related, but distinct, behaviours; and
- As a clinician, understand one’s own attachment style and the role it plays in the delivery of treatment to the patient.

Patients with an insecure, as opposed to a secure attachment style, may require the clinician to work harder in terms of treatment engagement and developing a therapeutic alliance, but, once engaged, patients are better able to respond to treatment. By maintaining the belief that patients who experienced childhood adversity may benefit from treatment, the clinician may aid the patient in developing and maintaining positive expectancies for his or her own treatment. In time, future
researchers will be focused on the question, “Which treatment works best for patients who report certain types of childhood adversity?”

8.7 Thesis Limitations and Strengths

One of the biggest limitations is the exploratory nature of the thesis hypotheses. The findings were not a priori and as such, require replication. The measures of childhood adversity used in this thesis relied on retrospective patient self-reports, either questionnaires or responses to interview questions. However, having noted the limitation of using a retrospective approach to data collection, other sources of data, like legal or medical records or child welfare reports, have their own issues, such as severely limiting the available dataset. With respect to abuse, while some concerns exist about the bias and consistency of memory (Hassan, 2006) and the reporting of past events, particularly unpleasant or traumatic events, the research consensus is that underreporting of adverse events is more likely a problem than over-reporting (Fergusson et al., 2011, MacMillan et al., 1997, Mullen, 1988). In support of retrospective reporting of parenting behaviours, the PBI has been found to be stable despite mood fluctuations (Gerlsma et al., 1993, Lizardi and Klein, 2005, Murphy et al., 2010, Sakado et al., 1999), as well as valid and reliable over time (Wilhelm et al., 2005, Wilhelm and Parker, 1990). In addition, the PBI has been shown to be a valid measure of actual parenting behaviours, with high inter-rater reliability found between parent, child, and family observer reports of parenting behaviour (Parker, 1981a).

The narrow focus of the childhood adversity variables examined in this thesis limits the scope of the findings. Wider definitions of neglect and abuse may include questions concerning the intra-parental relationship, parents’ substance use and mental health status, and intra-familial violence not specifically directed at the patient, as well as incarceration of a family member. These adverse childhood experiences have been shown to contribute to adult pathology as well (Edwards et al., 2003, Gilbert et al., 2008).
Apart from the limitations, this thesis has a number of strengths. One is the range of outcome measures examined, starting with an adequate trial that yields important, but often overlooked patient dropout data. The PBI was examined using the full dimensions of the measure, thus providing robust parental care and protection levels, rather than using composite scores or combinations of subscales as used in some studies (Bureau et al., 2010). Examining suicide attempts distinct from NSSI is another strong point of this thesis, which yielded original risk factor findings. The distinction is timely in light of the recently published DSM-5 with its inclusion of NSSI as a Condition for Further Study (American Psychiatric Association, 2013). Enrolling a heterogeneous sample of depressed outpatients who had comorbid suicidality enables the results to be more generalizable to the general population than if the studies had narrow inclusion criterion.

Another strong point may be the use of in-person interviews, with structured questions for the abuse, suicide, and NSSI data, as opposed to questionnaires. While a number of methods exist for gathering data, including questionnaires and computer devices, each has its own merits and weaknesses. Interviews, in addition to providing context and personal meaning for the responses, may elicit levels of disclosure that are more accurate than a self-report measure (Moor et al., 2012), as respondents provide details and clarifications that may be missed on a questionnaire. In addition, some respondents may prefer answering sensitive questions in person (Becker-Blease and Freyd, 2006, Becker-Blease and Freyd, 2007, Gleaves et al., 2007), with the opportunity to develop rapport (Chang et al., 2012). However, gathering patient data impersonally through the use of pen-and-paper or computer methods has its merits, as anonymity and lack of judgement factor into patients’ disclosure levels (Chang et al., 2012).

8.8 Future Research Directions

Despite the information gaps filled with this thesis, areas remain for future research. Scientific advances in genetics and brain imaging offer potential opportunities for
further investigation, as does an improved understanding of a wide range of familial factors which may contribute to adverse childhood experiences.

### 8.8.1 Potential mechanisms

The childhood adversity literature identifies potential mechanisms which may mediate or moderate the association between childhood adversity and a range of mental health issues, including depression. In turn, these mechanisms may impact a patient’s response to treatment. Two interrelated areas, gene expression and the neurobiology of the stress response are appropriate targets for future study.

Given that stressful early life experiences such as adverse parenting and abuse have been shown to alter gene expression and HPA axis functioning in animal (Weaver et al., 2006) and human studies (Heim et al., 2010, Penza et al., 2003, Roth and Sweatt, 2011), future research may be focused on epigenetic changes and alterations in the stress response system. Understanding the specific structural and functional changes in the brain related to different types of childhood adversity might lead to better understanding of the structures involved and suggest optimal treatment strategies (Heim, 2004), both psychotherapeutic and pharmacological (Heim et al., 2010).

Advances in brain imaging make it possible to scan patients who report certain types of adversity. These images could be classified by adversity type and compared, looking at brain structure and functionality. As this work is beyond the candidate’s scope of expertise, it would require collaboration with imagining experts. The information gleaned may yield important distinctions concerning brain changes following the experience of different types of childhood adversity, thus leading to treatment optimization.

Focusing on the positive side, imaging the brains of patients who experienced childhood adversity, yet did not develop a mental illness such as depression, may yield important clues as to the structural and functional aspects of the brain associated with protective factors and resilience. Finally, comparing brain images of patients whose
depression has successfully remitted with pharmacotherapy, psychotherapy, or both, with patients who have not responded to treatment may also offer important information as to the optimal depression treatment, depending on the adversity experienced.

8.8.2 Other avenues of exploration
Opportunities exist to further the quantitative analyses reported. An examination of the impact of different types of childhood loss (death, divorce, emotional neglect) in relation to depression outcomes may yield distinctions in how these losses impact depression outcomes.

8.8.2.1 Gender differences, family dyads and fathers
Another potential avenue of research within the childhood adversity domain is examining gender differences and familial attachment. In particular, looking at the interrelationship between the parent-child dyads of the same and opposite genders with respect to childhood adversity and in relation to treatment response may produce important findings. For example, Otani et al. (2009) found that in both males and females, interpersonal sensitivity increased with high protection from the same-gendered parent, but that for males, there was an additional effect of high maternal protection. Examining childhood adversity by parent and patient gender in relation to suicide attempts and NSSI is a timely future direction (Gratz et al., 2002). Further, given the paucity of research on fathers, a specific focus on the impact of their role in contributing to resilience or adverse outcomes would be valuable.

8.8.2.2 Qualitative analyses
Qualitative analyses would complement the quantitative analyses undertaken in this thesis. In light of the effect of low parental care (emotional neglect) on outcomes, a qualitative analysis of patient-clinician dialogues at different stages of therapy may be useful. The dialogue may illuminate important patterns and themes which provide detail about why and how the experience of low parental care had an impact on
response to treatment. Comparing the dialogue of patients who did not respond to treatment with patients who responded well to treatment despite experiencing low parental care may prove fruitful.

The qualitative comparison leads on well to an examination of the protective factors in patients who report adverse childhood experiences and yet respond to treatment. For example, what social, psychological, motivational, or personality factors contribute to resilience in the face of experiencing childhood adversity?

8.8.3 Optimal study design

In considering the ‘optimal’ design for a future study, the use of standardized measures would make comparisons among studies easier. In the case of this thesis, utilizing a standardised measure to assess for childhood adversity and suicidal behaviours and NSSI would facilitate comparison among studies.

A number of measures have been validated for the assessment of childhood adversity. Among them, one of the most-cited self-report measures is the Child Trauma Questionnaire (CTQ) (Scher, et al., 2001). A well-validated and thorough measure, available in the public domain, is The Childhood Experience of Care and Abuse Questionnaire (CECA-Q) (Bifulco, et al., 1994). This instrument covers a range of experiences including lack of parental care measured on two scales: neglect and antipathy, as well as physical and sexual abuse. The benefit of the CECA-Q is that the original structured clinical interview, upon which this measure is based, is a useful adjunct for additional information gathering if necessary. For a specific focus on childhood sexual abuse in adults, the Sexual Abuse Questionnaire (Lock, et al., 2005) is frequently cited. In terms of assessing for NSSI, the Inventory of Statements About Self-injury (ISAS) (Klonsky et al., 2008) is a measure designed to comprehensively assess the functions of NSSI and is based on the latest research in this area. It is also in the public domain. Whatever measures are selected, it is important that their psychometric properties, including validity and reliability, are strong. The availability
of normative data from the general population is important in order to accurately evaluate the meaning of a high score. For a comprehensive analysis of a range of measures for assessing childhood adversity, see Thabrew, et al., 2012.

Combining the use of the self-report measure together with an interview aids in verifying and clarifying responses. While a semi-structured interview with a well-trained and compassionate clinician is the gold-standard in assessment, it may not be feasible in all study situations due to the administration and scoring time and cost. As all measures have pros and cons, weighing up the purpose of the questionnaire (screening versus diagnostic), the population to be sampled (inpatient versus outpatient) and the burden to the patient in terms of time required, may aid in selection.

One important consideration, particularly in light of the results reported in this thesis, is that the PBI care and protection scores appear to measure a particular aspect of childhood adversity that is not tapped by standard adversity measures that focus on the physical, sexual and traumatic aspects of childhood adversity. As such, the PBI is a useful tool in gaining a comprehensive look at a range of adverse childhood experiences.

8.9 CONCLUSIONS

Childhood adversity, particularly low parental care and overprotection, showed a small, detectable difference in some outcomes in adults with depression. The impact of low parental care, conceptualized as emotional neglect, was more significant to treatment response than abuse in all the outcomes measured. This finding may surprise some clinicians and researchers who believe that abuse has the greatest impact on the development, outcome, and treatment of depression. For others, the modest size of the neglect finding may seem an underrepresentation. With respect to predicting suicide attempts and NSSI, abuse showed an association in univariate analyses, but in multivariate analyses the association of abuse with outcome was
better accounted for by low parental care. The correlation between abuse and low care should signal to clinicians the potential for emotional neglect to be an issue when abuse is reported.

Conceptualizing low parental care and overprotection as experiences which affect the parent-child attachment relationship is an appropriate way to understand the impact of the findings, as well as a means to consider optimal treatment. Interventions aimed at addressing specific patient vulnerabilities associated with adverse parenting such as emotion regulation and distress tolerance offers patients tools and skills, and provides a corrective emotional experience. Helping the patient develop trust in the clinician as well as in the treatment, is a valuable component of enhancing patient engagement, thus increasing the chance that the patient will stay in treatment long enough to benefit. The presence of childhood adversity need not be a predisposing inhibitory factor to treatment response. These findings highlight the value and importance of considering childhood adversity as a factor in outcomes for adults with depression.
APPENDIX 1: CLINICAL GLOBAL IMPRESSION SCALE (CGI)
GLOBAL CLINICAL EVALUATION OF SEVERITY OF ILLNESS:

1 = normal, not ill,
2 = slightly ill,
3 = mildly ill,
4 = moderately ill,
5 = moderately severely ill,
6 = severely ill

GLOBAL IMPRESSION:

Compared to condition on admission:

1 = very much improved,
2 = much improved,
3 = slightly improved,
4 = no change,
5 = slightly worse,
6 = much worse,
7 = very much worse
APPENDIX 2: DYSFUNCTIONAL ATTITUDE SCALE (DAS)
DAS

This inventory lists different attitudes or beliefs which people sometimes hold. Read each statement very carefully and decide how much you agree or disagree with the statement.

For each of the attitudes, show your answer by placing a cross (X) under the column that best describes how you think. Be sure to choose only one answer for each attitude. Because people are different, there is no right answer or wrong answer to these statements.

To decide whether a given attitude is typical of your way of looking at things, simply keep in mind what you are like most of the time.

Example:

<table>
<thead>
<tr>
<th>Most people are OK once you get to know them</th>
<th>Totally agree</th>
<th>Agree very much</th>
<th>Agree slightly</th>
<th>Neutral</th>
<th>Disagree slightly</th>
<th>Disagree very much</th>
<th>Totally disagree</th>
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</tbody>
</table>

Look at the example above. To show how much a sentence describes your attitude, you can check any point from ‘totally agree’ to ‘totally disagree’. In the above example, the checkmark at ‘agree slightly’ indicates that this statement is somewhat typical of the attitudes held by the person completing the inventory.

Remember that your answer should describe the way you think most of the time.

Now go to the next page and begin.
1. It is difficult to be happy unless one is good-looking, intelligent, rich and creative.

2. Happiness is more a matter of my attitude towards myself than the way other people feel about me.

3. People will probably think less of me if I make a mistake.

4. If I do not do well all the time, people will not respect me.

5. Taking even a small risk is foolish because the loss is likely to be a disaster.

6. It is possible to gain another person's respect without being especially talented at anything.

7. I cannot be happy unless most people I know admire me.

8. If a person asks for help, it is a sign of weakness.

9. If I do not do as well as other people it means I am an inferior human being.

10. If I fail at my work, then I am a failure as a person.

11. If you cannot do something well, there is little point in doing it at all.

12. Making mistakes is fine because I can learn from them.

13. If someone disagrees with me, it probably indicates they do not like me.

14. If I fail partly, it is as bad as a complete failure.

15. If other people know what you are really like, they will think less of you.

16. I am nothing if a person I love doesn't love me.

17. One can get pleasure from an activity regardless of the end result.

18. People should have a reasonable likelihood of success before undertaking anything.

19. My value as a person depends greatly on what others think of me.

20. If I don't set the highest standards for myself, I am likely to end up a second rate person.

<table>
<thead>
<tr>
<th>Agreement Level</th>
<th>Totally Agree</th>
<th>Agree (very much)</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree Slightly</th>
<th>Disagree (very much)</th>
<th>Disagree (totally)</th>
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<tbody>
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<td>1</td>
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</tbody>
</table>
21. If I am to be a worthwhile person, I must be truly outstanding in at least one major respect.  

22. People who have good ideas are more worthy than those who do not.  

23. I should be upset if I made a mistake.  

24. My own private opinions of myself are more important than other’s opinions of me.  

25. To be a good, moral, worthwhile person, I must help everyone who needs it.  

26. If I ask a question, it makes me look inferior.  

27. It is awful to be disapproved of by people important to you.  

28. If you don’t have other people to lean on, you are bound to be sad.  

29. I can reach important goals without slave driving myself.  

30. It is possible for a person to be scolded and not get upset.  

31. I cannot trust other people because they might be cruel to me.  

32. If others dislike you, you cannot be happy.  

33. It is best to give up your own interests in order to please other people.  

34. My happiness depends more on other people than it does on me.  

35. I do not need the approval of other people in order to be happy.  

36. If a person avoids problems, the problems tend to go away.  

37. I can be happy even if I miss out on many of the good things in life.  

38. What other people think about me is very important.  

39. Being isolated from others is bound to lead to unhappiness.  

40. I can find happiness without being loved by another person.
APPENDIX 3: MONTGOMERY ÅSBERG DEPRESSION RATING SCALE (MADRS)
**MONTGOMERY ÅSBERG DEPRESSION RATING SCALE (MADRS)**

**Instructions to rater:**

(Rate mood over past week)

The rating should be based on a clinical interview moving from broadly phrased questions about symptoms to more detailed ones which allow a precise rating of severity. The rater must decide whether the rating lies on the defined scale steps (0; 2; 4; 6) or between them (1; 3; 5). It is important to remember that it is only on rare occasions that a depressed patient is encountered who cannot be rated on the items in the scale. If definite answers cannot be elicited from the patient all relevant cues as well as information from other sources should be used as a basis for rating in line with customary clinical practice.

1. **Apparent sadness:**

   Representing despondency, gloom and despair, (more than just ordinary low spirits) reflected in speech, facial expression, and posture. Rate by depth and inability to brighten up.

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>No sadness</td>
</tr>
<tr>
<td>1</td>
<td>Looks dispirited but does brighten up without difficulty.</td>
</tr>
<tr>
<td>2</td>
<td>Appears sad and unhappy most of the time.</td>
</tr>
<tr>
<td>3</td>
<td>Looks miserable all the time. Extremely despondent.</td>
</tr>
</tbody>
</table>

2. **Reported sadness:**

   Representing reports of depressed mood, regardless of whether it is reflected in appearance or not. Includes low spirits, despondency or the feeling of being beyond help and without hope.

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<tbody>
<tr>
<td>0</td>
<td>Occasional sadness in keeping with the circumstances.</td>
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<tr>
<td>1</td>
<td>Sad or low but brightens up without difficulty.</td>
</tr>
<tr>
<td>2</td>
<td>Pervasive feelings of sadness or gloominess. The mood is still influenced by external circumstances.</td>
</tr>
<tr>
<td>3</td>
<td>Continuous or unvarying sadness, misery or despondency.</td>
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</tbody>
</table>

3. **Inner tension:**

   Representing feelings of ill defined discomfort, edginess, inner turmoil, mental tension mounting to either panic, dread or anguish. Rate according to intensity, frequency, duration and the extent of reassurance called for.

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<thead>
<tr>
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<tbody>
<tr>
<td>0</td>
<td>Placid. Only fleeting inner tension.</td>
</tr>
<tr>
<td>1</td>
<td>Occasional feelings of edginess and ill-defined discomfort.</td>
</tr>
<tr>
<td>2</td>
<td>Continuous feelings of inner tension or intermittent panic which the patient can only master with some difficulty.</td>
</tr>
<tr>
<td>3</td>
<td>Unrelenting dread or anguish. Overwhelming panic.</td>
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</tbody>
</table>

4. **Reduced sleep:**

   Representing the experience of reduced duration or depth of sleep compared to the patient’s own normal pattern when well.

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<tbody>
<tr>
<td>0</td>
<td>Sleeps as usual.</td>
</tr>
<tr>
<td>1</td>
<td>Slight difficulty dropping off to sleep or slightly reduced, light or fitful sleep.</td>
</tr>
<tr>
<td>2</td>
<td>Sleep reduced or broken by at least 2 hours.</td>
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<tr>
<td>3</td>
<td>Less than two or three hours sleep.</td>
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</tbody>
</table>

5. **Reduced appetite:**

   Representing the feeling of a loss of appetite compared with when well. Rate by loss of desire for food or the need to force oneself to eat.

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<tbody>
<tr>
<td>0</td>
<td>Normal or increased appetite.</td>
</tr>
<tr>
<td>1</td>
<td>Slightly reduced appetite.</td>
</tr>
<tr>
<td>2</td>
<td>No appetite. Food is tasteless.</td>
</tr>
<tr>
<td>3</td>
<td>Needs persuasion to eat at all.</td>
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</tbody>
</table>

6. **Concentration difficulties:**

   Representing difficulties in collecting one’s thoughts mounting to incapacitating lack of concentration. Rate according to intensity, frequency, and degree of incapacity produced.

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<tbody>
<tr>
<td>0</td>
<td>No difficulties in concentrating.</td>
</tr>
<tr>
<td>1</td>
<td>Occasional difficulties in collecting one’s thoughts.</td>
</tr>
<tr>
<td>2</td>
<td>Difficulties in concentrating and sustaining thought which reduces ability to read or hold a conversation.</td>
</tr>
<tr>
<td>3</td>
<td>Unable to read or converse without great difficulty.</td>
</tr>
</tbody>
</table>
7. Lassitude:
Representing a difficulty getting started or slowness initiating and performing everyday activities.

0  Hardly any difficulty in getting started.
    No sluggishness.
1  Difficulties in starting activities.
2  Difficulties in starting simple routine activities which are carried out with effort.
5  Complete lassitude. Unable to do anything without help.

8. Inability to feel:
Representing the subjective experience of reduced interest in the surroundings, or activities that normally give pleasure. The ability to react with adequate emotion to circumstances or people is reduced.

0  Normal interest in the surroundings and in other people.
1  Reduced ability to enjoy usual interests.
3  Loss of interest in the surroundings. Loss of feelings for friends and acquaintances.
5  The experience of being emotionally paralysed, inability to feel anger, grief or pleasure and a complete or even painful failure to feel for close relatives and friends.

9. Pessimistic thoughts:
Representing thoughts of guilt, inferiority, self-reproach, sinfulness, remorse and ruin.

0  No pessimistic thoughts
1  Fluctuating ideas of failure, self-reproach or self-depreciation.
3  Persistent self-accusations, or definite but still rational ideas of guilt or sin. Increasingly pessimistic about the future.
5  Delusions of ruin, remorse or unredeemable sin. Self-accusations which are absurd and unshakeable.

10. Suicidal thoughts:
Representing the feeling that life is not worth living, that a natural death would be welcome, suicidal thoughts and preparations for suicide. Suicidal attempts should not in themselves influence the ratings.

0  Enjoys life or takes it as it comes.
1  Weary of life. Only fleeting suicidal thoughts.
3  Probably better off dead. Suicidal thoughts are common, and suicide is considered as a possible solution, but without specific plans or intention.
5  Explicit plans for suicide when there is an opportunity. Active preparation for suicide.

Total score (sum of scores on each item): 


APPENDIX 4: PARENTAL BONDING INSTRUMENT (PBI)
### Parental Bonding Instrument (PBI)

**THIS SECTION LISTS VARIOUS ATTITUDES AND BEHAVIOURS OF PARENTS**

Questions 1 to 25 apply specifically to your **MOTHER**; Questions 26 to 50 apply specifically to your **FATHER**.

IF THESE QUESTIONS ARE NOT APPLICABLE TO ONE OR BOTH OF YOUR PARENTS, INFORM THE INTERVIEWER OF THIS AND THE REASONS WHY.

As you remember your **MOTHER** in your first 16 years of life, would you place an X in the most appropriate space next to each question.

<table>
<thead>
<tr>
<th>She...</th>
<th>Very like</th>
<th>Moderately like</th>
<th>Moderately unlike</th>
<th>Very unlike</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Spoke to me with a warm and friendly voice. ...............</td>
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<tr>
<td>2. Did not help me as much as I needed. ......................</td>
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<tr>
<td>3. Let me do those things I liked doing. ......................</td>
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<tr>
<td>4. Seemed emotionally cold to me.............................</td>
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<tr>
<td>5. Appeared to understand my problems and worries.......</td>
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<tr>
<td>6. Was affectionate to me. ....................................</td>
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<tr>
<td>7. Liked me to make my own decisions. ........................</td>
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<tr>
<td>8. Did not want me to grow up. ...............................</td>
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<td>9. Tried to control everything I did.........................</td>
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<td>10. Invaded my privacy .......................................</td>
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<td>11. Enjoyed talking things over with me......................</td>
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<td>12. Frequently smiled at me..................................</td>
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<td>13. Tended to baby me..........................................</td>
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<td>14. Did not seem to understand what I needed or wanted...</td>
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<td>15. Let me decide things for myself.........................</td>
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<td>She...</td>
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<td>Moderately unlike</td>
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<td>16.</td>
<td>Made me feel I wasn’t wanted.</td>
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<td>17.</td>
<td>Could make me feel better when I was upset.</td>
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<td>18.</td>
<td>Did not talk with me very much.</td>
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<td>19.</td>
<td>Tried to make me dependent on her.</td>
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<td>20.</td>
<td>Felt I could not look after myself unless she was around.</td>
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<td>21.</td>
<td>Gave me as much freedom as I wanted.</td>
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<td>22.</td>
<td>Let me go out as often as I wanted.</td>
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<tr>
<td>23.</td>
<td>Was over protective of me.</td>
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<td>24.</td>
<td>Did not praise me.</td>
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<td>25.</td>
<td>Let me dress in any way I pleased.</td>
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</table>

As you remember your FATHER in your first 16 years of life, would you place an X in the most appropriate space next to each question.

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<thead>
<tr>
<th></th>
<th>He...</th>
<th>Very like</th>
<th>Moderately like</th>
<th>Moderately unlike</th>
<th>Very unlike</th>
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</thead>
<tbody>
<tr>
<td>26.</td>
<td>Spoke to me with a warm and friendly voice.</td>
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<td>27.</td>
<td>Did not help me as much as I needed.</td>
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<td>28.</td>
<td>Let me do those things I liked doing.</td>
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<td>29.</td>
<td>Seemed emotionally cold to me.</td>
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<tr>
<td>30.</td>
<td>Appeared to understand my problems and worries.</td>
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<td>31.</td>
<td>Was affectionate to me.</td>
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<td>32.</td>
<td>Liked me to make my own decisions.</td>
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<td></td>
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<td>Very like</td>
<td>Moderately like</td>
<td>Moderately unlike</td>
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<td>33.</td>
<td>Did not want me to grow up.</td>
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<td>34.</td>
<td>Tried to control everything I did.</td>
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<td>35.</td>
<td>Invaded my privacy.</td>
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<td>36.</td>
<td>Enjoyed talking things over with me.</td>
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<td>37.</td>
<td>Frequently smiled at me.</td>
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<td>38.</td>
<td>Tended to baby me.</td>
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</tr>
<tr>
<td>39.</td>
<td>Did not seem to understand what I needed or wanted.</td>
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<tr>
<td>40.</td>
<td>Let me decide things for myself.</td>
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<tr>
<td>41.</td>
<td>Made me feel I wasn’t wanted.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>Could make me feel better when I was upset.</td>
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<tr>
<td>43.</td>
<td>Did not talk with me very much.</td>
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</tr>
<tr>
<td>44.</td>
<td>Tried to make me dependent on him.</td>
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</tr>
<tr>
<td>45.</td>
<td>Felt I could not look after myself unless he was around.</td>
<td></td>
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<tr>
<td>46.</td>
<td>Gave me as much freedom as I wanted.</td>
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<tr>
<td>47.</td>
<td>Let me go out as often as I wanted.</td>
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<tr>
<td>48.</td>
<td>Was over protective of me.</td>
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</tr>
<tr>
<td>49.</td>
<td>Did not praise me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50.</td>
<td>Let me dress in any way I pleased.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 5: SELF-HARM AND SUICIDE QUESTIONS
(SELF-HARM)

1. Have you ever deliberately harmed yourself to relieve tension or feel better?  
   NO  YES
   1  3

   IF NO (CODE 1) SKIP TO SUICIDAL BEHAVIOUR (BELOW)

   IF YES (CODE 3): How many times has this happened?

<table>
<thead>
<tr>
<th>Action</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wrist/arm cutting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head banging</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inserting sharp objects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (Specify):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Did you do this only when depressed? ................................................................. 1  3

3. When did you last do this? ................................................................. Last week Last month Last year More than 1 year

(SUICIDAL BEHAVIOUR)

Now I’m going to ask you some (further) questions about suicidal behaviour. UNK NO YES

1. Have you ever tried to kill yourself? .................................................................? 1  3

   IF NO SKIP TO PAGE 17 – A3

   IF YES: 1.a) How many times have you tried to kill yourself?.................................

   INTERVIEWER: For the following questions, ask about the most serious attempt.

2. How did you try to kill yourself?
   Record response: _______________________________________________________________

3. How old were you? .................................................................................................

   UNK NO YES

4. Did you require medical treatment after this attempt? ........................................? 1  3

   UNK NO ER INPT

5. Were you admitted to a hospital after the attempt? .............................................? 1  2  3

   UNK NO

6. Did you want to die? ..............................................................................................

   UNK NO YES

7. Did you think you would die from what you had done? .....................................? 1  3
8. INTERVIEWER: Rate intent of the most serious attempt.
   1 = No intent or minimal intent, manipulative gesture.
   2 = Definite intent, but ambivalent.
   3 = Serious intent, expected to die.
   ? = No information, not sure.

9. INTERVIEWER: Rate lethality of most serious attempt.
   1 = No danger (no effects, held pills in hand).
   2 = Minimal (scratch on wrist).
   3 = Mild (10 aspirin, mild gastritis).
   4 = Moderate (10 Seconals, briefly unconscious).
   5 = Severe (cut throat).
   6 = Extreme (respiratory arrest or prolonged coma).
   ? = No information, not sure.

10. Did the suicidal behaviour described occur during . . .
    Did the suicidal behaviour
    UNK  NO  YES
    described occur during . . .
    10.a) Depression? .................................................................?  1  3
    10.b) Mania? .................................................................?  1  3
    10.c) Alcohol Abuse? .................................................................?  1  3
    10.d) Drug Abuse? .................................................................?  1  3
    10.e) Psychosis? .................................................................?  1  3
    10.f) Other? (IF YES:) Specify: ________________________________?  1  3
APPENDIX 6: CHILDHOOD ABUSE QUESTIONS
**E: CHILDHOOD ABUSE** (ask in initial interview only, otherwise skip to Section F, p.14)

Sometimes traumatic events happen when people are quite young.

**E.1** Did you experience any of these traumatic events before you were 16:

- Were you the victim/witness of a disaster, accident or war, which affected your ability to live as before?
  - Yes
  - No
  - D.K.

**Number of times**

<table>
<thead>
<tr>
<th>Event</th>
<th>0</th>
<th>2</th>
<th>2-3</th>
<th>4+</th>
<th>D.K.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threatened with abuse by someone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Emotionally or psychologically abused</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Beaten so badly you had to see (or should have seen) a doctor</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Other. Specify:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>9</td>
</tr>
</tbody>
</table>

**E.2** When you were under 16, were you ever physically or psychologically forced by anyone to engage in any unwanted sexual activity, such as unwanted sexual touching of your body or sexual intercourse?

- Yes, definitely (Ask E.3)
- Yes, perhaps (Ask E.3)
- No, definitely
- D.K.

**DECISION:** If ‘no’ go to Section F, p.14. If ‘yes’ (perhaps or definitely) ask E.3

**E.3** Did this involve:

- Someone exposing the sex parts of their body to you when you didn’t want it?
- Someone threatening to have sex with you when you didn’t want it
- Someone touching the sex parts of your body when you didn’t want this?
- Someone trying to have sexual intercourse with you when you didn’t want this and not succeeding
- Someone having sexual intercourse with you when you didn’t want this
- Someone sexually attacking or raping you
- Other unwanted sexual activity. Specify:
E.4 How old were you when this (these things) happened?  
(Interviewer: For each year and each type of activity, enter code  
Yes = 1  
No  = 2  
N.A. = 8  

<table>
<thead>
<tr>
<th>Age</th>
<th>Exposure</th>
<th>Threaten</th>
<th>Touch</th>
<th>Intercourse</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 4 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5 – 9 years</td>
<td></td>
<td></td>
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<tr>
<td>10 – 12 years</td>
<td></td>
<td></td>
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<tr>
<td>13 – 15 years</td>
<td></td>
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</tbody>
</table>

E.5 What was the relationship between you and the person/people involved in these activities?  

If ‘yes’ enter number of times it happened (before age 16)  
If D.K. enter 9 but try for a best estimate  
i.e., Was it 2-3 times of 8-9. If >9 enter 9  

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Exposure</th>
<th>Threaten</th>
<th>Touch</th>
<th>Intercourse</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Natural) father</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brother(s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Uncle(s)</td>
<td></td>
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</tr>
<tr>
<td>Grandfather(s)</td>
<td></td>
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<tr>
<td>Stepfather</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Stepbrother(s)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Other rel. Specify</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Neighbour</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Family friend</td>
<td></td>
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</tr>
<tr>
<td>Teacher</td>
<td></td>
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<tr>
<td>Stranger</td>
<td></td>
<td></td>
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<tr>
<td>Other. Specify</td>
<td></td>
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</table>
APPENDIX 7: FLOW CHART FOR PATIENTS IN THE ANTIDEPRESSANT MEDICATION TRIAL

THE PATTERN OF PATIENTS SCREENED, ELIGIBLE, RANDOMISED AND TREATED IN THE ANTIDEPRESSANT MEDICATION TRIAL OF FLUOXETINE AND NORTRIPTYLINE

Screened by telephone for eligibility (n = 202)

Excluded
Did not meet the inclusion criteria (n = 7)

Patients randomized (n = 195)

Commenced Fluoxetine (n = 100)

Commenced Nortriptiline (n = 95)

Dropped out (n = 7)
Left the area (n = 2)

Assessed at six weeks (n = 186)
Fluoxetine (n = 105)
Nortriptiline (n = 71)
Other medication (n = 2)
No medication (n = 8)
APPENDIX 8: FLOW CHART FOR PATIENTS IN THE IPT/CBT TRIAL

THE PATTERN OF PATIENTS SCREENED, ELIGIBLE, RANDOMISED AND TREATED IN THE PSYCHOTHERAPY TRIAL OF IPT/CBT

Screened by telephone for eligibility (n=282)

Excluded (n=105)
- Did not attend the assessment (n=13)
- Did not meet inclusion criteria (n=46)
- Declined therapy in a research study (n=35)
- Preferred antidepressant treatment (n=11)

Patients randomized (n=177)

Commenced IPT (n=91)

Commenced CBT (n=86)

Completed an adequate trial (n=83)

Completed an adequate trial (n=76)

Responded to IPT, Y/N (n=40)

Responded to CBT, Y/N (n=50)
REFERENCES


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