BORDERLINE PERSONALITY DISORDER AND DIALECTICAL BEHAVIOUR THERAPY IN AN AUSTRALIAN PRIVATE HOSPITAL SETTING: TREATMENT RESPONSE AND BPD SUBTYPES

A thesis submitted in fulfilment of the requirements for the degree of
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DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of this thesis is the result of work which has been carried out since the official commencement date of the approved research program, and that any editorial work, paid, or unpaid, carried out by a third party is acknowledged.

Patricia A Altieri

Date....19th October 2011.....

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“But in the end it’s only a passing thing, this shadow. Even darkness must pass. A new day will come. And when the sun shines it will shine out the clearer”.

Sam Gamgee, Lord of the Rings

This work is dedicated to those individuals with BPD symptoms who continue to struggle against their difficulties, trying to increase the amount of sunshine in their world.

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Thesis Overview

Borderline Personality Disorder (BPD) is a complex psychological disorder, often considered to be one of the most severe of all the personality disorders because of the impact the symptoms have on the life of the person with the diagnosis and on those around them. Characterised by highly unstable affective reactions to environmental or interpersonal events and stimuli, it is often difficult for both the person and their significant others to understand and predict these reactions, and thus formulate and implement effective response strategies. Borderline personality disorder characteristics often cause sufferers and families high levels of distress and treatment uses public and private resources extensively and expensively. The impact of this disorder is profound at both the individual and community domains. In particular, the high number of suicide and self harm behaviours associated with this diagnosis and the high levels of emotional distress experienced by both the sufferer and their family members causes immense distress (Beatson, Rao, & Watson, 2010; Kraus & Reynolds, 2001; Paris, 2008).

Causal theories include biological, social, and psychological perspectives (Paris, 2005; 2008). Some sufferers report high levels of abusive experiences during childhood which are often considered to be a factor in the development of the disorder. These reports have resulted in the development of the theory of abuse experiences as a causal factor in the disorder (e.g., Bandelow et al., 2005; Goodman & Yehuda, 2002; McLean & Gallop, 2003; Sabo, 1997; Sansone, Gaither, & Songer, 2002; Trull, 2001; Zanarini et al., 1997). Other theorists consider attachment difficulties as central to the formation of the disorder, often associated with dysfunctional family environments (e.g., Meyer, Ajchenbrfenner, & Bowles, 2005; Levy, 2005). A variety of biological characteristics associated with this disorder have also been identified when sufferers are compared to non-sufferers, including structural differences in the hippocampus and amygdala areas of the brain, changes in volume and flow of cerebral spinal fluid and changes in neurotransmitter functioning (e.g., Baird, Veague, & Rabbitt, 2005; Bower, 1995; Gurvits, Koenigsberg & Siever, 2000; Hollander et al., 1994; Paris, 2004).

Borderline personality disorder is a disorder characterised by heterogeneous symptomatology, which can contribute to difficulties in assessment and treatment

formulations. Further exploration of this notion through cluster analyses of BPD symptoms and treatment responses have identified groups of prominent and related features including disturbed relationships, impulsivity and emotional dysregulation (e.g., Digre, Reece, Johnson, & Thomas, 2009; Hurt et al., 1992; Nesci, Smith & Altieri, 2009; Sanislow et al., 2002), adding support to the suggestion of the existence of subtypes within the diagnosis (e.g., Bohus et al., 2004; Koons et al., 2001; Linehan, 1993). In addition, several treatment outcome studies for BPD have found that there are some individuals who respond differentially to treatment (Bohus et al., 2004; Koons et al., 2001; Linehan, 1993).

The body of treatment literature includes studies based on psychodynamic concepts (e.g., object relations theories) as well as those based on cognitive and cognitive behavioural theory concepts (e.g., dialectical behaviour therapy). These studies have reported mixed efficacy and findings are sometimes difficult to compare because of differing methodologies and use of non-standardised measures. Dialectical behaviour therapy (Linehan, 1993a) has sound evidence for its efficacy, but there is a minimal amount of published efficacy research outside of the USA, or research seeking to identify which components of the treatment are most effective.

Linehan (1993) has conceptualised the Diagnostic and Statistical Manual - IV (Text Revision) (2000) (DSM-IV TR) symptoms of BPD into five areas of functioning. These are emotional dysregulation (emotional instability, problems with anger and irritability, and chronic affective problems); interpersonal dysregulation (instability in relationships, fear of being abandoned, and problems in interpersonal areas); behavioural dysregulation (suicide and self harm threats and behaviour and impulsive behaviours including substance use and abuse); cognitive dysregulation (cognitive rigidity and dichotomous thinking); and self dysfunction (problems with self-image, low self esteem and chronic feelings of emptiness). These domains of dysfunction are presented and further discussed in Chapter Three. In this thesis, psychometrically valid scales assessing aspects of functioning within each of these five domains were utilised to assess treatment outcomes. The measurement of patient functioning as a function of these five domains is a unique aspect of the current thesis.

The programme of research reported in this thesis expands the findings of the existing treatment literature and had several aims. The primary aim was to evaluate the impact of participation in a comprehensive DBT treatment programme being conducted in a private hospital setting in metropolitan Melbourne, Victoria on the

symptom profiles of a group of private patients diagnosed with BPD. The research assessed changes in these participants' scores on selected scales from a battery of standardised questionnaires measuring a variety of clinical syndromes. This private hospital conducted an outpatient day treatment programme, based on Linehan's (1993) DBT treatment programme, which comprised a combination of individual therapy and group skills training over a one year period.

A second aim of the research was to evaluate the impact of participation in a "stand-alone" eight week treatment module based on Linehan's (1993) principles of mindfulness, again utilising scores on selected scales from the standardised questionnaires completed by the participants. Some of these participants then completed the remaining modules of the full DBT programme, so for a small number of these participants, the measures were able to be repeated prior to their entry into the remainder of the DBT programme, thus giving the opportunity to assess whether or not any gains made in the initial mindfulness programme were maintained throughout the waiting or follow-up periods.

For participants in the full DBT programme, number, frequency, and strength of self harm and suicidal ideation urges, were monitored throughout their involvement in the treatment programme. Due to limited availability and high demand for the full DBT treatment programme, only a small group of participants entered the DBT treatment programme immediately following completion of the mindfulness module. Despite this, some comparison of this group's results with other DBT research was made. For the remaining group of participants, the opportunity existed to examine the impact of completing the remaining DBT modules after a delay following completion of the mindfulness module.

All participants' level of therapeutic alliance and satisfaction with the mindfulness module, the full DBT programme, and the therapists were also measured at multiple time points across the study. An additional, important component of the thesis investigated the presence of sub-types of individuals with BPD within the participant group, and their response to treatment.

Results showed that there were clinically and statistically significant changes in some of the participants' scores on the scales on the standardised instruments at the end of the eight week "stand alone" mindfulness programme. These changes in scores occurred in measures of emotional dysregulation, behavioural dysregulation, cognitive dysregulation, and dysregulation of self. Observed changes in scores were

in a positive direction at completion of the group –suggesting positive changes in participant's ability to manage their emotions and behaviour following participation in the group and improved self esteem and ability to focus attention and concentration. Where follow- up data was available for members of the mindfulness groups, these analyses showed that some, but not all gains had been maintained over the follow-up period, and scores on some scales had reverted to close to baseline levels.

Further clinically and statistically significant decreases were found in the mean scores of participants in the DBT group throughout the course of the intervention, suggesting some resolution of symptoms. These findings are consistent with already published research and add to the body of treatment related evidence pertaining to the efficacy of DBT as a trteament for BPD. Moreover, current findings can be used to help guide treatment choices, including assisting in decision making around which individuals are more likely to benefit from a DBT intervention and what factors are involved in positive changes.

Cluster analyses identified robust differences between participants, yielding two distinct groups of individuals with differing levels of intensity of symptomatology. Cluster membership remained stable across the intervention period with members of both clusters showing significant improvement in symptoms at the end of the intervention period.

In terms of overall structure, the programme of research report in this thesis is divided into 14 chapters. Chapter one of this thesis provides a synopsis of some of the key concepts of personality and personality disorder theory. Chapter two contains a discussion of borderline personality disorder in terms of its core nature and chapter Three discusses empirically validated treatments. Chapters four and five provide the rationale and details of the individual studies comprising this thesis. Chapters six, seven, and eight detail the results of the main analyses into the efficacy of the mindfulness and DBT interventions whilst Chapter nine considers the concept of sub-types of BPD. Chapters ten and eleven discuss treatment responses between the clusters for both mindfulness and DBT. Chapters twelve and thirteen discuss the clinical significance of the overall results and Chapter fourteen summarises the results of the series of studies comprising the thesis overall.

Chapter One

General Introduction

Personality

The term "personality" was derived from the Latin term "persona". This term described and symbolised the theatrical mask utilised by early dramatic performers. Over time, this term came to represent the actual characteristics of the person, rather than a way of concealing these characteristics. Contemporary use of the term "personality" has come to represent the complex pattern of characteristics present in an individual across their whole spectrum of functioning (Allen, 2006; Crowne, 2010; Ewen, 2003; Friedman & Schustack, 2011; Millon & Davis, 2000).

This concept of personality is utilised extensively in everyday life, both to describe others in terms of their characteristics, and to explain their behaviour in a particular situation (Watson, Clark, & Harkness, 1994). Moreover, an extensive body of research exists in many areas of psychology related to the impact of personality on other aspects of functioning (e.g., self-esteem, dependency, etc.), and the concept remains of interest to both the average person and those interested in research and/or clinical practice. Lexical studies have shown that at least four common domains or factors have been identified across different cultures and languages (Ashton & Lee, 2005), suggesting that a cross-culturally valid model of personality functioning exists. Ashton and Lee further report that the findings from this type of research fit well within the existing frameworks of normal personality variation research.

Most of the major theoretical approaches to psychology have developed theories around the issue of personality formation and expression. However, the most dominant perspectives are those of the biological, psychodynamic, interpersonal, and cognitive approaches. Allen (2006), Beck, Freeman, Davis, and Associates (2004), Friedman et al. (2011), and Millon and Davis (2000), provide comprehensive reviews of each of these approaches.

From the biological perspective, personality formation is influenced by characteristics that result from biological and genetic factors, such as temperament, which underpin distinct patterns of responding to environmental events from birth. These patterns are seen as continuous across an individual's life span. The theory of bodily humours developed by early Greeks centuries ago was one of the first biologically based systems to attempt to explain observable differences in behaviour by reference to differences in personality from a biological system perspective. This concept was later expanded and particular temperamental styles were believed to be associated with particular temperamental characteristics, for example, the melancholic temperament with sadness (Friedman & Schustack, 2011; Millon & Davis, 2000). These theoretical perspectives have generated extensive further research in the fields of neurobiology and neurochemistry, which continue on an ongoing basis.

The psychoanalytic perspective on personality is complex and conceptually rich. Developed in the nineteenth century from work with patients with symptoms of hysteria, a model involving levels of personality features was proposed. In this theoretical framework, unconscious internal states that underpin observable behavious are posited to exist without the individual having conscious awareness of the process. The impact of early childhood experiences in combination with aggressive and sexual biological instincts is central to this approach. In simplified terms, the primitive unconscious or the id is believed to be the most basic level of psychological or personality functioning. The id is believed to be motivated by the pursuit of achieving pleasure based on immediate gratification. In contrast, the ego and superego are believed to be superimposed on id functioning. Ego functioning occurs to balance the individual's needs with the demands of the external environment, whilst the super-ego is conceptualised as the psychic representation of societal and parental values and assesses an individual's behaviour against these standards. These more advanced and complex levels of functioning are hypothesised to be the moderators of the expression of the behaviour which is driven by the id's unconscious urges and drives. Defence mechanisms such as denial and hysterical paralysis are believed to moderate observable behaviour in response to a perception of threat from an external source (Friedman & Schustack, 2011; Millon & Davis, 2000).

From the perspective of the interpersonal theorists, an individual's interpersonal experiences, and the patterns of interaction which occur on an ongoing basis are the factors which constitute the personality. In contrast cognitive theorists

believe that behaviour can be explained by internal mental structures or schemas which underpin observable behaviour. These internal structures are believed to impact on an individual's functioning in every situation and at every level of cognitive processing (e.g., Barton-Evans, III, 1996; Keisler, 1996; Millon & Davis, 2000). Cervone (2005) asserted that these structures act to give meaning to experience, and can be modified by new learning and experience. The underlying principle of both the interpersonal and cognitive approaches to personality formation and development (i.e., experiential learning), is that it is through these ongoing interactions with other individuals and the environment that the individual personality and its underlying mental structures or schemas develops. Changes in behaviours can and do occur over time through ongoing learning through life experiences and events.

The early researchers in personality psychology sought to use traits found in the general population to explain an individual's behaviour. However, this perspective could not account for the fact that traits and behaviours observed in general population samples were sometimes of little assistance in explaining a particular individual's behaviour in different situational contexts (Cervone, 2005). Following a review of the available literature, Mischel (2004) proposed a perspective where he hypothesised that "individuals are characterized by distinctive and stable patterns of behaviour variability across situations" (p.7) – the "behavioural signature of their personality" (p.8). He concluded that the existing results of personality research indicated that these patterns of variability within an individual's behaviour are what characterises that particular individual across multiple situations.

Cervone (2005) expanded this thesis and concluded that the "inter-individual personality variables that summarize variability in the population are wholly insufficient for modelling intra-individual personality architecture" (p.423). He pointed out that explaining individual behaviour, and accounting for differences in behaviour between individuals, is a necessary development in the field of personality research, and argued for future research to adopt a complementary approach to these two fields of investigation. Cervone (2005) further stated that individuals construct meaning from their experience and the situations they experience, and react emotionally to them – in other words, behaviour results from a dynamic and complex process of interactions between the person and their environment. In turn, these reactions and inferred meaning influence future behaviours. He further argues for the need to utilise both the complex and dynamic cognitive and affective systems to

explain a particular individual's behaviours, and asserts that it may be the combination of these systems that is the "personality" or Mischel's (2004) "behavioural signature", under investigation.

More recently, researchers have developed the belief that it is the cross-situational consistency of individual behaviour that represents the underlying organisation of the system or personality that generates them (Cervone, 2005). Similarly, the Diagnostic and Statistical Manual-IV Text Revision (DSM-IV TR), (APA, 2000) defines personality traits as "enduring patterns of perceiving, relating to, and thinking about the environment and oneself that are exhibited in a wide range of social and personal contexts" (p.686) – giving support to the concept of stable variability across situations appropriate to gender and cultural expectations, as a widely accepted appropriate way to describe an individual's personality.

Whether the emphasis for theoretical developments and research is placed primarily on biological or internal factors, there is general agreement in the field of personality psychology that an individual's personality is a complex and dynamic system, which results from the interactions between biological factors and environmental impacts, which can change and develop as a result of ongoing life experiences.

Personality disorders

Systematic and meaningful links have been found amongst "normal" and "abnormal" personality traits and psychopathology based on DSM-IV TR constructs, and, indeed, many of the theorists in previous times assumed a strong link between personality and psychopathology (Krueger & Tackett, 2003). This psychopathology is often evident in early development or childhood, and those who subsequently develop a personality disorder (PD) have been noted to have shown clinical symptoms, temperamental abnormalities, or unusual traits during childhood. Whilst a PD is rarely formally diagnosed in childhood, the precursors of adolescent or adult behaviour meeting PD criteria can be observed (Paris, 2003).

DSM-IV TR (2000) defines a personality disorder (PD) as "an enduring pattern of inner experience and behaviour that deviates markedly from the expectations of the individual's culture" (p.686). To meet this definition, these deviations in behaviour need to be observable in at least two domains of the

individual's functioning, be pervasive and inflexible, and lead to impaired functioning and/or significant levels of distress in the individual under review. In addition, these difficulties need to become evident by adolescence or early adulthood. To make this diagnosis, the clinician needs to have knowledge of the individual's earlier developmental history and long term functioning patterns to enable them to judge whether or not the individual meets the initial criteria. In addition, the reported difficulties need to have been present for some time and have occurred across multiple situations (i.e., be judged to be enduring patterns of behaviour). Each PD is considered to be a qualitatively distinct clinical syndrome and prevalence rates vary according to the particular PD diagnosis.

The DSM-IV TR (2000) divides PD's into three clusters based on similarity of symptomatology. Cluster A includes paranoid, schizoid, and schizotypal PD's – the "odd and eccentric" cluster. Borderline, narcissistic, histrionic, and antisocial PD's form the Cluster B category – the "dramatic and erratic" cluster, whilst avoidant, dependent, and obsessive-compulsive PD's are categorised into Cluster C (characterised by anxiety and fear). The DSM-IV TR (2000) also includes a category of personality disorder "not otherwise specified" to take account of those whose symptoms do not meet the criteria for a specific disorder. Estimated general population prevalence rates vary within and across the three clusters, with the prevalence of some being as low as below 1% of the general population (schizoid and narcissistic), whilst others (antisocial and borderline) are estimated to have a prevalence rate between 2% and 4%. The prevalence of PD's varies according to the population being investigated, with prevalence rates found to be higher in a clinical population.

In the Australian population context, lifetime prevalence rates for all PD's have been estimated to be approximately 6.5% overall (Jackson & Burgess, 2000). From the results of this study, population prevalence rates in Australia [diagnosed according to International Classification of Diseases -10 (ICD-10) criteria] were estimated to range between 0.6% (histrionic PD) to 3.21% (anakastic PD). In terms of gender prevalence rates overall, some PD's are more frequently diagnosed in females (e.g., borderline, histrionic and dependent PD's), whilst some are more frequently diagnosed in males (e.g., anti-social PD) (APA, 2000), but whether or not these figures reflect actual differences in prevalence rates has yet to be determined.

Lenzenweger (2006) points out that the APA requirement for the problematic behaviour to be enduring to meet the DSM-IV TR definition of a PD was not based on empirical support at first inception. Accordingly, Lenzenweger (2006) devised a longitudinal study to assess the stability (or otherwise) of personality and personality disorder characteristics over time (18 years to date), and to investigate the proposition that problematic behaviour can be shown to be stable over a lengthy duration of time. Participants were primarily university students to avoid biasing the results by utilising a defined clinical population. This study established an overall prevalence rate of 11% for PD features in a non-clinical population. In addition, results showed that there was considerable stability of individual differences in PD features over time, as well as stability of mean levels of PD features in the total sample over the time of the study. However, both Lenzenweger (2006) and DSM-IV TR (2000) note that the intensity and severity of PD characteristics may decline in a particular individual over time to the point where they no longer meet the diagnostic criteria for a PD of any description, regardless of the stability of features in the broader population, and it should be noted that the expression of PD behaviour often changes as those with the disorder age. Researchers have found that about a third of those with a PD diagnosis improve after time (approximately five years), particularly for the Cluster B disorders of antisocial PD and borderline PD (Robins, 1966; Black, Baumgard, & Bell, 1995). However, research into the longer term outlook for symptom remission in other PD's is sparse, and therefore this question remains largely unanswered.

Aetiology of personality disorders

Most of the major theoretical approaches in psychology have developed etiological theories of personality disorders. Cognitive theorists (e.g., Beck, 1990; Beck, Freeman, & Davis, 2004; Young, Klosko, & Weishaar, 2003) have suggested that the way individuals process data is influenced by the interaction between their underlying beliefs or schemas and their genetically determined tendencies. For example, an individual with a temperamentally strong sensitivity to rejection may develop extremely strong and dysfunctional beliefs that such experiences are catastrophic, and also may develop a negative self-image when such experiences occur. Over time, the culmination of these beliefs about rejection and the experiences of rejection that typically occur in childhood and adolescence, may lead to the

formation of dysfunctional beliefs, and result in associated expectations and ways of interpreting experiences becoming fixed and resistant to change. In the personality disorders, these beliefs and expectations are believed to influence the individual's ways of functioning on an ongoing basis, and thus influence their cognitive and affective information processing and their subsequent behaviours (Beck et al., 2004). When this way of processing information is occurring on an ongoing basis throughout all life domains and in all kinds of life situations, then the individual is deemed to be suffering from a personality disorder. This process is believed to differ from the process of schema activation believed to be instrumental in the expression of Axis I disorders such as depression and anxiety, where the schemas are activated only during the experience of the symptoms of the disorder, rather than on a continuous basis. For example, an individual with depression may only experience the belief that they are unable to manage their life without help from others during the period of illness. In contrast, an individual with a defectiveness or inability schema, will experience this belief on an ongoing basis, and thus will not challenge it by attempting to manage their life experiences, relying always upon others for assistance in problem solving or attempting new tasks. In the latter case, and coupled with the behavioural expression of this schema across situations, the individual may meet the criteria for a personality disorder such as dependent PD (Beck et al., 2004; Young et al., 2003).

Psychodynamic approaches to the understanding of PD come from two main fields, namely, object relations and self psychology (Milton & McMahon, 1999). The object relations approach to psychological development proposes that a child's sense of self develops from organisation of their life experiences into "good" (pleasure enhancing) or "bad" (frightening or painful) experiences. Parents and the child themselves may also be viewed from this perspective as a result of development. More realistic views of the self and others which integrate both the "good" and "bad" aspects, are thought to be internalised as a result of "adequate" (Milton et al., p.1) development. From this perspective, personality pathology or disorder develops when the experience of "too many" (Milton et al., p.1) bad experiences does not allow the experience of "good" and "bad" to be integrated. Whilst the approach of self psychology theorists has some commonalities with the object relations approach, more emphasis is placed on the role of trauma experiences than intra-psychic conflict. During early childhood, the child sees the parents as "extensions of themselves" (Milton et al., p.1) and when traumatic events effect this relationship, the view of

union between them is disrupted. As a result, the child is unable to develop a secure sense of self and from that point on, may be highly sensitive to negative experiences in interpersonal relationships and may have difficulty tolerating separation from significant others (Milton et al., 1998).

Whilst there are differences between the models, there is agreement that the interaction between the individual's biologically determined characteristics and their experience of the familial and societal environment impacts on personality formation and thus the development of a PD under adverse conditions.

Clinical Features and Treatment

Most individuals presenting with a PD diagnosis in a clinical situation do not present requesting assistance with the PD symptoms and behaviours. It is most often the impact of the behaviours associated with the PD on their life functioning, or on others, which propels them into treatment (Jackson & Burgess, 2000). Difficulties in the realm of interpersonal functioning across situations appear to be common as well as other problems such as depression and anxiety. Anxiety and mood disorders are often diagnosed in individuals with a PD (Lenzenweger, Johnson, & Willett, 2004; Lewin, Slade, Andrews, Carr, & Hornabrook, 2005; Zimmerman & Mattia, 1999), and the presence of a PD may impact negatively on the treatment of these disorders by extending treatment time, or by rendering the treatment less successful (Arntz, 1999; Dreessen, Arntz, Luttles, & Sallaerts, 1994). In addition, those with a PD often have difficulty sustaining the therapeutic contract and terminate therapy prematurely. The prevalence of other psychological disorders is often higher amongst individuals who also meet the criteria for a PD diagnosis. For example, in a study of over one thousand university undergraduate students in the USA, Lenzenweger, Loranger, Korfine, and Neff (1997) found that individuals who met the diagnostic criteria for disorders such as bipolar affective disorder, major depressive episode, or social phobia were more likely to also meet the criteria for a diagnosis of a PD. Comparable findings were obtained in a national population survey in Australia (Australian National Survey of Mental Health and Wellbeing), carried out in 1997 (Jackson et al., 2000), where it was found that those who were assessed as meeting the criteria for any PD diagnosis were also more likely to have an affective disorder, an anxiety disorder, a substance use disorder or physical health problems, thus increasing the burden of disease or disability level on the individual with the disorder and their family. In

addition, these individuals were more likely to be unmarried, younger, have poor adaptive functioning and meet the diagnostic criteria for other disorders. Jackson et al.'s (2000) study also found that whilst there were some differences in prevalence rates according to gender at the sample level, these differences were not present at the population level. The authors also suggested that gender differences in PD rates obtained in previous studies are likely to have been influenced by the nature of the populations being studied, or the settings in which the research was conducted, rather than being a true reflection of population prevalence of PD. Given the findings of previous studies demonstrating high co-morbidity rates, it is not surprising that individuals with a PD diagnosis are high users of mental health services (Loffler-Stastka, Ponocny-Seliger, Fischer-Kern, & Leithner, 2005).

Treatment studies of PD have been conducted from the standpoints of all the major theoretical models. Some have compared the efficacy of different types of treatment delivered in multiple settings, whilst others have utilised one type of treatment and one type of setting in the research. Results have been somewhat varied, but most studies have demonstrated that some improvement in the behaviours associated with the particular PD being treated have occurred throughout the time of the treatment, regardless of the theoretical orientation of the treatment being offered.

For example, in a trial of two different types of short term psychodynamic psychotherapy for individuals with a PD diagnosis (brief adaptive psychotherapy and short-term dynamic psychotherapy), Winston et al. (1994) demonstrated significant improvement in presenting symptoms in those participating in the treatment groups, compared to symptoms within the wait-list control group. Interestingly, there was no difference between the results in either of the treatment groups, leading the authors to conclude that both types of therapy were effective. Participants in this study were drawn from a clinical population, with diagnoses across all of the DSM-III R Axis II PD clusters, as well as those with Axis I disorders. A Cluster C PD diagnosis was the most frequent of the PD diagnoses amongst the participants.

Kisely (1999) noted that there has been a long tradition of utilising therapeutic communities in the treatment of individuals with severe PD, but points out that this type of treatment approach is expensive and that data supporting its use is sparse. He further noted at the time of writing that much of the literature on treatment comprised qualitative or quantitative studies, with a lack of randomised controlled trials or

follow up data. He also briefly reviewed Dialectical Behaviour Therapy (DBT) (Linehan, 1993) and concluded that although this was a promising intervention, none of the interventions for severe personality disorders were entirely satisfactory due to the lack of a sufficiently rigorous research base. In a systematic review, Perry, Banon, and Ianni (1999) expanded Kisely's (1999) review and found fifteen studies which examined the effectiveness of psychotherapy for PD's. These studies reported pre- and post-intervention and follow-up data and examined a number of treatment modalities and settings. Perry et al. (1999) reported that four of the 15 studies focused primarily on BPD, one included individuals with BPD or schizotypal PD, two focused on avoidant and antisocial PD sufferers, and the remaining eight on individuals with mixed types of PD from the three DSM-III R clusters. In addition to the PD diagnosis, other prevalent diagnoses amongst some of the study participants were mood and adjustment disorders, anxiety disorders, substance abuse, somatoform disorder, eating disorder, and other disorders. Types of therapies studied included dynamic psychotherapy, cognitive behaviour therapy, supportive psychotherapy, and interpersonal group therapy. Length of treatments provided in the studies varied from once a week therapy sessions for 40 weeks to twice weekly sessions for one year, with a median of 278 weeks. Some of the studies reviewed were randomised controlled trials with a waiting-list or non-specific treatment condition some compared two types of treatment, whilst others reported on naturalistic observation of treatment groups. Outcome measures included self report measures as well as observer ratings. Dropout rates varied across the studies. The reviewers concluded that all fifteen studies demonstrated improvement in the symptoms of PD's following treatment to the point where some of the participants no longer met the diagnostic criteria, and that active psychotherapy (regardless of type) was more effective than no therapy at all, despite the heterogeneity of treatment modality, treatment groups, and length of treatment provided. They further noted that across all fifteen studies, the symptoms of those with PD improved less than the improvement noted in the symptoms of those who did not have a PD diagnosis.

Tyrer and Roy (2001) continued to expand on these findings. In a brief review of the results of studies of dynamic psychotherapy, cognitive analytical therapy, cognitive therapy, dialectical behaviour therapy, therapeutic community treatments, and pharmacological treatments, Tyrer and Roy (2001) concluded that some PD's

(particularly BPD) respond well to psycho-dynamically oriented treatment, especially when these are supported by group or therapeutic settings. In addition, they noted that medication (SSRI's and Lithium Carbonate) can be helpful in treatment.

Two large studies of day patient and outpatient group psychotherapy for individuals with a PD (Katerud et al., 2003; Wilberg et al., 2003) provide further support for the success of treatment of individuals with PD across varied settings. The initial study (Katerud et al., 2003) occurred across multiple day patient treatment settings in Norway and sought to provide information regarding the most effective intensity of day treatment programmes and their relative efficacy for different types of PD symptoms. Over one thousand patients participated in the treatment component of these research studies, whilst 187 participated in the outpatient group psychotherapy programme. Outcomes for both types of setting were assessed from scores on a number of standardised questionnaires and included a global assessment of each participant's functioning, parasuicidal behaviour, and work functioning. Day treatment settings included varied unit size (8-24 patients), and treatment dosages (8-16.5 hours per week). Treatment duration was less variable at eighteen weeks with only one unit exceeding this figure (mean treatment time of 41 weeks). Most of the participants were females and the most common diagnoses were reported to be avoidant, borderline, paranoid, and PD not otherwise specified. The same assessment procedures were utilised in each setting. Although not manualised, the treatments were based in a group setting, and included a mixture of psychodynamic and cognitive behavioural treatments. Most of the staff involved were formally trained in psychodynamic therapy and participated in an ongoing professional development programme throughout the course of the study. Treatment goals were to achieve reductions in symptom distress, self-destructive behaviours, interpersonal problems and increases in psychosocial functioning and quality of life. Results showed that patients who completed the day treatment programme achieved improvements in scores on the standardised measures, including improvements in functioning, that were maintained at one year follow up. Treatment dosage was not positively correlated with change amongst those with PD diagnoses, and little evidence for high treatment intensity was found as results suggested that a treatment time of approximately 10 hours a week facilitated improvements. Katerud et al. (2003) noted

the lack of randomisation to treatment settings as a limitation of their results, but rationalised that it is unlikely that the improvements noted occurred spontaneously.

The outpatient psychotherapy group average time of treatment was 24 months. Treatment was provided in four of the multiple centres in the units of the Norwegian Network of Psychotherapeutic Day Hospitals. These units offered an intensive 18 week group day treatment programme, utilising both psychodynamic and cognitive behavioural therapy as a follow up to the intensive day hospital treatment previously described. Group treatment was offered for 1.5 hours a week on a co-therapist basis, utilising therapists from the multi-disciplinary teams available. Most therapists also provided services in the day programme treatment. The main finding from the investigation of group psychotherapy programmes was that these assisted the participants in maintaining the gains they had made during the day programme treatment component, but that any further improvements from this initial level were modest (Wilberg et al., 2003). Both studies suggest that the level of improvement in participants was related to the number of PD criteria present, that is, the more criteria, the less significant the level of improvements. However, the fact that all participants demonstrated initial improvement following the day treatment programme and that these improvement were maintained at follow up in outpatient group treatment programmes is significant in terms of reductions in level of personal distress and improvements in functioning.

In a more recent project, Verheul and Herbrink (2007) conducted a systematic review of the evidence for efficacy of a number of treatment modalities for individuals with PD's. They reviewed four different formats and settings for the delivery of psychotherapy utilising studies that included individuals with a wide range of DSM-IV TR diagnoses. Treatment settings reviewed were day hospital psychotherapy, in-patient psychotherapy, group psychotherapy, and out-patient individual psychotherapy. Although the studies included participants from all PD diagnoses, the most prevalent PD diagnoses were dependent, avoidant, borderline, and not otherwise specified PD. Least prevalent diagnoses were antisocial, narcissistic, histrionic, and schizoid whilst obsessive-compulsive, schizotypal, and paranoid PD diagnosis prevalence fell in between. Verheul and Herbrink concluded that cognitive behavioural and psycho-dynamically oriented outpatient individual psychotherapy, were effective in improving psychosocial functioning and in reducing personality

pathology and symptomatology in patients with PD diagnoses from any of the three DSM-IV TR (2000) clusters, including PD not otherwise specified. These improvements were also found in psycho-dynamically oriented treatment programmes in a day hospital setting, in both short and longer term in-patient psychotherapy programmes, and in long-term group outpatient psychotherapy groups. It is also important to note that Verheul and Herbrink concluded that, from their review, the theoretical orientation of the treatment provided appeared to have had less impact on the efficacy of the treatment than previously believed. However, they also pointed out that manualised treatment programmes often contain elements of multiple therapeutic perspectives and orientations, usually including both cognitive behavioural techniques and supportive psychodynamic elements such as attention to the therapeutic relationship. Clinical recommendations provided included a recommendation that outpatient individual psychotherapy is "the treatment of first choice for patients with various Cluster A, B, C and not otherwise specified" (p 27) PD's. A further recommendation was that therapists adopt the consistent application of a coherent theoretical framework during the therapeutic process. An additional suggestion was that more emphasis should be placed on the more supportive aspects of therapy such as validation and empathy, when this is appropriate to the stage of therapy.

Leichsenring and Leibing (2003) reviewed a number of PD treatment studies which had utilised strategies from both the psychodynamic and cognitive behavioural orientations. No study utilised psychoanalysis in the treatment, and the psychodynamic treatments offered were time limited. The meta-analysis examined the results from 14 studies of psychodynamically oriented therapies and 11 studies which examined the efficacy of cognitive behavioural therapy, in terms of evidence for improvement in symptoms, core psychopathology and social functioning. Leichsenring and Leibing were interested in determining whether there was a correlation between outcome and length of treatment and whether or not either approach was more effective with particular types of PD than the other. Studies included in their analysis met a number of selection criteria, such as including explicit descriptions of the psychotherapeutic interventions utilised, used standardised diagnostic methods, assessed outcomes with reliable and valid instruments, and finally, reported the data in a form that allowed for within-group effect sizes or assessment of recovery rates to be calculated.Treatment settings included hospital and

community/outpatient settings, with some studies utilising both settings during the intervention process. Treatment was delivered by therapists trained and experienced in the particular intervention being utilised, with some treatments being based on manualised protocols and some being delivered within a broader framework. All therapists received supervision throughout the length of the intervention periods. The selected studies included a follow up assessment, the timing of which varied from five months to up to four years following intervention. Participants with a variety of PD diagnoses were included; however the majority of participants were reported as being individuals with BPD. Leichsenring and Leibing reported large overall effect sizes for both psychodynamic and cognitive behavioural approaches, with the effect sizes for psychodynamic therapy indicating long term rather than short term change had occurred. They concluded that the studies examined showed that both approaches were effective treatments for PD in terms of decreases in symptomatology and criteria for PD, but cautioned that further research would be necessary to further distinguish which type of therapeutic approach works best for which type of PD.

Livesley (2005) proposed a systematic treatment framework for interventions designed to treat PD's. He described five phases of treatment: "safety, containment, regulation and control, exploration and change, and integration and synthesis" (p.442) through which intervention for individuals with BPD should progress as symptoms improve. In the beginning phases, the safety of the individual and the containment of impulsivity and self damaging behaviours take precedence, whilst improving self esteem and identity are targets for the later stages. Livesley (2005) proposed that structured behavioural and cognitive interventions in conjunction with medication were most appropriate for the early stages of therapy, while maladaptive interpersonal patterns, traits, and cognitions are more appropriately targeted with psychotherapeutic techniques later in the process, to assist in the development of a more integrated and adaptive sense of self or identity. He argues for a comprehensive treatment programme consisting of a combination of these different interventions to best treat the many facets of a PD, since most people diagnosed with a PD exhibit multiple problems across multiple situations. He emphasises that these diverse interventions need to be delivered in a co-ordinated and integrated way and delivered in stages to maximise the chances of successful change occurring. Core features of psychopathology in PD involve chronic interpersonal problems, a poorly developed

sense of self or identity. Livesley (2005) argues that these features underlie most of the difficulties that characterise treatment for PD, such as developing a collaborative relationship, dealing with issues of trust, and low levels of motivation for change. He proposes that treatment needs to focus on these common features, based on a supportive therapeutic relationship that serves as the vehicle to deliver appropriate interventions. Once the change phase of treatment has been entered, Livesley (2005) argues that the core intervention strategy is most appropriately targeted towards schema identification and recognition.The individual with the PD is firstly helped to understand the impact of these on their lives, helped to recognise the signs of the pattern and what ways it manifests and then assisted to develop ways of mediating the impact of these schemas, initially on the therapeutic relationship and then extending this understanding out to interactions with others. The integration and synthesis stage follows where the goal is to help develop a more coherent sense of self, enhancing autonomy and goal directed activities, and the development of structure and organisation in the experience of the self (Livesley, 2005).

Oldham (2007) reiterates the point that numerous challenges remain in determining effective treatments for PD, although he also notes that the evidence that does exist is generally positive, in that effective treatment has been demonstrated, albeit in a relatively small number of controlled studies. Overall, the results of studies reported so far suggest that the treatment of individuals with PD's can be seen as possible, even desirable, rather than impossible and fruitless, and that services and clinicians can draw from a number of sources on which to base their treatment.

In summary, there exists a wealth of conceptually rich theoretical discussion relating to personality disorders and their treatment spanning many years of research activity. The intervention studies have been conducted in a number of different treatment settings and locations throughout the world, and reports of the outcomes from the many different approaches investigated have shown that treatment can be effective in reducing distress and symptom intensity. However, despite this, many challenges remain for therapists and researchers in this complex area.

The following chapter provides a synopsis of the core components of borderline personality disorder (BPD) in terms of the etiology, epidemiology, psychopathology, and heterogeneity of this complex psychological construct. In

addition, an introduction to the research relating to the concept of sub-types of BPD is provided.

Chapter Two

Core features of Borderline Personality Disorder (BPD)

Epidemiology

Introduced for the first time as a way of describing unusually difficult patients, the term "borderline" referred to individual psychopathology existing on the border between the psychoanalytic concepts of psychosis and neurosis (Paris, 2007). Despite its inclusion as a diagnosis in DSM-III in 1980, controversy around the validity of the construct and the diagnosis continued, related to the question of whether or not BPD was a variant of other disorders or was best described as a specific disorder on Axis II, or indeed more appropriately included as an Axis I disorder (Paris, 2007). The debates are yet to be definitively resolved, however, the discussions have prompted some researchers to suggest that BPD could more accurately be described in terms of scores on trait dimensions (Costa & Widiger, 2001), although this suggestion has not been implemented to date. Research into the validity of BPD as a diagnostic category is continuing as researchers and clinicians seek to expand their understanding in this area.

Estimated population prevalence rates vary across time and researchers, however, it has been reported that approximately two percent of the population of Australia will meet some or most of the diagnostic criteria for BPD at some stage during their life (Krawitz & Watson, 2000). Individuals with BPD are high users of mental health services, both public and private, and the course of this disorder tends to be long term, with approximately 50% of sufferers continuing to meet the criteria for BPD diagnosis up to 7 years after treatment (Robins, 2002). Indeed, up until recent times, there was a belief amongst clinicians that those with this disorder were unable to be treated, or at the very least, were extremely difficult to treat successfully (Beatson et al., 2010; Krawitz & Watson, 2000; Paris, 2008).

The majority of those diagnosed with BPD are female (75%), and many report a previous history of trauma or abuse during childhood (70%). In addition, many (46%) have been victims of adult violence (e.g., rape or domestic violence). It is believed that males are under-diagnosed with BPD and are more likely to be found (undiagnosed) in substance use and forensic treatment settings (Krawitz & Watson, 2000).

The underlying causes of BPD are yet to be determined. Cognitive theorists (e.g., Beck, 1990; Young, 1990) have suggested that particular cognitive schemas are associated with BPD behaviours in a perpetuating negative cycle. Others (e.g., Linehan, 1993) suggest that BPD results from a combination of individual biological factors interacting with negative environmental factors. However, as is the case with other psychological and psychiatric disorders, it is most likely that the aetiology of BPD resides within a complex multi-factorial model that involves a combination of individual biological predisposing factors, and environmental characteristics (Paris, 2008; Krawitz & Watson, 2000).

Epidemiological studies have estimated the general population prevalence of BPD as being between 1% and 2% (Skodol et al., 2002; Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004). However, in clinical populations individuals with a BPD diagnosis are believed to comprise up to 15-20% of all inpatient populations, and up to 10% of all outpatient populations (Skodol et al., 1998; Lieb et al., 2004). Moreover, prevalence rates of BPD have been identified in a community sample of children and adolescents as being 11% in children between the ages of 9 and 19 years, and 7.8% in adolescents at age 11-21 years. Findings from studies across USA and Europe estimate that about 70% of individuals diagnosed with BPD are women (Lieb et al., 2004).

The Australian prevalence rate has been estimated at 2% (Jackson et al., 2000) within the general population. A total of 911 people with a PD (primarily BPD) were treated by public mental health services in Victoria over a one year period in the early 1990's (Morton & Buckingham, 1994) and there is no real reason to suppose that this rate of service usage has declined since then. Figures for episodes of treatment in the private system are not available, but it is likely that there are many individuals with BPD being treated for anxiety, depression, or anger management outside of public facilities.

DSM-IV TR (2000) reports BPD as being diagnosed predominantly (about 75%) in women. However, Skodol and Bender (2003) suggest that this has occurred as a result of sampling bias. For example, one of the reasons postulated in support of a bias is that most prevalence studies have utlised clinical populations and women tend to present for psychological treatment more frequently than men and thus may be over-represented in clinical samples. Skodol and Bender point to the lack of population based epidemiological studies to support the notion that BPD is more common in women, and conclude that if such studies show that the prevalence of BPD differs by gender, then "biological and socio-cultural differences between women and men offer potentially illuminating hypotheses as to the causes of the difference" (p.358). However, this research has yet to be conducted and thus the true population prevalence of BPD remains a matter for speculation.

Aetiology of BPD

Early theorists investigating the aetiology of BPD developed models from object relations theory, utilising the results of projective testing. From this perspective, it was thought that individuals with BPD function at the pre-Oedipal child level and hence utilise splitting as a defence mechanism. However, this notion was not supported by research, as the attributions of individuals with BPD related to others' motives appeared to be malevolent, and of a level of sophistication not available to a young child (Beck et al., 2004).

Impairments in underlying attachment organisation have also been suggested in relation to development of BPD (Levy, Meehan, Weber, Reynoso, & Clarkin, 2005). In a study of the self-reported retrospective accounts of attachment of 99 outpatients with BPD using a number of attachment measures, Levy et al. found that three types of attachment patterns could be identified and that these related to specific BPD behaviours. These were reported as "an avoidant attachment pattern, a preoccupied attachment pattern, and a fearfully preoccupied attachment pattern" (p. 64). The "preoccupied" type related to higher levels of concern and behavioural reactions to real or imagined abandonments. Results for the "fearfully preoccupied" type displayed a trend towards higher ratings of identity disturbance, and the "avoidant" type had higher ratings of inappropriate anger. All of these characteristics are included in the criteria for diagnosing BPD.

Others have also found that attachment disruption or disorganisation is related to the BPD construct (Baird, Veague, & Rabbitt, 2005; Fonagy et al., 1996; Patrick, Hobson, Castle, Howard, & Maughan, 1994; Meyer, Ajchenbrenner, & Bowles, 2005). Problematic attachment processes can occur in situations of abusive behaviour towards the child, and this notion led to the development of a line of research into the relationship between these types of experiences and the development of BPD – to the point where the substitution of the diagnosis of complex post traumatic stress disorder has been suggested as a replacement for the BPD construct (e.g., Herman & van der Kolk, 1987). However, Golier et al. (2003) found that although a history of childhood trauma was indeed associated with the diagnosis of borderline personality disorder, this relationship was not exclusive to BPD. They also found that a history of childhood trauma was associated with a diagnosis of paranoid personality disorder, and therefore argued against the re-categorisation of BPD as a trauma spectrum disorder or a PTSD variant. Whilst the argument for viewing BPD as a trauma response does not seem to be particularly useful, it seems that disrupted attachment is relevant to the development of BPD, although the mechanisms of this relationship are yet to be fully identified.

More recently, a number of other factors have been identified to be correlated with the development of BPD, including childhood abuse, particularly childhood sexual abuse (CSA) (Bradley, Jenei, & Westen, 2005). However, reported rates of sexual abuse vary across studies, and as a result, it has been suggested that it is the characteristics of the abuse and the context in which it occurs that are most important in the development of BPD. It seems that age of onset, severity, and chronicity of childhood sexual abuse, and its co-occurrence with other forms of abuse, are all important aspects of the experience and influential on the outcome for the recipient of the abuse (Bandelow, et al., 2005; McLean & Gallop, 2003; Silk, Lee, Hill, & Lohr, 1995; Zanarini, et al., 2002). However, as Bradley et al. (2005) point out, most research into the impact of traumatic events on the process of development of a PD have not fully examined the characteristics of the family environment and it is likely that families where abuse occurs contain more than one risk factor for the children within it. For example, parental dysfunction or neglect of multiple types is more likely to occur when family functioning is unpredictable or unstable on a frequent basis. The impact of these factors on the development of the child and their relationship to adult psychopathology of all kinds are yet to be more thoroughly

investigated and determined. However, it is important to note that not all individuals who have experienced childhood abuse subsequently develop BPD, and therefore, other factors must be involved in the development of the disorder.

A second factor to be considered is the contribution of the individual's biological and genetic heritage in the development of BPD. Concordance studies have found BPD rates of 35% in monozygotic twin pairs and 7% in dizygotic twin pairs, providing support for a significant genetic effect in the development of the disorder (Lieb et al., 2004). In addition, individuals with BPD are "five times more likely to have a first-degree relative with BPD" (p.10) than would be expected to occur by chance alone (Zittel Conklin & Westen, 1998). Although receiving some attention from researchers, the impact of individual and family predispositions has yet to be fully identified. Some of the characteristics of BPD are reported to be related to heritable traits of impulsivity, neuroticism, impulsive aggression, and affective lability (Bradley et al., 2005). However, the impact of these characteristics on family functioning and development of psychological disorders, if they are also present in the parents, has yet to be determined.

Neurophysiological investigations have also received attention from researchers interested in the causes of BPD. These types of investigations have shown that a reduced level of serotonin activity is characteristic of individuals meeting the criteria for a BPD diagnosis (Coccaro, 1998a; Woo-Ming & Siever, 1998,). This reduced level of serotonin activity has been linked with low mood, anger and irritability, and suicide (Coccaro, 1998a; Siever, 1997; Silk, 1997; Soloff, 1997), all key characteristics of the BPD presentation. Dysfunction in the orbito-frontal cortex region of the brain has also been found to contribute to impulsivity, again one of the characteristic behaviours of BPD (Berline, Rools, & Iverson, 2005), although this dysfunction has not been shown to be linked to other characteristics of BPD behaviours. Lieb et al. (2004) highlight other neurobiological findings. For example, neuro-imaging studies of individuals with BPD have shown dysfunction in the network of brain regions that may mediate aspects of the disorder. These dysfunctions have been noted to occur in the fronto-limbic network, where an altered baseline metabolic rate has been observed. In addition, reduced volume in some parts of the brain has been identified, including the hippocampal and amygdala areas. Lieb et al. (2004) suggest that, in combination, these neuro-imaging findings suggest dual brain pathology in BPD (located in the limbic and prefrontal systems), but also note that it

is not clear whether these dysfunctions are pre-existing and precursors to the disorder, or arise as a consequence of the disorder, or are a combination of biological factors and adverse childhood events.

Cognitive theorists suggest that BPD behaviours result from particular underlying schemas and core beliefs about the person and the world (e.g., Beck et al., 2004; Young et al., 2003). These beliefs are hypothesised to develop over time from the interaction patterns and experiences that the individual is exposed to, and are characterised by specific themes of rejection, loneliness and abandonment by others, unlovability, and a view of the self as defective or bad. These themes contribute to the difficulties with trust in interpersonal relationships experienced by the individual with BPD, and to the intense emotional reactions experienced when these beliefs are activated by behaviour from another which is perceived as rejecting in some way. Beck et al. (2004) suggest that the three core beliefs held by the individual with BPD are that "The world is dangerous and malevolent"; "I am powerless and vulnerable"; and "I am inherently unacceptable" (p.198). It is these beliefs that are considered to underlie the difficulties with trust in interpersonal relationships and high levels of sensitivity to perceived or actual rejection that are characteristic of those with BPD. Individuals act in a manner consistent with their beliefs (e.g., becoming angry or demanding when there is a perception of imminent rejection or abandonment), which leads to difficulties in the interpersonal sphere of functioning and relationships in all areas of life, and thus these beliefs are continually confirmed.

Young et al.'s (2003) model is similar to Beck et al.'s (2004) perspective. In this approach to BPD, schemas are thought to be the driving forces behind ways or modes of functioning related to the contents of the schemas. Young has used the phrase "Early Maladaptive Schemas (EMS)" (Young et al., 2003, p.7) to describe the organised patterns of thinking, feeling, behaviours, and perceptions related to aspects of the environment or the self that comprise these schemas. For example, an EMS may consist of beliefs that others will punish or abandon the individual, and that they will always be alone and that nobody will ever care for them. When activated, this EMS will lead the individual to behave in ways that represent a desperate search for nurturance and intimacy, but despite this desperate wish for emotional comfort, the individual will experience an underlying fear of the vulnerability associated with receiving this nurturance and intimacy (Beck et al., 2004; Young et al., 2003). This particular way of functioning in a situation is deemed to be the "abandoned child"

mode. Other modes include the "angry/impulsive child", the "detached protector" mode, and the "punitive parent" mode (Young et al., 2003).

Young and colleagues (2003) proposed that these EMS could be further organised and categorised into associated schema domains – disconnection and rejection; impaired autonomy and performance; impaired limits; other-directedness; and overvigilance and inhibition. Each is considered to be a separate but related domain that contributes to an individual's behaviour and functioning when activated and comprises a number of different schemas (see Table 1). The domain of disconnection and rejection refers to the expectation that needs for security, safety, stability, nurturance, empathy, acceptance, and respect will not be met as a consequence of cold, unpredictable or rejecting early relationships with significant others. The domain of impaired autonomy and performance relates to expectations that separation and independent functioning and successful performance are unachievable. The impaired limits domain is seen as a deficiency in internal limits or goal-orientation and can lead to difficulty in respecting others' rights, setting and meeting realistic personal goals, and co-operating with others. Other-directedness refers to an excessive focus on others' goals or desires at the expense of own needs in order to avoid retaliation or gain love and approval, and can involve the suppression of anger and one's own desires. Overvigilance and inhibition involves emphasis on suppression of spontaneous impulses, choices, and feelings or on meeting rigid and internalised rules and expectations about performance and ethical behaviour, at the expense of relaxation, relationships, or health.

There is some limited empirical support for the notion of identifiable clusters of beliefs in relation to individuals with a BPD diagnosis (Arntz et al., 1999; Butler, Brown, Beck, & Grisham, 2002). These hypothesised belief clusters are believed to be developed from, and continually reinforced by, environmental events and life experiences, partly as a consequence of the behaviours exhibited by the individual with the BPD. However, the robustness of these findings has yet to be determined. Table 1 presents Young, Klosko, and Weishaar's (2003) conceptualisation of schemas.

Table 1

Early Maladaptive schemas and associated schema domains

Domain	Associated Schema
Disconnection & Rejection	Abandonment/Instability
	Mistrust/Abuse
	Emotional Deprivation
	Defectiveness/Shame
	Social Isolation/Alienation
Impaired Autonomy & Performance	Dependence/Incompetence
	Vulnerability to Harm or \Illness
	Enmeshment/Undeveloped Self
	Failure
Impaired Limits	Entitlement/Grandiosity
	Insufficient Self Control/Self-Discipline
Other Directedness	Subjugation
	Self Sacrifice
	Approval Seeking/Recognition Seeking
Overvigilance & Inhibition	Negativity/Pessimism
	Emotional Inhibition
	Unrelenting Standards/Hypercriticalness
	Punitiveness

Adapted from: "Schema Therapy: A practitioner's guide", by Young, J.E., Klosko, J.S., & Weishaar, M.E., (2003).

Linehan (1993) has proposed a multi-factorial model of BPD that takes into account both biological and environmental factors in the development of BPD. The major premise is that BPD results primarily from dysfunction in the emotion regulation system of the individual, in combination with what Linehan (1993) terms an "invalidating environment". This type of environment is one that responds negatively to the child's expression of appropriate emotion, describing the reaction as inappropriate, or alternatively, blames the child's distress on their own shortcomings. Both of these actions are seen as ways of "invalidating" the child's experience. In extreme forms an invalidating environment may include sexual, physical, or psychological abuse.

Linehan (1993) further suggests that the dysfunction in the ability to self-regulate emotions has biological antecedents, and leads to a high level of emotional vulnerability and lowered levels of ability to control and regulate all emotions. This difficulty with emotion regulation and control further contributes to the impact of adverse environmental events (such as childhood abuse) or the "invalidating environment", on the individual and thus influences the later development of BPD in vulnerable individuals. Individuals with BPD are often unable to tolerate emotional distress and at times, do not recognise when their distress is appropriate for the situation and context due to previous invalidation of their emotions. Once distressed, they are then unable to reduce their level of emotional arousal, leading to further distress. From the perspective of this model, individuals perpetuate the previously negative environment as adults by invalidating their emotional responses, seeking others' opinion regarding accurate perceptions of reality, and by setting unrealistic goals for themselves, which then lead to failure experiences, thus further invalidating them as individuals.

As Linehan (1993) observed, this theory takes into account psychological and biological features in an attempt to make sense of this disorder and the expression of its symptoms. Whilst this theory makes intuitive sense, it has yet to be thoroughly tested empirically, although the neuroimaging and concordance study findings previously described add weight to this multi-factorial approach towards the aetiology of BPD.

Psychopathology

The term "borderline personality disorder" was coined from the experiences of psychoanalytic therapists who had identified a number of patients whose response to treatment differed from those categorised as "psychotic" or "neurotic" (Krawitz & Watson, 2000; Linehan, 1993). These analysts formed the belief that those patients were on the border between neurosis and psychosis, or on the "borderline" between the two presentations, as their symptoms did not fall neatly into either of these standard categories. Initially utilised to describe a particular kind of personality organisation (Skodol et al., 2002), this construct comprised all of the seriously disturbed personality characteristics that had been identified from clinical practice at that time. Three types of intra-psychic characteristics were believed to define this construct. These were identity diffusion; primitive defence mechanisms such as denial, projective identification, and splitting; and reality testing that was vulnerable to failure and alterations (Skodol et al., 2002). The DSM criteria developed from a review of this construct (Gunderson & Sinder, 1975), and from results of trials of a psychometric measure that identified seven characteristics that differentiated the borderline group from other groups. The disorder was formally incorporated into DSM-III in 1980 (Linehan, 1993).

BPD is a complex syndrome with central features of disturbances in impulse control, mood regulation, and interpersonal functioning (see Table 2 for a list of DSM-IV TR criteria). Typical symptoms of disturbance include rapid mood changes that last for a relatively short time in reaction to environmental events. These changes in mood are often accompanied by impulsive behaviour, and it is in this context that anger outbursts directed toward self or others, or self-harm behaviours occur (Paris 2005). Difficulties with affect regulation are seen as a core component of BPD (Zittel Conklin, Bradley, & Westen, 2006). This term refers to difficulty in controlling and containing emotional expression so that emotions change rapidly, overwhelm logical thinking, and are perceived as being out of the individual's control for lengthy periods of time. In addition, it is difficult for the emotionally dysregulated (or affectively dysregulated) individual to return to their usual level of affective/emotional functioning. The terms "affect dysregulation" and "emotional dysregulation" are often used interchangeably (Zittel Conklin et al., 2006) and refer to this emotional control deficiency. It has been suggested that this affective dysregulation relates to a high

level of sensitivity to emotional stimuli, intense responses to these stimuli, and difficulty in controlling the affective response to enable a return to pre-arousal affective functioning (Linehan, 1993; Yen, Zlotnick, & Costello, 2002). The experience of negative affect such as anxiety, dysphoria, and anger are also seen as central to the expression of BPD (e.g., Bradley, Zittel Conklin, & Westen, 2005; Skodol et al., 2002; Trull, Widiger, Lynam, & Costa, 2003). It is during these times of high levels of emotional arousal that BPD patients may resort to self-harm and suicidal behaviours as a way of coping with the extreme emotions, or as a way of distracting themselves from the emotional pain by the use of physical pain (Linehan, 1993; Zittel Conklin et al., 2006). These types of behaviours are common amongst BPD patients and are often a cause of high levels of anxiety and concern amongst their therapists (Linehan, 1993; Reynolds, Lindenboim, Comtois, Murray, & Linehan, 2006).

Consistent with longstanding doctrine (see Kreitman, 1977), Linehan (1993) makes a distinction between suicidal and parasuicidal behaviours. Suicidal behaviours are those that convince the therapist that the patient truly wishes to die and is at high risk for action to accomplish this aim. These behaviours can include past suicide attempts, detailed plans and preparations, and having access to lethal means of self-harm. In contrast, parasuicidal behaviours are seen as those behaviours which are self-harm behaviours (e.g., body cutting or burning) but which occur in the absence of a wish to die. These behaviours may function to distract the BPD individual from their emotional pain, to express anger towards self or others, or simply to allow the experience of physical pain and suffering to reduce dissociation (Linehan, 1993).

The reasons underlying suicidal and parasuicidal behaviours have been shown to differ in significant ways (Brown, Comtois, & Linehan, 2002). In a study of 75 chronically suicidal BPD women, it was found that suicide attempts were more likely to occur when the suicidal behaviour was perceived as an attempt to improve the lives of others (i.e., relieve them of the burden of caring for the BPD individual). In contrast, parasuicidal behaviours were more likely to occur when the individual wished to express anger, punish themselves, distract themselves, or to reduce dissociative experiences and return to "normal" experiences of emotions.

The possibility of successful suicide is very real amongst this population of individuals, although reported completion rates vary between studies. For example, an overall suicide rate of 10% in those engaged in treatment has been reported in

several studies (Beatson et al., 2010; Krawitz & Watson, 2000), whilst the rate rises to almost 50% in those with the more severe forms of the disorder (meeting eight of eight of the DSM-III criteria). In its most severe form, with high levels of co-morbidity (particularly substance abuse), the suicide rate is estimated to be even higher. Most successful suicides occur in the first five years of treatment (Krawitz & Watson, 2000), and it has been suggested that there is no other psychiatric diagnosis where this high rate of mortality is likely to occur, although the overall mortality rate for BPD is similar to the mortality rate reported for individuals suffering from bipolar disorder or schizophrenia.

Substance use and misuse and disruptions to eating patterns may also function as ways of regulating high levels of unpleasant emotional arousal (Zittel Conklin et al., 2006). The expression of these symptoms mean that people with BPD often lead lives full of ongoing difficulties and high levels of emotional pain. These ongoing difficulties present challenges for sufferers, their friends and families, and treating professionals (Linehan, 1993; Robins, 2002) and include intense negative emotional states that are difficult to control and respond to appropriately. As previously discussed, these intense emotions are often associated with suicide and other self-harm threats and attempts, and anger outbursts, particularly towards those involved in their care (Linehan, 1993; Robins, 2002). Brodsky and Stanley, (2002) estimated that between three and nine percent of sufferers with BPD will successfully complete suicide. Not surprisingly, one of the consequences of these at-risk behaviours is that families, friends, and clinicians often experience feelings of frustration, anxiety, and stress.

Those with BPD have also been found to have unstable and low levels of self-esteem (Zeigler-Hill & Abraham, 2006), in addition to their high levels of affective instability in response to stress in interpersonal relationships. Using an experience-sampling design, these authors studied 156 undergraduates in introductory psychology courses, measuring both BPD features; self esteem level and stability, and affect level and stability in the context of experiences of perceived rejection and daily interpersonal stress. Results indicated that individuals with BPD features possess low levels of positive affect which is generally unstable, and that those with chronically high levels of unstable negative affect endorsed more items reflecting BPD pathology than did those with lower levels of negative affect, whether stable or unstable. In addition, those participants with higher levels of BPD pathology were more likely to

have unstable self-esteem ratings, and their self-esteem was more likely to be lower overall. Where those with low self-esteem had lower levels of BPD pathology, their self-esteem was likely to be more stable, albeit at relatively low levels. Those participants with higher levels of BPD pathology were also more likely to react to interpersonal stressors and report experiencing higher levels of negative important interpersonal events than those with low levels of BPD pathology, and be more likely to perceive being rejected by others. This finding suggests that the interpersonal stress experienced by those with BPD pathology may be closely related to their ongoing psychological adjustment in that when they have not experienced negative events, their feelings of self worth may be relatively high, in comparison to their feelings of low self-worth and rejection when interaction patterns are negative.

Sufferers of BPD are widely perceived as having unhelpful characterological traits and as being chronically disturbed in many areas of their daily functioning. This population of clients are longer term users of mental health services, both public and private, have multiple presentations and problems and are frequently treated at emergency departments as a result of their self-harm behaviours. They are often seen by workers in both the mental health and general health systems as difficult and demanding and as being likely to have a poor prognosis for treatment (Beatson, Rao & Watson, 2010; Krawitz & Watson, 2000; Linehan, 1993, 1993a; Paris, 2008).

However, providing the sufferer is not successful at their suicide attempts, there is some evidence that the severity of symptoms remits somewhat over time, with some individuals no longer meeting the number of criteria necessary for the disorder to be diagnosed (Zanarini, Frankenburg, Hennen, & Silk, 2003). Despite this, those with BPD often experience problems with depression and anxiety, and violent, abusive or difficult interpersonal relationships on an ongoing basis, so their lives may continue to be more challenging than others, even when diagnostic criteria are no longer met in full.

Table 2

DSM- IV TR Criteria for diagnosis of BPD

A pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:

1. frantic efforts to avoid real or imagined abandonment. **Note:** Do not include suicidal or self-mutilating behaviour covered in Criterion 5

2. a pattern of unstable and intense interpersonal relationships characterised by alternating between extremes of idealisation and devaluation

3. identity disturbance: markedly and persistently unstable self-image or sense of self

4. impulsivity in at least two areas that are potentially self- damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating). **Note:** Do not include suicidal or self-mutilating behaviour covered in Criterion 5

5. recurrent suicidal behaviour, gestures or threats, or self-mutilating behaviour

6. affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more that a few days.

7. chronic feelings of emptiness

8. inappropriate, intense anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights)

9. transient, stress-related paranoid ideation or severe dissociative symptoms

Adapted from: DSM-IV TR, APA (2000, p.710)

Heterogeneity of BPD

BPD is a heterogeneous disorder and individuals can exhibit many symptom combinations, given that five out of nine different defining symptoms are needed to meet the criteria for a formal diagnosis. The BPD diagnostic criteria can be grouped in different ways and individuals who meet the diagnostic criteria for BPD often meet criteria for other diagnoses, both in the Cluster B PD's (particularly narcissistic, histrionic, or antisocial) and for Axis I disorders, most typically affective disorders

(Zittel Conklin & Westen, 1998). It is not surprising that there is a high level of overlap between the symptoms of BPD and those of affective disorders, given that ongoing dysregulated and dysphoric affect is a central feature of BPD. It should be noted that this observed co-morbidity adds to the complexity of the disorder and its expression in any particular individual and their treatment, and necessitates the provision of equally multi-faceted treatments.

Krawitz and Watson, (2000) suggest that three symptom clusters can be identified overall in BPD. These are difficulties with identity or sense of self, difficulties with affect and affect control, and impulsive behaviours. Based on the results of research by Hurt and his colleagues (Hurt, et al., 1990; Hurt, Clarkin, Monroe-Blum, & Marziali, 1992), Linehan (1993) further organises the BPD diagnostic criteria into five categories. As summarised earlier, these are emotional dysregulation, interpersonal dysregulation, behavioural dysregulation, cognitive dysregulation, and finally, dysregulation of the sense of self. The term emotional dysregulation refers to affective lability and problems with anger that are commonly observed amongst individuals with BPD. Interpersonal dysregulation relates to fears of abandonment and chaotic interpersonal relationships which form two of the diagnostic criteria for BPD. Behavioural dysregulation is conceptualised as parasuicidal and impulsive behaviours (such as drug and alcohol use), whilst cognitive dysregulation refers to paranoid ideation and episodes of dissociation. Dysregulation in the sense of self relates to the disturbances in identity and the experience of a sense of emptiness that BPD individuals often report. These categories form the targets for Linehan's (1993, 1993b) dialectical behavioural therapy treatment protocols. This treatment is arguably the first treatment protocol designed specifically for this population to address the problematic and dysfunctional behaviours observed in this clinical group. It has been shown to be effective at reducing BPD behaviours in individuals with a diagnosis of BPD over the one year duration of the treatment (Linehan, 1993). It is important to note however, that although participants in these original studies improved on measures of trait anger, anxious rumination, depressive mood, and hospital admission rate, most participants' scores remained in the clinical range on most measures.

BPD Subtypes

Linehan (1993) observed differences in attachment to the therapists and attitude towards treatment between client groups in the original treatment studies. One group appeared to have a strong attachment to their therapist, whilst other individuals found commitment to treatment difficult. On the basis of these differences, the strongly attached group became identified as the "attached" group, whilst the less committed group were described as "butterfly-like" (Linehan, 1993). Support for an observable differential response to treatment in individuals with BPD was also noted in a study by Bohus (2001), where a bimodal result was found in inpatients' responses to a DBT treatment programme.

In attempts to more fully understand the features of individuals with this diagnosis and to more effectively target treatment, theorists and researchers have focused on attempting to identify further subtypes of BPD amongst clinical groups (e.g., Fossati et al., 1999; Russ, Shearin, Clarkin, Harrison, & Hull, 1993; Ryan & Shean, 2007; Whewell, Ryman, Bonanno, & Heather, 2000), based on both diagnostic features and self-harm and interpersonal behaviours. In research supporting the existence of subtypes, Zittel Conklin and Westen (1998) identified two types of BPD, with one type being considered to posses prominent histrionic features, and the other to be mostly emotionally dysregulated and dysphoric. The histrionic group were identified by the presence of several characteristics including dependency or neediness, a tendency to become involved with others who were emotionally unavailable or inappropriate, and a tendency to exaggerate expressions of emotion. In contrast, the emotionally dysregulated group were characterised by lack of control over their emotions, suicidal wishes, threats or gestures, high levels of subjective pain and dysphoria, and a tendency to react extremely to negative events and become irrational under stress and strong emotions. These subtypes were reported as having been found in two independent clinical samples (Zittel Conklin & Westen, 1998), but the implications for treatment tailored to the subtype characteristics are yet to be more fully investigated.

In a more recent discussion, Zittel Conklin et al. (2006) point out that the identified subtypes represent particular personality constellations that are not mutually exclusive and can be identified in all individuals to a greater or lesser degree. They noted that the three subtypes identified in their research, and in research with a group

of adolescents with emerging BPD (Bradley, Zittel Conklin, & Westen, 2005), shared anxious and dysphoric emotional states and difficulty in regulating these states as core characteristics, regardless of subtype. However, the patterns of affect expression and regulation differed. Individuals able to be identified by these differences in affective expression and regulation were described with differing labels. Those described as internalising-dysregulated individuals experienced ongoing dysphoria and were prone to self-hatred, which translated into self-harming behaviour as a response to these feelings. Those described as externalising-dysregulated individuals used strategies such as aggression towards others rather than self to regulate their unpleasant affective states, whilst histrionic-impulsive individuals were impulsive in their actions in response to these feelings. Since all identified subtypes of individuals with BPD in these studies experienced difficulties with appropriate affective regulation strategies, this area should be incorporated as a treatment target and is obviously an important component of any treatment for BPD.

Additional findings led researchers to conclude that the internalizing/externalizing dimension of BPD may be an important factor in conceptualising the differing features of this disorder. In an adolescent sample, four subgroups were identified and then merged into two groups, characterised by primarily externalizing or internalizing pathology (Zittel Conklin & Westen, 2006). These differences are important as Tustin (2001, 2002) suggested that those individuals with a predominantly internalizing response style might not respond well to treatments which emphasise choice and individual responsibility. However, Stone (2003) mounted a counter-argument, proposing that those with an externalizing bias would be less likely to take responsibility for their actions and more likely to attribute their difficulties as being caused by others.

Recent research by Digre et al. (2009) and Nesci et al. (2009) extended these earlier finding by investigating treatment response in subtypes of individuals with BPD being treated in a Government funded residential specialist treatment programme in Melbourne, Australia. Using cluster analyses, these researchers found that particular clusters of symptoms and characteristics enabled their participants to be divided into clinically meaningful subgroups, and that individuals within these groups evidenced a differential response to treatment.

Digre et al. (2009) were able to identify three distinct clusters of partcipants based on participant attributional styles and clinical characteristics. These were

described as withdrawn-internalising, severely disturbed-internalising and anxious-externalising. The withdrawn-internalising group were less likely to make external attributions about their difficulties, were less likely to seek social support, and had fewer co-morbid Axis 1 diagnoses. The second cluster (severely disturbed-internalising group) was distinguished from the others by higher levels of co-morbid diagnoses on Axis 1 and Axis 2, were more likely to blame themselves when coping with negative events, and more likely to report high levels of depression and dissociation. Individuals in the anxious-externalising group were more likely to blame external factors for negative events, and to seek social support to cope with these. The groups responded differentially to the treatment with a large drop in dissociative experiences found in the withdrawn-internalising group, and a significant reduction in ratings of depressive symptoms occurring in the anxious-externalising group. Disappointingly, virtually no improvement on the outcome measures used was observed in the severely disturbed-internalising group.

Nesci et al.'s (2009) larger study was able to identify two distinct sub groups of individuals with BPD involved in the treatment programme. The two groups were able to be differentiated by their patterns of attributions and their use of problem-focused coping strategies, consistent with Beck et al.'s (2004) theory relating to the role of dysfunctional beliefs and attributional patterns in personality disorders. Nesci et al. (2009) found that the participants could be distinguished by opposing attributions for negative events, with one group tending to blame themselves for such happenings and the other group more likely to blame others. The names of the clusters (self-good/self-bad and self-good/ other bad) chosen by Nesci et al. (2009) reflected these differences.

The groups could also be distinguished on their clinical characteristics, with the self-good/self-bad cluster reporting being more fearful of losing control of anxious or depressed moods than the self-good/other-bad cluster. In addition, individuals in this cluster were more likely to engage in a wide variety of self-harm acts. Nesci et al. (2009) suggested that these participants may use self-harm as a method of regulating the emotions of depression or anxiety. These individuals were also more likely to use substances to regulate mood and affect. Individuals in the self-good/self-bad cluster reported using significantly less problem-focused coping strategies than those in the self-good/other-bad cluster. Those in this second group were more likely to see themselves as responsible for positive events and to blame others for negative

occurrences. In addition, they were were also less likely to experience fear of losing control of depressed and anxious feelings. These clusters appeared to be relatively stable in this sample, as they were identified at entry and at discharge from the treatment programme. However, within the clusters, there were some individuals who had changed their cluster membership at the end of treatment, presumably as a response to participation in the treatment.

In terms of treatment response, individuals in the self-good/self-bad cluster showed significant score changes on the outcome measures in directions that indicated that their functioning had improved. Decreases in depressive symptoms, in addition to decreases in reported fear of losing control of moods, coupled with increases in problem-focused coping occurred, together with decreases in self-harm and suicidal behaviours. Decreases in the tendency to make internal attributions for negative events and increases in social support seeking, were also observed. In contrast, the self-good/other-bad cluster decreased significantly only in reports of depressive symptoms. Nesci et al. (2009) concluded that the differences in results supported the hypothesis that the two groups would respond differentially to the intervention.

Continuing development of the ability to identify subtypes of individuals with BPD and the investigation of differential responses to treatment based on these subtypes would benefit clinicians and researchers alike. Further research in this area may enable further development of treatments to better match the characteristics of identified subtypes, or alternatively, may enable improved matching of existing treatment to identifiable subtypes, and thus improve treatment outcomes.

A general discussion of empirically derived treatment outcomes follows in Chapter three, providing a background to the overall research programme reported in this thesis.

Chapter Three

Treatment outcomes for BPD

Treatment outcomes for sufferers of BPD have traditionally been poor with certain forms of treatment appearing to have negative impacts in some studies – in particular, early classic psychoanalysis and psychiatric inpatient treatment (Beatson et al., 2010; Krawitz & Watson, 2000; Paris, 2008). The search for successful treatment for BPD has been of interest to relatively few researchers until more recent times, with the main investigations being conducted in the area of the efficacy of psychodynamic interventions. However, the advent of Linehan's (1993) seminal work on DBT sparked renewed interest in the field and the findings of several research studies have been published since that time. The American Psychiatric Association (APA) Guidelines (2001) related to BPD, suggest that a combination of psychosocial, psychotherapeutic, and psychopharmacological interventions are of most use in the treatment of this disorder. The authors of these guidelines note in their opening summary that "most patients with borderline personality disorder will need extended psychotherapy to attain and maintain lasting improvement in their personality, interpersonal problems, and overall functioning" (APA, 2001, p.4). The guidelines go on to detail recommended interventions based on a review of available evidence. The importance of a collaborative and flexible approach to each individual with BPD is stressed throughout the discussion of recommended treatment options. In terms of individual psychotherapeutic approaches, the guidelines noted that both psychodynamic approaches and DBT have been shown to be effective. It is suggested that the key components of both of these approaches are limit setting, emphasising reflective rather than impulsive actions, monitoring of self-harm and suicidal behaviours, building a strong therapeutic alliance, validation of the individual's difficulties and experience, as well as encouraging the development of individual responsibility for actions. It is noted that group therapy is usually provided in conjunction with individual therapy, but also that individual psychodynamic

psychotherapy has been shown to be effective. Family therapy with an emphasis on psycho-education is discussed as a useful addition to the treatment options, rather than being a viable treatment option on its own.

Various pharmacological approaches are considered within the guidelines, with selective serotonin reuptake inhibitors being recommended as an initial treatment for affect dysregulation symptoms. The addition of mood stabilisers such as lithium, valporate, or carbamazepine are also suggested, along with low dose neuroleptics for severe behavioural dyscontrol.

The guidelines also discuss indications for brief hospitalisations, which they suggest may be helpful at times of increased risk to the individual themselves or to others, during transient psychotic episodes with associated impaired judgement and loss of impulse and behavioural control, and/or where the symptoms are of sufficient severity to interfere with the individual's functioning in most aspects of their life. Extended hospitalisations are suggested in cases of persistent and severe suicidality, a life threatening Axis 1 disorder (e.g., anorexia nervosa), ongoing risk to others from assaultive behaviour, severe decrease in ability to function in daily life and substance abuse or dependence that has not responded to outpatient treatment (APA, 2001). Crisis management is seen as an integral part of any treatment programme and it is recommended that a consistent response to crisis presentations be developed, which may include a hospital stay where necessary.

These guidelines have been unfavourably received by some (Paris, 2002; Sanderson, Swenson, & Bohus, 2002; Tyrer, 2002), on the grounds that the recommendations are not based on a sufficient degree of evidence from randomised controlled trials, that most of the studies reviewed have small sample sizes, that they are biased towards psychodynamic therapy based mainly on clinical beliefs, and that they provide an inadequate description of cognitive behavioural treatment. However, despite these criticisms, Paris (2002), Sanderson et al. (2002), and Tyrer (2002) eventually conclude that the guidelines are useful, despite their shortcomings, in that they offer some assistance about consistent treatment recommendations to the clinician struggling to find a way of addressing the many difficulties with which individuals with BPD present, and which tend to need extensive resource input from both hospital and community services.

Livesley (2004) points out that existing literature demonstrates that the "....major treatments such as cognitive, psychodynamic, and dialectical behaviour

therapies are effective" (p. 190) and supports the APA (2001) guideline's notion of a varied and flexible treatment approach to individuals with BPD. He argues that comprehensive treatment of BPD requires an eclectic approach which utilises techniques from different therapeutic models, delivered in an integrated and co-ordinated way, using a rehabilitation framework. He further points out that what "...we now need to know is what kind of intervention works with what kind of problem and with what kind of patient (because not all patients with the diagnosis are the same)" (p.191).

Livesley (2004) also suggests that there may be limits to the extent of change possible in some of the BPD characteristics, a suggestion that is supported by a six year follow up study reported by Zanarini, Frankenburg, Hennen, and Silk (2003). The notion of the efficacy of an eclectic approach to BPD is also supported in this follow-up of individuals with PD, including 233 individuals with BPD, who received multiple treatment inputs across different modalities (Zanarini et al., 2003). These authors drew three major conclusions from their review. The first was that remissions of BPD were common, with almost three quarters of the individuals with BPD recovering over the course of the study. Moreover, almost fifty percent of the participants were judged to be in remission from the disorder within the first four years of follow up. The authors concluded that this finding suggests that most BPD individuals experience substantial reductions in symptoms earlier than is commonly believed. The second conclusion drawn was that recurrences of BPD were rare as there was no recurrence of the disorder in study participants once remission had been achieved. The third finding was that the individuals with BPD remained symptomatically distinct from those with other PD's despite the declining rate of their symptoms over the course of the study.

In terms of BPD symptom type, Zanarini et al. (2003) suggested that the affective symptoms of BPD were the least likely to resolve. It was suggested that this finding indicates that these affective symptoms may be features of the BPD individual's temperament and this could account for their resistance to change. Impulsive behaviours, including suicide attempts and self harm acts were found to be the symptoms most likely to resolve over the course of the study. Substance use also declined over the six years but other types of impulsive behaviours remained relatively unchanged (e.g., verbal aggression, excessive spending, and binge eating). Reports of psychotic symptoms also declined as did some of the interpersonal

problems reported at entry into the study (e.g., chaotic relationships, devaluation, and manipulation by others) however, abandonment concerns and fear of being alone remained relatively stable. Treatment modalities in this study included hospitalisation, outpatient treatment, group and individual therapy, and residential treatments, and the programme could therefore be considered comprehensive and individually focused.

In a prospective study of patients with BPD, Gunderson et al. (2003) identified a sample of 18 participants whose symptom level reduced to a total of two DSM-IV criteria or below after two years of treatment. This improvement occurred in the first 18 months of the study and appeared to relate to improvements in comorbid Axis I disorders and improvements in the interpersonal environment in which the individual lived.

Investigating predictors of outcome for patients with BPD after two years of treatment Gunderson et al. (2006) suggest that a history of childhood trauma and high levels of borderline psychopathology with associated functional impairment, are associated with a poor outcome from psychotherapy. They further suggest that the quality of the relationships of the individual with BPD have prognostic significance, in that the more troubled the existing relationships the poorer the outcome for the diagnosed individual, unless therapeutic attention to these relationships and appropriate interventions are devised.

Paris (2005) argues convincingly that there is strong support for the positive impact of structured psychotherapy on the symptoms of BPD, but that support for pharmacotherapy remains mixed. Similarly, following a review of recent treatment studies, Fonagy and Batemen (2006) asserted that "the majority of patients with borderline personality disorder experience a substantial reduction in their symptoms far earlier than previously assumed" (p.1). They assert that although the course of therapy may be lengthier than for Axis I disorders, this is counterbalanced by the fact that remission of the PD is somewhat rare (estimated at 10% over six years), in contrast to the fairly frequent remissions seen in sufferers of Axis I disorders such as Major Depressive Disorder. However, even in those with BPD of a level of severity requiring hospitalisation, seventy-five percent achieve remission (judged against standardised diagnostic criteria) after 6 years.

As previously stated, outcomes of treatment for BPD sufferers have often been poor (Beaston, 2010; Krawitz & Watson, 2000; Paris, 2008). However, more recently

a treatment approach developed by Linehan (1993), Dialectical Behaviour Therapy (DBT), has been shown to be effective in reducing self-harm acts and number and duration of inpatient unit stays. Unfortunately, most of the studies demonstrating the efficacy of this treatment approach have been conducted overseas and therefore the relevance and efficacy of this approach for the Australian population and circumstances is yet to be fully assessed by further ongoing research.

Livesley (2004) asserts that the traditional notion of BPD as a chronic treatment resistant disorder is outdated, as treatment outcome studies continue to demonstrate efficacy of a number of approaches. Whilst some BPD symptoms may be more resistant to change than others, it is clear that co-ordinated treatments developed specifically for sufferers of BPD, delivered in an integrated and co-ordinated way are effective and that treatments from a number of different theoretical modalities can be successfully utilised. Specific treatments for symptoms appear to be most effective when based on a sound therapeutic alliance or relationship between the therapist and the individual with BPD. This relationship then assists the therapist to address core self and interpersonal pathology with the individual to bring about positive changes in these aspects of functioning (Linehan, 1993; Livesley, 2004).

However, the question of the optimal extent of therapy (regardless of type) for maximum efficacy remains to be determined. In an earlier review of over thirty years of studies in the area, Howard, Klopta, Krause, and Orlinsky (1986), concluded that in a naturalistic setting, individuals diagnosed with BPD are more likely to need extended periods of therapy, regardless of type of theoretical orientation, than individuals receiving treatment for Axis I diagnoses such as anxiety or depression.

Psychodynamic Treatment for BPD

Numerous published studies investigating the efficacy of psychodynamically oriented treatment for BPD exist (APA, 2001) however; there are relatively few methodologically rigorous ones. One study of 44 patients compared the outcomes for participants who were randomly assigned to either general psychiatric care or a psychodynamically oriented partial hospitalisation programme (Bateman & Fonagy, 1999). The partial hospitalisation programme comprised weekly individual psychoanalytic psychotherapy; thrice weekly group psychoanalytic psychotherapy; weekly expressive therapy based on the principles of psychodrama; weekly

community meetings; monthly medication reviews with a psychiatric resident; and monthly meetings with a case administrator. Treatment for members of the control group included a regular review with a senior psychiatrist once every two weeks, outpatient and community follow-up, inpatient admissions as required and no formal psychotherapy. Average length of stay in the experimental group was 1.5 years and when compared to the control group, completing group members showed decreased self harm behaviours, and a decrease in the proportion of members attempting suicide from 95% pre treatment to 5% post treatment. Experimental group members also improved on measures of state and trait anxiety, depression, social adjustment, and interpersonal problems. In addition, the frequency and length of inpatient stays decreased in the last six months of the project. In contrast, no such improvements were noted in the control group. Follow up of the experimental group members after a further 18 months showed the gains made were maintained and that the improvement had continued when measured by their scores on standardised instruments (Bateman & Fogarty, 2001).

An Australian study (Stevenson & Meares, 1992) investigated the impact of participation in twice-weekly psychodynamic therapy with 30 individuals with BPD, on violent behaviour, number and length of hospitalisations, use of illegal drugs, self harm, and work related functioning, when compared to the year prior to receiving treatment on these dimensions of functioning. The authors reported that there were significant reductions on all dimensions following treatment. This group of patients was later compared with 30 patients from an outpatient waiting list who received treatment as usual (Meares, Stevenson, & Comerford (1999). This treatment consisted of supportive and cognitive therapy and crisis intervention and assessments were conducted at baseline and at regular intervals throughout the 17 months of the study. Comparisons showed that the original group of patients treated with psychodynamic therapy had a significantly better outcome that these control subjects, even though they had been more severely ill at baseline measurement. However, these studies have methodological limitations that mean the results should be interpreted with caution. The lack of random assignment to group, lack of detail about the amount of treatment received by the control group, different follow-up periods for different participants, and non blind assessment of the outcome mean that it is unclear whether the more favourable outcome for the experimental group is due to the type of therapy, or to the amount of therapy received.

Despite these shortcomings, current evaluations of three different types of treatments for BPD (Clarkin, Levy, Lenzenweger, & Kernberg, 2004, 2007) add weight to the case for the efficacy of psycho-dynamically oriented treatment. Clarkin et al. compared the efficacy of transference-focused psychotherapy (TFP), dynamic supportive therapy (DST), and DBT with 99 individuals diagnosed with BPD. Participants were randomly assigned to treatment groups, and received medication if indicated by their clinical needs. All were treated in community settings on an outpatient basis. Results showed that participants in all three treatment groups improved in anxiety, depression, social adjustment, and global functioning. Both DBT and TFP group members improved on measures of suicidality, and members of the TFP and DST groups improved in measures of anger. The researchers reported that only participants in the TFP treatment group improved on measures of irritability and verbal and physical assault towards others. Results from this study indicate that structured outpatient treatment can facilitate change in key areas of functioning for those with BPD across three treatment modalities, but that TFP therapy was associated with change over more outcome domains than the other therapies investigated. However, the specific mechanisms underlying these changes remain yet to be determined.

The relatively recent development of Cognitive Analytic therapy (CAT) makes a further contribution to the field of treatment for BPD, with encouraging preliminary results from limited case histories and naturalistic studies in both hospital and outpatient settings published to date. In a study of 27 patients who completed a full course (24 sessions) of CAT, half the sample was assessed as no longer meeting diagnostic criteria for BPD (Ryle & Golynkina, 2000). At 18 month follow up, further positive changes had occurred on psychometric measures. CAT is designed to be time limited and its theory and practice has evolved since its inception, to the point where it has been shown to be of value in a wide range of conditions and contexts (Ryle, 2004), and no doubt the body of research into its efficacy will continue to expand.

Cognitive and Cognitive Behavioural Treatment of BPD

Cognitive therapy (CT) was initially developed for the treatment of depression and other Axis 1 disorders. However, it has been adapted for use with individuals with

PD's of all types, including those with BPD. Studies of the efficacy of CT and cognitive behavioural therapy (CBT) carried out in the early 1990's are difficult to interpret due to small numbers of participants or the lack of differentiation of types of personality disorders (APA, 2001). In addition, these studies tended to focus on the problematic behaviours associated with this diagnosis rather approaching the disorder as a whole from an integrated formulation (Beck et al., 2004).

Brown, Newman, Charlesworth, Crits-Christoph, and Beck (2004) conducted an open trial of cognitive therapy for BPD. A total of 32 individuals participated throughout the study. All individuals reported suicide ideation or self harm behaviours, along with high scores of measures of hopelessness, depression, and dysfunctional beliefs and most had an extensive psychiatric history, including previous psychotherapy and pharmacotherapy. The manualised treatment occurred on a weekly basis, over a one year period and therapists were trained and supervised throughout by experienced practitioners. Results showed that participants experienced clinically significant decreases in symptomatology at the end of the study, including decreases in hopelessness, suicide ideation, depression, and number of dysfunctional beliefs. These improvements were noted at the end of the 12 month treatment period, and had been maintained six months later, at an 18 month follow up interview.

Arntz (1999) also found positive effects of long term CBT with patients with a PD, including those with BPD, whilst Beck (2004) reported that short and focused CBT was successful at reducing suicidal ideation and suicide attempts in individuals with BPD when compared with a control treatment.

Davidson et al. (2006) conducted a randomised controlled trial of CBT and treatment as usual (TAU) compared to TAU alone, in a group of individuals who met the criteria for a BPD diagnosis. The TAU consisted of services offered with the U.K. National Health Service, which typically involved a minimum standard of ongoing care from a general practitioner and contact with community mental health teams and inpatient services as needed. The CBT treatment was manualised and conducted by CBT therapists in community settings. The therapists received training and ongoing supervision. Both treatment groups received treatment over a 12 month period, with the CBT participants receiving an average of 27 sessions over a 12 month period. Whilst no differences were found in rate of hospital utilisation, CBT plus TAU was shown to reduce the mean number of suicidal acts carried out by the participants over the two years of the study (12 months treatment and 12 months follow-up). In

addition, mean scores on the Young Schema Questionnaire (1998) decreased, as did measures of distress related to symptoms and anxiety. The cost effectiveness of the therapies was also investigated (Palmer et al., 2006). No significant differences between CBT plus TAU and TAU alone were found. Whilst the authors conclude that there was no significant cost benefit for the use of CBT for BPD, it is important to note that there was improvement on symptom domains when CBT was included with TAU.

Schema therapy (Young et al., 1999, 2003) and DBT (Linehan 1993) are grounded in CBT but both of these theorists have significantly expanded the model and developed a range of innovative techniques to address specific elements of the BPD presentation. Linehan's (1993) work on DBT for BPD has had a major impact on the field of treatment for this disorder. The cornerstone of DBT is the dialectic between acceptance and change, and the emphasis on the inter-relationships and reciprocal influences within the client's emotional system. Linehan posits that the therapist and client must balance the tension between acceptance of what is valid about the client's current behaviours (in the context of life experiences) and their attempts to cope with unbearable emotional pain, with the therapeutic demand that the client needs to change their behaviours, despite this recognition or validation, to develop a more satisfying life. Within the theoretical framework, the client is seen as doing the best they can, but is encouraged to do "better". Additionally there is recognition that clients may not have caused their own problems but must solve them regardless, that clients want to improve, and that clients need to try harder to change (Linehan 1993). DBT has three identifiable stages of treatment:

(i) Stage 1: decreasing life threatening behaviours
(ii) Stage 2: reducing post-traumatic stress
(iii) Stage 3: increasing self-respect and achieving individual goals

(Brodsky & Stanley, 2002, p.347)

As stated in an earlier section of the thesis, Linehan (1993, p.13) has re-conceptualised the DSM-IV TR criteria and their behavioural implicationsfor BPD into five domains of functioning (emotional dysregulation; interpersonal dysregulation; behavioural dysregulation; cognitive dysregulation; and self dysregulation).

Linehan's treatment protocol contains a mix of psychological and practical interventions, including both behavioural and cognitive interventions derived to address these aspects of functioning and behaviour, together with other strategies developed as part of the treatment package. Mindfulness, derived from Zen practices, is perceived as a core skill to be learned and practiced in DBT, and is the foundation upon which practical skills are built. Mindfulness involves focused observation of the self and context to facilitate observation and description of emotions, without making judgements about the observations made. It is the "non-judgemental observation of the ongoing stream of internal and external stimuli as they arise" (Baer, 2003, p.125). Mindfulness requires the ability to focus the attention on the present moment from a non-judgemental perspective and to identify what works in the particular situation in which the individual finds themselves (Feigenbaum, 2007). The ability to be mindful has been shown to be associated with psychological well-being (Brown & Ryan, 2003) and has also been shown to be of assistance with suicidal clients (Williams & Swales, 2004) and in the treatment of chronic depression (Seagal, Williams, & Teasdale, 2002). Furthermore, Faranacci, Eisen, and Johnson (2005), showed that mindfulness training impacted positively on long term emotional and cognitive regulation in a group of individuals with BPD being treated in a private hospital day programme, and that the number of hospital admissions amongst the participants declined following the intervention.

To date, stage 1 of DBT has been the most researched of the stages – the importance of targeting self harm behaviours to the clinician involved in delivering treatment is obvious. However, other behaviours addressed within this stage include therapy interfering behaviours such as client non-attendance, lateness, and attending when under the influence of substances. Once the sufferer has successfully completed Stage 1, they move into the remaining stages to address other issues they may be facing such as the impact of childhood abuse, and low self esteem.

Linehan's original (1993) research conducted DBT treatment over a 12-month period and contrasted changes and improvements in clients' behaviours with changes within the group assigned to treatment as usual in the community. The clients in the DBT group experienced a reduction in the severity and frequency of parasuicidal behaviours in the initial four months of the study and a reduction in hospital bed days over the 12 months of the study. In addition, improvements in social functioning and reduction of anger experiences occurred (Linehan, Tutek, Heard, & Armstrong,

1994), and these improvements were maintained at six and 12 month follow up (Linehan, Heard, & Armstrong, 1993). However, despite these positive improvements in some aspects of functioning, participants' scores on some of the measures utilised to assess change remained in the clinical range.

Currently, there have been a number of published randomised controlled trials of DBT and some non-randomised trials, all of which demonstrate the overall effectiveness of DBT as a treatment modality for BPD in terms of decreasing severity and frequency of self-harming behaviours, and number of psychiatric hospitalisations. In addition, participants in DBT programmes are more likely to stay engaged in the programme than those engaged in treatment as usual in the community (Feigenbaum, 2007). However, with the exception of four studies, this research has been carried out primarily with participants in America and Europe and the extent to which these findings are generalisable to Australian populations is yet to be fully investigated.

A non-randomised treatment study in Australia utilised a modified type of DBT and reduced the period of treatment to six months (Prendergast & McCausland, 2007). Two groups of participants were included in the trial. The results of this study confirmed previous findings that DBT is an effective treatment for parasuicidal behaviour as findings showed participation in treatment decreased the occurrences of medically severe suicidal actions and reduced number of hospital admissions and telephone and face to face contacts for participants over the course of the study. However, at this stage of the development of the body of knowledge, it remains to be determined whether all components of the DBT treatment protocol are equally effective.

A New Zealand pilot study of a six month duration DBT programme (Brassington & Krawitz, 2006), utilised the MCMI-III and the Symptom Checklist - 90-R (Derogatis,Rickels, & Rock, 1977) to investigate the efficacy of the programme in two groups of five public mental health patients. One group was based in a rural setting and the other in an urban area. The intervention consisted of individual and group treatment, together with a therapists' consultation group and therapist telephone availability. Treatment was provided by a number of clinicans from various disciplines. When pre- and post-test scores on the MCMI-III scales were compared, significant improvements in functioning had occurred on ten of these scales, including the "borderline" scale. SCL-90-R ratings also decreased, along with a decrease in

acute hospital bed days. The authors concluded that an effective DBT treatment programme could be successfully implemented in a public mental health service.

A more recent Australian study (Davenport, Bore, & Campbell, 2010) investigated changes in self regulation and personality functioning following a DBT treatment programme, utilising the five-factor model of personality (McCrae & Costa, 1997) as a conceptual base for the investigation. Self-report questionnaires investigated participants' pre and post levels of self-control as well as the five components of the five-factor theory. These researchers found that levels of agreeableness, conscientiousness, and self-control were significantly lower at pre-treatment when compared with post-treatment status and the questionnaire norms. In contrast, participants' scores on neuroticism were higher than the norms at both pre- and post-treatment. The authors concluded that levels of self-control contribute to both the presentation of BPD and the impact of BPD, and that the high levels of neuroticism observed in their participants support Linehan's (1993) biosocial model of development of BPD.

A second recent study evaluated a 20 week DBT programme for 140 adult clients with BPD (Williams, Hartstone, & Denson, 2010). Using a pre and post design, the study investigated changes in participant subjective ratings of depression and anxiety, together with BPD symptomatology. In addition, measures of service utilisation were compared across three time periods (the six months prior to commencing group therapy, during the group therapy and six months post completion of group therapy). Those who completed the therapy reported reductions in anxiety and depression. In addition, reductions in emergency department attendances, inpatient bed days and telephone calls requesting assistance occurred.

The body of research examining the efficacy of schema focused therapy (SFT) is somewhat limited, but is increasing gradually. Nordahl and Nysaeter (2005) reported a series of six single case studies of schema therapy for patients with BPD. The emphasis during the treatment period was reported to be on schema mode work, including a limited amount of re-parenting (both mechanisms of change in SFT) and included an assessment at 12 month follow up. Nordahl and Nysaeter found that clinically meaningful improvement occurred in five of the six participants in the study, and that three no longer met the criteria for BPD at the end of the treatment period. A large randomised controlled trial comparing the efficacy of schema-focused therapy (SFT) with transference-focused psychotherapy (TFP) efficacy for BPD has

been recently undertaken (Giesen-Bloo et al., 2006). Both of these therapeutic approaches are designed to lead to structural personality change, evidenced by decreases in self-destructive behaviours and reduced pathological personality functioning. The study was conducted in four community mental health centres in Northern Europe and 88 individuals diagnosed with BPD took part. Therapy was provided twice weekly across three years in both treatment conditions. Participants were assessed before randomisation occurred and then at three month intervals throughout the duration of the study. The researchers noted that the clinical and sociodemographic characteristics of the participants in both groups were similar at baseline, however, in terms of completion of treatment, more of the TFP group dropped out during the course of the study than in the SFT group. At the end of the study period, significantly more SFT participants recovered or showed clinical improvement when assessed on the Borderline Personality Disorder severity index, as well as improvements in the structure of the personality functioning. Quality of life also improved in the SFT group, as did general psychological dysfunction. The authors noted that the improvements were evident at the 12 month mark of the study, and continued up until the end of the three year period of the research, and concluded that their results contributed "to a positive treatment perspective for BPD by lending support to SFT as a valid evidence-based practice" (p.657). However, they also highlighted the need for further research into treatment effectiveness.

Ball (2007) reported on a small research project with was undertaken as part of a larger study. Thirty male and female individuals with a PD and who were participating in a methadone maintenance programme were randomly assigned to two treatment groups. One group received manualised dual focus schema therapy (DFST) and the other received 12 step facilitation therapy (12FT). The most common PD diagnoses were antisocial, borderline, avoidant, and dependent. Participants in the DFST group are reported to have decreased the frequency of their substance use more rapidly than those in the 12FT group. The therapeutic alliance was reported to be stronger in the DFST group; however dysphoric affect reduced more in the 12FT group than in the DFST group. Despite this latter finding, the authors concluded that DFST "shows initial promise as the first time-limited manual-guided psychotherapeutic approach for the full range of personality disorders encountered in substance abuse patients" (p.305).

Mechanisms of change in therapy

Wenzel, Chapman, Newman, Beck, and Brown (2006) suggest that the primary mechanism of change in CT for BPD is the change in dysfunctional beliefs. However, this mechanism of change is both supported and enhanced by the enhancement of skills, reduction in hopelessness, and improvements in attitudes towards treatment that also occur. Lynch, Chapman, Rosenthal, Kuo, and Linehan (2006) argue that change following DBT treatment occurs through a combination of exposure, response prevention, and extinction of ineffective emotional responses, and through enhanced attentional control, and improved stimulus discrimination. They summarise these mechanisms as "the reduction of ineffective action tendencies linked with dysregulated emotions" (p.475). Since beliefs or schemas are not directly addressed in DBT, the extent of incidental impact the treatment has on these for each individual remains to be determined, and the mechanisms involved in long lasting change remain to be identified by further research.

It is now believed that the prognosis for BPD is generally more positive than traditionally reported andspontaneous recovery is common as the individual ages (Beatson et al., 2010). Not surprisingly, good treatment aids remission and it seems that up to 90% of BPD patients improve eventually, regardless of their level of suicide or self harm threats (Paris & Zweig-Frank, 2001). Although attempts continue to be made to predict the course of the disorder and the outcomes of treatment (Zanarini, Frankenburg, Hennen, Reich, & Silk, 2006), this has not yet proved possible (Beatson et al., 2010). In summary, it is clear that the treatment outcome research to date has demonstrated the efficacy of a number of interventions for individuals with BPD, including DBT and other cognitive therapies, as well as therapies such as TFP and CAT, and that individuals with BPD often experience improvement in symptoms as they mature.

However, many of the existing outcome studies have utilised specially developed measures rather than existing psychometrically validated measures and as a consequence, there exists the need to evaluate these treatments on some of the existing normed and standardised psychometrically valid measures. The studies reported in this thesis utilised existing validated measures of psychopathology, all of which displayed acceptable correlations between the measures within each domain, including measures of schema strength as well as measures of psychopathology.

These measures are described in detail within the General Method section in this thesis, and the battery is consistent throughout each of the eight empirical studies reported.

The series of studies comprising this thesis begins with a review of the results of investigations into the efficacyof mindfulness as a single treatment module. An account of a follow-up study of a small group of these participants is then provided. The outcomes from participation in a complete 12 month DBT programme are discussed in the next part of the thesis. The investigation then continues with a discussion of whether or not meaningful subtypes of participants can be identified, differential treatment response between indivduals in these subtypes, and the clinical significance of the results obtained for both mindfulness and DBT. Finally, an overall summary of the findings is provided.

Chapter Four

Research programme rationale

Scope of the research

The research reported in this thesis sought to formally and objectively examine the efficacy of a DBT day programme conducted at a private hospital in Melbourne, Victoria (The Melbourne Clinic – TMC). The TMC treatment programme has been running for several years but has not previously been formally and objectively evaluated on standardised psychometric measures, although clinical evaluation of participants is carried out on an ongoing basis. In addition, although modified DBT programmes have been conducted in Australia, the effect of participation in a full 12 month DBT treatment programme has not yet been reported. The language and content of skills groups and handouts from an American context may not translate exactly into the Australian cultural context, and thus modifications to the programme may be necessary to enhance effectiveness.

The complete DBT intervention is divided into four modules: mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance. The structure of the research programme allowed for examination of the efficacy of participation at the end of each of the four treatment modules. Accordingly, pre- and post-test measures were taken at the beginning and completion of each of the four treatment modules. Treatment outcomes were therefore investigated and compared at the completion of the initial mindfulness programme, as well as at the completion of each of the remaining three intervention modules. In addition comparisons between baseline pre-entry scores and final end-of-treatment scores were conducted.

In the treatment intervention reported in this thesis, 88 TMC clients commenced the eight week mindfulness module that is offered as a "stand-alone" intervention. Of these, 71 completed the intervention. A subset of these participants

(*n*=27), selected by TMC therapists on the basis of clinically assessed need and perceived potential benefit from participation, then continued into the remaining DBT modules, in some cases following a six month waiting period until a place became available. At TMC, there are four intakes per year into the mindfulness module and only two per year into the remaining three DBT modules - at the beginning and in the middle of each year. Depending on demand and place availability, some participants in the last mindfulness group of a particular year are able to gain entry into the DBT programme at the beginning of the next year – a process that is comparable to Linehan's (1993a; 1993b) continuous treatment programme.

The research design allowed investigation of both the degree of participant symptom change after a brief intervention period (the initial "mindfulness" module), and an assessment of the robustness of any gains made throughout the subsequent waiting period for a smaller group, as well as investigating whether or not there was significant additional change in these participants following completion of each of the three remaining DBT modules. A noteworthy aspect of this research is that treatment outcomes were assessed on a battery of scales that were selected from a range of existing, psychometrically sound and standardised measures of symptoms across different time periods. Thus, the assessment battery included: Millon Clinical Multiaxial Inventory-III (MCMI-III) scales that are designed to measure how the individual 'generally' feels; Young Schema Questionnaire (YSQ-S2: Young, 2003) scales that measure long standing cognitive schemas; Trauma Symptom Inventory (TSI: Briere, 1997) scales that assess symptoms over the last six months; and Depression, Anxiety, and Stress (DASS: Lovibond & Lovibond, 1995) scales that assess depression and anxiety across the last week. As a result, it was possible to assess whether or not a degree of more lasting change had occurred at the end of the intervention.

The question of whether all individuals with BPD benefit equally from participation in a DBT treatment programme has not yet been discussed in the body of research evidence into DBT (Feigenbaum, 2007). Given that the population of individuals with BPD are known to be diverse across a range of symptoms and presentations it may be that a DBT programme has greater efficacy for particular BPD presentations. Investigations of subtypes of individuals with BPD (Digre & Reece, 2008; Nesci et al., 2009) have shown that differential response to intervention programmes can occur in groups of individuals differentiated by their scores on

measures of symptoms and attribution style. Thus, one of the aims of this research was to further examine treatment outcomes measured by changes in scores on standardised measures of borderline personality pathology, self-esteem, coping, mood, and trauma symptoms as reported by participants with differing symptom profiles. The results of this research can thus be used to help inform decisions about the appropriateness of DBT interventions for particular individuals.

Since one of the aims of the standard DBT programme is to elicit behavioural change via cognitive skills training, the opportunity exists to identify and measure any incidental change in participants' cognitive schemas (belief systems) related to changes in their behaviours occurring during and following the completion of the intervention. As a consequence, the current research provided an examination of the changes in scores on selected cognitive schemas occurring within the mindfulness module and the remaining three DBT treatment modules for a sub-set of participants, through measurement of changes in the extent of participants' beliefs in particular schemas throughout the treatment process.

Finally, given the increasingly prevalent finding that diverse psychotherapies can result in similar clinical outcomes, it is of interest to examine the relative influence on outcome of factors specific and non-specific to DBT. Specifically, the relationship between intervention outcome and client satisfaction with the therapy and therapists, and the therapeutic alliance are investigated. These non-specific factors are known to contribute to therapeutic outcome across different therapeutic activities (Green & Oei, 2003; Oei & Shuttlewood, 1996, 1997), but such research has not previously been undertaken in relation to DBT.

Specific aims of the research programme

The aims of this programme were to:

(i) Investigate the extent to which positive change on scales from structured measures is achieved after completion of the 'mindfulnes' module.

(ii) For the subset of participants continuing on to the remaining three modules of the DBT treatment programme, to investigate the degree to which status at this completion point is maintained across time until entry to these modules.

(iii) Independently establish the effectiveness of the TMC DBT treatment programme in Australia, on a range of standardised, psychometrically valid

measures specifically designed to measure psychopathology and symptomatology in patients across three time frames, and to identify factors that may contribute to outcome. The instruments utilised were selected to measure changes in symptoms that are specifically targeted in a DBT treatment programme (e.g., self-harm behaviours; mood and anxiety symptoms, and anger) as well as variables that may also be associated with positive treatment outcomes (e.g., cognitive schemas; self esteem; patient satisfaction; therapeutic alliance).

(iv) Investigate any differential effects of participation in the TMC DBT programme after a delayed entry into the remaining modules of the programme following completion of the mindfulness module.

(v) Establish whether or not participants could be divided into different groups or 'clusters' (sub-types) based on symptoms and other characteristics.

(vi) Establish whether or not any such identified cluster shows a differential response to the treatment components.

(vii) Establish the validity of use of these measures within a population of Australian individuals with a diagnosis of BPD.

Research programme hypotheses

A number of hypotheses were generated for examination in the research programme. Given the reported success of mindfulness interventions (Baer 2003, 2006), it was hypothesised that participation in the eight week Mindfulness programme alone would result in positive changes in participants' psychological adjustment and symptom experience as measured by improvements in their scores on the standardised measures utilised in this research. It was further hypothesised that these improvements would be enhanced for those participants completing the remaining modules of the full DBT programme. Specifically, it was hypothesised that these improvements would consist of positive changes in participants' BPD behaviours and symptoms (e.g., self-harm behaviours, emotional dysregulation, cognitions, experience of anger), during the treatment programme, as measured on the battery of scales utilised.

Given the potential diversity in symptom profiles and presentations in this diagnostic group, it was further hypothesised that it would be possible to identify

meaningful sub-groups of participants and to investigate differences in their response to the treatment interventions.

Data collection methodology throughout was identical for all participants. Randomly ordered questionnaire sets were administered to participants prior to commencing mindfulness training and at the end of the module. For those participants involved in the remaining DBT training, questionnaires were re-administered at the end of each skills training module in an identical manner. At each questionnaire administration exercise, the order of questionnaires within each set was varied to minimise any order effects.The project was approved by both the RMIT University Human Research and Ethics Committee (June 2004), and The Melbourne Clinic Research and Ethics Committees (November 2003).

The series of eight studies reported in this thesis contribute to the body of knowledge relating to the efficacy of mindfulness training as a single treatment module for individuals with BPD, as well as adding to the outcome research relating to treatment of BPD overall. Further contribution is made as a result of the use of existing, standardised and psychometrically valid measures designed to measure symptoms across different time periods. The research programme also investigates the efficacy of mindfulness and DBT treatment within a sample of Australian patients being treated within the private service system, rather than in a publicly funded treatment agency, and examines the effect of participation in each DBT module separately.

Chapter five describes the general method employed throughout the research programme and contains general comments on the data analysis overall. Chapter six investigates the hypothesis relating to participation in the mindfulness module, and Chapter seven reports the results of follow-up analyses after completion of the initial module. The thesis continues in Chapter eight with a discussion of the results of the analyses of the effects of participation in the remaining DBT treatment modules within those participants who contininued into this programme. The work then investigates the hypothesis relating to the identification of meaningful sub-groups of participants and differential response to treatment between the groups in Chapter nine. The concept of clinical versus statistical significance is discussed in Chapters ten through to thirteen, including consideration of differential treatment responses between the two clusters of participants previously identified. A final summary of the findings of the programme is provided in Chapter fourteen.

Chapter Five

General Method

Participants

A total of eighty-eight individuals were involved in the research programme overall. Participant selection processes and details of their clinical and demographic characteristics are discussed in the following sections.

Participant selection

Participants were drawn from all clients accepted into the TMC initial "mindfulness" groups and the DBT programmes conducted in 2004, 2005, and 2006, once their treating psychiatrist had given permission for them to be approached about the research. All participants had been previously diagnosed with BPD (following clinical assessment) by their referring/treating psychiatrist before referral to the TMC programme. Participants' diagnostic status was also examined by comparing clinical information derived from case file analysis against the DSM-IV TR criteria. The results of this process are discussed below. All referring psychiatrists continued to review their patients throughout the duration of their TMC treatment, but all other treating professionals ceased their involvement for the duration of the TMC programme.

Of the 88 participants in the study, 27 clients (31%) were offered places in the full DBT treatment programme following completion of the mindfulness module, which is run four times a year for eight weeks at a time. For some of these 27 clients their entry into the remaining three-module DBT programme was delayed by up to six months due to limited availability of places, and during this waiting period, they returned to the care of their existing community treating team. Some participants from the final mindfulness group of 2005 were able to immediately enter the DBT group and complete the remaining three treatment modules consecutively as places were immediately available. All of the DBT group participants had been involved in a

mindfulness treatment group at some stage during their involvement with TMC, prior to entering the DBT group.

Sixteen (18%) of the total number of participants in the mindfulness groups failed to complete the eight week programme, whilst only 4 (15%) DBT participants ceased their involvement in the group prematurely. All ceased their involvement during the emotion regulation component of the programme. There were no statistically significant differences in mean scores between the individuals who entered the remaining modules of the DBT programme immediately following completion of mindfulness and those who experienced a delay prior to entry to DBT in any of the clinical or demographic measures used in this programme. Thus, this data was able to be combined for analyses.

Demographic characteristics of participants

Seventy-seven (87%) of the total group of participants were female and 11 (12%) were male. Other BPD treatment outcome studies (inpatient and community studies), with mixed gender samples have reported similar percentages of female and male participants (e.g., Clarkin et al., 2007; Williams et al., 2010). Interestingly, there were a considerable number of treatment outcome studies with 100% female participants (e.g., Bohus et al., 2004; Brassington & Krawitz, 2006; Clarkin et al., 2007; Giesen-Bloo et al., 2006; Linehan et al., 2006; Prendergast & McCausland, 2007).

The proportion of females in this sample is slightly higher than would be expected for sufferers of BPD in the general population as it has been reported that typically, approximately 75% of individuals diagnosed with BPD are female (APA, 2000). However, reported BPD prevalence rates from diagnostic studies are inconsistent (Johnson et al., 2003) and it is possible that the higher proportion of females reported in clinical studies is related to the fact that females are more likely to seek help for emotional difficulties than males (Johnson et al., 2003; Torgersen et al., 2001). For example, Johnson and colleagues (2003) compared male and female individuals with BPD on both demographic and clinical criteria. Following these comparisons, they reported that only three differences emerged (males were more likely to receive additional diagnoses of substance use disorders; females were more likely to receive additional diagnoses of eating disorder and/or post-traumatic stress disorder). Based on this study, they suggested that BPD patients of both genders were more similar than dissimilar in both demographic and clinical characteristics. Other

authors (e.g., Torgensen et al., 2001; Trull, Stepp & Solhan, 2006) support this proposition and suggest that the DSM-IV TR statement regarding prevalence may be weighted towards clinical impression rather than empirically collected data. It seemed reasonable therefore, to analyse the results from this group of participants as a whole, rather than separating them on the basis of gender.

Participant ages ranged from 19 – 69 years (*M*=37 years, *SD*=12 years) and all lived in Metropolitan Melbourne. Thirty participants (34%) were in a relationship (married or de facto), seven (8%) were divorced, seven (8%) were separated, and 44 (50%) were single. Seventy-nine participants (90%) were born in Australia, with six (7%) of the remaining participants having been born in the U.K. Of the remaining three participants, one participant was from the Middle East, one from another part of Europe, and one did not specify their country of origin. English was the preferred language for all participants.

In terms of educational level, 33 participants (37%) had completed an undergraduate tertiary degree, 31 (35%) had completed Year 12 of secondary school, 10 (11%) had completed postgraduate training at tertiary level, two (2%) had completed a diploma or certificate course, seven (8%) had completed Year 11, three (3%) Year 10 and two (2%) achieved Year 9 or below. Almost half of the participants, (*n*=40, 46%) received Centrelink benefits (i.e, social security), with 24 (27%) participants supported by their partners or family. Twenty-four (27%) of the participants were supported by their own earnings.

Twenty four (27%) of participants were working, most (*n*=20, 83%) on a part-time basis. Of those not working, only five (6%) were currently seeking employment. The remaining participants were either unable to work due to their difficulties (*n*=59, 67%) or were caring for dependents. Occupations ranged from professional (33%) and administrative/clerical (19%) to unskilled (3%). The majority of participants indicated that their annual income level was less than $20,000 (*n*=51, 58%), whilst eight (9%) received between $20,000 and $30,000, eight (9%) recorded an income between $30,000 and $40,000, five (6%) between $40,000 and $50,000, and sixteen (18%) indicated an income level of above $50,000 per annum.

Participants' clinical presentation

Partcipants' illness duration

Participant reported age of onset of psychological difficulties of any sort ranged from 6 years to 51 years (*M*=19 years, *SD* =10 years). Reported age at which Borderline Personality Disorder was diagnosed ranged from 13 years to 68 years (*M*=30 years, *SD*=12 years). Participants' reported total number of admissions to psychiatric units prior to entry into TMC programme varied from none to 42 (*M*=6, *SD*=9), with 44 (50%) of participants reporting having also received treatment from public mental health services at some time during their illness. The length of time that participants had been treated at TMC at time of questionnaire completion ranged from 1 month to 21 years, (*M*=3 years, *SD*=5 years).

Participants' trauma history

All participants reported some experience of trauma during their life. Fifteen (17%) had experienced a threat of force during a crime related event, 29 (33%) had experienced physical force, 35 (40%) had experienced an attempted or actual break-in whilst they were away from their property, 9 (10%) had experienced this event when they were at home. Thirty-seven (42%) participants had experienced a serious accident at work or in a car, 9 (10%) had experienced a natural disaster, 11 (12%) had experienced a man-made disaster, and 6 (7%) had been exposed to chemicals or radioactivity. Twelve (14%) participants had experienced serious injury in another situation, 22 (25%) had been in a situation where they feared injury or death, 30 (34%) had seen someone else seriously injured or killed, and 26 (29%) had seen or handled dead bodies (outside of a funeral situation). Twelve (14%) had had a close friend or family member killed by a drunk driver, seven (8%), had experienced the death of a spouse, partner or child, whilst 19 (22%) had experienced serious or life threatening illness themselves. Forty-three (49%) had received news of the serious illness or unexpected death of a significant other. Two (2%) had been engaged in combat in a military zone. Eighteen (20%) participants reported having been attacked with a weapon, 16 (18%) reported being attacked without a weapon and seriously injured, whilst 29 (33%) reported having been beaten, spanked, or pushed by another and being injured as a result.

In terms of unwanted sexual contact, 40 (45%) participants had experienced forced intercourse, or oral, or anal sex. Forty-three (49%) had experienced another touching private parts of their body or been forced to touch others in private places,

and 27 (31%) reported other types of unwanted sexual contact. Twenty-four (27%) of participants reported experiencing stressful situations of some sort, other than those already described.

Number of BPD criteria met

The number of BPD criteria met by each participant was established from the record of their initial assessment interview. All participants met more than one criterion, with all participants meeting at least five criteria (the minimum requirement to meet the diagnosis of Borderline Personality Disorder). Data was unavailable for eleven participants (12%). Data for the remaining 77 participants identified that 20 (26%) of them met criteria 1 (frantic efforts to avoid real or imagined abandonment), 63 (82%) met criteria 2 (a pattern of unstable and intense interpersonal relationships characterised by alternating between extremes of idealisation and devaluation), 56 (73%) met criteria 3 (identity disturbance), 46 (60%) met criteria 4 (impulsivity in at least two self-damaging areas such as substance abuse, binge eating) , 63 (82%) met criteria 5 (recurrent suicidal behaviour, gestures, or threats or self-mutilating behaviour), 73 (95%) met criteria 6 (affective instability and marked reactivity of mood), 28 (36%) met criteria 7 (chronic feelings of emptiness), 30 (39%) met criteria 8 (inappropriate intense anger or difficulty in controlling anger), and 31 (40%) met criteria 9 (transient, stress-related paranoid ideation or severe dissociation).

Participants' mean score on the MCMI-III clinical BPD personality scale was 77 (*SD*=17), with a range of scores from -1 to 104. A score of 76 or above is considered to represent an individual who possesses the trait of severe personality pathology of the borderline type. The mean score on the Borderline Scale of the PDQ-IV was 6 (*SD*=2), with a range of scores from 1 to 9. A score of five or more on the borderline scale of this instrument is necessary to meet the criteria for a DSM-IV TR diagnosis of BPD. Such a score indicates that the individual has endorsed a minimum of five items representing specific DSM-IV TR diagnostic criteria.

Alcohol and other drug use

A total of 19 (22%) participants denied using alcohol at all, 35 (40%) reported using alcohol only occasionally, whilst 13 (15%) reported using it sometimes. Twelve participants (14%) reported using alcohol often, whilst 8 (9%) reported daily use. Most participants (*n*=56, 63%) reported never using illicit drugs, 13 (15%) reported

occasional use, and 10 (11%) used sometimes. A total of five participants used often (6%) or every day (*n*=4, 4%).

Participants' reported symptoms

Most participants reported experiencing mixed symptoms on an ongoing basis. These symptoms included depression/mood swings (*n*=34, 39%), anxiety (*n*=5, 6%), suicidal ideation (*n*=7, 8%), or a mixture (*n*=42, 48%) of all of these. Sixty-eight participants (77%) reported experiencing symptoms on an ongoing or daily basis. Ten (11%) participants experienced symptoms three to four times a week, with the remainder of the sample experiencing symptoms from one to two times a week to a few times a month.

Thirty-seven (42%) of participants reported being violent towards others, most usually their spouse or parent, whilst 63 (72%) had made threats of self harm. The type of self-harm participants threatened included suicide (*n*=24, 27%), cutting self (*n*=17, 19%), overdose (*n*=7, 8%) or burning self (*n*=14, 16%). Twenty-two (25%) of participants reported making threats which represented a combination of all of these possibilities.

A total of seventy-one (81%) of participants had carried out some form of self-harm behaviour. Within this group, cutting was the most common behaviour (*n*=21, 24%), followed by overdosing (*n*=11, 12%), burning self (*n*=3, 3%), jumping from a bridge (*n*=4, 4%), or other method (*n*=18, 20%). A total of fourteen (16%) of these participants had carried out some combination of these behaviours in their self-harm episodes.

Participants' level of satisfaction with life and the support available

Twenty-nine (33%) participants were very dissatisfied with life overall. The same number of participants were fairly dissatisfied, whilst 4 (4%) were only a little dissatisfied with their lives. Only 12 (14%) were fairly satisfied, and 14 (16%) were a little satisfied with life overall.

However, participants were very satisfied (*n*=18, 20%), fairly satisfied (*n*=30, 34%), or a little satisfied (*n*=16, 18%) with the level of support that was available to them. Twelve (14%) were fairly dissatisfied with the support they received, seven (8%) were a little dissatisfied, and five (6%) were very dissatisfied.

Measures

In addition to diagnostic assessments administered prior to entry into the programme, a suite of standardised psychometric measures were administered before and after completion of the initial eight week "mindfulness" module for all participants. For those individuals accepted into the full DBT programme after a waiting period, these measures were re-administered prior to the commencement of the remaining components of the DBT programme, at the completion of each component, and at programme completion. For immediate entrants into the DBT programme, measurement occurred immediately following completion of the mindfulness module, and at the completion of each DBT treatment module. As previously stated, the sequence of instrument administration was varied randomly across all measurement points to minimise potential order effects.

The measures administered included clinical diagnostic assessments and formalised psychometric measures. These structured measures assess symptoms and experiences from three different time frames. The MCMI-III contains general statements which are designed to assess an individuals's general view of themselves. The TSI asks individuals to respond on the basis of their experiences over the last six months, whilst the DASS seeks information about the last week of the individual's life. This combination of time frames enables richer and more comprehensive information to be gained about changes in scores over time.

The measures were chosen to reflect Linehan's (1993) suggested reorganisation of BPD criteria into the domains of functioning of emotional dysregulation, behavioural dysregulation, interpersonal dysregulation, cognitive dysregulation, and dysregulation of self. Emotional dysregulation is conceptualised as being comprised of chronic heightened levels of depression and anxiety, and excessive and often inappropriate experience and displays of anger. Problematic behaviours such as inappropriate or excessive drug and alcohol use and self-harm behaviours comprise the domain of behavioural dysregulation, whilst interpersonal dysregulation represents interpersonal problems such as unstable relationships and concerted efforts to avoid abandonment. The domain of cognitive dysregulation is conceptualised as including cognitive disturbances such as transient psychotic syjptoms, disruptions in attention, experiences of dissociation and rigidity in thinking. The final domain, dysregulation of self is hypothesised to include feelings of

emptiness and low self-esteem together with an unstable sense of self (Linehan, 1993). These instruments are identified in the following sections.

Diagnostic assessments.

Clinical assessment interview

As previously noted, all participants had been previously diagnosed with BPD by their treating/referring psychiatrist. Following referral to TMC day programmes and prior to gaining acceptance into the programmes, a clinical assessment interview was conducted to determine each candidate's suitability for the treatment programme. During the course of this initial interview, the candidate's history of interpersonal conflict, affect regulation difficulties, and self harm were assessed in detail. A checklist was completed at the end of each interview, enabling the symptoms and difficulties recorded at these interviews to be compared to the DSM-IV TR (2000) criteria for Borderline Personality Disorder, and the number of criteria each candidate met established.

Standardised psychometric assessments

Two instruments were utilised to assist in confirming the likelihood of the diagnosis of BPD as being accurate for participants. These were:

The Personality Diagnostic Questionnaire: Version 4 (PDQ-4) (Hyler, 1994). This instrument is a 100 item, self-administered questionnaire designed to assess DSM-IV diagnostic criteria for personality disorders. It is widely used in research and clinical practice. Respondents are asked to indicate whether the description of a particular behaviour given generally applies to them or not (e.g., "I avoid working with others who may criticize me"). The total PDQ-4 scale is seen as a measure of overall personality disturbance, whilst scores above 4 on a specific diagnostic scale suggest that a diagnosis should be recorded on that scale (e.g., paranoid, narcissistic, antisocial, obsessive-compulsive). The scale includes an assessment of the individual's response validity. Agreement with SCID-II diagnoses of the magnitude of between -.02 to .63 (Hyler, Skodol, Kellman, Oldham, & Rosnick, 1990) have been reported and it has also been shown to acceptably accurately identify members of the prison population with personality disorders when compared with results from administration of the SCID-II (Davison, Leese, & Taylor, 2001) and to have adequate reliability and validity co-efficients. A similar result was obtained in a study investigating college students (Taylor, James, Bobadilla, & Reeves, 2008), using

selected scales from both instruments. This study reported the internal consistency reliability co-efficient for the PDQ-4 at the level of .64.

In this research programme, patients completed the scale at the end of the initial clinical assessment interview.

The severe personality borderline pathology scale scores on the *Millon Clinical Multi-Axial Inventory – III* (Millon, 1997) were also used to assess the extent of BPD pathology for each participant at entry into the treatment programme, as were other symptoms identified during the clinical assessment interview for entry into TMC treatment programme.

General Psychological adjustment

The measures utilised were chosen on the basis of their psychometric properties and ability to measure symptoms commonly associated with BPD in an objective way. All measures were administered at the commencement and completion of each individual treatment module for all participants in the study. The total suite of measures from which the selection of sub-scales was made for use in the research programme is discussed in the following section. The sub-scales selected from these measures represent the domains of BPD dysregulation proposed by Linehan (1993) previously discussed. These are identified in Table 3 later in the section.

Millon Clinical Multi-Axial Inventory – III (MCMI-III) (Millon, 1997)

The MCMI–III is a standardised, self-report questionnaire that assesses a wide range of information related to an individual's emotional adjustment and attitude towards taking tests. It is designed for adults and focuses on clinical syndromes and is one of the most commonly used tests in clinical practice (Groth-Marnat, 2009). There are 175 questions, to which the individual responds "true" or "false" on a separate answer sheet. It also contains validity scales. The MCMI-III yields scores on a number of clinical scales which represent DSM-IV (APA, 2000) diagnostic criteria. Scale scores are organised into clusters for the purpose of interpretations. These clusters (Millon 1997) comprise clinical personality patterns such as avoidant, dependent, histrionic; severe personality pathology, including paranoid and borderline; clinical syndromes (e.g., anxiety disorder, dysthymic disorder, post-traumatic stress); and severe syndromes (thought disorder, major depression, delusional disorder). Base rate scores in the range of 0-60 are interpreted as "normal"; scores which fall in the range of 61-75 are thought to represent a "tendency" for the characteristic to be present in the individual; scores falling in the range of 76-85 are

representative of a "trait" and scores which fall between 86-115 are suggestive of the presence of a diagnosable disorder. The scales are both reliable and valid. Alpha co-efficients for the clinical scales are reported to range from .66 to .90, while the test-retest correlations reported range is from .82 to .96. Base rate scores for each scale have been validated by correlation with widely used collateral instruments (Millon, 1997).

Trauma Symptom Inventory (TSI) (Briere, 1995)

The TSI is designed to evaluate acute and chronic post-traumatic symptoms based on DSM-IV criteria (APA, 2000). It is a 100-item questionnaire with 10 clinical scales that measure the extent to which the individual endorses trauma-related symptoms, and three validity scales. The profile of scores on the scales is seen as a comprehensive assessment of psychological trauma. Scale scores can be organised into a number of clinical domains believed to be related to the experience of post traumatic stress and other psychological symptoms. The TSI scales of Depression (D), anxious arousal scales (AA), and anger/irritability (AI) comprise the domain of emotion/mood. The domain of trauma symptoms includes the scales of defensive avoidance (DA), intrusive experiences (IE), and dissociation (DIS). Scales in the domain related to self are impaired self reference (ISR) and tension reduction behaviour (TRB), whilst sexual issues are measured by scores on the scales sexual concerns (SC) and dysfunctional sexual behaviour (DSB). Scores on the TSI are converted to standard T scores and plotted to identify an individual's scores profile. TSI scores have a mean of T=50, and a standard deviation of 1.5 (T=65). Scores in this range are considered to be in the "normal" range, whilst those above 65 are considered to be "elevated". Reliability co-efficients for the scales are reported to range from .74 to .91 in both clinical and non-clinical populations. In addition, the instrument is reported to possess both construct and criterion validity (Briere, 1995) when assessed against other reliable and valid measures during the normative process such as the MCMI and the Beck anxiety and depression scales.

Depression, Anxiety, and Stress Scale (DASS-21) (Lovibond & Lovibond, 1995)

This 21-item test measures depression, anxiety and stress. Each of the 21 items is rated on severity of symptoms for the past week, and thus the instrument is sensitive to change in emotional state. The DASS-21 yields z scores on the domains of stress, anxiety and depression. Scores falling in the range of 0-.5 are considered

normal; scores between .5 and 1.0 represent a mild level of depression, stress or anxiety; a score between 1.0 and 2.0 suggests a moderate level of symptoms; scores between 2.0 and 3.0 represent a severe level of symptoms; and scores between 3.0 and 4.0 are considered representative of an extremely severe level of symptoms. The normative sample reliability co-efficients for the scales are reported to range from .73 to .81. This instrument has also been validated against other psychometrically sound measures measuring the same constructs (Lovibond & Lovibond, 1995).

State-trait Anger Expression Inventory – 2 (STAXI-2) (Spielberger, 2003)

The 44-item STAXI-2 measures an individual's experience, expression, and control of anger. It contains measures of the intensity of anger at a particular time, as well as how often angry feelings are experienced over time and the respondent's expression of anger behaviours. Each respondent chooses a response from a 4 point scale, where 1 = "not at all" and 4 = "very much so". Typical questions include "I control my temper", "I am quick tempered" and "When I get mad, I say nasty things". Scores can be organised into the domains of state anger (SA), trait anger (TA), and anger expression (AX). The domain of trait anger includes scores on the angry temperament (AT) and angry reaction (AR) scales. The expression of anger index (AX) includes measures of how often experienced anger is expressed verbally or by physical aggression, how often angry feelings are suppressed, how often the outward expression of angry feelings is controlled, and how often attempts to control angry feelings using self soothing behaviours occur. Scores falling in the range of the 25^{th} to 75^{th} percentile are considered to be in the "normal" range, although higher scores may indicate a higher likelihood of experiencing, outwardly expressing, or alternatively, suppressing and controlling anger. Scores above the 75^{th} percentile indicate that the individual is more likely to experience or express feelings of anger to a degree that interferes with optimal functioning. This instrument has been validated against other psychometrically sound measures and alpha co-efficients ranging from .73 to .86 are reported for the normative sample utilised in the development of the scales (Spielberger, 2003).

Young Schema Questionnaire - Short form (YSQ-S2) (Young 2003)

The YSQ-S2 is a 75-item scale, designed to measure an individual's self-defeating beliefs about themselves and the world. The scale has been psychometrically validated through a combination of factor analysis and calculation of alpha co-efficients for the domains measured. The alpha co-efficients were reported

to range from .77 to .92, whilst the test-retest reliabilities ranged from .50 to .82 (Hoffart et al., 2005; Schmidt, Joiner, Young, & Telch, 1995). The short form of the questionnaire was chosen firstly because it is quicker to complete, and secondly, in previous research, it has been found to contain the five highest loading items for each factor or maladaptive belief. The scale can be used to obtain a total or mean score on a variety of schema, which are believed to underpin the cognitive distortions observed in personality disordered clinical populations, and which are believed to give rise to PD behaviours such as emotional lability and coping difficulties. Alternatively, the total of items scored five or more by the individual can be calculated, again to identify the most prominent schemas. Calcultion of mean scores for each schema is the strategy most commonly used in the context of research (Hoffart et al., 2005). However, for use in clinical and therapeutic situations, the total number of schemas yielding a score of 5-6 (highest possible score on each schema) is calculated and discussed with the individual. Scores of this magnitude indicate that the particular schema is likely to be an important influence on the indivdiual's functioning in that domain, and therefore a potential target for treatment.

Since the scale was being used in a research programme rather than for clinical work, the mean score on the schemas included in the research studies was calculated for each participant and then combined and examined for change throughout this research programme. Schema mean scores greater than four are considered representative of schemas which would be likely to be influential in an individual's functioning (Young et al., 2003). It was noted that the YSQ-S3 was published shortly after the commencement of data collection. However, to allow comparisons between scores over time to be made, the YSQ-S2 was retained throughout the research programme. Originally, the short and long versions of the schema questionnaires were developed to assess maladaptive schemas theorised to be central to the development of psychological difficulties and personality disorders. These schemas are grouped into domains which reflect their hypothesised origin within the individual's learning history and early experiences. The domains and schemas hypothesised within each of them are discussed more fully below (Hoffart et al. 2005; Schmidt et al., 1995; Young, 1990, 2003).

Disconnection and Rejection Domain

Individuals with active or prominent schemas in this domain often have difficulty forming and maintaining stable, secure, and satisfying relationships with

others. According to Schmidt et al. (1995) and Young et al. (2003) individuals with active schemas in this domain have often had traumatic childhoods and are often the most damaged. They tend to avoid intimate relationships altogether or move quickly from one destructive relationship to another in an attempt to get their needs for safety, security and nurturance met. High scorers on any of the four schemas in this domain typically believe that others are unreliable, and rejecting *(Abandonment)* and abusive *(Mistrust/Abuse).* High scorers also perceive themselves as defective, inferior, or bad in some way *(Defectiveness/Shame)* and feel isolated from others and the rest of the world *(Social Isolation/Alienation).* All of the schemas in this domain were included in the research programme, with one or more included in most aspects of dysregulation.

Impaired Autonomy & Performance

There are four schemas in this domain. High scorers on schemas in this domain are likely to have the expectation that they are unable to function independently or successfully in the environment without dependence on others. The schema of *Dependence/Incompetence* relates to this belief that high levels of assistance are needed from others in order to meet everyday responsibilities. The *Vulnerability to Harm or Illness* schema relates to unrealistic or exaggerated fears that unpreventable internal or external catastrophic events are imminent. High levels of emotional closeness and involvement with significant others at the expense of individual social development are represented by the *Enmeshment/Undeveloped Self* schema in this domain. Feelings of emptiness and of being without direction are common to those for whom this schema is prominent. The final schema in this domain is *Failure.* This relates to a belief about being fundamentally inadequate relative to others, and a conviction that failure is inevitable. The schemas of *Dependence/Incompetence* and *Enmeshment/Undeveloped self* were included in the research as they are relevant to dysregulation of the self in terms of beliefs relating to self-efficacy and self-esteem. Thus, they are included in the dysregulated self domain in these studies.

Impaired Limits Domain

The two schemas included in this domain relate to difficulties with internal limits, long term goal related activities, or responsibility towards others. When activated, these schemas may lead to difficulties in respecting others' rights and co-operating with them, or in setting and meeting realistic short or long term goals. The

Entitlement/Grandiosity schema relates to a view of the self as being superior to others and entitled to special rights and privileges, together with an expectation of not being limited by the reciprocities of usual patterns of social interactions. The *Insufficient Self-Control/Self Discipline* schema relates to difficulties in achieving personal goals or in controlling excessive expressions of emotions or impulsive behaviours, related to self control insufficiencies or deficits. The *Insufficient self-control/Self discipline* schema was included since it relates to the domain of emotional dysregulation examined in this research.

Other Directedness Domain

This domain relates to the amount of emphasis placed on meeting others' needs at the expense of the individual's own needs (Schmidt et al., 1995; Young et al., 2003) and includes two schemas. The *Subjugation* schema represents the surrender of control over actions to others to avoid their disapproval or retaliation. The typical childhood family environment underpinning the development of this schema is thought to have been one that was primarily based on conditional parental approval and acceptance, where the child was prevented from following their inclinations. This schema represents repression of emotions or needs because they are seen as invalid or unimportant. Frequently, individuals where this schema is prominent are compliant and eager to please. At times, this repression of emotions or needs can lead to explosive outbursts of anger which has built up over time. The other component schema in this domain is the *Self Sacrifice* schema. An individual with this schema voluntarily meets others' needs at the expense of their own in order to avoid causing others pain, or to gain self-esteem. Unfortunately, some individuals may also develop feelings of resentment over time. In this research programme, only the *Subjugation* schema is included in the examinations of the domain of interpersonal dysregulation.

Overvigilance & Inhibition Domain

There are two schemas in this domain, *Emotional Inhibition* and *Unrelenting Standards/Hypercriticalness*. Individuals with high scores in this domain tend to suppress their impulses and spontaneous feelings and attempt to meet rigid internalised rules about their performance and the expense of health and happiness (Young et al., 2003). Such individuals are often pessimistic and as children, learned that life comprised predominantly negative features and were not encouraged to be playful, spontaneous or happy. Individuals with an active *Emotional Inhibition* schema restrain any spontaneous feeling or action to prevent loss of impulse control

or criticism from others. These individuals often appear cold and withdrawn with restricted affect. The activation of the *Unrelenting Standards/Hypercriticalness* schema results in feelings of pressure to meet extremely high internalised standards of behaviour and actions, to avoid feelings of shame and disapproval from others. These schemas were not included as there was little relationship between scores on these schemas and scores on other schemas included in the domains, as measured by factor analysis of scores at baseline.

Mindful Attention Awareness Scale (MAAS) (Brown & Ryan, 2003)

The MAAS is a 14 item scale which asks the respondent to indicate the degree to which they notice particular experiences. It is designed as a measure of the absence of unthinking and automatic behaviour (Coffey & Hartman, 2008). Responses range from "1=almost always", to "6=almost never". Sample items include "I could be experiencing some emotion and not be conscious of it until some time later", and "It seems I am 'running on automatic' without much awareness of what I'm doing". Each respondent's total score is calculated, with higher scores indicating that the individual has good control of their attention and tends to be focused on the behaviour being undertaken at any given moment, rather than dissociated or in a "trance" state with little conscious awareness of behaviour or the situation being experienced. Alpha co-efficients ranging from .80 to .87 are reported based on community and national samples. Test-retest reliability analyses found no significant difference between mean scores across two measurement points. In addition, comparisons of scores on the MAAS with scores achieved on a number of other scales confirmed its' validity (Brown & Ryan, 2003; Coffey & Hartman, 2008).

Coopersmith Self Esteem Inventory – Adult (SEI-A) (Coopersmith, 1990)

The SEI–A is a standardised self-report questionnaire that is designed to assess an individual's evaluative attitudes towards the self. It consists of 25 items about which the individual makes a judgement relating to whether the statement is like or unlike them. The instrument is designed to measure the global concept of self esteem in adults and has been reported to have a reliability level estimated at approximately .80 (Bolton, 2003) and has been widely used in research and clinical settings. The term "self-esteem" relates to the evaluation a person makes, and customarily maintains, of him or herself; that is, overall self esteem is an expression of approval or disapproval, indicating the extent to which a person believes him or herself competent, successful, significant, and worthy" (Coopersmith, 1990, p 1-2). It is

believed that self-esteem is significantly related to effective functioning in life and personal satisfaction. Mean scores typically fall in the range from 70-80, with a standard deviation between 11 and 13. High scores correspond with high self-esteem. Alpha co-efficients of .87 to .92 are reported in the manual, together with a test-retest reliability of .64 (Coopersmith, 1990).

Selection of scale battery for analysis

A battery of scales from these measures were chosen for analysis on the basis of their apparent ability (based on scale descriptions as shown in the test manuals or published literature) to best represent the five domains of BPD dysregulation hypothesised by Linehan (1993). The scales used to measure each of these domains dysregulations are reported in turn below.

Emotional dysregulation domain

Emotional dyregulation is the first of Linehan's (1993) hypothesised domains of BPD functioning and contains the highest number of DSM-IV TR (2000) diagnostic criteria. It is conceptualised as primarily relating to dysregulated affective responses, such as chronic problems with anger, hostility and irritability, and chronic negative affect (Linehan (1993).

The scales selected to represent the domain of emotional dysregulation are shown in Table 3 and described below. This domain comprises (i) chronic negative affect; (ii) depressed mood; (iii) anxiety; and (iv) anger/irritability. Scales indexing these factors are identified and described below.

Table 3

List of scales utilised in the research programme in the domain of emotional dysregulation

	Measure	Scale
Depression	MCMI-III	Major depression
	DASS	Depression
	TSI	Depression
Anxiety	MCMI-III	Anxiety
	DASS	Anxiety
	TSI	Anxious arousal
Anger	YSQ-S2	Insufficient self control/Self Discipline
	TSI	Anger/Irritability
	STAXI-II	Anger expression – Outward
		Anger expression – Inward
		Angry reaction
Overall Borderline Personality Pathology		
	MCMI-III	Borderline personality pathology

(i) Depressed mood.

As is clear from inspection of Table 3, three scales are used to measure depressed mood. These are:

Millon Clinical Multi-Axial Inventory – III (MCMI-III) (Millon, 1997) – Major Depression scale

High scores on the scale measuring the symptoms of major depression indicate a severely depressed individual, who may experience suicidal ideation, a dread of the future and a sense of hopeless resignation on an ongoing basis. Somatic difficulties such as fatigues and changes in weight as well as concentration problems and feelings of worthlessness or guilt are also common (Millon, 1997). Items assess how the individual generally feels. Participant baseline scores on this scale were analysed using Pearson correlations (2-tailed). Results showed that scores on this scale

correlated .77 with baseline scores on the DASS, and .66 with baseline scores on the TSI depression scale.

Depression, Anxiety, and Stress Scale (DASS-21) (Lovibond & Lovibond, 1995) – Depression scale

Responses on this scale represent the severity of depressive symptoms experienced over the week prior to completing the measure. Baseline scores on the DASS depression scale achieved a correlation of .61 with the TSI depression scale.

Trauma Symptom Inventory (TSI) (Briere, 1995) – Depression scale

The TSI depression scale measures the extent to which an individual has experienced depressed mood and depressive cognitions over the six months prior to completing the scale. High scores suggest the individual frequently experiences feelings of sadness and unhappiness, feelings of worthlessness and inadequacy, feelings of sadness and thoughts about death, and has a view of the future as hopeless.

(ii) Anxiety

Three scales are included to mesure anxiety. These are:

Millon Clinical Multi-Axial Inventory – III (MCMI-III) (Millon, 1997) – Anxiety Disorder scale

High scores on the anxiety disorder scale indicate an individual who experiences significant physical symptoms of anxiety (e.g., nausea, excessive perspiration) and feelings of apprehension and tension. Baseline scores on this scale correlated .54 with the DASS baseline score, and .38 with scores on the TSI anxious arousal scale.

Depression, Anxiety, and Stress Scale (DASS-21) (Lovibond & Lovibond, 1995 – Anxiety scale

Responses to this scale represent the extent of symptoms of anxiety experienced by the individual over the week prior to scale completion. Scores on this scale correlated with the TSI anxious arousal scale at the .60 level.

Trauma Symptom Inventory (TSI) (Briere, 1995) - Anxious Arousal scale

The anxious arousal scale measures the physical symptoms of anxiety and autonomic arousal. Individuals with high scores are likely to experience periods of nervousness, shaking, and physical and psychological tension and apprehension.

(iii) Anger

Scales from three different measures are used to measure participants' anger. These are:

Trauma Symptom Inventory (TSI) (Briere, 1995) - Anger/Irritability scale.

The anger/irritability scale measures the extent of angry mood and irritable affect experienced by an individual. High scorers are likely to experience internal sensations of anger or irritability, as well as angry cognitions (e.g., wanting to hurt another) and angry behaviour (e.g., argumentativeness, shouting). Baseline scores here correlated at the .40 level with the YSQ-S2 Anger/Irritability schema score, at .43 with the STAXI-II Angry reaction score, at .51 with the STAXI-II Anger Expression - Outward score, and at .18 with the STAXI-II Anger Expression – Inward score.

State-Trait Anger Expression Inventory – 2 (STAXI-2) (Spielberger, 2003), Angry Reaction (AR), Anger Expression – Outward (AX-O), and Anger Expression – Inward (AX-I) scales

The angry reaction scale measures the extent to which angry feelings are experienced whilst the individual is feeling frustrated or is experiencing negative evaluations from others. The anger expression – outward scale measures the frequency of verbally or physically abusive behaviour towards others as a means of expressing angry, whilst the anger expression – inward scale measures the frequency of suppression of angry feelings. The angry reaction score correlated .37 with the YSQ-S2 insufficient self control/self discipline score, the anger expression outward score correlated with this schema at the .31 level, and the anger expression inward scale score reached a correlation level of .24. Overall, the correlations were weakest between the anger expression inward scale score and the other scales included in this domain.

YSQ - S2 (Young 2003) - Insufficient self control/self discipline schema

Individuals with high scores on this schema are likely to experience difficulties in achieving personal goals or in controlling excessive expressions of emotions, particularly anger, and controlling impulsive behaviours directed towards self or others as a result of insufficiencies or deficits in self control mechanisms.

(iv) *MCMI-III scale - severe personality pathology – Borderline*

This scale was designed to assess the degree of overall affective dysregulation and emotional instabilitycommon in individuals with a BPD diagnosis, in addition to

recurring suicidal and self-harming thoughts and difficulties with interpersonal relationships (Millon, 1997). It is included as an overall measure of emotional dysregulation.

Interpersonal dysregulation domain

The second of Linehan's (1993) domains, this domain is conceptualised as relating to interpersonal problems such as unstable and conflictual relationships, low levels of social support and efforts to avoid perceived threats of loss, or actual experience of loss. Selected items from the YSQ-S2 were included in this domain as representative of the concepts being measured. Table 4 identifies the scales selected to represent the domain of interpersonal dysregulation. These are also described below.

Table 4

List of schemas utilised in the research programme in the domain of interpersonal dysregulation

Measure	Schema
YSQ-S2	Abandonment
	Mistrust/Abuse
	Subjugation

YSQ – S2 selected schemas – Abandonment; Mistrust/Abuse and Subjugation schema

A high score on the abandonment schema indicates that the individual is uncertain of the availability of others for support and protection, and experiences fears of being abandoned. The mistrust/abuse schema is designed to examine an individual's expectation that others will intentionally hurt or abuse them in some way, whilst the subjugation schema is designed to measure the extent to which an individual surrenders to others to avoid anger or abandonment (Young et al., 2003). In terms of correlations between the schemas, scores on the abandonment schema achieved correlations of .28 and .41 with scores on the mistrust/abuse and subjugation schemas respectively. The correlation between the mistrust/abuse and subjugation schemas was calculated to be .49**.**

Behavioral dysregulation domain

Included in this domain are behaviours such as suicide threats and parasuicidal behaviours, and self-damaging behaviours such as alcohol and drug abuse, Three scales from two measures are included in this domain together with self-reports of the frequency and intensity of self-harm ideation from diary cards, completed by participants in the full DBT programme. The scales were chosen as being representative of the characteristic behaviours of behaviourally dysregulated individuals as hypothesised by Linehan (1993) and are presented in Table 5 below.

Table 5

List of scales utilised in the research programme in the domain of behavioural dysregulation

Measure	Scale
MCMI-III	Alcohol dependence
	Drug dependence
TSI	Tension reduction behaviour
Self reports	Frequency and intensity of suicidal Ideation (DBT group only)

MCMI – III scales – Drug and Alcohol Abuse

Individuals with high scores on these scales are more likely to have a history of excessive use of alcohol or other drugs, or to be currently using these substances excessively. This excessive use may result in problems in interpersonal and vocational functioning. Baseline scores on the MCMI-III alcohol dependence scale correlated at .55 with the baseline score on the drug dependence scale, and at .30 with the TSI tension reduction behaviour baseline score. However, the correlation between the baseline score on the MCMI-III drug dependence scale and the baseline score on the TSI scale was low at .18.

Trauma Symptom Inventory (TSI) (Briere, 1995) –Tension Reduction Behaviour scale

The tension reduction behaviour scale represents a measure of activities that an individual may engage in to modulate or avoid negative internal states. High scores represent an individual's tendency to express their distress in self-destructive behaviours, aggression or inappropriate sexual behaviours.

Self monitoring of self harm ideation intensity and frequency

This occurred for DBT group participants only and included recording of any self harm urges which had occurred, utilising a monitoring form (diary card) which was already in use in the DBT group programme. Each participant in the DBT programme recorded information relating to their self-harm thoughts on a daily basis throughout the course of the treatment programme. This is usual clinical practice in TMC's DBT treatment programme and each programme participant is expected to record relevant information on their cards throughout treatment and during the follow up period

Cognitive dysregulation domain

Dichotomous and rigid thinking, and cognitive disturbances, such as transient psychotic symptoms are conceptualised as belonging to this domain of functioning. Two scales from the MCMI-III, one from the TSI and the MAAS were considered representative of the cognitive symptoms hypothesised in this domain. Table 6 identifies the scales used to assess this domain. A brief discussion of the characteristics and properties of each scale then follows.

Table 6

List of scales utilised in the research programme in the domain of cognitive dysregulation

Measure	Scale
MCMI-III	Thought disorder
	Delusional disorder
TSI	Dissociation
MAAS	Full instrument

MCMI-III Thought Disorder and Delusional Disorder scales

Individuals with high scores on the thought disorder scale may, at times, display disorganised behaviour or appear confused or disoriented. They may experience hallucinations and unsystematised delusions and fragmented or bizarre thinking patterns consistent with the experience of a brief psychotic state.

Those attaining high scores on the delusional disorder scale may be experiencing paranoia, together with other-directed hostility and irrational thinking. Correlations between baseline scores on the thought disorder scale ranged from .58 with the delusional disorder scale, to .56 on the TSI dissociation scale. The correlation with scores on the the MAAS was -.48, indicating that the higher the score on the thought disorder scale, the lower the scale on the MAAS. Baseline scores on the delusional disorder scale correlated at the .56 level with the TSI dissociation score, and -.50 with the MAAS, again indicating that higher scores on the delusional disorder scale are associated with lower scores on the MAAS.

TSI – Dissociation scale

This scale measures the frequency of dissociative experiences and symptoms. High scores on this scale may indicate higher levels of depersonalisation and derealisation, and cognitive and emotional numbness. Baseline scores on this scale correlated at -.49 with baseline scores on the MAAS.

Mindful Attention Awareness Scale (MAAS)

Higher scores on this scale indicate that an individual is able to focus and control their attention during tasks and activities. Lower scores indicate that the individual may be experiencing periods of dissociation or inattention to their current activities. It is not surprising that the correlations between baseline scales on this scale and the other scales in this domain are negative, since the higher the level of cognitive disruption from transient psychotic symptoms and periods of dissociation, the less oriented to the present and the less focused an individual's attention would be expected to be.

Self dysfunction domain

Chronic feelings of emptiness, low self-esteem, an unstable sense of self and poor self image are central to this domain. Together with chronic negative affect and affective instability, these feelings may also contribute to suicidal and parasuicidal behaviours and other impulsive behaviours such as promiscuity. Table 7 lists the

scales chosen to represent these characteristics. A brief discussion of the characteristics and properties of each scale then follows.

Table 7

List of scales utilised in the research programme in the domain of self dysfunction

Measure	Scale
TSI	Impaired self reference
YSQ-S2	Enmeshment/Undeveloped self schema
	Defectiveness/Shame schema
	Social Isolation schema
Coopersmith SEI – Adult	Full instrument – Adult form

TSI – Impaired Self Reference scale

The TSI impaired self reference scale measures difficulties associated with deficits in personal identify and the sense of self. High scores indicate an individual who has difficulty discriminating their own needs from others, confusion regarding personal identity, experiences the need to rely on others for direction and structure, and feels an internal sense of emptiness. Correlations between baseline scores on this scale and the other measures utilised in this domain ranged from .52 for the defectiveness/shame schema, .55 with the social isolation schema, .29 with the enmeshment schema and -.39 with the Coopersmith SEI-A.

YSQ- S2 schema – Enmeshment/undeveloped self; Defectiveness/Shame; and Social Isolation schema

The enmeshment/undeveloped self schema relates to excessive feelings of emotional involvement and closeness with significant others to the point where there is a belief that the individual cannot be happy without the constant support of the significant other. High scores on this schema can also be associated with feelings of emptiness and lack of or insufficient individual identity. High scores can also indicate an individual with high levels of emotional involvement with significant others at the expense of individuation and social development. Baseline scores on this schema

correlated at the .22 level for scores on the defectiveness/shame schema, .26 on the social isolation schema, and -.38 on the Coopersmith SEI-A.

High scorers on the defectiveness/shame schema are likely to believe that they are inferior or invalid when compared to others and/or that they are unlovable. Baseline scores on this schema correlated at .78 with baseline scores on social isolation, .22 with enmeshment scores, .51 with TSI impaired self reference scores and -.64 with scores on the Coopersmith SEI-A.

The social isolation schema relates to a feeling of being isolated and different from others, and not part of a community or specific social group. Baseline scores on this schema correlated at .78 with the defectiveness/shame scores, .26 with the enmeshment/undeveloped self schema score, .55 with the TSI impaired self reference score, and at -.59 with the Coopersmith SEI-A.

Coopersmith Self Esteem Inventory – Adult (SEI-A) (Coopersmith, 1990)

The lower the score achieved on this inventory, the lower the individual's self esteem. Higher scores on this inventory indicate functional levels of self esteem. It is not surprising then that the correlations between this measure and YSQ-S2 schemas assessing dysfunctional beliefs about the self are negative. The higher the level of these dysfunctional beliefs, the lower would be the expected self esteem inventory score.

Measures of Therapeutic alliance and consumer satisfaction

Measurement of participants' perceptions of the therapeutic alliance were included in the suite of measures administered throughout the research programme, as was a measure of consumer level of satisfaction with the programme in terms of therapist behaviour, programme content, and programme outcome overall. Many theorists (e.g., psychodynamic, client centred, humanistic) have discussed the importance of a positive therapeutic alliance between therapist and patient as a necessary component in successful therapy. In an Australian study, Green (2003) assessed the efficacy, reliability, and validity of two measures of therapeutic alliance within a group treatment for depression, and reported that the two measures utilised had demonstrated psychometric reliability, and validity. Since the TMC treatment programme is also in a group format it was appropriate to utilise these measures (Green, 2003).

The therapeutic alliance is believed to be related to treatment efficacy (Green, 2003) in any programme and therefore a measure of this seemed necessary in this research programme. In addition, consumer satisfaction and its relationship (if any) to treatment outcome has not previously been measured at TMC, so an assessment of this also occurred. These measures are described more fully below.

Vanderbilt Therapeutic Alliance Scale – Revised (VTAS-R) (Green, 2003)

This is an 18-item scale which measures the individual's perception of their interactions with their therapist. Participants are asked to rate the therapist on a 5 point scale where 0="not at all" and 5="a great deal" on statements such as "To what extend did the therapist commit themselves and their skills to help the patient to the fullest extent possible?" A high score indicates a positive perception of the therapist and is seen as a measure of the therapeutic alliance. The inter-rater reliability for the original VTAS is reported as .60, and strong correlations with other measures of therapeutic alliance have been reported (Fenton, Cecero, Nich, Frankforter, & Carroll, 2001). For the VTAS-R, Green (2003) reported alpha co-efficients of .79 for the section measuring therapist intrusiveness, and .92 for the section measuring a positive therapy climate, with an overall Cronbach's alpha reported as .81.

Satisfaction with Therapy and Therapist Scale – Revised (STTS-R) (Oei & Shuttlewood, 1999)

This 13-item scale measures the individual's degree of satisfaction with the therapy process, the therapist, and the overall outcome of the therapy. Each respondent is asked to respond to statements such as "I am satisfied with the quality of the therapy I received" on a 5 point scale where 1 = "strongly disagree" and 5 = "strongly agree". Respondents are also asked to make a judgement about the extent of assistance they gained from the treatment with the specific problem that brought them to therapy. Green (2003) reported Cronbach's alpha coefficient to be 0.94.

Procedure

The procedure followed was common to all participants throughout the duration of the project. All participants in TMC's Mindfulness and DBT treatment programmes were approached during the time period of the study and requested to participate in the research once their treating psychiatrist's permission to discuss the study with them had been gained. Those who agreed to participate signed a "Plain

Language Statement", and completed a basic demographic questionnaire. They then completed several sets of questionnaires throughout their involvement in the study. For each group of participants, the sequence of questionnaires in the package was different at each administration. The questionnaire battery was administered at the beginning and end of each treatment module, to ensure that there was no detrimental effect of completing the questionnaires in terms of reduced time available for the programme content.

Mindfulness group participants completed the questionnaires prior to the initial treatment session of the eight week treatment programme, following an introduction and discussion of the process to be employed. Participants were able to ask questions and/or comment on the project or the process as necessary. Questionnaires were also completed following completion of each mindfulness skills training group.

A similar process occurred for DBT group participants, with the process being explained again prior to each questionnaire battery completion. Participants then completed the battery at the end of each treatment module. For DBT skills training participants, responses at the end of each treatment module served as the pre-treatment measurement for the next module. There was usually a two week break between the end of one DBT module and the beginning of the next, although this was extended slightly at the end of each year to allow for Christmas and New Year holidays.

All project participants were offered the opportunity to give feedback about the experience of completing the questionnaires at the time of completion, and appropriate support was available for any participants who became distressed during the procedure. One individual and one group debriefing session were requested during the entire data collection period. Participant queries and comments were appropriately resolved during these sessions.

Some of the participants failed to complete the mindfulness (n=16) and DBT (n=4) treatment programmes. In the DBT group, this non-completion occurred as a result of a change in circumstances such as commencing work, or moving house. For those failing to complete the mindfulness group, no data to explain the non-completion was available.

The Melbourne Clinic (TMC) Treatment Programme

TMC offers a day patient treatment programme to individuals with BPD who are able to access private mental health services. The eight week mindfulness programme developed by Linehan (1993a; 1993b) is offered as a "stand-alone" intervention as an intervention in its own right for some clients, as well as incorporating it into the full DBT programme. All project participants commenced this "mindfulness" module, with some continuing on into the remainder of the full DBT programme. The mindfulness intervention aims to ensure that participants continuing on to the full DBT programme have some strategies available to them to utilise whilst waiting for entry into the full treatment programme. The module teaches the participants to be open to their cognitive and affective experiences in a non-judgemental way (Robins, Schmidt, & Linehan, 2004), an ability which is believed to facilitate the development of self-understanding and self-observing skills which are considered necessary for change to occur (Robins et al., 2004).

The TMC programme adapted Linehan's (1993a; 1993b) original format to include the same mindfulness training content (e.g., mindfulness of the breath; mindful walking; mindful eating) delivered over a longer time period to give participants more time to learn and develop the skills. The initial week of the TMC programme comprised a discussion of group rules. Following this initial session, each mindfulness skill was taught over a two week period, with a two week revision period at the end of the programme where participants displayed their mastery of the skills. Each group commenced with a homework review of an hour's duration, followed by one hour of teaching content, and concluded with 30minutes of mindfulness practice and setting of the homework task for the week. Where necessary, a short break was scheduled at the end of the first hour of the group, and additional short practice opportunities utilised throughout the course of the group to demonstrate the skill being discussed.

Following completion of this module, entry to the remainder of the DBT programme could be delayed for up to six months as intake occurs only twice a year. This remaining nine month DBT programme contains the modules of Interpersonal Effectiveness, Emotion Regulation and Distress Tolerance (Linehan, 1993a). Each of these modules is of eight week duration, and each is conducted in accordance with the principles and strategies delineated in Linehan's (1993b) treatment protocol.

Individuals in the DBT treatment programmes are required to suspend their involvement with any other treating psychologist or counsellor during the course of the programme. Contact is maintained with their treating psychiatrist throughout.

The Melbourne Clinic DBT treatment programme was developed by a therapist (clinical psychologist) who was trained in DBT in the USA by Linehan. In terms of structure, the programme is a standard DBT programme containing all the elements of Linehan's (1993) treatment protocol, including DBT team consultation, telephone coaching and ancilliary treatments as well as individual DBT therapy and group skills training. The content and implementation of the skills training sessions and individual sessions adhered to the standard DBT treatment protocol, and together, all components functioned as a full DBT treatment programme. All TMC psychologists were involved in delivering the programme compontents. Programme participants also continued to attend appointments with their treating private psychiatrist or other treating professional in addition to the treatment offered as part of TMC programme.

General issues relating to data analysis

The focus of the research programme in this thesis was to examine the impact of Mindfulness and DBT treatment provided for consumers diagnosed with BPD within TMC and the project had an exploratory and descriptive focus. For the results of all intervention groups, descriptive and inferential analyses were utilised to describe consumer characteristics and investigate relationships amongst variables in the domains of functioning of interest (emotional dysregulation, interpersonal dysregulation, behavioural dysregulation, cognitive dysregulation, and dysregulation of self).

There were no statistically significant differences in baseline mean scores on any demographic, symptom, or behavioural domain between the 88 participants in the study at entry into the Mindfulness programme, when the mean scores of those who entered Mindfulness alone, and those who continued on to participate in the remaining DBT modules were compared. As a consequence, all participants' scores were combined for analyses of the data relating to participation in mindfulness. Any missing values were replaced utilising the SPSS missing value replacement procedure (Field, 2009), following visual scanning of the data. Normality was examined using

the Kolmogorov-Smirnov test (Field, 2009) with three variables appearing to violate the normality assumption. However, given the relatively large sample size overall and the fact that statistically sound analyses were employed, the data was used in its original form and not transformed for any analysis (Field, 2009; Norman, 2010).

Paired t-tests and repeated measure multivariate MANOVA and ANOVA analyses, together with correlational analyses (used to assess the degress of relationship between measures in each domain) (Field 2009; Pallant, 2005) were conducted using the Statistical Package for the Social Sciences (SPSS) Version 17.0 for Windows.

Treatment completers versus treatment non-completers

It was of interest to investigate possible differences between TMC clients who completed the treatment programmes (TC) and those who did not complete the treatment (TMC) programmes. It should be noted that whilst 17 (19%) did not complete the initial mindfulness module, only four (15%) participants did not complete the DBT treatment programme. These rates are roughly comparable to rates reported in other BPD treatment outcome studies, which include reported non-completion rates of 17% (Giesen-Bloo et al., 2006); 22% (Bohus et al., 2004); 25% (Linehan, et al., 2006); 31% (Prendergast & McCausland, 2007); and 51% (Williams et al., 2010). These latter two studies were conducted in Australian mental health settings.

A meta- analysis of 41 studies investigating reatment completion rates in psychotherapy for BPD individuals conducted by Baricot, Katsakou, Marougka, and Priebe (2010), found an overall non-completion rate of 25% for treatments of less than 12 months duration, and 29% for treatments of longer duration. From their analysis these authors concluded that across studies, differences in treatment setting and model did not contribute to the varying rates found. However, impulsivity, low level of commitment to change and poor quality therapeutic relationships were found to be associated with failure-to-complete rates in individual studies.

In this research programme, demographic and clinical information relating to mindfulness non-completers was compared to information relating to completers using independent t-tests to examine any differences between the groups that may have contributed to non-completion of treatment. In terms of differences in

demographic details, significantly more of the mindfulness non-completers (TNC) were unemployed ($p<.05$), and reported more ongoing symptoms (TNC = 4, TC = 3, $p<.05$) than did the completers (TC). There were no other significant differences between the groups in any other area. In terms of scores on symptom measures and clinical scales, there were no significant differences between the groups on any of the MCMI-III scale scores, on any of the the DASS – 21 scales, on the Coopersmith Self Esteem Inventory, on the Trauma Symptom Inventory (despite the non-completers endorsing significantly more trauma experiences), or on the Young Schema Questionnaire (S-2). There were no differences between groups in the total number of BPD criteria met on the BPD criteria checklist, or on most of the Personality Diagnostic Questionnaire - 4 scales except for scores on the Narcissistic PD scale, where non-completers were found to have endorsed more of these items on average than completers (TNC = 4, TC=3, $p<.05$). Since there were very few non-completers in the DBT group, comparison between these individuals and the remainder of the group did not occur.

Missing data

There were very few responses missing from the completed questionnaires – all participants generally completed all questionnaires fully. If missing data occurred this tended to be on some items on measures in the suite of questionnaires being administered at that time, and no participants missed answering a complete questionnaire at any stage in the study. Any missing values in the data set were calculated using the SPSS "Missing Values Analysis" procedure (Hawthorne & Elliott, 2005). Missing data were replaced with the estimated values resulting from this procedure prior to any analyses being conducted. No cases were deleted even if the participant did not complete the treatment programme. For ease of analysis and reporting, data for each phase of the treatment was analysed separately and results for mindfulness and DBT treatment groups are also reported separately.

Chapter Six

Mindfulness training and BPD symptoms

Mindfulness and acceptance-based therapies

Eastern religions have asserted the benefit of mindfulness meditation for reducing psychological suffering and increasing well being for centuries (Linehan, 1993a; Kabat-Zinn, 1982). In recent years, these traditional Eastern approaches have been adapted for use in Western treatments across a variety of age groups, and have been incorporated into evidence-based treatment programmes available in a wide range of service settings. These approaches have included mindfulness based stress reduction (MBSR); mindfulness based cognitive therapy (MBCT; acceptance and commitment therapy (ACT); and dialectical behaviour therapy (DBT). There is a growing body of empirical evidence for the efficacy of this approach to psychological problems and this has assisted in the development of more comprehensive understandings of the concepts involved in this approach (Baer, 2006, 2010).

Mindfulness is a central component of a DBT programme (Linehan, 1993a), but has also been used in the treatment of other psychological disorders. Baer (2006) reviewed the concept of mindfulness and acceptance-based treatment approaches and concluded that, despite the differences, the common component in these treatments was teaching the skill of "a particular way of paying attention to present-moment experiences ..... that may have significant potential for reducing symptoms and improving well-being in a wide range of populations" (p.26).

In a comprehensive review, Baer (2006) delineated the methods and applications that have been utilised to treat disorders such as depression, anxiety, psychosis, eating disorders, and BPD in adults and older adults. The review goes on to consider the findings in children and adolescent groups, and in groups with diagnosed medical conditions such as cancer and chronic pain patients, as well as application in

managing workplace stress during a wellness programme. The programmes described report significant benefits to the participants in terms of reduced distress and increased ability to manage affective dysregulation. A later work extends this body of knowledge by consideration of the theory and mechanisms of change relating to mindfulness training (Baer, 2010)

Mindfulness is used as a mechanism for directing attention to the present moment in a non-judgemental or accepting way (Kabat-Zinn, 1990), in contrast to the state of mind where attention is focused on negative feelings or worries, or unpleasant bodily sensations. Mindfulness involves a compassionate and interested approach to thoughts and sensations being experienced at any one time, or during any activity. Over time, this experience is believed to lead to acceptance of what is being experienced without judgement about its nature (Kabat-Zinn, 2003), and thus a decreased focus on aversive or worrying sensations and thoughts develops.

Mindfulness training has been conceptualised as comprising a set of skills that can be taught, and consequently, these skills have been incorporated into a variety of treatments for specific disorders (Baer, 2003, 2006). Mindful awareness is different from traditional concentration management meditation as it does not require the use of a single stimulus to direct attention (Baer, 2006). Instead, when attention is distracted by a thought or feeling, the nature of the stimuli which has captured the attention is considered to be unimportant – what is noted is that attention has wandered and it (attention) is then redirected back to the exercise of observation of the present moment and its sensations. It is believed that over time this experience builds tolerance of negative and distressing experiences and allows the individual to experience and become aware of their transient nature (Baer, 2006). This recognition is believed to build tolerance and acceptance of transient negative states and thus increase individual ability to tolerate these with reduced distress. Interventions based on the concept of mindfulness include different methods for teaching the skills. Some include formal, lengthy meditation practices (MBSR and MBCT), whilst others (e.g., ACT, DBT) include shorter and less formal exercises to practice these skills (Kabat-Zinn, 1982, 1990; Segal et al., 2002; Hayes, Follette, & Linehan, 2004; Linehan1993a).

MBSR was designed for use as a group intervention with individuals suffering from chronic pain and stress related illnesses (Kabat-Zinn, 1982, 1990) and is based on extensive training in mindfulness meditation across the course of the intervention

groups (Baer, 2006). The training conducted is highly experiential but also includes in-session psycho-education on physical and psychological stress responses.

MBCT incorporates several of the techniques utilised in MBSR, but also includes learning to focus attention on everyday activities such as household duties, or personal care activities and was initially designed to prevent relapse in chronic depression. Monitoring of pleasant and unpleasant events is incorporated into the treatment protocol and participants are encouraged to observe and accept their thoughts and feelings rather than observing and attempting to challenge or change them. Psycho-education about depression is included in the programme and acceptance of unpleasant thoughts and feelings is encouraged. Several CBT techniques (e.g., pleasant event scheduling, discussion of cognitions) known to be effective in treating depression are included, and participants are encouraged to develop relapse prevention plans incorporating all the skills learned throughout the programme (Segal et al., 2002). Group treatment of this kind has been shown to be effective in reducing relapse rates for individuals with three or more relapses of chronic depression (Ma, 2002; Segal et al., 2002), although the reasons for this discrepancy are yet to be identified (Teasdale, Segal, & Williams, 2003).

A recent Australian study (Schreiner & Malcolm, 2008) investigated the benefits of mindfulness meditation on feelings of stress, anxiety, and depression. Participants were selected from individuals attending public meditation courses. The DASS was used to measure ratings of stress, anxiety, and depression prior to commencing the programme and at completion. The study reported that severity ratings had decreased for all participants at the end of the training. Interestingly, participants with more severe pre-intervention ratings appeared to have benefitted most from the intervention and the authors suggest that this indicates that mindfulness training is useful in reducing symptoms of sub-clinical anxiety and depression in undiagnosed individuals (Schreiner & Malcolm, 2008).

ACT promotes exposure to experiences which have been previously avoided based on the premise that efforts to control such experiences by avoidance often result in an increase in the intensity and frequency of these experiences (Hayes, 1999). Individuals are taught to "observe their thoughts and the process of thinking without assuming that thoughts are true or important" (Baer, 2006, p.24). In this manner, individuals are taught that thoughts are transient phenomena that do not necessarily having a direct impact on the environment or the individual's life circumstances or

behaviour, unless the individual takes actions based upon them. Clients are also taught to distance themselves from negative thoughts by just noticing that the thought is present and refraining from making a judgement about its nature (Baer, 2006), so that the relationship the individual has with the thoughts and feelings changes. As an individual is exposed to these thoughts and comes to develop more and more awareness that thoughts and feelings are observable and transient events, it is hypothesised that a degree of emotional distance from them is developed, thus lessening the associated distress. This notion is supported by studies which report that attempts to avoid or suppress unwanted negative thoughts increase the frequency and intensity with which they are experienced (Len & Wicker, 2007; Rosenthal, Cheavens, Lejuez, & Lynch, 2005). Hayes' (1999) approach emphasises refraining from acting on thoughts and feelings which is believed to eventually decrease emotional reactivity to mood states and thereby allow the opportunity to choose different behavioural responses to such phenomena. Thus, this process could be conceptualised as a form of exposure to unpleasant stimuli which eventually decreases the reaction to the stimuli and the frequency and intensity of the unpleasant thoughts (Len & Wicker, 2007: Rosenthal, et al., 2005).

DBT was one of the first treatment approaches to incorporate mindfulness skills training in the programme (Baer, 2006), and learning to control attention is a central goal in mindfulness interventions. The inability to exert this control is believed to lead to problems such as inability to concentrate on important tasks and inability to cease thinking about current, future, or past difficulties. Discovering that extended formal meditation tasks were unhelpful to the BPD population as they are frequently highly distressed and suicidal and therefore unable to control their behaviour well enough for the requisite length of time, Linehan (1993a,1993b) and colleagues identified the core components of mindfulness practice and developed alternative ways of teaching these skills. Mindfulness in DBT is conceptualised as consisting of a set of seven skills that are utilised to assist the individual to enter into the present moment "at the level of direct and immediate experience" (Welch, Rizvi, & Dimidjian, 2006, in Baer, 2006, p.119). According to these authors, DBT mindfulness skills are intended to assist in increasing the BPD individual's ability to concentrate, learn and problem solve in highly emotionally aroused states – typically areas of immense difficulty due to problems with emotion regulation and intense suffering.

As noted above, the DBT mindfulness skill set consists of seven core skills. These can be catergorissed into three skill domains: "wise mind"; "what"; and "how" skills (Linehan, 1993a, 1993b; Welch et al., 2006, in Baer 2006). According to Linehan (1993), "wise mind" is an abstract concept that represents the combination of "emotion mind" and "reasonable mind", where "emotion mind" is the state of mind where thoughts and behaviours are directly and unthinkingly, influenced by emotions, sometimes leading to impulsive and unhelpful behaviours. This inability to refrain from acting on unwanted thoughts and feelings is a state of mind that is commonly reported by BPD sufferers. In contrast, "reasonable mind" is a state of mind where behaviour is controlled by a logical and thoughtful emotional state, and is thus more considered and effective. "Wise mind" functioning is believed to be accessible to most individuals following appropriate training and experience such as provided by a DBT programme.

The remaining mindfulness skills as described by Baer (2010) and Welch et al. (2006, in Baer, 2006) are conceptualised as being "what" and "how" skills. There are three components of each type. The 'what" skills are conceptualised as the ability to observe; describe; and participate in experiences (including thoughts and feelings) as they are occurring, without making judgements about them. These skills cannot be practised simultaneously. These activities assist the individual to realise that thoughts are not the literal "truth", but merely mental events. It is believed that this ability decreases belief that thoughts are true and important, which may reduce the individual's tendency to act impulsively or self-destructively in response to them. This exercise also assists the individual to learn to notice and identify all emotions as well as learning how to accept and tolerate unpleasant ones – core activities in "emotion regulation" and "distress tolerance" in DBT. The need to accept unpleasant emotions as part of daily life without judgement is emphasised in this process which is believed to enable the individual to experience these unpleasant emotions without immediately reacting negatively to them.

The "how" skills can be practised simultaneously, and are described as the ways in which the "what" skills are implemented. These skills are the ability to focus the attention effectively on one thing at a time (one-mindfully) in a non-judgemental manner. Positive and negative consequences are acknowledged but the individual is encouraged to accept these without judgements being made about their desirability or undesirability, whilst recognising likes and dislikes. Practised together, this skill set is

designed to assist the BPD individual learn to tolerate unpleasant emotional states without acting on impulse whilst experiencing them, and furthermore, to assist in them in returning to a more regulated emotional state (Linehan, 1993a, 1993b), in an attempt to reduce emotional and behavioural reactivity.

A recent discussion of the effects of mindfulness training (Wupperman, Neumann, & Axelrod, 2008) suggests that deficits in the ability to focus attention and awareness in the present moment and accept these experiences, are central to the BPD psychopathology. They further suggest that much of the borderline impulsive behaviour and difficulties with emotion regulation can be attributed to avoidance of negative and unpleasant affect, behaviour that is decreased by mindfulness training. Other researchers (Eifert & Heffner, 2003; MacCoon & Newman, 2003; Shapiro, Schwartz, & Bonner, 1998) have suggested that mindfulness skills are related to the ability to experience empathy, regulate physiological symptoms of anxiety, and consider the consequences versus rewards of behaviour. Mindfulness has also been shown to be negatively correlated with the trait of neuroticism (Brown & Ryan, 2003), which has been described as a defining characteristic of BPD features and which is thought to contribute to the inherent coping difficulties observed in this population (Clarkin, Hull, Cantor, & Sanderson, 1993; Widiger, Costa, & McCrae, 2002).

In a study of young non-BPD diagnosed adults, Wupperman and colleagues (2008) noted that lower levels of self-reported mindfulness skills in a young adult university student population were associated with less effective interpersonal problem solving skills and less effective regulation of negative affect and increased impulsivity. In contrast, higher levels of reported skills in mindfulness were related to the ability to regulate emotions effectively, effectively solve interpersonal problems, and decrease impulsive behaviour. These findings support the hypothesis that deficits in mindfulness skills are related to BPD pathology and behavioural difficulties. The authors further suggested that deficits in mindfulness abilities can predict variability in BPD behaviours, even after controlling for neuroticism, coping patterns and traits, and that as a consequence, mindfulness training is a vital component in BPD treatment.

In addition, mindfulness skills were rated likely to be the most utilised and practised by adolescent patients involved in DBT treatment (Lindenboim, Comtois, & Linehan, 2007; Miller et al., 2000; Stepp, Spler, Jahng, & Trull, 2008), and perceived

as being the most helpful. Whilst these positive ratings may have been due, in part, to the focus on the frequent practise of these skills in group and individual treatment, Wupperman et al. (2008) conclude that these skills were perceived as acceptable and helpful to these patients (regardless of the reasons for this), and were therefore utilised more frequently. To date, there are few studies investigating the effect of mindfulness training alone in the treatment of BPD, although there is empirical support for the efficacy of the DBT overall treatment package, and some support for the efficacy of the mindfulness component of the package.

Reappraisal of situations rather than suppression of the associated reactions, has been shown to be beneficial to psychological health (Gross, 2002; Gross & John, 2003), and thought suppression is thought to be a contributor to the intensity and reactivity of negative affect in BPD (Rosenthal, Cheavens, Lejuez, & Lynch , 2005). The effects of avoidance on strengthening and intensifying negative emotions such as anxiety are well documented in the CBT literature and there is a considerable body of evidence from this literature relating to the benefits of exposure to a feared stimulus as a method of reducing the intensity of anxiety. Accordingly, it may be that the exposure to unpleasant mental events that occurs in mindfulness training and practise decreases the impact of these and is a primary mechanism of positive change in dealing with the affective dysregulation which is a prominent feature of the BPD presentation (Linehan, 1993a, 1993b; Lynch, Chapman, Rosenthal, Kuo, & Linehan, 2006; Wupperman et al., 2008).

It is important to note that mindfulness skills training is most commonly delivered in a group format. As a consequence, it may be that non-specific factors of group participation also contribute to the positive research findings relating to mindfulness training as an intervention to increase attentional control and focus. For example, Linehan (1993a) highlights the supportive function of group therapy and her programme offers the opportunity for patients to join a supportive group process therapy group once they have completed the DBT skills training programme. These groups are ongoing and participants usually make a renewable time-limited commitments to be involved.Within these groups, the group processes are utilised as a vehicle for change to continue to address difficulties which interfere with improving quality of life such as self-invalidation, grief, mood-dependent behaviour , emotional reactivity and crisis-generating behaviour (Linehan, 1993a). Paris (2008) notes that the current published literature regarding the effectiveness of group therapy as a

treatment modality in BPD is limited and needs further attention from researchers, although the literature relating to the efficacy of group therapy for other disorders is supportive of efficacy. A number of studies have suggested that cohesion between group members and the therapist/s is a factor which contributes positively to patient benefit and treatment outcome, and enhances continuing group membership. Ongoing collaboration and consensus relating to therapist-patient agreement on treatment processes and expectations are also believed to be important in achieving a positive outcome from group therapy (Duncan, Miller, Wampold, & Hubble, 2010). However, the relative importance of these aspects of group functioning has yet to be determined.

It is possible that some of these factors contribute to the positive outcomes of mindfulness skills training groups; however, it is likely that these factors enhance the positive effects of the training reported, rather than account solely for the positive changes reported by those who have received mindfulness skills training. The aim of this initial study was to investigate the efficacy of mindfulness as a sole intervention for individuals with BPD attending TMC treatment programme. It was hypothesised that participation in this module would be associated with positive changes in mean scores on all measures employed in the research programme (previously described in the General Method section in Chapter five).

Method

Participants

Participants in this study were the 88 individuals who had been referred by their private primary care provider for treatment in the TMC day patient programme. All participants were funded by private health insurance. The majority of the participants commencing the module were female; with ages ranging from 19 – 69 years and all lived in Melbourne, Victoria, Australia. The full account of participant demographic details and their clinical presentations are described in full in the general method section in Chapter five. As previously stated, sixteen of the commencing participants failed to complete the full eight week mindfulness training module.

Measures

Responses on the battery of self-report inventories previously described in Chapter five formed the basis of analyses in this study.

Procedure

All participants completed the measures prior to entry into the mindfulness group and at module completion eight weeks later. Each group was of two hour duration and included the provision of theoretical information and education in accord with the DBT mindfulness protocol, as well as skills practice during the group and the assignment of homework tasks to assist with generalisation of skills for completion prior to attendance at the next week's session.

Those participants who proceeded to the remaining modules of the DBT programme after a delay, completed the full suite of measures again prior to commencing the remaining treatment modules, thereby allowing a follow up investigation of the of the effects of mindfulness treatment to occur (discussed in Chapter seven).

Results

The results for all participants in the eight-week mindfulness treatment module are presented below. Those participants who went on to complete the full DBT programme after a delay were also included in this analysis as a "follow-up" group. The results for this group are discussed in Chapter seven.

As previously noted, there were no statistically significant differences in mean scores between the groups of participants on any demographic, clinical/symptomatic, or behavioural domain at pre-test; therefore all participant scores were combined for analyses of the data relating to participation in the eight week mindfulness module. Parametric analyses were employed throughout and all analyses were conducted using the Statistical Package for the Social Sciences (SPSS) Version 17.0 for Windows.

Paired t-tests (Field, 2009; Pallant, 2005) were conducted on participant mean scores on the selected scales in each domain, to compare results at baseline (prior to undergoing the mindfulness treatment module) and at post-treatment (following

completion of the full eight-week programme). A Bonferroni correction was applied to the results of all analyses resulting in a significance level of 0.025 being used to determine statistical significance.Results for mean score comparison analyses on the scale battery are presented and described below in terms of the five domains of BPD dysregulation proposed by Linehan (1993). Pearsion's correlations were also calculated between baseline scores on the scales utilised in the study. Participant satisfaction ratings with the therapeutic alliance and the programme overall were correlated with post treatment scores to investigate whether or not there was a relationship between consumer alliance and satisfaction with the programme and treatment outcome.

Emotional dysregulation domain

Depressed mood

As previously discussed, these scales measure the experience of depressed mood over three time periods, namely, how the individual generally feels (MCMI-III major depression scale), their experience over the last six months (TSI depression scale) and over the last week (DASS depression scale). As shown in Table 8, t-test analyses revealed a statistically significant reduction in mean scores on the MCMI-III major depression scale between baseline and post-test. Similarly, mean scores on the TSI depression scale had decreased significantly at post test. Effect sizes are moderate but given the strong correlations between these scales (MCMI-III and DASS at .77, MMCM-III scores with the TSI at .66, and TSI and DASS at .61), are likely to represent clinically relevant and consistent change. However, no significant difference in mean scores occurred on the scale measuring level of depression over the past week (DASS depression scale).

Anxiety

No statistically significant changes in mean scores occurred on the MCMI-III anxiety scale, the DASS anxiety scale, or the TSI anxious arousal scale, although mean scores on all these scales had decreased at the end of the intervention period, suggesting that some positive change occurred in clinical status. This is likely to be a reliable finding as baseline scores on the MCMI-III anxiety scale correlated at the .54 level with the DASS scale and .38 with the TSI scale, whilst the DASS anxiety scale and the TSI scale correlated at the .60 level, as previously discussed.

Anger

Correlations between scales in this domain were in the low to medium range. Baseline scores on the YSQ-S2 schema correlated at .40 with the TSI scale, the TSI scale correlated at the .43 level with the STAXI-III angry reaction scale, and at .51 with the STAXI-II anger expression – outward scale. However, the correlation with the STAXI-II anger expression – inward scale was low at .18. The STAXI-II scale correlations with the YSQ-S2 schema scale scores ranged from .24 on the anger expression – inward scale to .37 on the angry reaction scale. Analyses of score changes across the time of the intervention revealed that statistically significant decreases in mean scores occurred on the STAXI-II angry reaction scale, and on the YSQ Insufficient self control/self discipline scale. Although effect sizes are in the medium range, given the correlation between the scales this is likely to be a meaningful result. Even though the mean scores on the TSI anger/irritability scale, the STAXI-II anger expression-out scale, and the STAXI-II anger expression-in scale had all decreased at the end of the mindfulness intervention, these decreases were not statistically significant.

As evident from inspection of Table 8, mean scores on the MCMI-III borderline personality disorder scale reduced slightly during the time of the mindfulness intervention but not to a statistically significant extent. This is not surprising given that the mindfulness intervention is an eight week programme and that this scale measures chronic difficulties across all domains of functioning associated with the diagnosis, which would not be expected to change significantly in a short time.

Table 8

Results of paired t-tests for Mindfulness group participants across the domain of Emotional Dysregulation at Time 1(entry into the programme) and Time 2 (post intervention)

Time	N	*Mean (SD)*	*t (71)*	*p*	*d*
Emotional Dysregulation					
Depression					
MCMI-III – Depression scale					
T1	72	74.33 (23.08)			
T2	72	64.75 (30.97)	3.07	**.003**	.35
DASS – Depression scale					
T1	72	2.33 (1.48)			
T2	72	2.33 (1.54)	-0.01	.994	
TSI – Depression scale					
T1	72	67.18 (10.39)			
T2	72	64.17 (10.69)	-2.64	**.010**	.29
Anxiety					
MCMI-III Anxiety Disorder scale					
T1	72	83.85 (20.08)			
T2	72	79.99 (23.25)	1.99	.056	
DASS – Anxiety scale					
T1	72	2.33 (1.54)			
T2	72	2.07 (1.62)	1.57	.122	
TSI – Anxious Arousal scale					
T1	72	62.92 (8.89)			
T2	72	60.58 (11.63)	1.79	.078	
Anger					
YSQ-S2 Insufficient self control/self discipline schema					
T1	72	4.00 (1.31)			
T2	72	3.67 (1.44)	2.54	**.013**	.28
TSI – Anger/Irritability scale					
T1	72	58.19 (10.01)			
T2	72	57.35 (10.90)	0.67	.506	
STAXI – II Anger Expression – Out scale					
T1	72	50.72 (10.93)			
T2	72	50.02 (10.13)	0.53	.595	
STAXI – II Anger Expression – In scale					
T1	72	52.55 (8.36)			
T2	72	51.82 (9.73)	0.61	.541	
STAXI-II Angry Reaction scale					
T1	72	48.50 (9.17)			
T2	72	46.11 (9.21)	2.33	**.022**	.26
MCMI-III Borderline Personality Pathology scale					
T1	72	75.82 (18.13)			
T2	72	72.43 (21.84)	1.83	.071	

Note. Bold type = statistically significant result

Interpersonal dysregulation domain

Analyses of observed decreases in mean scores on the YSQ – S2 schemas abandonment, mistrust/abuse and subjugation shown in Table 9 below, revealed a statistically significant decrease on the schema of subjugation only, with a large effect size. Mean scores on the abandonment and mistrust/abuse schema decreased but not significantly so once the Bonferroni correction was applied. However, given that the correlation between the abandonment schema and the subjugation schema baseline scores was .41, and between the subjugation schema and the mistrust/abuse schema was .49, the decrease in scores on the abandonment schema and mistrust/abuse schema are also likely to be robust and clinically meaningful, even though not statistically significant.

Table 9

Results of paired t-tests for Mindfulness group participants across the domain of Interpersonal Dysregulation at Time 1(entry into the programme) and Time 2 (post intervention)

Time	N	*Mean (SD)*	*t* (71)	*p*	*d*
Interpersonal dysregulation					
YSQ-S2 abandonment schema					
T1	72	4.01 (1.60)			
T2	72	3.68 (1.55)	2.19	.032	
YSQ-S2 mistrust/abuse schema					
T1	72	3.12 (1.55)			
T2	72	2.76 (1.50)	2.18	.033	
YSQ-S2 subjugation schema					
T1	72	3.74 (1.29)			
T2	72	3.18 (1.35)	4.39	**.000**	.46

Note. Bold type = statistically significant result

Behavioral dysregulation domain

Table 10 presents the details of the analyses for mean scores in this domain. Analyses of mean scores indicated that although these had decreased at completion of the mindfulness intervention, the change was statistically significant for only one scale. Self reported mean scores on the TSI tension reduction behaviour scale

decreased significantly over the intervention period, and this change was associated with a medium level effect size. The correlation between MCMI-III baseline score on the alcohol dependence scale was .55 with the score on the drug dependence scale and .30 with the tension reduction behaviour scale of the TSI. However, the correlation between the MCMI-III drug dependence scale score and TSI scale was low at only .18, which is somewhat surprising given the level of correlations observed between the scales generally in this domain.

Table 10

Results of paired t-tests for Mindfulness group participants across the domain of Behavioural Dysregulation at Time 1(entry into the programme) and Time 2 (post intervention)

Time	N	*Mean (SD)*	*t* (71)	*p*	*d*
Behavioural dysregulation					
MCMI-III – Alcohol Dependence scale					
T1	72	63.24 (12.66)			
T2	72	63.71 (15.11)	-0.35	.73	
MCMI-III – Drug Dependence scale					
T1	72	57.32 (19.04)			
T2	72	59.19 (18.92)	-0.73	.47	
TSI – Tension Reduction Behaviour scale					
T1	72	66.76 (15.44)			
T2	72	60.00 (17.30)	3.37	**.001**	.37

Note. Bold type = statistically significant result

Cognitive dysregulation domain

Analyses of mean scores in the cognitive dysregulation domain (presented in Table 11), show that mean scores on the MCMI-III thought disorder scale and delusional disorder scale decreased significantly, with medium effect sizes suggesting the findings are robust. Interestingly, the effect size associated with the significant change in mean scores on the MAAS was quite large, indicating that the result is robust and likely to be clinically meaningful. Although mean scores on the TSI dissociation scale had decreased across the intervention period, this decrease was not statistically significant. However, a decrease in mean scores on this scale is consistent with the gains observed in the other scales.

Table 11

Results of paired t- tests for Mindfulness group participants across the domain of Cognitive Dysregulation at Time 1(entry into the programme) and Time 2 (post intervention)

Time	N	*Mean (SD)*	*t* (71)	*p*	*d*
Cognitive dysregulation					
MCMI-III – thought disorder scale					
T1	72	68.03 (16.36)			
T2	72	64.14 (19.02)	2.33	**.023**	.26
MCMI-III –delusional disorder scale					
T1	72	50.06 (29.70)			
T2	72	41.59 (32.22)	2.28	**.025**	.24
TSI – dissociation scale					
T1	72	65.97 (13.31)			
T2	72	63.75 (13.38)	1.45	.151	
Mindful Attention Awareness Scale					
T1	72	49.96 (12.10)			
T2	72	48.94 (13.18)	s-3.83	**.000**	.41

Note. Bold type = statistically significant result

Self Dysregulation domain

As is evident from inspection of Table 12, statistically significant decreases in mean scores with medium effect sizes occurred on four of the five schemas included in the self dysregulation domain. Scores on the YSQ-S2 schemas of enmeshment and defectiveness/shame both changed significantly across the intervention period, as did mean scores on the TSI impaired self reference scale. In addition, mean scores increased on the Coopersmith SEI – Adult scale between baseline and post-test. However, although mean scores on the YSQ-S2 social isolation schema decreased, these scores were not significantly different at the end of the group. The relationships between these scales are shown by the correlations between the baseline scores on each, indicating consistency between them. Baseline scores on the TSI impaired self reference scale correlated at .52 for the defectiveness/shame schema, .55 with the social isolation schema, .29 with the enmeshment schema and -.39 with the Coopersmith SEI-A score. The baseline scores on the enmeshment schema correlated at .22 with scores on the defectiveness/shame schema, .26 on the social isolation schema, and -.38 on the Coopersmith SEI-A. Scores on the defectiveness/shame

schema correlated at .78 with scores on the social isolation schema, .22 with the enmenshment schema, .51 with the TSI impaired self reference scale, and -.64 with the Coopersmith SEI-A.

Table 12

Results of paired t- tests for Mindfulness group participants across the domain of Self Dysregulation at Time 1 (entry into the programme) and Time 2 (post intervention)

Time	N	*Mean (SD)*	*t* (71)	*p*	*d*
Self dysregulation					
YSQ-S2 score – enmeshment/undeveloped self schema					
T1	72	2.72 (1.50)			
T2	72	2.36 (1.47)	2.50	**.015**	.28
YSQ-S2 score – defectiveness/shame schema					
T1	72	4.08 (1.61)			
T2	72	3.54 (1.68)	2.89	**.005**	.32
YSQ-S2 score – social isolation schema					
T1	72	4.13 (1.64)			
T2	72	3.75 (1.59)	2.14	.036	
TSI – impaired self reference scale					
T1	72	66.82 (10.29)			
T2	72	63.19 (11.72)	2.77	**.007**	.31
Coopersmith Self Esteem Inventory – Adult					
T1	72	28.24 (16.85)			
T2	72	32.13 (19.96)	-2.36	**.021**	.26

Note. Bold type = statistically significant result

Measures of patient satisfaction with the Mindfulness programme overall

Patient satisfaction with the programme provided by TMC was measured utilising the Vanderbilt Therapeutic Alliance Scale – Revised (VTAS-R), which has a maximum score of 90 and the Satisfaction with Therapy and Therapist Scale – Revised (STSS-R). Overall, all participants expressed a high degree of satisfaction on the VTAS-R scale and STSS-R scale with the programme (maximum score = 25), the therapists (maximum score = 35) and the outcome of the programme (maximum score = 5). Despite these high levels of overall satisfaction or perhaps because of the lack of variability in this large group of participant ratings, Pearson's correlational

analyses showed no statistically significant relationship between satisfaction ratings and treatment outcome on any of the outcome variables. The lack of variability in ratings is demonstrated by the minimum, maximum, and mean scores and standard deviations for both scales which are presented in Table 13.

Table 13

Descriptive statistics for scores on the Vanderbilt Therapeutic Alliance Scale – Revised (VTAS-R) and the Satisfaction with Therapy and Therapist Scale – Revised (STTS-R) Time 2 (post intervention, n = 72)

Measure	Min	Max	*Mean*	*Standard deviation*
VTAS-R	20	73	54.81	10.03
STTS-R				
Therapist	9	36	29.63	4.71
Outcome	2	20	4.39	2.11
Programme	5	29	20.51	3.97

Discussion

The analyses of results reported above showed that there were positive changes in mean scores on all of the selected scales at the end of group members' participation in the initial eight week mindfulness programme, when compared to their scores prior to the commencement of the intervention. It was also found that the majority of the effect sizes for these changes were in the medium to large range. These positive changes appear to be robust and meaningful, and occurred on all of the areas of BPD dysregulation hypothesised by Linehan (1993a), including positive changes in mean scores on the MCMI-III scale measuring borderline pathology.

In terms of emotional dysregulation, positive changes in mood across the time of the intervention are suggested by the statistically significant decreases observed in participants' mean scores on the MCMI-III and TSI scales measuring depressive symptoms at the end of the intervention period. In addition, participants' scores on scales measuring angry reactions and expression also decreased, although not always

statistically significantly. Participants' ability to tolerate frustration and exercise self control to achieve personal goals as measured by scores on the YSQ-S2 insufficient self control/self discipline schema also improved. When this schema is prominent, the individual attempts to avoid responsibility and conflict. While the remaining analyses of scales in this domain were not statistically significant, it is worth noting that mean scores on other scales measuring depression, anxiety, and anger included in this domain all decreased over the intervention period.

Similar positive changes also occurred in the domain of behavioural dysregulation, with participants reporting significantly lower scores on the TSI tension reduction behaviour scale. Elevated scores on the Tension Reduction Behaviour scale indicates that the individual engages in behaviours that are designed to reduce or soothe internal negative states and which might include self-harm behaviours or other destructive behaviours directed towards themselves or others. However, there was apparently little change in participants' dependence on the use of alcohol and drugs to soothe negative emotional states.

In terms of interpersonal dysregulation, participants were also significantly less likely to meet others' needs at the expense of their own at the end of the intervention period as measured by scores on the YSQ-S2 subjugation schema. The subjugation schema represents the surrender of control over actions to others to avoid their disapproval or retaliation. The typical childhood family environment underpinning the development of this schema is thought to have been one that was primarily based on conditional parental approval and acceptance, where the child was prevented from following their inclinations. The subjugation schema represents repression of emotions or needs because they are seen as invalid or unimportant. Frequently, individuals where this schema is prominent are compliant and eager to please and at times this repression of emotions or needs can lead to explosive outbursts of anger which has built up over time. Positive change in scores occurred on the abandonment and mistrust/abuse schemas, although these changes were not statistically significant. The decreases in mean scores in this domain at the end of the intervention period suggest that participants were more confident in others' ability to tolerate their difficulties and to meet their needs for security and nurturance at the completion of the intervention. Whilst the post intervention mean scores on these schemas indicated that they would still be influential in participants' functioning, the

extent of their influence had decreased in comparison to the pre- intervention mean scores.

In common with findings in other domains, scores on most scales in the cognitive dysregulation domain changed in a positive direction, often to a statistically significant extent. Participants' ability to focus their attention on their actions in the present as measured by the MAAS, had improved significantly at the end of the intervention period. This improvement in the mean scores on the MAAS following completion of the intervention indicates that participants were more able to focus their attention and concentration on the task or experience at hand, rather than enter a dissociative or dream like state during everyday tasks or events, such as driving, cooking, or cleaning. This finding is supported by the positive changes that occurred on the TSI scale measuring dissociation, and is perhaps not so surprising given that the content of the mindfulness intervention is focussed on helping participants pay attention to the moment, to the activity they are undertaking, without judgements and without trying to change thoughts or emotions. The essence of the intervention is on developing the ability to notice, accept, and tolerate the experience of different thoughts or emotions, (pleasant and unpleasant) without acting on them. This technique has been described as de-centreing (Segal et al., 2002) from thoughts and feelings to reduce their impact and the likelihood of acting in response to them in an unhelpful way. Based on the changes in scores observed in these participants, the mindfulness intervention appears to have assisted participants in achieving the objectives of improved concentration and attention, and decreasing dissociative and transient psychotic experiences.

Changes in scales utilised to measure the extent of participants' self dysregulation were also positive. This domain is concerned with feelings of emptiness and low self-esteem, and an unstable sense of self and self-image. There were four statistically significant changes in mean scores in this domain; mean scores on the remaining schema improved even though the improvement was not statistically significant. Several YSQ-S2 schemas were included in this domain. The enmeshment/undeveloped self schema relates to the belief that the individual cannot be happy without the assistance of another, and feelings of emptiness and lack of direction are also reported. The defectiveness/shame schema relates to feelings of being fundamentally defective at the deepest level of psychological functioning, whilst the social isolation schema relates to a feeling of being isolated and different

from others, and not part of a community or specific social group. Other scales included in this domain are the TSI scale of impaired self reference and the Coopersmith – SEI A scale. Elevated scores on the impaired self reference scale indicate an individual who has an inadequate sense of self and personal identity, whilst a higher score on the Coopersmith SEI-A indicates functional levels of self esteem. Participants' mean scores on all the YSQ-S2 schema had decreased significantly at the end of the intervention period, consistent with improvements in self esteem noted by the higher scores on the SEI-A and the improvements in mood noted on other scales.

The findings that mean scores on the schemas included in all domains decreased over the eight week intervention period is somewhat surprising, given that schemas are perceived as psychic structures that develop from early learning experiences in response to environmental factors and are relatively difficult to change (Young et al., 2003). This finding confirms the relevance of cognitions in BPD. However, it may be that the individual's relationship with their thoughts or schema changed as a result of exposure to them during the mindfulness exercises (Segal et al., 2002).

Cognitive theorists have proposed that cognitive therapy is designed to help individuals develop the ability to develop some emotional separation or distance from cognitions (particularly if they are depression related), in order to decrease the impact of the cognition on mood and behaviour. This distancing is believed to occur through the development of the ability to distance oneself from one's thoughts by the application of cognitive techniques such as disputation and examination of the evidence supporting the thought (Segal et al., 2002). From this perspective, de-centreing or distancing from thoughts is the result of the application of other cognitive therapy techniques and may result in decreased avoidance of negative thoughts and emotions.

In discussions of the development of their mindfulness based cognitive therapy for chronic depression, Segal et al. (2002) suggest that the changes in negative thoughts and improvements in mood which occur following engagement in the process of cognitive therapy result *primarily* from changes in the individual participant's relationship to their thoughts, not through changes in the content of the thoughts alone. They argue that the individual's perspective on thoughts alters during therapy from an initial position where the thoughts are seen as true and accurate

representations of the self, to a position where they are able to be perceived as "passing events in the mind that are neither necessarily valid reflections of reality nor central aspects of the self" (p.38), as a result of the de-centreing from thoughts and emotions that occurs during the practice of mindfulness. From this perspective, de-centreing has a central role in cognitive therapy for depression, rather than being one of many cognitive techniques being utilised and is similar to the mindfulness "what" skills of observing and describing (Baer, 2006) which facilitate the acceptance of thoughts and feelings as internal events which do not necessarily need to be modified but can merely be noticed and experienced.

Although many of the existing studies have some methodological limitations, mindfulness training has proven to be beneficial in improving the symptoms associated with several disorders, including chronic pain and other physical difficulties and those experiencing anxiety, eating disorders, and depression (Baer, 2003, 2006) and this study extends these findings. Although the positive effects of delivering intervention in a group format (as previously discussed) may have contributed to the efficacy of participation in mindfulness training groups in some way, it is unlikely that the positive effects reported by participants are related to this aspect of group participation alone,

Participation in the eight week mindfulness programme appears to have led to improvements in measures of participants' general psychological functioning and to an associated decrease in symptoms of psychological distress. This may have resulted from the development of the participants' ability to alter their perception of their thoughts and feelings from one of these thoughts and feelings being an accurate representation of reality and innately "true", to a position where participants were able to be more detached observers of these experiences and as a consequence become less judgemental and more accepting of them as relatively transient phenomena which do not necessarily have to be acted on. In other words, it may be that these participants have changed the relationship they had with their negative thoughts and feelings to one which was more accepting of them as transient. This acceptance of thoughts and feelings as being relatively transient phenomena without making judgements could have resulted in both decreases individual psychological dysregulation and distress (as measured on these scales) and could potentially, lead to the individual developing the ability to delay impulsive reactions or behaviours in response to the experiences. Segal et al. (2000) hypothesised that depressive cognitions in those with chronic

depressive illnesses could be triggered by slight negative changes in mood which were then compounded by the activation of these cognitions and schemas. It may be that the reverse phenomenon occurs in that a slight improvement in mood decreases the extent and influence of the negative cognitions and schemas present in an individual's psyche. Such a mechanism could assist in understanding the changes in schemas found amongst participants in these groups. That is, this change in the extent to which these schemas were held as "true" could have been decreased by the improvements in mood reported, and the distancing from negative thoughts and feelings resulting from participation in mindfulness training. Development of mindfulness skills may also assist in early recognition of a problem, which allows for effective behaviours to be chosen, and encourages recognition of the consequences of the various options for action being considered (Linehan, 1993b), rather than making global judgements about the limitations of the self.

Alternatively, as Baer (2003, 2006, and 2010) notes, several proponents of mindfulness as a clinical intervention suggest that the act of allowing unpleasant thoughts, feelings, or bodily sensations to occur can function as a type of exposure. Thus, repeated exposure reduces the reaction to these sensations over time, and the individual spends less time trying to avoid or change them. From this perspective, mindfulness epitomises the core concept of DBT, that of acceptance of "what is" whilst working constructively to improve the future (Linehan, 1993b). The study by Len and Wicker (2007) supports the notion that suppression of unpleasant or unwanted thoughts increases their frequency and intensity, whilst exposure to them has a positive effect. Further support for the efficacy of exposure to thoughts in terms of reducing their impact and associated negative affective states, rather than thought suppression is provided by the Rosenthal et al. (2005) study where it was found that the relationship between negative affective reactivity and intensity, and BPD symptoms was mediated by thought suppression. These authors suggested that the chronic efforts to suppress unpleasant thoughts made by those with BPD, function as an attempt at a negative affect regulation strategy. However, as previously noted, the impact of this thought suppression is to increase, rather than reduce, negative affect intensity, therefore, learning to tolerate rather than suppress unpleasant mental events as is taught during mindfulness training may have had the effect of reducing negative affect in these participants.

More recently, a new aspect of the impact of mindfulness training has been of interest, made possible to investigate by technological advances in neuro-imaging. It has been reported that long term practice of mindfulness meditation together with the exposure and acceptance of all emotions associated with this practice has been found to be associated with changes in some of the structures and functions in the brain, that have then been associated in turn with cognitive and emotional benefits (Treadway & Lazar, in Baer 2010). If these results can be consistently observed, then it may be that mindfulness training can make a positive impact on the brain differences in individuals with BPD as hypothesised by Linehan (1993) and observed in neuroimaging studies in individuals with BPD (e.g., Lieb et al., 2004). These findings add weight to the likelihood that the positive outcomes reported by participants in mindfulness skills training primarily result from training in the actual attentional control skills which occurs within the programme, rather than being unduly influenced by the effect of non-specific group process factors.

Overall, participants in this study were very satisfied with all components of the programme including the therapists, the process of the intervention, and the outcome in terms of skills gained and assistance with the problems for which they were seeking help. The finding that there were no statistically significant relationships between satisfaction ratings and treatment outcomes is somewhat surprising given that most researchers and texts relating to BPD comment on the importance of the therapeutic relationship to achieve positive therapy outcomes (e.g., Linehan, 1993a; Young et al., 2003). However, it may be that the lack of variability in the ratings and the high levels of satisfaction reported with all aspects of the programme overall contributed to this lack of statistical relationship, despite variations in participant symptom level at baseline. Alternatively, for this group of participants it may be that the quality of the ongoing relationship with their primary care provider (retained throughout involvement in TMC programme) was more relevant to the overall outcome of the day treatment programme than was their relationship with TMC therapists.

The results of this study suggest that participation in an eight week mindfulness programme can be a useful intervention to assist those with a BPD diagnosis and characteristics in reducing symptoms of psychological distress and improving psychological functioning. Further, the positive changes observed in participants mean scores on scales from standardised instruments measuring the areas

of emotional dysregulation support Wupperman et al.'s (2008) findings of an association between higher levels of mindfulness skills and a decrease in negative emotions. Overall, these results demonstrate that the TMC mindfulness intervention, designed to teach the individual to notice, tolerate and accept all thoughts and emotions, rather than suppress them, has been effective in reducing signs and symptoms of psychological distress for participants in the initial eight week intervention.

It is acknowledged that this study is limited by the lack of random assignment to a control or alternative treatment group. However, this ideal is often unachievable in a clinical treatment programme situation, particularly in a private treatment setting. At initial assessment, participants in this study reported high levels of symptoms such as negative affect and anger, and psychological distress, and some of them had been struggling with their difficulties for many years. As such, the improvements participants reported on the battery of scales from standardised measures at the end of the intervention are likely to be clinically, even if not always statistically, significant. Despite the limitations of lack of a control condition, these results provide support for the efficacy of participation in a brief mindfulness training programme in reducing symptoms of psychological distress for this group of BPD sufferers.

A small number of the participants in this study went on to complete the remaining three modules of TMC DBT programme. For most of these individuals, there was a delay of up to six months before this could occur as intake to the DBT programme occurs every six months. As a consequence, there was the opportunity to assess these participants again after this waiting period which provided the opportunity to investigate the benefits of mindfulness training over a longer time frame. The results of this study are presented in the following chapter.

Chapter Seven

BPD and Mindfulness

Treatment effects at six month follow-up

As discussed in Chapter six, participation in a mindfulness treatment programme conducted by TMC resulted in positive changes in the domain of emotional dysregulation amongst participants. These included reductions in participants' reported levels of anxiety, depression, and ability to manage angry feelings. In addition, participants' scores on measures of the power of cognitive schemas also reduced. In combination, these findings support the use of mindfulness as a therapeutic treatment, at least in the short term.

However, the duration of the reported gains from mindfulness training remains relatively unknown as investigations relating to the longer term efficacy of mindfulness interventions are still in their early stages. Despite this, there are indications that gains following mindfulness training can be maintained, as some follow-up investigations have been reported. For example, continued improvement over the three months following mindfulness training in the context of relieving anxiety symptoms has been reported (Kabat-Zinn et al., 1992), as has reduced relapse rates in individuals with chronic depression following mindfulness training combined with group cognitive behavioural treatment (Ma, 2002; Segal et al., 2002; Teasdale, Segal, & Williams, 2003). However, as previously stated, rate of relapse reduced in only those individuals who had experienced three or more previous relapses.

More recently, Farinacci et al. (2005) conducted a follow-up of seven individuals with BPD who had participated in a mindfulness training group two or three years earlier. In common with this research project, the skills groups investigated addressed the mindfulness skills taught in DBT programmes over a ten week period in two hour sessions which included education and theory review and skills practice. Homework tasks were also assigned for completion between groups.

Farinacci et al. (2005) conducted telephone interviews with seven of the 32 participants who were able to be located. These individuals reported having continued the use of mindfulness skills during the up to two to three year interval following completion of the group. The participants interviewed reported increased concentration and awareness of the transient nature of intense emotions as well as decreased anger, and regular use of the skills in daily life. The number and length of participants' hospital admissions and number of self harm acts were also reported to have reduced following the training. The authors concluded that the DBT mindfulness training had been effective in improving self-management of mood skills, as well as improving mood overall and that these gains had been maintained since completing the groups.

As previously discussed, twenty-one of the participants in mindfulness training groups experienced a delay of up to six months prior to gaining entry into the remaining DBT treatment module groups as intake to these groups occurred only twice a year. During the intervening period these participants had returned to the care of their primary care provider (e.g., private psychiatrist, private psychologist, counsellor, or similar professional). Data relating to the content of this treatment was unavailable, as was data relating to mean wait time to enter the DBT treatment group. Despite these shortcomings, the situation offered the opportunity of assessing the duration of the gains in psychological well being reported by these participants at the end of the mindfulness treatment in a systematic way, and specifically to investigate whether or not these gains had been maintained over the intervening period.

Method

Participants

Participants were 21 individuals from the original sample of 88, who had undertaken an eight-week mindfulness training group at TMC and who had been offered a place in the remaining DBT treatment modules, following completion of these groups. However, some of these participants experienced a delay in entry into the DBT modules as intake occurred twice a year only. Seventeen participants were female and four were male. Participant age ranged from 20 to 49 years, with a mean of 37 years. Further details of these individuals' clinical and demographic characteristics are discussed in the following sections.

Participants' demographic characteristics

Eight participants (38%) were in a relationship (married or de facto), two (9%) were divorced, one (5%) was separated, and ten (48%) were single. Twenty participants (95%) were born in Australia, with one (5%) having been born in the U.K. English was the preferred language for all participants.

In terms of educational level, six participants (29%) had completed an undergraduate tertiary degree, three (14%) had completed a post graduate degree or diploma, seven (33%) had completed Year 12 of secondary school, four (19%) had completed Year 11, and one (5%) achieved Year 9 or below. Eleven of the participants (52%) received Centrelink benefits, with five (24%) participants supported by their partners or family. Five (24%) of the participants were supported by their own earnings from part-time employment. Occupations ranged from professional (27%) and administrative/clerical (9%) to unskilled (5%). The majority of participants indicated that their annual income level was less than $20,000 (*n*=13, 62%), whilst two (9.5%) received between $20,000 and $30,000, two (9.5%) recorded an income between $40,000 and $50,000, and four (19%) indicated an income level of above $50,000 per annum.

Participants' clinical presentation

Partcipants' illness duration

Participant reported age of onset of psychological difficulties of any sort ranged from 11 years to 39 years (*M*=19 years, *SD*=8 years). Reported age at which Borderline Personality Disorder was diagnosed ranged from 16 years to 47 years (*M*=32 years, *SD*=9 years). Participants' reported total number of admissions to psychiatric units prior to entry into TMC programmes varied from none to 25 (*M*=7, *SD*=7), with 10 (48%) of participants reporting having also received treatment from public mental health services at some time during their illness. The length of time that participants had been treated at TMC at time of questionnaire completion ranged from one month to 13 years, (*M*=3 years, *SD*=4 years).

Participants' trauma history

All participants reported some experience of trauma during their life. Five (24%) had experienced physical force during a crime related event, three (14%) had experienced an attempted or actual break-in when they were away from their property, and 11 (52%) had experienced this type of event when they were at home. Eight (38%) individuals had experienced a serious accident at work or in a car. One

(5%) individual had experienced a natural disaster, three (14%) had experienced a man-made disaster, and one (5%) had been exposed to chemicals or radioactivity. Five (24%) participants had experienced another situation which resulted in serious injury, six (29%) had been in a situation where they feared they may be injured or killed, eight (38%) had seen witnessed someone else being seriously injured or killed, and four (19%) had seen or handled dead bodies (not in a funeral situation). Two participants (9.5%) had had a close friend or family member killed by a drunk driver, three (14%), had experienced the lost a spouse, partner or child through death, whilst six (29%) had experienced a serious or life threatening illness. Twelve (57%) had received news of the serious illness or unexpected death of a significant other and one (5%) had been engaged in combat in a military zone. Five (24%) participants reported having been attacked with a weapon, five (24%) reported being attacked without a weapon and seriously injured, whilst seven (33%) reported having been beaten, spanked, or pushed by another and being injured as a result.

In terms of unwanted sexual contact, 10 (48%) participants had experienced forced intercourse, or oral, or anal sex. Nine (43%) had experienced another touching private parts of their body or been forced to touch others in private places, and eight (38%) reported other types of unwanted sexual contact. Five (24%) reported experiencing other stressful situations of some sort.

Number of BPD criteria met

As reported in Chapter five, the number of BPD criteria met by each participant was established from the record of their initial assessment interview. Overall, all participants in this research programme met at least five criteria (the minimum requirement to meet the diagnosis of Borderline Personality Disorder). Data was unavailable for eleven individuals from the original 88 participants (12%). In terms of this study, five (24%) participants met criteria 1 (frantic efforts to avoid real or imagined abandonment), 12 (57%) met criteria 2 (a pattern of unstable and intense interpersonal relationships characterised by alternating between extremes of idealisation and devaluation), 13 (62%) met criteria 3 (identity disturbance), 13 (62%) met criteria 4 (impulsivity in at least two self-damaging areas such as substance abuse, binge eating) , 17 (81%) met criteria 5 (recurrent suicidal behaviour, gestures, or threats or self-mutilating behaviour), 17 (81%) met criteria 6 (affective instability and marked reactivity of mood), four (19%) met criteria 7 (chronic feelings of emptiness), three (14%) met criteria 8 (inappropriate intense anger or difficulty in

controlling anger), and 9 (43%) met criteria 9 (transient, stress-related paranoid ideation or severe dissociation). Participants' mean score on the MCMI-III clinical BPD personality scale was 77 (*SD*=13), with a range of scores from 37 to 97. As previously stated, a score of 76 or above is considered to represent an individual who possesses the trait of severe personality pathology of the borderline type. Mean score on the Borderline Scale of the PDQ-IV for this group of individuals was 7 (*SD*=2), with a range of scores from 3 to 9. A score of five or more on the borderline scale of this instrument indicates that the individual has endorsed a minimum of five items representing specific DSM-IV diagnostic criteria necessary to meet the criteria for a DSM-IV diagnosis of BPD.

Alcohol and other drug use

A total of four (19%) participants denied using alcohol at all, eight (38%) reported using alcohol only occasionally, whilst 3 (14%) reported using it sometimes. Four participants (19%) reported using alcohol often, whilst 2 (9%) reported daily use. Most participants (*n*=13 62%) reported never using illicit drugs, four (19%) reported occasional use, and three (14%) used sometimes. Only one participant in this group used every day (5%).

Participants' reported symptoms

Most participants reported experiencing mixed symptoms on an ongoing basis. These symptoms included depression/mood swings (*n*=13, 62%), anxiety (*n*=2, 9.5%), suicidal ideation (*n*=2 9.5%) and four (19%) individuals reported experiencing a mixture of all of these. In terms of frequency of symptoms, 16 participants (76%) reported experiencing symptoms on an ongoing or daily basis. Two (9%) participants experienced symptoms three to four times a week, with three (14%) individuals reporting experiencing these difficulties from one to two times a week to a few times a month.

Eleven (52%) of participants reported being violent towards others at times, usually towards their spouse or parent, whilst 17 (81%) reported that they had made threats of self harm at some time during their illness. Twenty (95%) individuals reported having carried out self harm acts. Type of self-harm participants threatened included overdose (*n*=4, 19%), cutting self (*n*=10, 48%), or a combination of these behaviours (*n*=6, 33%).

Participants' level of satisfaction with life and support available

Eight (38%) participants reported being very dissatisfied with life overall, eight (38%) were fairly satisfied, one (5%) was a little satisfied, and four (19%) were fairly satisfied. Only two (9%) were very dissatisfied with the level of support received, three (14%) were fairly dissatisfied. Four (19%) individuals were only a little satisfied with their level of support, whilst six (29%) were fairly satisfied and six (29%) were very satisfied.

Measures

The suite of standardised psychometric measures utilised in this section of the research are described in full in the General Method section (Chapter five).

Procedure

The procedure described in Chapter five continued to be utilised throughout this section of the research programme. The suite of measures were administered after completion of the initial eight week "mindfulness" module for these participants and re-administered prior to the commencement of the remaining components of the DBT programme. As previously mentioned, the sequence of instrument administration was varied randomly across all measurement points to minimise potential order effects.

All project participants were again offered the opportunity to give feedback about the experience of completing the questionnaires at the time of completion, and appropriate support given to any participants who were distressed by the procedure.

Aims

The aim of this study was to investigate whether or not the gains made by participants during the initial eight week mindfulness training module had been maintained during the waiting period for a place in the remaining DBT modules (i.e., up to six months). Thus, the between-module delay offered the opportunity to assess the effects of mindfulness training on a longer-term basis for individuals with BPD symptoms. As previously reported, data relating to individual waiting times was unavailable and it was not possible to calculate their mean waiting time as a result. In addition, no information on treatment received during this waiting time was available as they were cared for by their existing primary care provider alone in this intervening

period

Results

A series of single factor (time) repeated measure MANOVAs and ANOVAs (Field, 2009; Pallant, 2005) were conducted on the mean scores on scales in each domain of dysregulation across the three mesurement periods: Time 1 (entry into the initial Mindfulness programme); Time 2 (post-intervention); and Time 3 (entry into the DBT group). Where the multivariate main effect for time was significant (with Bonferroni correction to $\alpha = 0.016$), exploratory univariate comparisons were undertaken (Field, 2009; Pallant, 2005) to identify which of the dependent variables included in the domain accounted for this effect. Follow-up pairwise comparisons (with Bonferroni correction to $\alpha = 0.016$) were conducted when the univariate main effect for time was found to be significant.

Single factor (time) repeated measures ANOVAs were utilised in the analysis of changes in borderline personality pathology, self esteem scores, and measures of mindfulness ability. These were were conducted on the mean MCMI-III Borderline personality scale scores (Emotional Dysregulation domain), the Coopersmith SEI-A score (Self Dysregulatin domain), and the mean score on the Mindful Attention Awareness Scale (MAAS). Consistent with the approach described above, follow-up pairwise comparisons (with Bonferroni correction to $\alpha = 0.016$) were conducted when the univariate main effect for time was significant.

Emotional dysregulation domain

As discussed in Chapter five, scales in this category measure chronic negative affect, depressed mood, anxiety, and anger/irritability. The means and standard deviations for the scales in this domain at Time 1, Time 2, and Time 3 are presented in Table 14 below.

Table 14

Means and standard deviations for mindfulness follow-up group participants across the domain of Emotional Dysregulation at Time 1(entry into the initial Mindfulness programme); Time 2 (post intervention); and Time 3 (entry into the DBT group)

Scale & Time	*n*	*Mean*	*(SD)*
Emotional Dysregulation			
Depression			
MCMI-III – Depression scale			
T1	21	73.62	(19.45)
T2	21	70.71	(21.75)
T3	21	70.00	(23.49)
DASS – Depression scale			
T1	21	2.41	(1.09)
T2	21	2.38	(1.43)
T3	21	2.67	(1.40)
TSI – Depression scale			
T1	21	65.57	(10.68)
T2	21	65.76	(9.91)
T3	21	67.71	(9.25)
Anxiety			
MCMI-III Anxiety Disorder scale			
T1	21	87.81	(10.88)
T2	21	83.04	(18.52)
T3	21	85.19	(14.94)
DASS – Anxiety scale			
T1	21	2.59	(1.27)
T2	21	1.99	(1.30)
T3	21	2.59	(1.55)
TSI – Anxious Arousal scale			
T1	21	62.19	(10.21)
T2	21	62.67	(9.69)
T3	21	63.05	(10.32)
Anger			
YSQ-S2 Insufficient self control/self discipline schema			
T1	21	4.00	(0.95)
T2	21	3.67	(1.32)
T3	21	3.52	(1.33)

Continued overleaf

Table 14 *(Cont'd)*

Means and standard deviations for mindfulness follow-up group participants across the domain of Emotional Dysregulation at Time 1(entry into the initial Mindfulness programme); Time 2 (post intervention); and Time 3, (entry into the DBT group)

Scale & Time	*n*	*Mean*	*(SD)*
Anger (cont'd)			
TSI – Anger/Irritability scale			
T1	21	57.43	(10.27)
T2	21	57.38	(11.80)
T3	21	57.95	(11.56)
STAXI-II Angry Reaction scale			
T1	21	50.19	(7.79)
T2	21	46.95	(9.16)
T3	21	50.71	(15.01)
STAXI – II Anger Expression – Out scale			
T1	21	52.76	(7.30)
T2	21	50.28	(10.24)
T3	21	48.76	(18.82)
STAXI – II Anger Expression – In scale			
T1	21	48.86	(8.94)
T2	21	49.71	(11.34)
T3	21	54.52	(13.35)
MCMI-III Borderline personality pathology			
T1	21	77.14	(13.26)
T2	21	77.09	(15.22)
T3	21	78.90	(13.83)

To test the duration of gains made in this domain during the initial treatment modules and assess changes over the waiting period, a repeated measure MANOVA analysis was conducted on the mean scores on the MCMI-III Depression scale, the DASS Depression scale, and the TSI Depression scale (see Table 14) at Time 1, Time 2, and Time 3. Although inspection of Table 14 shows that mean scores on the MCMI-III, TSI, and DASS depression scales decreased across the active treatment intervention period, there was no significant effect for time at the multivariate level (*F*

(6,100) = .58, *p* =.75) or at the univariate level for any measure: MCMI-III (*F* (2) = 1.03, *p*=.35, DASS (*F* (2) =.09, *p*=.89), TSI (*F* (2) = .41, *p* =.65).

A second MANOVA was calculated on the mean scores on the MCMI-III Anxiety scale, the DASS Anxiety scale, and the TSI Anxious Arousal scale at Time 1, Time 2, and Time 3. Although mean scores on all of these scales had decreased at the end of the initial intervention period as shown in Table 14, these decreases were not maintained across the waiting period and mean scores had risen again slightly by the time of entry into the remaining DBT modules. Overall, no significant effects for time were found at the multivariate level (*F* (6,100) = .80, *p*=.57) or at the univariate level for any of the measures: MCMI-III (*F* (2) =.33, *p*=.70), DASS (*F* (2) = 1.64, *p*=.21), or TSI (*F* (2) = .19, *p*=.80).

Similarly, a third MANOVA was calculated on the mean scores on the YSQ-S2 Insufficient self control/self discipline scale, the TSI Anger/Irritability scale, the STAXI-II Angry Reaction scale, Anger Expression - Outward scale and Anger Expression – Inward scale at Time 1, Time 2, and Time 3. In common with scores on other scales in this domain, mean scores on the TSI scale, the STAXI-II scales, and the YSQ scale had all decreased at the end of the initial mindfulness group, although these decreases were not statistically significant. When assessed after the waiting period experienced prior to entry to the DBT group, some mean scores had risen slightly, whilst some had either remained stable or had slightly decreased. However, despite these minor changes across time, no significant effects for time were found at the multivariate analysis level (*F* (10, 96) =1.10, *p*=.37) or at the univariate level for any of the measures: YSQ – S2 (*F* (2) =.55, *p*=.55), TSI (*F*(2)=.02, *p*=.97), STAXI-II AR (*F*(2) = 2.20, *p*=.13), STAXI-II AXO (*F* (2) =1.45, *p*=.24), or STAXI-II AXI (*F* (2) = .62, *p*=.52).

An ANOVA was conducted on the mean score on the MCMI-III Borderline pathology scale at Time 1, Time 2, and Time 3. As can be observed in Table 14, the mean score increased slightly throughout the period of the mindfulness intervention and then decreased again across the waiting period. However, all of these changes were minor, and could be accounted for by the variability of scores observed in the group across the three measurement points since, consistent with the results of the analyses of the other scales included in this domain, no significant effect for time was found (*F* (2, 25) = .21, *p*=.81).

Interpersonal dysregulation domain

As previously discussed, this domain is conceptualised as assessing unstable interpersonal relationships, efforts to avoid loss, and other interpersonal problems. The means and standard deviations for the scales in this domain at Time 1, Time 2, and Time 3 are presented in Table 15 below. A repeated measure MANOVA analysis showed that although mean scores on the all three YSQ-S2 schemata in this domain decreased across the active treatment intervention period, there was no significant effect for time at the multivariate level (F (6,100) = 1.70, p =.13) or at the univariate level: abandonment (F (2) = 1.25, p=.29), mistrust/abuse (F (2) =.10, p=.89), subjugation (F (2) = 4.59, p =.03) following completion of the mindfulness intervention.

Table 15

Means and standard deviations for mindfulness follow-up group participants across the domain of Interpersonal Dysregulation at Time 1(entry into the initial Mindfulness programme); Time 2 (post intervention); and Time 3, (entry into the DBT group)

Scale & Time	*n*	*Mean (SD)*
Interpersonal Dysregulation		
YSQ-S2 abandonment schema		
T1	21	3.95 (1.39)
T2	21	3.57 (1.47)
T3	21	3.52 (1.29)
YSQ-S2 mistrust/abuse schema		
T1	21	3.19 (1.33)
T2	21	3.14 (1.49)
T3	21	3.28 (1.27)
YSQ-S2 subjugation schema		
T1	21	3.95 (1.16)
T2	21	3.33 (1.24)
T3	21	3.33 (1.32)

Further inspection of changes in mean scores across the three time periods revealed that the decreases in mean scores had largely been maintained over the intervening time period for the abandonment and subjugation schema. A slight increase in the mean score on the mistrust/abuse schema was observed at Time 3; however, given the variability present in the means, this increase is most likely related to this variability and is unlikely to be of clinical importance.

Behavioral dysregulation domain

Impulsive and problematic behaviours such as excessive use of alcohol or other drugs and other inappropriate ways of reducing emotional tension, such as self-harm or aggressive behaviours, are conceptualised as falling within this domain. The means and standard deviations for scores on scales included in this domain across the three time periods are shown in Table 16 below. A repeated measure MANOVA analysis was conducted on the mean scores on the MCMI-III Alcohol Dependence and Drug dependence scales, and the TSI Tension Reduction Behaviour scale to assess the significance of changes across time.

Table 16

Means and standard deviations for follow-up group participants across the domain of Behavioural Dysregulation at Time 1(entry into the initial Mindfulness programme); Time 2 (post intervention); and Time 3, (entry into the DBT group)

Scale & Time	*n*	*Mean (SD)*
Behavioural dysregulation		
MCMI-III - Alcohol Dependence scale		
T1	21	63.52 (6.28)
T2	21	62.90 (11.69)
T3	21	64.86 (10.52)
MCMI-III - Drug Dependence scale		
T1	21	63.43 (12.07)
T2	21	64.24 (12.97)
T3	21	62.81 (21.86)
TSI – Tension Reduction Behaviour scale		
T1	21	65.43 (15.45)
T2	21	63.38 (17.58)
T3	21	65.95 (14.15)

The MANOVA analysis across the three time periods indicated that no significant change in mean scores had occurred at the multivariate (F (6, 100) = 1.58, p =.16) or univariate level for Alcohol Dependence (F (2) = .45, p=.62); Drug Dependence (F (2) = 1.78, p=.20) or Tension Reduction Behaviour (F (2) = 1.10, p=.34).

Cognitive dysregulation domain

Dichotomous and rigid thinking, cognitive disturbances, and transient psychotic symptoms are all conceptualised to be included in this domain of dysregulation. The means and standard deviations for scores on these scales across these time periods are shown in Table 17 below. Consistent with the analyses in other domains, a repeated measure MANOVA analysis was conducted on the mean scores on the MCMI-III Thought Disorder and Delusional Disorder scales, and TSI Dissociation scale, in combination with an ANOVA of scores on the MAAS.

Table 17

Means and standard deviations for mindfulness follow-up group participants across the domain of Cognitive Dysregulation at Time 1(entry into the initial Mindfulness programme); Time 2 (post intervention); and Time 3, (entry into the DBT group)

Scale & Time	*n*	*Mean (SD)*
Cognitive dysregulation		
MCMI-III - thought disorder scale		
T1	21	70.24(10.02)
T2	21	67.05(16.04)
T3	21	68.00(19.53)
MCMI-III –delusional disorder scale		
T1	21	58.76(21.44)
T2	21	52.48(30.92)
T3	21	59.00(19.74)
TSI – dissociation scale		
T1	21	65.90(12.28)
T2	21	68.62(13.16)
T3	21	67.24(12.01)
Mindful Attention Awareness Scale		
T1	21	43.38 (8.26)
T2	21	50.24 (9.49)
T3	21	49.24 (7.01)

Note. Bold type = statistically significant result

The results of the MANOVA analysis of mean scores on the MCMI-III and TSI scales showed no significant effect for time at the multivariate level (F (6,100) = .80, p = .57) or at the univariate level on the Thought Disorder scale (F (2) = 1.35, p = .28), Delusional Disorder scale (F (2) = .42, p = .65) or the Dissociation scale (F (2) = 1.06, p = .35) within an overall pattern of changes generally similar to that previously observed in other domains. Scores on the MCMI-III thought disorder and delusional disorder scales had decreased at the end of the mindfulness group, but rose again slightly over the waiting period. Mean scores on the TSI dissociation scale fluctuated slightly across the mindfulness intervention and period until follow-up, but again, not statistically significantly so.

However, the ANOVA analysis on the MAAS mean score revealed an overall large main effect for time (F (2, 25) = 19.342, p = .00, d=1.08), with mean scores at baseline being significantly different from mean scores at the end of the intervention and follow-up period. This finding indicates that the gains made during the active treatment period were maintained and were maintained across time, despite participants' no longer being involved in TMC active skills groups during this waiting period.

Self-dysregulation domain

This domain is conceptualised as including the individuals's sense of self, self image and self esteem. Scales included in this domain are deemed to be valid and appropriate measures of the participant's sense of self, self image, and self esteem across time. The means and standard deviations for participant scores on these scales across the intervention and waiting time periods are shown in Table 18 below. A combination of repeated measure MANOVAs (YSQ-S2 schemata and TSI scale) and ANOVA (Coopersmith SEI-A) analyses were conducted to assess changes in scores across the time period of interest in this study (T1, T2, T3).

Table 18

Means and standard deviations for mindfulness follow-up group participants across the domain of Self Dysregulation at Time 1(entry into the initial Mindfulness programme); Time 2 (post intervention); and Time 3, (entry into the DBT group)

Scale & Time	N	*Mean (SD)*
Self dysregulation		
YSQ-S2 score – enmeshment/undeveloped self schema		
T1	21	2.90 (1.26)
T2	21	2.19 (1.25)
T3	21	2.09 (1.51)
YSQ-S2 score – defectiveness/shame schema		
T1	21	4.09 (1.41)
T2	21	3.71 (1.58)
T3	21	3.28 (1.62)
YSQ-S2 score – social isolation schema		
T1	21	4.00 (1.14)
T2	21	3.71 (1.65)
T3	21	3.57 (1.36)
TSI – impaired self reference scale		
T1	21	64.38 (10.56)
T2	21	65.28 (10.37)
T3	21	66.43 (10.31)
Coopersmith Self Esteem Inventory – Adult		
T1	21	27.90 (11.97)
T2	21	34.71 (20.32)
T3	21	34.90 (18.16)

The results of the repeated measure MANOVA analysis conducted on the mean scores on theYSQ-S2 schemas and the TSI scale showed no significant effect for time at the multivariate level (F (8,98) = 1.08, p =.38), or at the univariate level on the YSQ-S2 schemas of Enmeshment/Undeveloped self (F (2) = 3.16, p = .07), Defectiveness/Shame (F (2) = 2.71, p = .09), Social Isolation (F (2) = 1.13, p = .37), and the TSI Impaired Self Reference scale (F (2) = .07, p = .92). the ANOVA analysis on the mean score on the Coopersmith SEI-A scale across Time 1, Time 2 and Time 3 revealed a similar non-significant result (F (2,25) = 4.36, p =.03). Once again the

overall pattern of changes observed in this domain was generally similar to that previously observed in other domains.

Patient satisfaction

As previously discussed, patient satisfaction with the programme provided by TMC was measured utilising the Vanderbilt Therapeutic Alliance Scale – Revised (VTAS-R), (maximum score of 90) and the Satisfaction with Therapy and Therapist Scale – Revised (STSS-R) at the end of the mindfulness intervention. Overall, (see Table 19) all participants expressed a high degree of satisfaction with the programme (maximum score = 25), the therapists (maximum score = 35) and the outcome of the programme (maximum score = 5).

Table 19

Means and standard deviations for scores on the Vanderbilt Therapeutic Alliance Scale – Revised (VTAS-R) and the Satisfaction with Therapy and Therapist Scale – Revised (STTS-R) Time 3 (entry into DBT programme)

Time	Min	Max	*Mean*	*Standard deviation*
VTAS-R	21	76	57.61	11.37
STTS-R				
Therapist	22	35	29.90	4.08
Outcome	3	5	4.24	0 .54
Programme	17	25	22.50	2.26

Discussion

Although there were positive changes in participant mean scores on the clinically related scales at the end of the initial mindfulness treatment group, these changes fluctuated over the waiting period prior to entry into the DBT treatment group. Some of the scores had returned to their baseline level or slightly above after the waiting period, whilst some had maintained their improvement or continued to improve throughout this period. These fluctuations may, of course, be magnified due

to the small number of participants in this group, or may represent natural changes in the expression of this inherently unstable disorder. The variance in scores amongst group members was quite large in most cases, and adds weight to this latter possibility.

The initial improvement in participant mean scores suggests that this smaller sub-group did benefit from the mindfulness intervention whilst involved in it, and perceived it as very helpful and effective. This perception of helpfulness and efficacy is shown by the high STSS-R and VTAS-R ratings given at the end of the programme. In addition, some of the reported positive changes were maintained and even increased across the waiting period, most notably the mean scores on the Mindful Attention Awareness Scale. This maintenance of gains made during mindfulness training is consistent with the results of others (Farinacci et al. 2005; Ma, 2002; Segal et al., 2002; Teasdale, Segal, & Williams, 2003). Since difficulties in this area are fundamental to BPD symptom expression, this finding is likely to be clinically as well as statistically significant.

Overall, the findings from this study add weight to the existing literature regarding the palatability and utility of mindfulness interventions. Although the majority of the changes in scores observed overall in this smaller group did not reach statistical significance, it is worth noting that most scores on most measures had moved in a positive direction at the end of the initial eight week intervention period. The fact that some of these scores had slightly increased (worsened) again by the follow-up measurement point, suggests the need for ongoing intervention and therapist assistance to maintain and extend gains made, at least for individuals in this smaller, more severely unwell group. It is also the case that the cluster analysis discussed in chapter nine to follow, revealed that all of these twenty-one individuals who went on to the remaining DBT programme fell into the more severely unwell cluster, so it is perhaps not surprising that an eight week treatment programme did not totally relieve their difficulties. However, the results of this research suggest that participation in this eight week mindfulness programme can be a useful intervention to assist those with BPD characteristics in reducing symptoms of psychological distress and improving psychological functioning. Further, the positive changes observed in participants' mean scores on standardised instruments measuring the areas of emotional dysregulation support Wupperman et al.'s (2008) findings of the

existence of an association between higher levels of mindfulness skills and a decrease in negative emotions.

The results of this study further demonstrate that participation in even a brief mindfulness skills training intervention is of considerable benefit to even severely unwell individuals, at least immediately following the intervention. It is noted that no follow up data was available for the individuals who did not proceed to the DBT group, but this was outside the scope of this research. Once participants leave the group, there is no further contact with TMC unless they are waiting for entry to the remainder of the DBT programme. This is a limitation of the study that could be addressed by further research.

At initial assessment, participants in this study reported high levels of symptoms such as negative affect and anger, and psychological distress, and some of them had been struggling with their difficulties for many years, so the improvements they reported on the battery of scales from standardised measures at the end of the intervention may be clinically, if not statistically, significant. Despite the limitations of lack of a control condition, these results provide a degree of support for the efficacy of participation in a brief mindfulness training programme in a group of BPD sufferers in reducing symptoms of psychological distress, and of the lasting nature of at least some of the improvements in psychological functioning which occurred.

The following chapter reports on the investigation of the efficacy of the DBT skills training treatment programme conducted at TMC.

Chapter Eight

DBT training and Treatment Response

The development of DBT represented a significant advance in empirically validated treatment approaches of BPD. Sufferers of this disorder experience high levels of emotional and psychological distress and are generally regarded as being amongst the population of those considered by therapists to be the most difficult to treat effectively. Those with this diagnosis are often in the most need of help and thus are high users of services (Linehan & Kehrer, 1993). DBT consists of a blend of cognitive-behavioural, interpersonal systems, and psychodynamic approaches with Eastern religions and philosophies. The resulting approach is a consistent set of treatment principles and strategies designed to reduce self harm attempts and associated psychological distress, and to improve daily functioning in those affected by the symptoms and difficulties associated with this disorder.

Central to the theoretical basis of DBT is a dialectical view of the world which emphasises "wholeness, interrelatedness, and process (change) as fundamental characteristics of reality" (Linehan & Kehrer, 1993, p. 400). This dialectical view asserts that there are opposing elements of any event and that the organism continuously strives to reconcile the tension between these two positions. However, there is also an opposite position to the resulting new position formed from this reconciliation and so the process becomes a continuous one. DBT conceptualises problematic behaviours such as self harm, dissociation, and substance abuse as ways of coping with high levels of emotional arousal, and as the consequences of this arousal (Feigenbaum, 2007). Fundamental to the DBT treatment protocol is the therapist's assumption that the client is the way they are for good reasons, and that they are doing the best they currently can, whilst at the same time, the therapist is seeking to induce changes in behaviours to facilitate improvements in the individual's way of living. Thus, maintaining the balance between acceptance and change whilst

developing and enhancing the therapeutic relationship is a fundamental task for the DBT therapist (Feigenbaum, 2007)

DBT assumes that BPD results from multiple causes and the symptoms represents a breakdown in normal functioning related to dysfunction in the individual's emotional regulation system combined with negative environmental impacts and events. As discussed in Chapter two, the biological dysfunctions are hypothesised to relate to the brain structures involved in emotional regulation, such as the prefrontal and temporo-limbic systems (Feigenbaum, 2007). Negative familial childhood environments are considered to be those where adults or significant others are unresponsive to or invalidating of the child's reactions to their individual experiences, so that the child who is distressed may be punished or ridiculed for these feelings, or alternatively, assumed to be experiencing a particular emotion even when this is denied. Over time, this type of environment and experience tend to exacerbate the emotional vulnerability and the emotional dysregulation of the BPD individual. An abusive family environment is considered to be the ultimate invalidating experience for any child, and particularly children with this biological vulnerability (Linehan & Kehrer, 1993). Five areas of dysregulation in sufferers of BPD have been identified by Linehan et al. (1993) and Swales et al. (2000). These are dysregulations in the areas of (i) behaviour, including impulsivity in potentially self damaging areas such as suicidal behaviours; (ii) affect and emotional states, including extreme mood reactivity and fluctuations, and inappropriate and/or extreme feelings of anger; (iii) interpersonal skills deficits and problems in relationships, including efforts to avoid abandonment, and unstable and intense relationships; (iv) an impaired sense of self and unstable self-image and identity; and (v) cognitive functioning problems such as transient paranoid ideation or dissociation in the context of overwhelming psychosocial stress (Swales et al., 2000).

There are four stages of treatment in DBT, including the pre-treatment stage which is designed to both explain the requirements of the treatment and to gain the individual's commitment to work toward the defined treatment goals. Once this commitment has been confirmed, the initial stage of the therapeutic intervention focuses on addressing suicidal behaviours, therapy interfering behaviours, quality of life interfering behaviours, and behavioural skills. This stage includes teaching mindfulness skills; increasing interpersonal effectiveness; facilitating regulation of emotions; improving the ability to tolerate distress; and developing or improving the

ability to manage emotions more appropriately. The second and third stages of therapeutic intervention focus on decreasing post traumatic stress symptoms; improving self-respect; and the achievement of individual goals (Linehan, 1993a). DBT requires the individual receiving treatment to participate in both individual and group therapy and telephone coaching interventions, and therapists involved to participate in group supervision. The group skills training sessions are designed to teach and practice new skills and are divided into four modules (mindfulness, emotional regulation, interpersonal effectiveness, and distress tolerance). The four skills training modules are designed to reduce the core symptoms of BPD. Mindfulness skills address confusion about identity, interpersonal effectiveness skills are designed to facilitate improved interpersonal functioning, reduction of the impact of mood lability is addressed by emotional regulation skills, and distress tolerance skills are designed to reduce impulsive behaviours aimed at avoiding or changing negative affect (Linehan, 1993b).

The function of the individual therapy is to relate the skills learned in group to the specific issues and goals of the particular individual involved. Any difficulties with commitment to the therapy (such as therapist or client therapy-interfering behaviours) and motivation to change are also addressed in the individual sessions (Linehan, 1993; Feigenbaum, 2007). Telephone consultations are also utilised to enhance generalisation of skills (Linehan, 1993). In addition to direct clinical work, DBT therapists receive intensive group supervision designed to ensure commitment to the principles of the treatment and to address any difficulties with therapist motivation (Linehan, 1993; Feigenbaum, 2007).

The full (12 month duration) and abbreviated (6 month duration) versions of the treatment have been the focus of empirical investigations in both inpatient and outpatient settings, primarily in the United States. The first published randomised control trial (RCT) of DBT was that reported by Linehan, Armstrong, Suarez, Allmon and Heard (1991). Following 12 months of DBT treatment or 12 months of treatment as usual (TAU), those who had completed the DBT treatment showed reduced frequency and level of severity of parasuicidal behaviours in the initial four months of treatment and for 12 months following cessation of treatment. Increased retention in treatment and reduced in-patient hospital bed days were also observed in the DBT group. Several of these improvements were reported to have been maintained at six

and 12 month follow-up (Linehan et. al, 1993). Reductions in anger and improved social functioning were also found (Linehan et.al, 1994).

Amended versions of DBT have also been utilised in the treatment of other disorders in adults (Carbaugh, & Suias, 2010; Lanius & Tuhan, 2003; Miller & Kraus, 2007) and suicidal behaviour in adolescents. Overall, the results of these studies have shown that when compared with outcomes for "treatment as usual" groups, involvement in DBT results in a decrease of parasuicidal thoughts and behaviours, a decrease in the medical severity of any suicide attempts, a trend towards less frequent hospital admissions, decreased drug use, and improvements in feelings of depression, hopelessness and anger at the end of the treatment period, as well as decreased telephone contacts in between therapy sessions (Koerner & Dimeff, 2000; Koons et al., 2001; Kroger et al., 2006; Prendergast & McCausland, 2007; Robins, 2002; Miller, Rathus, Linehan, Wetzler, & Leigh, 1997; Simpson et al., 1998; Swales, Heard, & Williams, 2000). In addition, these improvements often last up to a year following cessation of treatment. Participation in outpatient DBT training and ongoing skills practice has also been shown to reduce core BPD features (Stepp, Epler, Jahng, & Trull, 2008), such as negative interpersonal relationships and affective instability, as measured by the Personality Assessment Inventory – Borderline Features Scale (PAI-BOR).

Australian studies investigating the efficacy and impact of DBT programmes are relatively scarce (Brassington & Krawitz, 2006; Davenport et al., 2010; Williams, Hartstone, & Denson, 2010; Prendergast & McLCausland, 2007), although some of the principles of DBT treatment have been incorporated into the approach to BPD utilised in public mental health facilities. However, the efficacy of these types of multi-faceted approaches has not been investigated. Australian researchers have previously reported that participation in a modified DBT programme resulted in decreases in the frequency of severe suicide actions, number of hospital admissions and overall contacts (Brassington & Krawitz, 2006; Prendergast & McCausland, 2007; Williams, Hartstone, & Denson, 2010), and that changes in personality functioning and self regulating ability have occurred following treatment (Davenport et al., 2010). Despite the value of these investigations, there is a need for further study of the efficacy of DBT in the Australian context to enable treatment options to be continually improved to improve their efficacy.

DBT has been widely adopted as the treatment of choice for BPD and BPD like difficulties, however, it has been suggested (Scheel, 2000) that this acceptance has occurred in the absence of a sufficient evidence base. These concerns were further discussed by Feigenbaum (2007), who reviewed both DBT treatment components and the evidence base for its efficacy, and concluded that there was a need to further improve the ….." evidence base for the efficacy and effectiveness of DBT" (p.66).

Despite this caution, DBT is one of the leading APA recommended treatments for BPD (APA, 2001) as well as being reported as helpful in modified forms in treatment of other disorders such as Obsessive-Compulsive personality disorder (Miller & Kraus, 2007), co-morbid Bulimia and substance abuse (Carbaugh & Sias, 2010), and trauma (Lanius & Tuhan, 2003). The evidence relating to DBT as an effective treatment approach to BPD and other difficulties, from both RCT and non RCT trials is increasing (Feigenbaum, 2007). However, as previously stated, to date the majority of this research has occurred in the United States or the United Kingdom, with only four published studies being reported in Australia (Brassington & Krawitz, 2006; Davenport, Bore, & Campbell, 2010; Prendergast & McCausland, 2007; Williams et al., 2010). To date no Australian study of the efficacy of a full twelve month DBT programme has been published.

More studies investigating the efficacy of DBT and its component modules will assist in increasing the evidence base (Feigenbaum, 2007; Robins & Chapman, 2004; Smith & Peck, 2004; Westen, 2000), as will studies investigating whether there are common factors in a variety of treatment approaches, and which types of therapy are most appropriate for differing presentations of individuals suffering from the symptoms of BPD. In addition, further efficacy studies utilising already existing measures that are psychometrically valid and reliable, will help to add to the evidence regarding the efficacy of DBT, since the majority of reported studies assess efficacy of the treatment mainly by the use of scales developed for the particular study reported.

The study to be reported here adds to the body of evidence relating to the efficacy of DBT treatment programmes in the Australian context and builds on the reported results of existing studies. It assesses changes in participant mean scores on a range of existing, well validated, and reliable measures which have been widely used in previous research, based on the domains of BPD dysfunction hypothesised by

Linehan (1993a). These measures were administered at the end of each of the four treatment modules, thus allowing change across time to be assessed more fully. In addition, the fact that assessment occurred at the end of each module enables some assessment of the relative impact of each treatment module to be made. Use of existing and widely used psychometric instruments enhances the reliability and validity of any observed improvements in participants' ratings of symptoms as a result of the intervention.

Method

Participants

Of the 27 individuals offered entry into the remaining three DBT modules at the TMC day programme, six participants were offered entry immediately following completion of mindfulness training. The remaining twenty-one participants were those who experienced a delay following completion of mindfulness training, as previously discussed in Chapter seven. Four of the 27 participants did not complete the full DBT training, leaving a sample size of 23 for analyses. Of the four participants who left the group, two gained employment, one moved house, and the other withdrew from the group for personal reasons.

Participants' demographic characteristics

Participant age ranged from 20 years to 69 years (M = 38, SD = 11). Twenty-three (85%) of the group were female, with four (15%) males making up the remainder of the total number. Eleven participants (41%) were in a relationship (married or de facto), three (11%) were divorced, one (4%) was separated, and twelve (44%) were single. Twenty four participants (89%) were born in Australia, with two (7%) having been born in the U.K. One (4%) participant was born in another European country. English was the preferred language for all participants.

In terms of educational level, seven participants (26%) had completed an undergraduate tertiary degree, three (11%) had completed a post graduate degree or diploma, nine (33%) had completed Year 12 of secondary school, five (18%) had completed Year 11, and two (7%) achieved Year 10 or below. Thirteen of the participants (48%) received Centrelink benefits, with seven (26%) participants supported by their partners or family. Four (15%) of the participants were supported by their own earnings from part-time employment, and one (4%) was the recipient of

income from a superannuation fund. Occupations ranged from professional (26%) and administrative/clerical (22%) to unskilled (4%). The majority of participants indicated that their annual income level was less than $20,000 (*n*=16, 60%), whilst two (7%) received between $20,000 and $30,000, three (11%) recorded an income between $40,000 and $50,000, and five (18%) indicated an income level of above $50,000 per annum.

Participants' clinical presentation

Partcipants' illness duration

Participant reported age of onset of psychological difficulties of any sort ranged from 7 years to 43 years (*M*=19 years, *SD*=9 years). Reported age at which Borderline Personality Disorder was diagnosed ranged from 15 years to 47 years (*M*=31 years, *SD*=10 years). Participants' reported total number of admissions to psychiatric units prior to entry into TMC programme varied from none to 30 (*M*=7, *SD*=8), with 14 (52%) of participants reporting having also received treatment from public mental health services at some time during their illness. The length of time that participants had been treated at TMC at time of questionnaire completion ranged from one month to 13 years (*M*=3 years, *SD*=3 years).

Participants' trauma history

All participants reported some experience of trauma during their life. Seventeen (63%) had experienced physical force during a crime related event. In terms of unwanted sexual contact, 17 (63%) participants had experienced some form of this type of event. Overall, twenty-one (78%) also reported experiencing other stressful situations of some sort.

Number of BPD criteria met.

As was reported in the General Method section (Chapter five), the number of BPD criteria met by each participant was established from the record of their initial assessment interview. Overall, all participants met at least five criteria (the minimum requirement to meet the diagnosis of Borderline Personality Disorder). Participants' mean score on the MCMI-III clinical BPD personality scale was 75 (*SD*=20), with a range of scores from -1 to 97. As previously stated, a score of 76 or above is considered to represent an individual who possesses the trait of severe personality pathology of the borderline type.

Alcohol and other drug use

Five (18%) participants denied using alcohol at all, eleven (41%) reported using alcohol only occasionally, whilst three (14%) reported using it sometimes. Four participants (15%) reported using alcohol often, whilst five (18%) reported daily use. Most participants (*n*=17, 63%) reported never using illicit drugs, five (18%) reported occasional use, and three (11%) used sometimes. Only two participants (7%) reported using illicit drugs every day.

Participants' reported symptoms

Most participants reported experiencing mixed symptoms on an ongoing basis. These symptoms included depression/mood swings (*n*=15, 56%), anxiety (*n*=2, 7%), suicidal ideation (*n*=3, 11%) whilst seven (26%) individuals reported experiencing a mixture of all of these. In terms of frequency of symptoms, 19 participants (70%) reported experiencing symptoms on an ongoing or daily basis. Three (11%) participants experienced symptoms three to four times a week, and three (11%) individuals reported experiencing these difficulties from one to two times a week to a few times a month.

Sixteen (59%) of participants reported being violent towards others at times, usually towards their spouse or parent, whilst 22 (81%) reported that they had made threats of self harm at some time during their illness. Twenty-five (93%) individuals reported having carried out self harm acts. Type of self-harm participants threatened included overdose (*n*=6, 22%), cutting self (*n*=10, 37%), or a combination of these behaviours (*n*=4, 15%).

Participants' level of satisfaction with life and support available

Eight (30%) participants reported being very dissatisfied with their life overall, ten (37%) were fairly dissatisfied; two (7%) was a little dissatisfied; three (11%) were a little satisfied; and four (15%) were fairly satisfied with their life. Two (7%) were very dissatisfied with the level of support they received for their illness; three (11%) were fairly dissatisfied; one (4%) was a little dissatisfied; six (22%) were a little satisfied; seven (26%) were fairly satisfied with the level of support received; and eight (30%) were very satisfied.

Measures

The suite of diagnostic measures utilised at baseline assessment are described in full in the General Method section (Chapter five), as are the battery of scales from the standardised psychometric measures utilised in this study.

Procedure

A total of six participants entered the DBT programme immediately after completing mindfulness training. These participants completed the measures prior to their initial entry into the mindfulness group and at its completion, and then at the completion of each of the remaining three DBT treatment modules. Those participants who experienced a delay prior to entry into the DBT modules (*n*=21) completed a full suite of measures prior to entry into Module 2 of the DBT programme. All participants then completed the suite of measures at the end of each individual module throughout the programme. Comparison analyses (t-tests) of baseline scores at entry into the DBT treatment group revealed no significant differences between the two groups of participants' mean scores on any of the scales utilised.

Each DBT skills group was of two hour duration and included the provision of theoretical information and education in accord with the DBT protocol, as well as skills practice during the group and the assignment of homework tasks to assist with generalisation of skills for completion prior to attendance at the next session. Participants also engaged in individual therapy with TMC therapists throughout the time of the treatment and were expected to monitor the intensity and frequency of their suicidal and self harm thoughts on a daily basis. They ceased involvement with any other treating psychologist or counsellor during their engagement in DBT training.

Results

Independent t-test comparisons (Field, 2009) of mean scores on the battery of scales administered at entry into the DBT training programme, revealed that there were no significant differences in mean scores between the group of participants who experienced a delay following completion of mindfulness prior to entering the DBT treatment programme, and those who commenced the DBT programme immediately following completion of the initial mindfulness programme. This finding enabled the groups to be combined for the purposes of analyses of the effects of participation in

the DBT programme, leading to results for a total of 23 participants who completed the entire DBT programme being available for further analyses.

A combination of a series of single factor (time) repeated measure MANOVAs and ANOVAs (Field, 2009; Pallant, 2005) were conducted on the mean scores on scales in each domain of dysregulation across five measurement points: Time 1 (entry into the mindfulness programme); Time 2 (post completion of the Mindfulness module); Time 3 (post completion of the Interpersonal Effectiveness training); Time 4 (post completion of the Emotional Regulation module; and Time 5 (post completion of the Distress Tolerance module). Readers are referred back to the General Method section (Chapter 5) for the full description of these domains of dysregulation.

Where the multivariate main effect for time was significant (with Bonferroni correction to α=0.016), exploratory univariate comparisons were undertaken (Field, 2009; Pallant, 2005) to identify which of the dependent variables included in the domain accounted for this effect. Follow-up pairwise comparisons (with Bonferroni correction to $\alpha = 0.016$) were conducted when the univariate main effect for time was found to be significant.

Single factor (time) repeated measure ANOVAs were utilised in the analysis of changes in borderline personality pathology, self esteem scores, and measures of mindfulness ability, These were were conducted on the mean MCMI-III Borderline personality scale scores (Emotional Dysregulatin domain), the Coopesmith SEI-A score (Self Dysregulation domain), and the mean score on the Mindful Attention Awareness Scale (MAAS). Consistent with the approach described above, follow-up pairwise comparisons (with Bonferroni correction to $\alpha = 0.016$) were conducted when the univariate main effect for time was significant.

The results of these analyses are reported by domains of dysregulated functioning in the following section.

Emotional dysregulation domain

As discussed in Chapter five, scales in this category measure chronic negative affect, depressed mood, anxiety, and anger/irritability. The means and standard deviations for the scales in this domain at Time 1, Time 2, Time 3, Time 4, and Time 5 are presented in Table 20 below.

Table 20

Results of repeated measure MANOVA and ANOVA analyses and post hoc t-tests (with Bonferroni correction) for DBT group participants across the BPD domain of Emotional Dysregulation at Time 1(entry into the Mindfulness programme) through to Time 5 (completion of the DBT group)

Time	N	*Mean (SD)*	*t (22)*	*p*	*d*
Depression					
MCMI-III – Depression scale					
T1	23	75.74 (20.92)	-2.73	ns	
T2	23	77.69 (27.99)	-5.17	ns	
T3	23	69.43 (25.93)	-3.56	**.002**	**.42**
T4	23	62.93 (31.38)	-2.41	**.003**	**.17**
T5	23	57.69 (29.82)		sig cf T3, T4	
DASS – Depression scale					
T1	23	2.52 (1.27)	-1.91	ns	
T2	23	2.76 (1.63)	-3.47	ns	
T3	23	2.72 (1.58)	-3.05	ns	
T4	23	2.04 (1.62)	-1.50	ns	
T5	23	1.75 (1.73)		ns	
TSI – Depression scale					
T1	23	66.00 (11.98)	-1.29	ns	
T2	23	67.78 (10.94)	-2.46	ns	
T3	23	66.39 (8.77)	-1.75	ns	
T4	23	63.04 (13.39)	-0.52	ns	
T5	23	62.26 (12.48)			

Continued overleaf

Table 20 *(Cont'd)*

Results of repeated measure MANOVA and ANOVA analyses and post hoc t-tests (with Bonferroni correction) for DBT group participants across the BPD domain of Emotional Dysregulation at Time 1(entry into the Mindfulness programme) through to Time 5 (completion of the DBT group)

Time	*N*	*Mean (SD)*	*t (22)*	*p*	*d*
Anxiety					
MCMI-III Anxiety Disorder scale					
T1	23	86.39 (21.82)	-2.54	ns	
T2	23	84.30 (25.58)	-1.66	ns	
T3	23	85.00 (21.95)	-2.54	ns	
T4	23	83.22 (19.37)	-2.66	ns	
T5	23	77.56 (20.08)		ns	
DASS – Anxiety scale					
T1	23	2.63 (1.38)	-2.32	ns	
T2	23	2.42 (1.51)	-2.18	ns	
T3	23	2.66 (1.45)	-2.81	ns	
T4	23	2.17 (1.64)	-2.47	ns	
T5	23	1.85 (1.58)		ns	
TSI – Anxious Arousal scale					
T1	23	62.39 (10.86)	-0.75	ns	
T2	23	65.35 (10.07)	-2.33	ns	
T3	23	64.04 (9.07)	-2.04	ns	
T4	23	61.96 (12.37)	-1.63	ns	
T5	23	59.78 (12.03)		ns	

Continued overleaf

Table 20 *(Cont'd)*

Results of repeated measure MANOVA and ANOVA analyses and post hoc t-tests (with Bonferroni correction) for DBT group participants across the BPD domain of Emotional Dysregulation at Time 1(entry into the Mindfulness programme) through to Time 5 (completion of the DBT group)

Time	*N*	*Mean (SD)*	*t (22)*	*p*	*d*
Anger					
YSQ-S2 Insufficient self control/self discipline schema					
T1	23	3.83 (1.23)	-2.72	ns	
T2	23	3.61 (1.40)	-2.04	ns	
T3	23	3.61 (1.47)	-2.11	ns	
T4	23	3.52 (1.38)	-2.10	ns	
T5	23	3.13 (1.14)		ns	
TSI – Anger/Irritability scale					
T1	23	56.91 (10.73)	-1.13	ns	
T2	23	58.65 (12.33)	-3.02	ns	
T3	23	59.52 (11.99)	-2.63	ns	
T4	23	57.21 (9.11)	-2.43	ns	
T5	23	53.78 (10.52)		ns	
STAXI – II Anger Expression – Out scale					
T1	23	50.48 (7.21)	-2.16	ns	
T2	23	50.69 (12.17)	-2.81	ns	
T3	23	48.61 (13.77)	-1.49	ns	
T4	23	48.78 (10.09)	-3.34	ns	
T5	23	46.09 (9.52)		ns	

Continued overleaf

Table 20 *(Cont'd)*

Results of repeated measure MANOVA and ANOVA analyses and post hoc t-tests (with Bonferroni correction) for DBT group participants across the BPD domain of Emotional Dysregulation at Time 1(entry into the Mindfulness programme) through to Time 5 (completion of the DBT group)

Time	*N*	*Mean (SD)*	*t (22)*	*p*	*d*
Anger *(cont'd)*					
STAXI – II Anger Expression – In scale					
T1	23	49.69 (8.40)	-1.66	ns	
T2	23	52.09 (11.51)	-3.50	ns	
T3	23	52.78 (9.12)	-3.42	ns	
T4	23	47.52 (11.11)	-2.05	ns	
T5	23	45.39 (10.42)		ns	
STAXI-II Angry Reaction scale					
T1	23	49.04 (8.52)	-4.12	**.004**	**.86**
T2	23	45.91 (10.06)	-2.91	ns	
T3	23	45.91 (9.84)	-2.73	ns	
T4	23	44.04 (9.43)	-2.83	ns	
T5	23	41.39 (7.19)		sig cf T1	
MCMI-III Borderline Personality Pathology					
T1	23	75.35 (20.90)	-2.39	ns	
T2	23	76.96 (21.25)	-3.33	ns	
T3	23	75.91 (19.70)	-2.79	ns	
T4	23	75.30 (23.63)	-2.33	ns	
T5	23	63.96 (26.71)		ns	

Note. Bold type = statistically significant result

Depressed mood

To test the duration of gains made in this domain during the DBT treatment programme, a repeated measure MANOVA analysis was conducted on the mean scores on the MCMI-III Depression scale, the DASS Depression scale, and the TSI Depression scale (see Table 22) at Time 1, Time 2, Time 3, Time 4, and Time 5.

There was a significant effect for time at the multivariate level (F (12,228) = 2.61, p=.003). Univariate analyses revealed that there was a significant effect for time on the MCMI-III Depression scale (F (2)=6.96, p=.003) only. There appeared to be a significant change in mean scores for the DASS Depression scale (F (3) =4.10, p=.01) at the univariate level, however, the change in mean scores on the TSI Depression scale was not significant (F (3)=2.00, p=.13).

Post-hoc pairwise comparisons revealed that the mean scores on the MCMI-III Depression scale at T5 were significantly different to the mean scores at T3 (t (22)=-3.56, p=.002, d =.42) and T4 (t (22)=-2.41, p=.003**,** d=.17), with small to moderate effect sizes obtained. However, despite a significant difference at the univariate level, pairwise comparisons on the DASS depression scale were not significant at the .016 level. Similarly, mean scores on the TSI scale, showed no significant difference across time, although the pattern of changes was similar. Overall, mean scores on all depression scales fluctuated across the active treatment intervention period, tending to increase in the middle of the treatment but then decreasing again by the end of the programme (see Table 20 for these figures).

Anxiety

A second MANOVA was calculated on the mean scores on the MCMI-III Anxiety scale, the DASS Anxiety scale, and the TSI Anxious Arousal scale at Time 1, Time 2, Time 3, Time 4, and Time 5. Overall, no significant effects for time were found at the multivariate level (F (12,228) = 1.69, p=.07) or at the univariate level for any of the measures: MCMI-III (F (3) = 2.08, p=.11), DASS (F (3)=3.15, p=.04), or TSI (F (2)=1.48, p=.24). Mean scores on these scales had decreased across the intervention period, but not statistically significantly so.

Anger

A third MANOVA was calculated on the mean scores on the YSQ-S2 Insufficient self control/self discipline scale, the TSI Anger/Irritability scale, the STAXI-II Angry Reaction scale, Anger Expression - Outward scale and Anger Expression – Inward scale at Time 1, Time 2, Time 3, Time 4, and Time 5. In

common with scores on other scales in this domain, mean scores had all decreased at the end of the intervention period, but generally not significantly so, as no significant effects for time were found at the multivariate analysis level (F (20, 280)=1.83, p=.02). However, inspection of the results of the analyses at the univariate level (with the Bonferroni level set at .016), revealed that there was a significant result for the STAXI-II AR (F (3) = 4.70, p=.00). Pairwise comparisons on the STAXI-II AR scale across time revealed that the mean score at Time 5 was significantly less than the mean score at Time 1 (t (22)=-4.12, p =.004, d=.86), and that the effect size was large. However, the observed changes on the STAXI-II AXO (F (3) = 1.78, p=.16), STAXI-II AXI (F (3)=3.73, p=.02), the YSQ – S2 (F (3)=2.36, p =.07), and the TSI scale (F (3)=2.03, p =.12) were all non significant.

An ANOVA was conducted on the mean score on the MCMI-III Borderline Pathology scale at Time 1, Time 2, Time 3, Time 4, and Time 5. As can be observed in Table 20, the mean scores had decreased at the end of the programme. However, these changes were not statistically significant (F (4, 19) = 2.82, p=.05), once Bonferroni corrections had been made.

Interpersonal dysregulation domain

This domain is conceptualised as representing unstable relationships, efforts to avoid loss, and the interpersonal problems often experienced by individuals with BPD. Changes in the mean scores and standard deviations on scales included in this domain across time are shown in Table 21.

Table 21

Results of repeated measure MANOVA analyses for DBT group participants across the BPD domain of Interpersonal Dysregulation at Time 1(entry into the Mindfulness programme) through to Time 5 (completion of the DBT group)

Time	*N*	*Mean (SD)*	*t (22)*	*p*
Interpersonal Dysregulation				
YSQ-S2 abandonment schema				
T1	23	4.09 (1.70)	-1.52	ns
T2	23	3.78 (1.70)	-0.97	ns
T3	23	3.69 (1.63)	-0.72	ns
T4	23	3.65 (1.61)	-0.58	ns
T5	23	3.52 (1.75)		ns
YSQ-S2 mistrust/abuse schema				
T1	23	3.39 (1.53)	2.40	ns
T2	23	3.26 (1.63)	0.14	ns
T3	23	3.47 (1.34)	-0.60	ns
T4	23	3.43 (1.41)	-0.45	ns
T5	23	3.30 (1.79)		ns
YSQ-S2 subjugation schema				
T1	23	3.96 (1.43)	-2.78	ns
T2	23	3.61 (1.56)	-2.33	ns
T3	23	3.30 (1.46)	-1.43	ns
T4	23	3.13 (1.52)	-1.22	ns
T5	23	2.91 (1.50)		ns

Repeated measure MANOVA analyses of mean scores across Time 1- Time 5 on the YSQ – S2 schemas Abandonment, Mistrust/Abuse, and Subjugation revealed no statistically significant change across time at the multivariate level once the Bonferroni correction had been applied (F (12, 227)=2.14, p=.02). Similarly, calculations at the univariate level for all measures were also non-significant: YSQ-S2 Abandonment (F (2)=1.08, p=.36); Mistrust/Abuse (F (3)=.198, p=.90); and Subjugation (F (2)=4.48, p=.02).

Behavioral dysregulation domain

This domain includes problematic and impulsive behaviours such as excessive use of alcohol and other drugs to facilitate coping, and inappropriate tension reduction

behaviours, such as self-harm behaviours (e.g., cutting, burning, overdosing). The means and standard deviations for scores on these scales across time are displayed in Table 22.

Table 22

Results of repeated measure MANOVA analyses and post-hoc comparisons for DBT group participants across the BPD domain of Behavioural Dysregulation at Time 1(entry into the Mindfulness programme) through to Time 5 (completion of the DBT group)

Time	*N*	*Mean (SD)*	*t (22)*	*p*
Behavioural dysregulation				
MCMI-III - Alcohol Dependence scale				
T1	23	63.69 (8.61)	-1.27	ns
T2	23	63.91(14.11)	-1.56	ns
T3	23	66.95(12.87)	-2.29	ns
T4	23	65.73(14.46)	-2.25	ns
T5	23	58.74(17.78)		ns
MCMI-III - Drug Dependence scale				
T1	23	56.22 (20.70)	-0.89	ns
T2	23	59.43 (19.45)	-1.92	ns
T3	23	53.52 (21.30)	-0.56	ns
T4	23	49.13 (23.84)	0.82	ns
T5	23	51.56 (22.62)		ns
TSI – Tension Reduction Behaviour scale				
T1	23	63.83 (16.88)	-1.80	ns
T2	23	62.04 (17.20)	-1.44	ns
T3	23	61.26 (13.48)	-2.32	ns
T4	23	58.48 (14.42)	-1.36	ns
T5	23	56.22 (11.42)		ns

Repeated measure MANOVA analyses of changes in mean scores across Time 1 – Time 5 on the MCMI-III Alcohol Dependence and Drug Dependence scales, together with the TSI Tension Reduction Behaviour scale (as displayed in Table 22) showed no significant effect for time at the multivariate level (F (12,228)=2.11, p = .02), or the univariate level for any measure: MCMI-III Alcohol Dependence (F (2)=2.59, p =.08); Drug Dependence (F (3)=2.41, p =.08); TSI Tension Reduction Behaviour scale (F (2)=1.49, p =.23).

Cognitive dysregulation domain

This domain is conceptualised as comprising difficulties in cognitive functioning such as dichotomous and rigid thinking, cognitive disturbances, and transient psychotic symptoms. Mean scores on scales in this domain were analysed with a combination of repeated measure MANOVA and ANOVA analyses. The means and standard deviations for these scores across time are displayed in Table 23 below.

Table 23

Results of repeated measure MANOVA and ANOVA analyses for DBT group participants across the domain of BPD Cognitive Dysregulation at Time 1(entry into the Mindfulness programme) through to Time 5 (completion of the DBT group)

Time	*N*	*Mean (SD)*	*t (22)*	*p*	*d*
Cognitive dysregulation					
MCMI-III - thought disorder scale					
T1	23	69.35 (18.96)	-2.17	ns	
T2	23	69.04 (21.70)	-1.92	ns	
T3	23	66.09 (19.29)	-1.16	ns	
T4	23	65.82 (18.66)	-1.90	ns	
T5	23	62.22 (15.32)		ns	
MCMI-III –delusional disorder scale					
T1	23	57.74 (24.27)	-1.76	ns	
T2	23	57.78 (29.88)	-1.78	ns	
T3	23	63.61 (25.66)	-1.03	ns	
T4	23	52.26 (21.62)	-1.01	ns	
T5	23	49.00 (22.25)		ns	
TSI – dissociation scale					
T1	23	66.52 (14.51)	-2.32	ns	
T2	23	69.87 (13.66)	-4.73	**.000**	**.85**
T3	23	66.43 (12.60)	-3.54	**.002**	**.62**
T4	23	62.30 (13.49)	-3.41	**.002**	**.27**
T5	23	58.74 (12.37)		sig cf T2, T3, T4	
Mindful Attention Awareness Scale					
T1	23	42.43 (9.04)	5.96	**.000**	**-1.33**
T2	23	49.74 (12.37)	3.23	**.004**	**-0.56**
T3	23	49.65 (11.23)	3.62	**.001**	**-0.59**
T4	23	55.17 (9.84)	0.32	ns	
T5	23	56.47 (11.82)		sig cf T1, T2, T3	

Note. Bold type = statistically significant result

The repeated measure MANOVA analyses (with Bonferroni correction) of mean scores on scales across Time 1-Time 5 for the MCMI-III Thought Disorder and Delusional Disorder scales, together with the TSI Dissociation scale, revealed a significant effect for time at the multivariate level (F (12, 228) =2.05, p=.02). Inspection of the results of univariate analyses revealed a non-significant result for the MCMI-III Thought Disorder (F (3)=1.60, p =.20), and Delusional Disorder scales (F (3)=2.97, p =.24). However, a significant change across time had occurred on the TSI Dissociation scale (F (3)=5.36, p =.004). Pairwise comparisons (t-tests) revealed that scores at Time 5 were significantly different from scores at Time 2 (t (22)=-4.73, p= .000, d=.85), Time 3 (t (22)=-3.54, p =.002, d=.62), and Time 4 (t (22)=-3.41, p = .002, d=.27). Effect sizes ranged from small to large.

An ANOVA analysis of the scores on the Mindful Attention Awareness Scale across Time 1 – Time 5 showed a significant effect for time (F (4, 19)=13.31, p = .000). Subsequent pair wise comparisons (t-tests) revealed that the mean score at Time 5 was significantly different from the mean score at Time 1(t (22)=5.96, p = .000, d =-1.33), Time 2 (t (22)=3.23, p =.004, d =-.56) and Time 3 (t (22)=3.62, p = .001, d = -.59).

Self dysregulation domain

This domain is conceptualised as representative of the unstable sense of self and self image, feelings of emptiness, and low self esteem often reported by individuals with BPD. Scales included this domain were chosen to measure self concept and self esteem. In common with the analyses of mean scores (displayed in Table 24 below) on scales in other domains, a combination of repeated measure MANOVA and ANOVA analyses were utilised to assess for main effects for time across Time 1-Time 5.

Table 24

Results of repeated measure MANOVA and ANOVA analyses for DBT group participants across the domain of BPD Self Dysregulation at Time 1(entry into the Mindfulness programme) through to Time 5 (completion of the DBT group)

Time	*N*	*Mean (SD)*	*t (22)*	*p*	*d*
Self dysregulation					
YSQ-S2 score – enmeshment/undeveloped self schema					
T1	23	2.65 (1.26)	-1.94	ns	
T2	23	2.39 (1.50)	-1.67	ns	
T3	23	2.22 (1.56)	-1.00	ns	
T4	23	2.13 (1.25)	-1.14	ns	
T5	23	2.00 (1.13)		ns	
YSQ-S2 score – defectiveness/shame schema					
T1	23	4.22 (1.62)	-3.48	**.002**	**.73**
T2	23	3.83 (1.72)	-2.92	**.008**	**.49**
T3	23	3.61 (1.67)	-0.92	ns	
T4	23	3.43 (1.80)	-2.20	ns	
T5	23	2.96 (1.82)		sig cf T1, T2	
YSQ-S2 score – social isolation schema					
T1	23	4.09 (1.34)	-1.73	ns	
T2	23	3.78 (1.70)	-0.59	ns	
T3	23	3.83 (1.43)	-1.13	ns	
T4	23	3.78 (1.47)	-1.30	ns	
T5	23	3.56 (1.41)		ns	
TSI – impaired self reference scale					
T1	23	65.61 (11.60)	-1.41	ns	
T2	23	69.16 (10.17)	-3.39	**.003**	**.70**
T3	23	66.69 (10.44)	-2.43	ns	
T4	23	62.78 (13.91)	-1.15	ns	
T5	23	60.87 (13.20)		sig cf T2	
Coopersmith Self Esteem Inventory – Adult					
T1	23	30.26 (17.26)	-3.16	**.004**	**-.54**
T2	23	31.87 (20.52)	-0.70	ns	
T3	23	37.61 (23.76)	-2.27	ns	
T4	23	40.39 (20.97)	-2.75	ns	
T5	23	40.69 (21.32)		sig cf T1	

Note. Bold type = statistically significant result

The MANOVA analyses of the mean scores from Time 1-Time 5 on the YSQ-S2 schemas of Enmeshment/Undeveloped Self, Defectiveness/Shame and Social Isolation, together with the mean scores of the TSI revealed no significant effect for time at the multivariate level (F (16, 260)=1.70, p =.07). Similarly, there was no statistically significant effect across time at the univariate level for the following scales: YSQ-S2 Enmeshment (F (2)=1.85, p=.16); Social Isolation (F (2)=.82, p =

.47), and the TSI Impaired Self Reference scale (F (2)=2.64, p =.07). However, despite the non-significant multivariate result, a significant effect for time was observed on the YSQ-S2 Defectiveness/Shame schema (F (3)=4.57, p=.008) at the univariate level. Post hoc comparisons (t-tests) showed that the mean score at Time 5 was significantly different to the mean score at Time 1(t (22)=-3.48, p=.002, d =.73) and Time 2 (t (22)=-2.92, p =.008, d =.49), and that effect sizes were medium to large.

ANOVA analysis of the mean score across Time 1-Time 5 on the Coopersmith SEI-A indicated that no significant effect for time occurred (F (4,19)=2.32, p =.09), although scores did change in a positive way across the intervention period.

Suicidal urges

Throughout the DBT programme, all participants were requested to monitor the frequency and intensity of their urges to suicide on a daily basis. These completed monitoring sheets (where available) were inspected at the end of the programme and the average totals per month calculated. Completion rates varied between participants across the time of the intervention, resulting in variable numbers of rating sheets being available for analysis. The group mean scores and standard deviations across Time 1-Time 5 for reported frequency and strength of urges to suicide are displayed in Table 25.

Table 25

Means and standard deviations for reported frequency and strength of suicide urges at Time 1 (pre intervention), Time 2, Time 3, Time 4, and Time 5 (post intervention)

Time	*N*	Mean	Standard deviation
Average number of days per month suicidal urges experienced			
T1	17	3.12	2.59
T2	19	2.79	2.74
T3	19	3.05	2.86
T4	17	3.06	2.75
T5	16	3.25	2.72
Average reported strength of suicidal urges			
T1	17	2.17	1.79
T2	19	1.74	1.41
T3	18	1.83	1.20
T4	17	1.76	1.44
T5	16	1.81	1.33

The maximum possible score on the diary sheet is seven, indicating that suicidal urges were experienced every day of the week. The maximum possible rating of urge strength is five. Unfortunately, not all participants completed their diary monitoring throughout the intervention period. Inspection of the available data for frequency of suicidal urges over the intervention period revealed very little change across all measurement points. This result was confirmed with repeated measure MANOVA analyses across Time 1-Time 5 which showed that the changes were not significant at the multivariate level for number of days suicidal urges were experienced per month, or the reported strength of those urges, (F (8,110)=.58, p = .79). A similar result was observed at the univariate level for number of days suicidal urges were experienced per month (F (2)=.20, p =.86), and the strength of the urges (F (3)=.66, p = .58). Unfortunately, records of actual instances of self-harm behaviour were not available.

Self-harm urges

Repeated measure MANOVA analyses were conducted across Time 1-Time 5 on reported numbers of days per month self-harm urges were experienced and the average reported strength of those urges. Once again, completion rates varied between participants across the time of the intervention, which resulted in variable numbers of rating sheets being available for analysis.The means and standard deviations of reported number and strength of self-harm urges from available diary sheets are displayed in Table 26 below.

Table 26

Mean scores for reported frequency and strength of self-harm urges at Time 1 (pre intervention), Time 2, Time 3, Time 4, and Time 5 (post intervention)

Time	*N*	Mean	Standard deviation
Average number of days self-harm urges experienced per month			
T1	19	3.31	2.69
T2	20	3.05	2.52
T3	20	3.50	2.56
T4	18	2.67	2.74
T5	18	3.05	2.46
Average reported strength of urges to self harm			
T1	19	2.26	1.52
T2	20	2.30	1.45
T3	19	2.31	1.20
T4	18	2.05	1.76
T5	18	2.22	1.52

The results of the analyses revealed no significant effect for time at the multivariate level for the number of days self-harm urges were experienced per month, or the reported strength of those urges (F (8,110)=.58, p =.79). At the univariate level, no significant change was observed for the number of days self-harm urges were experienced per month (F (2)=1.50, p =.24), or the reported strength of those urges (F (4)=.20, p =.92).

Measures of patient satisfaction with the DBT programme overall

Participant satisfaction with the full DBT programme provided by TMC was measured utilising the Vanderbilt Therapeutic Alliance Scale – Revised (VTAS-R), (maximum score of 90) and the Satisfaction with Therapy and Therapist Scale – Revised (STSS-R). A combination of repeated measure MANOVA and ANOVA analyses were performed on mean scores on these instruments across Time 1-Time 5. The minimum, maximum, and mean scores and standard deviations for these instruments are presented in Table 27 below and the results of the ANOVA and MANOVA analyses are then discussed.

Table 27

Means and Standard Deviations for scores on the Vanderbilt Therapeutic Alliance Scale – Revised (VTAS-R) and the Satisfaction with Therapy and Therapist Scale – Revised (STTS-R) at Time 1 (pre intervention), Time 2, Time 3, Time 4 and Time 5 (post intervention)

Time	*N*	Min	Max	*M*	SD
VTAS-R					
T1	20	18.00	69.00	48.33	18.00
T2	19	50.00	60.00	54.33	3.72
T3	19	46.00	76.00	55.80	11.75
T4	18	47.00	70.00	55.20	8.75
T5	17	50.00	64.00	58.80	5.63
STTS-R					
Therapist					
T1	20	21.00	35.00	28.50	5.24
T2	19	27.00	35.00	31.00	2.89
T3	19	28.00	35.00	31.40	2.88
T4	18	22.00	35.00	28.20	5.93
T5	17	30.00	35.00	32.00	2.00
Outcome					
T1	20	3.00	5.00	4.00	0.63
T2	19	4.00	5.00	4.50	0.55
T3	19	4.00	5.00	4.20	0.45
T4	18	4.00	5.00	4.40	0 .55
T5	17	4.00	5.00	4.60	0 .55
Programme					
T1	20	17.00	25.00	20.00	2.83
T2	19	20.00	25.00	22.50	2.43
T3	19	20.00	25.00	22.60	2.40
T4	18	16.00	25.00	21.40	3.36
T5	17	21.00*	25.00	23.20	1.89

Note. * indicates statistical significance

Although ANOVA analysis of mean scores on the VTAS-R across Time 1 – Time 5 showed no significant effect for time (F (4, 19)=1.13, p =.37) at all, participants were consistently extremely satisfied with the quality of the therapeutic relationship with their therapists as measured on this instrument (maximum score of 90 with four items reverse scored, so that a lower score on these items represents a positive judgement of the relationship with the therapist).

Repeated measure MANOVA analyses of mean scores relating to satisfaction with the programme, the outcome of the programme, and the therapist revealed a

significant effect for time at the multivariate level (F (12, 217)=2.89, p =.001). Inspection of univariate analyses revealed that there were significant changes across time on ratings of satisfaction with the programme (F (2)=4.05, p =.015), the outcome (F (3)=4.19, p =.010), and the therapist (F (3)=3.88, p =.016). However, the post hoc pairwise comparisons (with Bonferroni corrections) showed that only the change between mean scores of satisfaction with the programme at Time 1 and Time 5 were statistically significant (t (21)=1.03, p =.022, d =-1.09). Overall, participants expressed a high degree of satisfaction with the programme (maximum score=25), the therapists (maximum score=35) and the outcome of the programme (maximum score =5) across the entire intervention period.

Discussion

The aim of this study was to examine the changes in mean scores on scales in each of five domains of BPD dysregulation as suggested by Linehan (1993a) following participation in the DBT programme at TMC. Participants were assessed on a battery of scales selected from a variety of psychometrically sound, frequently used standardised measures, as previously discussed in Chapter five, across five time periods.

Overall, the results support findings of previous research (e.g., Brassington & Krawitz, 2006; Koerner & Dimeff, 2000; Koons et al., 2001; Kroger et al., 2006; Prendergast & McCausland, 2007; Robins, 2002; Miller, Rathus, Linehan, Wetzler & Leigh, 1997; Simpson et al., 1998; Swales, Heard, & Williams, 2000; Williams et al., 2010). Significant improvements in mood occurred throughout the intervention, together with decreases in angry reactions to events and situations. Self-reported inappropriate tension reduction behaviours employed as affect regulation mechanisms (such as use of alcohol and drugs, and self harm), also decreased throughout the intervention. The decrease in the mean score on the MCMI-III borderline personality pathology scale which occurred by the end of completion of the remaining DBT modules is consistent with improvements in other measures of affect dysregulation utilised in previous studies (e.g., Brassington & Krawitz, 2006). Scores in the range of 60-75 on this scale are considered to represent a "tendency" for the borderline characteristics to be present, and the decrease in mean scores that occurred throughout

the intervention indicates movement towards the "normal" range of scores (0-60) on this measure. This change suggests that the participants' experience of intense moods which often contain elements of depression, anger, or anxiety (i.e., dysregulated affect) had lessened significantly at the end of the treatment programme.

The observed improvements in the area of cognitive dysregulation indicate that DBT training resulted in sustained improvements in the ability to focus attention in the present moment and presumably, assisted in decreasing participants' focus on unhelpful thoughts and emotions, thus allowing the influence of these thoughts and feelings on individual functioning to decrease. This finding supports the results of the mindfulness analyses, and further confirms the importance of the mindfulness component of the DBT intervention programme.

In common with results observed in the Mindfulness group participants, significant improvements occurred on some of the dysfunctional schemas in the self dysregulation domain investigated in this study, suggesting that the continuing practice of mindfulness techniques which occurs in DBT skills training may change the relationship between an individual's schema and their belief in the accuracy of those schema, with associated reductions in negative affect.

The improvements reported on measures of self esteem in the domain of self dysregulation are heartening. From these reports, participant self esteem improved throughout the DBT intervention. Reported level of belief in the schema assessing feelings of being basically defective in some fundamental way also decreased significantly, confirming this improvement. Given that dysregulation of the sense of self is fundamental to BPD, this finding is noteworthy. These results also suggest that reductions in the severity of core BPD features such as negative interpersonal relationships and affective instability occurred during the intervention, similar to those observed in the Stepp et al. (2008) study.

The lack of statistically significant positive change in the reported frequency and intensity of suicidal and self harm urges found in this study is disappointing, given that the DBT programme was designed to target these behaviours specificially (Linehan, 1993a). However, participants' relatively low record completion rate and the accuracy of their report may have impacted on this area, together with the lack of behavioural records of any self-harm acts.

Overall, participants' reported high levels of satisfaction with all aspects of the DBT programme offered to them, despite the lack of statistically significant

relationship found between these ratings and outcome measure scores. In particular, their ratings of satisfaction with the programme improved significantly throughout the time of the intervention, suggesting that they perceived that they experienced "real world" benefits from their involvement.

In conjunction with the statistically significant improvements on the measures used in this study, the acceptability of this treatment approach supports the continued use of this intervention with this clinical population. However, participants in this study were not randomly allocated to the DBT treatment group, but were offered places on the basis of observed need and ability to participate. Thus, they may not be representative of the general population of BPD sufferers overall, and the lack of a control group, of necessity, leads to a need for caution in the interpretation of these results. However, despite these limitations, the fact that these participants improved on objective measures of psychological difficulties over the course of this intervention supports the continued use of this treatment approach for this population. The finding that scores continued to improve throughout the DBT intervention suggests that there is additional benefit to participation in the full programme, despite the significant benefits of the mindfulness intervention alone observed in the initial stage of this intervention.

The statistically significant changes in mean scores on some of the schemas included in the self dysregulation domain of functioning examined in this study confirm the validity of the findings of the initial mindfulness study. Once again, it may be that application of mindfulness skills and techniques through the continuous practice which occurs in a DBT intervention functioned to continue to change the participants' relationship with their unhelpful cognitions in a positive way. This may have occurred by enabling participants to pay less attention to their thoughts' psychological "presence" or, alternatively, the impact of the thoughts may have decreased through an "exposure" process. The effect of "exposure" on decreasing anxiety to feared or unpleasant stimuli is well documented in the general CBT research literature (e.g., Andrews et al., 2003) and could also be important in understanding the results of mindfulness and DBT training. Regardless of the mechanism, it seems clear that the impact and power of these schemas have decreased (as measured by changes in mean scores) as a consequence of participation in this DBT programme, with associated improvements in mood and anger control. Whether or not these changes translated into behavioural change was not able to be determined

in the set of studies reported in this thesis, but is an aspect that could be investigated in future research endeavours.

Chapter Nine

Subtypes of Borderline Personality Disorder

The initial studies in this research programme investigated the efficacy of mindfulness and DBT treatment for individuals diagnosed with BPD within a private hospital setting in Melbourne, Australia. Improvements in subjective reports of depression, anxiety, and anger were found, as well as a decrease in dissociative symptoms, an increase in the reported ability to be mindful in daily life, and improved self esteem. Improvements in cognitive schemas were also found, indicating that the degree of belief in some cognitions could be influenced indirectly through the application of other therapeutic techniques.

However, as previously noted, borderline personality disorder is a disorder with heterogeneous symptomatology, which contributes to difficulties in assessment and treatment formulation, and variation in patient outcomes. Research conducted to assist in understanding this heterogeneous symptomatology has demonstrated that BPD symptoms can be grouped according to their nature; a finding which may assist in more effectively targeting treatment approaches to particular groups of difficulties, thus increasing efficacy. Previous researchers have utilised cluster analyses of BPD symptoms and have identified groups of prominent and related features in the symptom profile, such as disturbed relationships, impulsivity, and emotional dysregulation (Hurt et al., 1992; Sanislow et al., 2002), adding support to the suggestion of the existence of subtypes within the diagnosis (e.g., Bohus, 2001; Digre et al., 2009; Koons, et al., 2001; Linehan, 1993; Nesci et al., 2009). Treatment outcome studies for BPD invariably find that there are some individuals who respond differentially to whichever treatment modality is being utilised (Bohus, 2001; Koons, et al., 2001; Linehan, 1993). If subtypes of individuals with BPD can be reliably identified, it would be of benefit to determine whether or not treatment response

varies as a function of subtypes. Thus, treatment response may be able to be improved by the identification of particular therapeutic techniques or approaches which are of most benefit to patients with particular symptom profiles, rather than adopting a "one size fits all" approach to treatment.

Linehan (1993) observed differences in attachment to the therapists and attitude towards treatment between client groups in the original treatment studies. One group appeared to have a strong attachment to their therapist, whilst other individuals found commitment to treatment difficult. On the basis of these differences, the strongly attached group became identified as the "attached" group, whilst the less committed group were described as "butterfly-like" (Linehan, 1993). Support for this type of distinction between individuals was noted in a study by Bohus (2001), where a bimodal result was found in inpatients' responses to a DBT treatment programme.

In attempts to more fully understand the features of individuals with this diagnosis and to more effectively target treatment, theorists and researchers have focused on attempting to identify further subtypes of BPD amongst clinical groups (e.g., Fossati et al., 1999; Russ, Shearin, Clarkin, Harrison, & Hull, 1993; Ryan & Shean, 2007; Whewell, Ryman, Bonanno, & Heather, 2000), based on both diagnostic features and self-harm and interpersonal behaviours. In research supporting the existence of subtypes, Zittel Conklin and Westen (1998) identified two types of BPD, with one type being considered to posses prominent histrionic features, and the other to be mostly emotionally dysregulated and dysphoric. The histrionic group were identified by the presence of several characteristics including dependency or neediness, a tendency to become involved with others who were emotionally unavailable or inappropriate, and a tendency to exaggerate expressions of emotion. In contrast, the emotionally dysregulated group were characterised by lack of control over their emotions, suicidal wishes threats or gestures, high levels of subjective pain and dysphoria, and a tendency to react extremely to negative events and become irrational under stress and strong emotions. These subtypes were reported as having been found in two independent clinical samples (Zittel Conklin & Westen, 1998), but the implications for treatment tailored to the subtype characteristics are yet to be more fully investigated.

In a more recent discussion, Zittel Conklin et al. (2006) point out that the identified subtypes represent particular personality constellations that are not mutually exclusive and can be identified in all individuals to a greater or lesser degree. They

noted that the three subtypes identified in their research, and in research with a group of adolescents with emerging BPD (Bradley, Zittel Conklin, & Westen, 2005), shared anxious and dysphoric emotional states and difficulty in regulating these states as core characteristics, regardless of subtype. However, the patterns of affect expression and regulation differed. Individuals able to be identified by these differences in affective expression and regulation were described with differing labels. Those described as internalising-dysregulated individuals, experienced ongoing dysphoria and were prone to self-hatred, which translated into self-harming behaviour as a response to these feelings. Those described as externalising-dysregulated individuals used strategies such as aggression towards others rather than self to regulate their unpleasant affective states, whilst histrionic-impulsive individuals were impulsive in their actions in response to these feelings. Since all identified subtypes of individuals with BPD in these studies experienced difficulties with appropriate affective regulation strategies, this area should be incorporated as a treatment target and is obviously an important component of any treatment for BPD.

Additional findings led researchers to conclude that the internalizing/externalizing dimension of BPD may be an important factor in conceptualising the differing features of this disorder. In an adolescent sample, four subgroups were identified and then reduced and categorised into two groups, characterised by primarily externalizing or internalizing pathology (Zittel Conklin & Westen, 2006). These differences are important as Tustin (2001, 2002) suggested that those individuals with a predominantly internalizing response style might not respond well to treatments that emphasise choice and individual responsibility. However, Stone (2003) mounted a counter-argument, proposing that those with an externalizing bias would be less likely to take responsibility for their actions and more likely to attribute their difficulties to being caused by others.

More recent research has extended these earlier finding by continuing with investigating treatment response in subtypes of individuals with BPD (Digre et al., 2009; Nesci et al., 2009). These researchers found that participants could be meaningfully divided into subgroups based on particular clusters of symptoms and characteristics, and that these groups evidenced a differential response to treatment. Digre et al. (2009) identified three distinct clusters of individuals from their sample based on attributional styles and clinical characteristics. These clusters were described as *withdrawn-internalising*, *severely disturbed-internalising* and *anxious-*

externalising and differed in their clinical presentations. These groups also responded differentially to the treatment with reduction of symptomatology occurring in two of the three groups but with virtually no improvement occurring in individuals in the *severely disturbed-internalising* group.

Nesci et al.'s (2009) study identified two distinct sub groups of individuals with BPD from their participants. The two groups could be differentiated by their patterns of attributions and their use of problem-focused coping strategies. The terms *self-good/self-bad* and *self-good/other-bad* were developed to describe the characteristics of these subtypes. Thus, individuals within the groups could be distinguished by opposing attributions for negative events, with one group tending to blame themselves (self-good/self-bad), and the other group more likely to blame others (self-good/other bad) for these occurrences. These findings provide further support for Beck et al.'s (2004) theory relating to the role of dysfunctional beliefs and attributional patterns in personality disorders. The groups could also be distinguished on their clinical characteristics, with differences observed in perception of ability to control anxious or depressed moods, in substance use and type of problem solving utilised, and in the likelihood of self-harm occurring.

In terms of response to the treatment programme, differential changes in scores on outcome measures occurred. Individuals in the self-good/self-bad cluster showed decreases in depressive symptoms, decreases in reported fear of losing control of moods, and increased use of problem-focused coping. In addition, decreases in self-harm and suicidal behaviours were reported as well as decreases in the tendency to make internal attributions for negative events. In contrast, the self-good/other-bad cluster decreased significantly only in reports of depressive symptoms. Nesci et al. (2009) concluded that the differences in results supported the hypothesis that the two groups would respond differentially to the intervention. Further, some 38 individuals within the group changed their cluster membership following completion of the treatment programme, lending support to the efficacy of the treatment.

However, both of these groups of researchers (Digre et al., 2009; Nesci et al., 2009), investigated the outcome of treatment within a specialised, publicly funded residential treatment programme, established to treat those individuals with BPD deemed to possess symptomatology or behaviours of a level of severity unable to be successfully treated with a combination of inpatient/outpatient treatment in public mental health services. It is possible that sub-types of BPD are more likely to be

identified amongst these more severely ill individuals, rather than amongst those being treated in general public or private outpatient facilities.

Participants in the research programme reported in this thesis were receiving mindfulness and DBT treatments on a day patient basis in a private hospital setting, and thus differ from the samples described in previous studies. In addition, the measures utilised to assess response to treatment differ from those used in other studies in that they consisted of a suite of psychometrically valid and reliable measures, chosen according to the domains of BPD dysfunction proposed by Linehan (1993). It was therefore of interest in this project to investigate whether or not participants could be meaningfully classified into subtypes of BPD on the basis of scores on these objective measures, and whether or not a differential treatment response related to such subtypes occurred. In this way, this study extends on the work of previous researchers as suggested by Nesci et al. (2009), by utilising objective and standardised measures of affect, dissociation, attentional control, and self esteem, all of which are believed to represent key constructs in BPD. It also examines differential treatment response amongst a heterogenous group of BPD sufferers in a private hospital day programme.

Method

Participants

For the purpose of determining the existence of subtypes within the sample population, all participants commencing mindfulness training were included (n = 88). The sample demographics are described in full in Chapter five (General Method), however for convenience, a brief summary is also presented here.

Demographic characteristics

Of the 88 participants, 77 (87%) were female and 11 (12%) were male. Ages ranged from 19 – 69 years (M =37 years, SD = 12 years). All participants lived in Metropolitan Melbourne. Only thirty participants (34%) were in a relationship with a partner. The majority (90%) were born in Australia, and English was the preferred language for all participants.

Participants varied in terms of educational level, with the majority having completed year 12 of secondary school and many also completing tertiary training at undergraduate and post graduate level. Despite these high levels of education, almost

half of the participants received Centrelink benefits, with only 24 reporting being engaged in paid employment. The remaining participants were either unable to work due to their difficulties or were caring for dependents. Reported cccupations ranged from professional and administrative/clerical, to unskilled. The majority of participants indicated that their annual income level was less than $20,000 per annum.

Participants' general clinical presentation

Partcipants' illness duration

Participants' reported age of onset of psychological difficulties of any sort ranged from 6 years to 51 years. Participants' reported total number of admissions to psychiatric units prior to entry into TMC programme varied from none to 42, with 44 of participants reporting having also received treatment from public mental health services at some time during their illness. The length of time that participants had been treated at TMC at time of initial questionnaire set completion ranged from one month to 21 years.

Participants' trauma history

All participants reported some experience of trauma during their life. These reported experiences included threat of force during a crime related event, physical force, or an attempted or actual break-in at their home. Others reported having experienced a serious accident at work or in a car, a natural disaster, man-made disaster, or exposure to chemicals or radioactivity. Others reported experiencing serious injury in another situation, one quarter had been in a situation where they feared injury or death, and a third had seen someone else seriously injured or killed. Some had lost family members through accidents or serious illnesses, whilst 19 participants had themselves experienced serious or life threatening illness. In terms of unwanted sexual contact, almost half of the participants had experienced forced intercourse, or oral or anal sex, whilst 27 reported other types of unwanted sexual contact.

Number of BPD criteria met

As previously stated, the number of BPD criteria met by each participant was established from the record of their initial assessment interview. Data was unavailable for eleven participants. Of the remaining participants, all met at least five criteria (the minimum requirement to meet the diagnosis of Borderline Personality Disorder).

Alcohol and other drug use.

Most participants were either abstinent from alcohol or reported occasional use. However, twelve reported using alcohol often, and eight reported daily use. Most participants reported never using illicit drugs. However, 23 reported occasional use, whilst five reported frequent or daily use.

Participants' reported symptoms

Most participants reported experiencing mixed symptoms on an ongoing basis. These symptoms included depression/mood swings, anxiety, suicidal ideation or a mixture of all of these. The majority of participants reported experiencing symptoms on an ongoing or daily basis.

Almost half of the participants reported being violent towards others, and/or experiencing self harm ideation and threatening self harm. Types of self-harm behaviours threatened included suicide, cutting or burning self, or overdose. Seventy-one participants had engaged in some form of self-harm behaviour.

The pre-intervention range of scores for participants on the suite of measures utilised in the research project are displayed in Table 28.

Measures

The suite of diagnostic measures are described in full in the general method section (Chapter five), as are the standardised psychometric measures utilised in this section of the research.

Procedure

Pre-intervention mean score data from questionnaire completion was entered into SPSS Version 17.0 as previously described in Chapters six, seven, and eight for all participants. As reported there, data had been screened for missing values, and errors and score distribution examined. Missing values had been replaced according to SPSS missing values procedure and any errors were rectified. Distribution of scores did not significantly violate assumptions of normality. Within-group symptom heterogeneity can be observed by inspection of the score ranges shown in Table 28.

Table 28

Score ranges on clinical measures for all participants (n = 88) at pre-intervention assessment

Measure	Min	Max	*M (SD)*
Emotional Dysregulation			
Depression			
MCMI-III – Depression scale	0.00	115.00	72.85 (25.86)
DASS – Depression scale	0.00	4.00	2.38 (1.51)
TSI – Depression scale	24.00	83.00	67.49 (10.12)
Anxiety			
MCMI-III – Anxiety Disorder scale	0.00	108.00	82.66 (20.56)
DASS – Anxiety scale	0.00	4.00	2.27 (1.54)
TSI- Anxious Arousal scale	21.00	79.00	63.28 (9.49)
Anger			
YSQ – Insufficient self control	1.00	6.00	3.91 (1.34)
TSI – Anger/Irritability	25.00	78.00	58.45 (10.05)
STAXI – Angry reaction	30.00	70.00	49.18 (9.71)
STAXI – Anger expression (out)	13.00	80.00	50.53 (11.81)
STAXI – Anger expression (in)	38.00	74.00	53.03 (8.70)
Interpersonal Dysregulation			
YSQ - S2 – Abandonment	1.00	6.00	3.94 (1.56)
YSQ - S2 - Mistrust/Abuse	1.00	6.00	3.11 (1.56)
YSQ – S2 – Subjugation	1.00	6.00	3.69 (1.32)
Behavioural Dysregulation			
MCMI – III Alcohol dependence	0.00	106.00	64.20 (16.58)
MCMI-III – Drug dependence	0.00	109.00	59.18 (22.77)
TSI – Tension Reduction behaviour	13.00	100.00	66.87 (15.86)
Cognitive Dysregulation			
MCMI- III – Thought disorder	0.00	104.00	67.96 (15.78)
MCMI–III – Delusional disorder	-5.00	109.00	50.73 (29.95)
TSI – Dissociation scale	21.00	93.00	66.07 (12.87)
Mindful Attention Awareness	17.00	76.00	44.08 (11.85)
Self Dysregulation			
YSQ – S2 – Enmeshment	1.00	6.00	2.66 (1.50)
YSQ – S2 – Defectiveness/shame	1.00	6.00	4.04 (1.57)
YSQ – S2 – Social isolation	1.00	6.00	4.08 (1.66)
TSI – Impaired self reference	23.00	85.00	66.69 (9.93)
Coopersmith Self Esteem Inv	4.00	88.00	29.06 (17.69)
MCMI-III Borderline scale	-1.00	104.00	76.64 (17.21)

To investigate whether or not study participants could be assigned to specific groupings based on their symptomatology, two step cluster analyses were conducted. These analyses are multivariate techniques based on the use of algorithms, designed to classify individuals by their characteristics. Individuals grouped in this way should be more similar to each other within the group on these characteristics and less similar to other individuals in different group/s on these characteristics (Hair & Black, 2000; Norusis, 2005). This technique was selected because it allows a range of data to be examined (continuous and/or categorical) and also allows for automatic or researcher generated clusters. In addition, this procedure has been successfully utilised by previous researchers (Digre et al., 2009; Nesci et al., 2009). In this instance, participant clusters were automatically generated by the SPSS v17 programme.

All scale mean scores were entered into SPSS v17 for the two step cluster analysis procedure as all were considered potentially important in distinguishing between different groups of participants.

Results

All study participants who commenced the mindfulness module were classified into two discrete clusters. Twenty-six participants were categorised into Cluster 1, and 62 into Cluster 2. Individuals within each cluster were compared on demographic and clinical variables. The details for individuals within each cluster are displayed in Table 29.

Cluster demographic details

The demographic information for individuals in each cluster was also compared to determine if any significant differences existed between the groups of individuals. Chi-square analyses (Field, 2009; Pallant, 2005) were utilised to test for significant differences between means. Table 29 presents the data forming the basis of these comparisons.

Table 29

Demographic characteristics for each Cluster

Demographic	Cluster 1 (n=26) *Number (%)*	Cluster 2 (n=62) *Number (%)*
Marital status		
Partnered	8 (30.8%)	22 (35.5%)
Unpartnered	18 (69.2%)	40 (64.5%)
Age		
30 years or younger	4 (15.4%)	9 (38.7%)
31 years - 40 years	24 (34.6%)	17 (27.4%)
41 years plus	13 (50.0%)	21 (33.9%)
Education*		
Yr 12 or less completed	7 (26.9%)	36 (58.1%)
Tertiary education completed	19 (73.1%)	26 (41.9%)
Income		
Centrelink benefit	7 (26.9%)	30 (48.4%)
Other (salary, family support etc.)	19 (73.1%)	32 (51.6%)
Age at illness onset*		
18 years or less	13 (50.0%)	46 (74.2%)
19 years – 51 years	13 (50.0%)	16 (25.8%)
Length of time treated at TMC		
One year or less	16 (61.5%)	42 (67.7%)
Two or more years	42 (38.5%)	20 (32.3%)
Number of psychiatric inpatient unit admissions		
Two or less	14 (53.8%	31 (50.0%)
Three or more	12 (46.2%)	31 (50.0%)
Number of times treated by CATT		
Never	14 (53.8%)	29 (46.8%)
One or more times	12 (46.2%)	33 (53.2%)
Substance use		
Illicit drugs		
Never	18 (69.2%)	38 (61.3%)
Occasionally	5 (19.2%)	18 (29.0%)
Often	3 (11.5%)	6 (9.7%)

Continued overleaf

Table 29 *(Cont'd)*

Demographic characteristics by Cluster membership

Demographic	Cluster 1 (n=26) *Number (%)*	Cluster 2 (n=62) *Number (%)*
Alcohol		
Never	8 (32.0%)	11 (17.7%)
Occasionally	13 (52.0%)	35 (56.5%)
Often	4 (16.0%)	16 (25.8%)
Symptoms		
Ongoing	18 (69.2%)	50 (80.6%)
Self harm thoughts & acts		
Single type	18 (72.0%)	46 (75.4%)
Multiple types	7 (28.0%)	15 (24.6%)
Traumatic and crime experiences		
Never	12 (46.2%)	27 (43.5%)
At least one	27 (43.5%)	35 (56.5%)

Age

In terms of participant age, four individuals in Cluster One were aged 30 years or less, 9 were aged between 31-40 years, and 13 were 41 years or older. For Cluster 2 individuals, 24 were aged 30 years or less, 17 were aged 31-40 years, and 21 were aged 41 years or older. There were no significant differences between the Clusters in this area (χ^2=4.69, *df*=2, *p*=.10).

Marital status

Of the individuals in Cluster 1, eight had a partner whilst 18 were single. For individuals in Cluster 2, these figures were 22 individuals in a relationship with a partner, and 40 were alone. Again, the differences between the groups were not significant (χ^2=7.60, *df*=3, *p*=.06). It is noteworthy that the majority of individuals in both clusters were unpartnered - individuals with BPD are well known to have difficulties in the ability to form and maintain meaningful relationships.

Education

Seven (26.9%) Cluster 1 individuals had completed year 12 or less, whilst 19 (73.1%) had completed a course of tertiary education. For Cluster 2 participants, 36 (58.1%) had completed year 12 or less, and 26 (41.9%) had completed tertiary

education. These differences between the clusters were significant (χ^2=7.110, *df*=1, *p*=0.008). Cluster 2 individuals tended to report more severe levels of symptoms, and have become ill at a younger age. As a result, their education may have been compromised, accounting for the significant differences between the groups.

Income

Of participants in Cluster 2, 30 (48.4%) were receiving a Centrelink benefit while 32 (51.6%) were supported by other means (e.g., family, partner). In the Cluster 1 group, 7 (26.9%) were receiving a Centrelink benefit, whilst 19 (73.1%) had alternative sources of income. There was no significant difference between the clusters in this area (χ^2=3.46, *df*=1, *p*=.07), although it is possible that there was a greater need for Centrelink support for individuals in Cluster 2 as the severity of their symptoms (see below) might preclude obtaining and maintaining paid employment.

Age at illness onset

For Cluster 1 participants, 13 reported that they had become unwell at aged 18 years or less, whilst the remaining 13 reported becoming unwell between the ages of 19 and 51 years. For Cluster 2 participants, 46 had first become unwell at age 18 years or younger, whilst 29 had become unwell between the ages of 19 and 51 years. Once again, this difference between the clusters was statistically significant (χ^2=4.85, *df*=1, *p*=.028), indicating that individuals in Cluster 2 had been unwell for significantly longer time periods, potentially impacting more negatively on their life plans and achievements than for individuals in Cluster 1.

Length of time treated at The Melbourne Clinic

There were no significant differences between the clusters in terms of the duration of treatment at TMC (χ^2=.31, *df*=1, *p*=.37). Sixteen of the individuals in Cluster 1 had been treated there for at least one year, whilst 10 had been receiving treatment for two or more years. For individuals in Cluster 2, 42 had been treated for one year or less, and 20 for two or more years.

Psychiatric inpatient unit admissions

The numbers of individuals with two or fewer admissions to a psychiatric inpatient unit in Cluster 1 was 14, whilst 12 individuals had had three or more admissions. In Cluster 2, 31 individuals had been admitted twice or less than twice, and 31 had been admitted three times or more. Differences between the clusters were not significant (χ^2=.11, *df*=1, *p*=.46).

Crisis Assessment & Treatment Team treatment

The number of times an individual is treated by a CATT team is often representative of the degree of severity of the illness experienced. For individuals in Cluster 1, 14 had never been treated by a CATT team, whilst 12 had been treated one or more times. For the Cluster 2 group, 29 had been treated once, and 33 treated more frequently. These slight differences between the clusters were not significant (χ^2=.37, *df*=1, *p*=.35).

Substance use

Most participants denied using illicit drugs (Cluster 1, *n*=18; Cluster 2, *n* =38). Of the remainder, five participants in Cluster 1 reported occasional drug use, whilst only three reported frequent use. For the remaining participants in Cluster 2, 18 reported occasional use and six reported frequent use of illicit substances. There were no significant differences between the clusters in this area (χ^2=.92, *df*=2, *p*=.68). In terms of alcohol use, eight individuals in Cluster 1 reported never using alcohol, 13 reported occasional use and 4 reported frequent use. For Cluster 2 individuals, these figures were 11 never using alcohol, 35 using alcohol occasionally and 16 reported using alcohol often. There were no significant differences between the groups in alcohol use (χ^2=2.47, *df*=2, *p*=.30).

Reported symptom type and frequency

There were no significant differences between the clusters when the nature (χ^2 =1.81, *df*=3, *p*=.62) and frequency (χ^2=4.08, *df*=5, *p*=.62) of reported symptoms was compared. Eighteen participants in Cluster 1 reported experiencing ongoing symptoms, and 18 reported experiencing at least one symptom constantly. Fifty individuals in Cluster 2 reported the same symptom frequency. For individuals in both clusters, the most frequently reported symptoms were depression and anxiety, together with some psychotic symptoms (primarily "voices").

Self-harm thoughts

All participants reported some thoughts of self harm. The reported frequencies (χ^2=1.83, *df*=1, *p*=.14) and content (χ^2=1.16, *df*=1, *p*=.99) of these thoughts did not differ significantly between the clusters. Overall, eighteen individuals in Cluster 1 reported thinking about a single type of self-harm act, with seven of these reporting thoughts of multiple types of acts. For Cluster 2, 46 reported thoughts of one type of self-harm action only, whilst 15 reported experiencing

thoughts of multiple types. Types of self harm reported included overdose, cutting and burning self, jumping from a bridge, or running into traffic.

Trauma experience history

There were no significant differences between individuals in the clusters in terms of number of traumatic events reported as having been experienced (χ^2=1.09, *df*=1, *p*=.23). Overall, 12 individuals in Cluster 1 reported never having experienced a traumatic event or crime, whilst 14 reported such experiences. For individuals in Cluster 2, 27 individuals had never experienced this type of event, and 35 reported at least one experience of this nature. Types of trauma or crime experienced varied and included assaults, burglaries and road accidents, however, there were no significant differences between the clusters in this area (χ^2=.05, *df*=1, *p*=1.00). In terms of trauma involving physical or sexual assault, eight Cluster 1 individuals reported never having experienced incidents involving physical or sexual assault. For those in Cluster 2, this figure was 16. Eighteen of those in Cluster 1 reported this type of experience on at least one occasion, whilst 46 of individuals in Cluster 2 reported having an experience of this nature. There was no significant difference between clusters in reported experience of these types of events (χ^2=.239, *df*=1, *p*=.41).

Cluster clinical details

Analyses of mean scores on scales within each domain for individuals at pre-intervention assessment within these clusters are displayed in Table 31. Statistically significant differences between the two clusters on each measure (identified through use of t-tests) are identified and effect size calculations for these differences are also shown in Table 30.

Table 30

Between Cluster comparisons of mean scores on clinical scales at pre-intervention assessment

Measure	Cluster 1 (*n*=26)		Cluster 2 (*n*=62)				
	M	*(SD)*	*M*	*(SD)*	*t(86)*	*p*	*d*
Emotional Dysregulation							
Depression							
MCMI-III Depression	50.61	(26.16)	82.17	(19.33)*	-6.27	.000	-1.37
DASS Depression	0.87	(1.13)	3.00	(1.17)*	-7.86	.000	-1.84
TSI Depression	58.31	(12.21)	71.34	(5.85)*	-6.78	.000	-1.36
Anxiety							
MCMI-III Anxiety Disorder	67.23	(29.21)	89.13	(10.46)*	-5.19	.000	-1.00
DASS Anxiety	0.71	(0.97)	2.92	(1.24)*	-8.08	.000	-1.98
TSI Anxious Arousal	54.38	(10.20)	67.02	(6.16)*	-7.15	.000	-1.50
Anger							
YSQ-S2 Insufficient self control	3.11	(1.34)	4.24	(1.21)*	-3.86	.000	-0.88
TSI Anger/irritability	51.08	(8.70)	61.55	(10.06)*	-5.04	.000	-1.11
STAXI-II Angry reaction	44.61	(8.85)	51.10	(9.47)*	-2.98	.004	-0.71
STAXI-II Anger exp (out)	47.77	(10.01)	51.69	(12.38)	-1.43	.16	
STAXI-II Anger exp (in)	50.38	(6.22)	54.14	(9.37)	-1.88	.06	

Continued overleaf

Table 30 *(Cont'd)*

Between Cluster comparisons of mean scores on clinical scales at pre-intervention assessment

Measure	Cluster 1 (*n*=26)		Cluster 2 (*n*=62)				
	M	*(SD)*	*M*	*(SD)*	*t(86)*	*p*	*d*
Interpersonal Dysregulation							
YSQ-S2 Abandonment	3.19	(1.77)	4.26	(1.37)*	-3.05	.003	-0.67
YSQ-S2 Mistrust/abuse	1.88	(0.91)	3.63	(1.49)*	-5.52	.000	-1.41
YSQ-S2 Subjugation	2.61	(1.02)	4.14	(1.17)*	-5.79	.000	-1.39
Behavioural Dysregulation							
MCMI-III Alcohol dep	63.58	(14.53)	64.47	(17.47)	-0.23	.82	
MCMI-III Drug dep	59.61	(26.02)	59.00	(21.50)	0.11	.91	
TSI – Tension Red Beh	53.35	(12.69)	72.55	(13.50)*	-6.19	.000	-1.47
Cognitive Dysregulation							
MCMI-III Thought disorder	53.77	(18.19)	73.92	(9.87)*	-6.78	.000	-1.37
MCMI-III Delusional disorder	29.73	(32.33)	59.54	(24.18)*	-4.76	.000	-1.04
TSI-Dissociation	53.38	(9.66)	71.38	(10.03)*	-7.76	.000	-1.83
Mindful Attn Awareness	52.54	(12.37)	40.53	(9.71)*	4.87	.000	1.08

Continued overleaf

Table 30*(Cont'd)*

Between Cluster comparisons of mean scores on clinical scales at pre-intervention assessment

Measure	Cluster 1 (*n*=26)		Cluster 2 (*n*=62)				
	M	*(SD)*	*M*	*(SD)*	*t(86)*	*p*	*d*
Self Dysregulation							
YSQ-S2 Enmeshment	2.00	(1.41)	2.93	(1.45)*	-2.77	.007	-0.65
YSQ-S2 Defectiveness	2.88	(1.63)	4.53	(1.28)*	-5.07	.000	-1.13
YSQ-S2 Social isolation	2.77	(1.58)	4.63	(1.37)*	-5.55	.000	-1.26
TSI Impaired self ref	56.54	(8.88)	70.95	(6.77)*	-8.27	.000	-1.82
Coopersmith Self Esteem	41.50	(20.28)	23.84	(13.57)*	4.78	.008	1.02
MCMI-III Borderline Personality Pathology							
	65.42	(22.84)	81.34	(11.50)*	-4.35	.000	-0.88

Note. * denotes statistically significant difference (after Bonferroni adjustment applied)

As shown in Table 30, Cluster 2 individuals reported significantly more symptoms of dysregulation in all domains when compared to individuals in Cluster 1. Individuals in Cluster 2 were significantly more depressed and anxious, and likely to be more generally irritable. They were also more likely to engage in higher levels of inappropriate behaviour to reduce or cope with negative affect than those in Cluster 1, more likely to experience expectations of being abused by other, and also more likely to subjugate their own needs to others' to avoid conflict and negativity. Cluster 2 individuals were also more likely to experience more problems with transient psychotic or dissociative experiences, and to perceive themselves as defective in some fundamental way and avoid social contact as a result. Overall borderline pathology, as measured by the MCMI-III, was also reported at higher levels in individuals categorised into Cluster 2. Based on the results of these analyses, Cluster 2 was named "*dysregulated/defective self*", and the term "*dysregulated/more functional self*" generated to describe individuals in Cluster 1. These terms are further discussed later in this chapter.

Discussion

Data displayed in Tables 29 and 30 show that individuals in each cluster differed significantly on a number of variables across domains of dysregulation. Cluster 1 individuals reported experiencing lower levels of symptomatology overall when compared with individuals in Cluster 2. Further, they were less likely to be supported by Centrelink benefits, and were less likely to have been admitted to a psychiatric inpatient unit or treated by a CATT team. Cluster 1 individuals were also less likely to experience symptoms on an ongoing basis, as well as being less likely to report having experienced a traumatic event. With the exception of educational level, where Cluster 1 individuals were more likely to have completed Year 12 of High School and more likely to have completed post-Year 12 training, these differences were not statistically significant. In terms of Linehan's (1993) domains of functioning, Cluster 2 individuals appear to be more dysregulated across all areas.

In the domain of emotional dysregulation, Cluster 2 individuals reported significantly more depressive experiences and symptoms than those included in Cluster 1. Individuals in Cluster 2 also reported significantly higer levels of anxiety symptoms and psychological and physiological arousal, and were more likely to

experience some difficulty in controlling irritability or angry feelings, in addition to reporting difficulties in controlling impulsive behaviours and excessive expressions of emotion, when compared with individuals in Cluster 1.

In terms of behavioural dysregulation, individuals in Cluster 2 were significantly more likely to express negative internal states in self destructive or aggressive behaviours than individuals in Cluster 1. However, there was little difference between the clusters in alcohol or drug use and dependence.

In the area of interpersonal dysregulation, there were two statistically significant differences between the clusters. Individuals in Cluster 2 were more likely to report experiencing a fear of being abandoned or unsupported by others and to avoid these events or others becoming angry with them by subjugating their needs and wishes to those of others, than were those in Cluster 1. Cluster 2 members were also more likely to expect that others were likely to intentionally hurt or abuse them than those in Cluster 1.

Individuals in Cluster 2 also reported significantly higher levels of cognitive dysregulation than those in Cluster 1. Based on mean scores on measures assessing this domain, Cluster 2 individuals were more likely to appear confused or disorganised and to experience transient psychotic symptoms. They were also more likely to experience episodes of dissociation or depersonalisation/derealisation, and not surprisingly, reported being less likely to be able to control their attention during everyday tasks.

Analyses in the area of self dysregulation also yielded significant differences between the individuals in each cluster. Individuals in Cluster 2 were significantly more likely to view themselves as being fundamentally defective in some way and as a consequence, reported lower self esteem and deficits in personal identity. As a consequence, these individuals are more likely to isolate themselves from others, rely on closeness with others to feel any positive feelings about themselves and their life, have difficulty discriminating between their own and others' needs, and experience an internal sense of emptiness. Individuals in Cluster 2 also reported significantly higher levels of borderline pathology. Based on the results of these analyses, it seems that individuals classified into Cluster 2 are more likely to have had a more severe illness experience in general which has resulted in higher levels of overall dysregulation and likely impairment in overall functioning and daily life activities.

The clusters identified in this study share some characteristics with the subtypes proposed by other researchers (e.g., Bradley, Conklin, & Westen et al., 2005; Grinkler, 1968; Layden et al., 1993; Millon et al., 2000; Nesci et al., 2009; Westen & Shedler, 1999; Whewell, et al., 2000) in that they reported symptoms of affective, cognitive, and self dysregulation. The results of these analyses suggest that Cluster 2 individuals experienced beliefs of personal incompetence or defectiveness, labile mood and anger/irritability, fears of abandonment, depression and anxiety, were likely to have difficulty with impulse control, and were also dysregulated in the area of cognitive functioning and self esteem/identity. Whilst individuals in Cluster 1 evidenced some elevated scores on the measures, these were generally in the "normal" range of scores for each particular measure, although at times they fell at the ceiling for that range. Despite this, Cluster 1 individuals still reported lowered self-esteem and other difficulties across all domains, but not at the same level of intensity as individuals in Cluster 2. Based on the differences between the clusters on the standardised measures, individuals in Cluster 2 appear to be primarily emotionally, cognitively and self dysregulated and to be significantly different from Cluster 1 individuals in these areas. As a consequence, Cluster 2 was named "dysregulated/defective self", and the term "dysregulated/more functional self" generated to describe individuals in Cluster 1.

The findings of this study provide some support to the results of Westen and Shedler (1999) and add weight to the suggestion that the domain of dysphoria/emotional dysregulation is a stable domain of functioning with which to identify subtypes of BPD. Cluster membership remained stable throughout the course of the intervention, again supporting the stability of this distinction. However, this stability may be related to the fact that the mindfulness module is of eight weeks duration only, which is perhaps too brief an intervention time to allow for more permanent change in characteristics to occur. The response to participation in the mindfulness module by individuals in both clusters is discussed in the following section.

In terms of further treatment, the group undertaking the remainder of the full DBT programme (over 9 months) was composed primarily of individuals who had been identified in Cluster 2 in this analysis, with only five individuals from Cluster 1 progressing to this part of the treatment. Once again, cluster membership remained stable throughout the intervention, adding weight to the accurate allocation of

individuals to cluster membership in this project. Treatment response for individuals within each cluster for both the mindfulness and full DBT interventions are discussed in the following two chapters.

Chapter Ten

Mindfulness training and Cluster membership

As previously discussed, research into the nature and treatment of BPD has identified subgroups of individuals with BPD amongst participants based on particular clusters of symptoms and characteristics, and has found that these groups displayed a differential response to treatment (e.g., Bradley, Conklin & Westen et al., 2005; Digre et al., 2009; Grinkler, 1968; Layden et al., 1993; Millon et al., 2000; Nesci et al., 2009; Westen & Shedler, 1999; Whewell, et al., 2000).

Participants in the current research programme were also able to be categorised into two distinct clusters based on analyses of pre-intervention reported symptomatology (as discussed more fully in Chapter nine). Individuals in the two clusters identified in this study differentially reported symptoms of affective, cognitive and self dysregulation, with Cluster 2 individuals reporting higher intensity of beliefs of personal incompetence and defectiveness, in addition to labile mood with heightened levels of anger/irritability, fears of abandonment, and feelings of depression and anxiety. Individuals in Cluster 2 were also more likely to experience impulse control difficulties, and experience dysregulation in functioning in the areas of cognitions and self esteem/identity. Cluster 1 individuals reported lowered self-esteem and other difficulties across all domains, but at a lower level of intensity compared to individuals in Cluster 2 and their reported mean scores typically fell in the "normal" range of scores for each particular measure, although at times at the ceiling for that range.

Individuals in Cluster 2 reported higher levels of difficulties in controlling fluctuating mood and angry feelings. They were also more likely to have low self esteem and to believe that responsibility for life events was based in an external

source. In addition, these individuals were more likely to fear being abandoned by others, to struggle with impulse control, and to experience higher levels of cognitive dysregulation (e.g., dissociation, transient psychotic symptoms). As a result, the term "dysregulated/defective self" was generated to describe individuals in this cluster.

Whilst several individuals in Cluster 1 reported some elevations in these areas of functioning, their scores were more likely to fall within the "normal" range of scores for the measures, albeit sometimes at the "ceiling" of this range. Despite this, they also reported low self-esteem and difficulties across domains, but these difficulties were reported to be less severe than the levels reported by individuals in Cluster 2.

Cluster 2 was named *"dysregulated/defective self"*, as those indivdiuals appeared to be significantly different from individuals in Cluster 1 in the areas of cognitive, emotional and self functioning. The term *"dysregulated/more functional self"* was generated to describe individuals in Cluster 1.

As previously discussed, other research has reported differential treatment response in groups of individuals with BPD. As a consequence, it was important to examine treatment response in each cluster of individuals in order to investigate whether or not treatment response differed between clusters.

Method

The reader is referred to Chapter five for an overall discussion of the characteristics of the participants, the measures chosen, the rationale for the choices, and the general procedure utilised throughout this research programme.

Participants

All participants in Cluster 1 and Cluster 2 were included in this study. The clinical features and basic demographics of individuals within each cluster are described in full in Chapter nine (Tables 29 and 30). However, to assist the reader a brief summary is also presented here.

Summary of participant demographic characteristics

Participant demographic characteristics at baseline assessment were compared to establish the existence of significant differences between individuals within each cluster. The results of these analyses are displayed in Table 30 and 31 (see Chapter 9), and discussed fully therein.

Age

Most individuals were aged 30 years or more in both clusters and there were no significant differences in ages between individuals in the Clusters.

Marital status

Most individuals in both clusters were unpartnered. This may reflect the fact that individuals with BPD of any level of severity often have difficulties in forming and maintaining meaningful relationships. There were no significant differences between Cluster 1 and Cluster 2 individuals in marital status.

Education

Overall, individuals in Cluster 2 reported significantly lower levels of educational achievement when compared to those in Cluster 1. These individuals were more likely to have completed secondary and tertiary courses than those in Cluster 2, perhaps because Cluster 2 individuals tended to report more severe levels of symptoms, and have become ill at a younger age. As a result, their education may have been compromised, accounting for the significant differences between the groups.

Income

Source of financial support for participants in Cluster 2, was generally divided between support from family or partner and Centrelink benefits. In contrast, the majority of individuals in Cluster 1 were supported by earnings from paid employment. Although there was no significant difference between the clusters in this area, it may be that there was a greater need for Centrelink support for individuals in Cluster 2 as a consequence of lowered ability to obtain and maintain paid employment because of symptom severity.

Summary of participant clinical characteristics

Age at illness onset

Cluster 2 participants were significantly more likely to have become unwell at a younger age than Cluster 1 participants, with resultant potentially higher levels of negative impact on life plans and achievements.

Duration of TMC treatment

There were no significant differences between the clusters in terms of duration of treatment at TMC.

Psychiatric inpatient unit admissions

There were no significant differences between the clusters in this area. Most indivduals reported two or more admissions in their illness history.

Crisis Assessment & Treatment Team treatment

The number of times an individual is treated by a CATT team is often representative of the degree of severity of the illness experienced. However, there wre no significant differences between the clusters in reported involvement with CATT.

Substance use

Most participants completely denied using illicit drugs and alcohol. A small minority reported using either of these substances frequently; however, there were no significant differences between the groups in use of either substance.

Ongoing symptoms

The nature and frequency of reported symptoms did not differ between clusters. Most participants reported experiencing at least one symptom on a constant basis. The most frequently reported symptoms were depression and anxiety, together with some psychotic symptoms (primarily "voices") for individuals in both clusters,

Self-harm thoughts and acts

All participants reported some thoughts of self harm and the reported frequencies and content of these thoughts did not differ significantly between the clusters. Type of self-harm reported included overdose, cutting and burning self, jumping from a bridge, or running into traffic.

Trauma history

Very few individuals reported an absence of traumatic experiences of some kind. Reports of experienced events included included assaults, burglaries and road accidents, as well as unwanted sexual contact from another. However, there were no significant differences between individuals in either cluster in this area.

Measures

The suite of measures which form the basis of this study is described in full in the General Method section (Chapter 5).

Procedure

In order to investigate the presence of differences in response to treatment between the two clusters, data from pre and post mindfulness intervention assessments (Time 1 and Time 2) was entered into SPSS V17. Repeated measure MANOVA analyses (Field, 2009) were conducted to investigate simple main effects of phase within illness severity on the mean scores for each scale within the domains under investigation. Overall results showed that there were significant changes over the time of the intervention on some scales for individuals in both clusters. These findings are discussed separately for each domain.

Results

Emotional Dysregulation

As previously discussed, this domain represents the affective lability conceptualised as central to the difficulties of individuals with BPD, and overall BPD personality pathology. Measures of depression, anxiety, and anger from standardised psychometric instruments were included in this domain. As shown in Table 31, the phase within illness MANOVA analyses showed that there were some significant improvements in participant scores on the scales measuring depression and anxiety across the time of the intervention in this domain. Although mean scores on scales measuring anger and overall pathology fluctuated slightly over the intervention period, these fluctuations were not statistically significant. These results are further discussed in the following section.

Table 31

Pre and post Mindfulness intervention means and standard deviations by Cluster for the domain of Emotional Dysregulation

Measure	Cluster 1 (*n*=21)		Cluster 2 (*n*=51)	
	M	*(SD)*	*M*	*(SD)*
Depression				
MCMI-III Depression scale				
Pre	56.90	(23.93)	81.50	(18.64)
Post	38.81*	(32.49)	75.43	(23.25)
DASS Depression scale				
Pre	0.88	(1.11)	2.93	(1.17)
Post	1.15	(1.35)	2.82	(1.36)
TSI Depression scale				
Pre	58.05	(13.09)	70.94	(5.95)
Post	56.05	(10.18)	67.51*	(9.04)
Anxiety				
MCMI-III Anxiety scale				
Pre	69.24	(29.01)	89.86	(10.48)
Post	61.09*	(29.39)	87.76	(14.51)
DASS Anxiety				
Pre	0.65	(0.99)	3.01	(1.15)
Post	0.74	(1.04)	2.61*	(1.50)
TSI Anxious Arousal				
Pre	55.28	(10.76)	66.06	(5.60)
Post	54.57	(8.68)	63.06	(11.86)
Anger				
YSQ-S2 Insufficient self control/self discipline				
Pre	3.28	(1.38)	4.29	(1.17)
Post	2.81	(1.47)	4.02	(1.29)
TSI – Anger/Irritability scale				
Pre	51.00	(9.26)	61.16	(8.79)
Post	51.90	(7.49)	59.58	(11.35)
STAXI-II Angry Reaction scale				
Pre	43.81	(8.10)	50.43	(8.96)
Post	42.95	(8.48)	47.41*	(9.26)
STAXI-II Anger Expression – Outward				
Pre	47.24	(10.34)	52.15	(10.93)
Post	46.57	(8.74)	51.45	(10.40)
STAXI-II Anger Expression – Inward				
Pre	51.52	(5.89)	52.98	(9.21)
Post	49.14	(9.09)	52.92	(9.86)
MCMI-III Borderline personality pathology				
Pre	62.05	(23.28)	81.49	(11.73)
Post	68.20	(40.74)	79.39	(12.85)

Note. ***** denotes statistically significant difference

Depressed mood

As shown in Table 31, in terms of depression, the tests on the simple main effect of phase within illness severity found a significant pre- to post-test change in mean score on the MCMI-III Depression scale for only the dysregulated/more functional self group ($\Lambda = 0.87$, F (1,69) = 10.13, $p = .002$, $\eta_p^2 = .13$). Although the mean score also decreased for individuals in Cluster 2, this decrease was not statistically significant ($\Lambda = 0.96$, F (1,69) = 2.77, $p = .10$, $\eta_p^2 = .04$). There were no significant changes in depression scores for individuals in either cluster on the DASS Depression scale (Cluster 1, $\Lambda = 0.99$, F (1,69) = 0.67, $p = .42$, $\eta_p^2 = < .01$; Cluster 2, $\Lambda = 1.00$, F (1,69) = 0.88, $p = .35$, $\eta_p^2 = <.01$) or on the TSI Depression scale for individuals in Cluster 1 ($\Lambda = 1.00$, F (1,69) = 0.89, $p = .35$, $\eta_p^2 = .01$). However, for individuals in Cluster 2, mean scores on this scale had decreased significantly at the end of the intervention ($\Lambda = 0.92$, F (1,69) = 6.34, $p = .01$, $\eta_p^2 = .08$).

Anxiety

There were statistically significant changes on two scales included in this domain, as displayed in Table 31. For individuals in Cluster 1, mean score on the MCMI-III Anxiety scale had decreased at the end of the intervention ($\Lambda = 0.93$, F (1, 69) = 4.94, $p = .03$, $\eta_p^2 = .07$). For individuals in Cluster 2, although their mean scores on this scale decreased slightly, this decrease was not significant ($\Lambda = 0.99$, F (1,69) = .80, $p = .37$, $\eta_p^2 = .01$). In contrast, on the DASS Anxiety scale, the Cluster 2 mean score had decreased significantly at the end of the intervention ($\Lambda = 0.94$, F (1,69) = 4.26, $p = .04$, $\eta_p^2 = .06$), whilst the mean score for individuals in Cluster 1 remained virtually unchanged ($\Lambda = 1.00$, F (1,69) = 0.09, $p = .76$, $\eta_p^2 = .<.01$). Mean scores on the TSI Anxious Arousal scale decreased for individuals in both clusters across the time of the intervention, but these decreases were not significant (Cluster 1, $\Lambda = 1.00$, F (1,69) = 0.87, $p = .77$, $\eta_p^2 < .01$; Cluster 2, $\Lambda = 0.95$, F (1,69) = 3.73, $p = .06$, $\eta_p^2 = .05$).

Anger

Only one significant change in mean scores occurred in this domain (see Table 31). The mean score for individuals in Cluster 2 on the STAXI-II Angry Reaction scale decreased significantly by the end of the intervention ($\Lambda = 0.92$, F (1,69) = 6.17,

p = .015, η_p^2 = .08). However, this was not the case for individuals in Cluster 1 where a non-significant slight decrease in mean score occurred (Λ = 1.00, F (1, 69) = 0.20, p = .65, η_p^2 = .<.01).

There was little change on mean scores on the YSQ-S2 Insufficient self control/self discipline schema for either cluster (Cluster 1, Λ = 0.95 , F (1, 69) = 3.81, p = .06, η_p^2 = .06; Cluster 2, Λ = 0.96, F (1, 69) = 3.08, p = .08, η_p^2 = .04), or on the TSI Anger-Irritability scale (Cluster 1, Λ = 1.00 , F (1, 69) = 0.15, p = .70, η_p^2 < .01; Cluster 2, Λ = 0.98, F (1, 69) = 1.08, p = .30, η_p^2 = .015).

This pattern continued on the remaining STAXI-II scales, Anger Expression – Outward (Cluster 1, Λ = 1.00 , F (1, 69) = 0.767, p = .78, η_p^2 < .01; Cluster 2, Λ = 1.00, F (1, 69) = .206, p = .65, η_p^2 < .01), and Anger Expression – Inward (Cluster 1, Λ = 0. 98 , F (1, 69) = 1.14, p = .29, η_p^2 = .016; Cluster 2, Λ = 1.00, F (1, 69) = .002, p = .97, η_p^2 <.01).

In terms of overall borderline pathology, no significant change in the means for either group occurred on the MCMI-III borderline scale.

Interpersonal Dysregulation

This domain includes schema scales designed to measure aspects of interpersonal functioning difficulties often reported by individuals with BPD. Intense fears of being abandonded are a central feature in an individual with BPD or BPD traits, as are difficulties with trusting others, and a tendency to meet others' needs at the individual's own expense to avoid rejection – a behaviour that often results in intense resentment of the other. Table 32 displays the means on schema scales in this domain within each cluster at the time of entry into the Mindfulness programme and following completion of the module.

Table 32

Pre and post Mindfulness intervention means and standard deviations by Cluster for the domain of Interpersonal Dysregulation

Measure	Cluster 1 (*n*=21)		Cluster 2 (*n*=51)	
	M	*(SD)*	*M*	*(SD)*
YSQ-S2 – Abandonment				
Pre	3.14	(1.80)	4.37	(1.37)
Post	2.71	(1.49)	4.08	(1.41)
YSQ S2 – Mistrust/abuse				
Pre	1.90	(0.83)	3.63	(1.50)
Post	1.81	(0.93)	3.15*****	(1.53)
YSQ S2 – Subjugation				
Pre	2.67	(1.02)	4.18	(1.13)
Post	2.43	(1.03)	3.49*****	(1.35)

Note. ***** denotes statistically significant difference

Within this domain, the analyses of main effect of phase within illness severity showed there were no significant changes in mean scores on the YSQ-S2 schema scale of Abandonment (Cluster 1, $\Lambda = 0.97$, F (1, 69) = 2.29, p = .13, η_p^2 = .03; Cluster 2, $\Lambda = 0.96$, F (1, 69) = 2.62, p = .11, η_p^2 = .04) for either cluster. However, significant decreases had occurred in Cluster 2 individuals at the end of the intervention on mean scores on the YSQ-S2 Mistrust/Abuse (Cluster 1, $\Lambda = 1.00$, F (1,69) = .096, p = .76, η_p^2 = .001; Cluster 2, $\Lambda = 0.92$, F (1, 69) = 5.71, p = .02, ηp^2 = .08) and Subjugation schema scales (Cluster 1, $\Lambda = 0.98$, F (1,69) = 1.06, p = .31, ηp^2 = .015; Cluster 2, $\Lambda = 0.77$, F (1, 69) = 21.34, p = .000, η_p^2 = .23).

Behavioural Dysregulation

Scales included in this domain of dysregulation were chosen to measure the inappropriate use of alcohol and drugs and self-harming behaviours as ways of coping with unpleasant feelings or events typically observed in, or reported by, individuals with BPD. The means and standard deviations for these scales prior to entering the mindfulness groups and post completion of the programme are displayed in Table 33.

Table 33

Pre and post Mindfulness intervention means and standard deviations by Cluster for the domain of Behavioural Dysregulation

Measure	Cluster 1 (*n*=21)		Cluster 2 (*n*=51)	
	M	*(SD)*	*M*	*(SD)*
MCMI-III Alcohol Dependence				
Pre	60.76	(12.95)	64.25	(12.52)
Post	59.81	(16.25)	65.31	(14.47)
MCMI-III Drug Dependence				
Pre	56.14	(25.51)	57.80	(15.93)
Post	54.48	(25.10)	61.14	(15.60)
TSI – Tension Reduction Behaviour Scale				
Pre	53.05	(13.21)	72.41	(12.55)
Post	48.67	(13.89)	64.67*	(16.49

Note. ***** denotes statistically significant difference

As shown in Table 33, the mean scores on the MCMI-III Alcohol Dependence scale changed little across the intervention period for individuals in either Cluster (Cluster 1, $\Lambda = 1.00$, F (1,69) = .15, p = .70, η_p^2 = .002; Cluster 2, Λ = 0.99, F (1, 69) = .44, p = .51, η_p^2 =. 006) when the tests for main effect of phase within illness severity were conducted. Similarly, mean scores on the MCMI-III Drug Dependence scale remained virtually unchanged (Cluster 1, Λ = 1.00, F (1, 69) = .12, p = .73, η_p^2 = .002; Cluster 2, Λ = 0.98, F (1, 69) = .1.19, p = .28, η_p^2 = .017). Mean scores on the TSI – Tension Reduction Behaviour scale decreased across the time of the intervention for individuals in both clusters, (Cluster 1, $\Lambda = 0.98$, F (1,69) = 1.38, p = .24, η_p^2 = .019; Cluster 2, Λ = 0.87, F (1, 69) = 10.50 , p = .002, η_p^2 = .13) but this decrease was significant for Cluster 2 individuals only.

Cognitive Dysregulation

This domain includes measures of the transient psychotic symptoms frequently reported by individuals with BPD, as well as measures of dissociative

episodes and attentional focus. Mean scores and standard deviations for individuals within clusters on these measures pre and post completion of the mindfulness module, are shown in Table 34.

Table 34

Pre and post Mindfulness intervention means and standard deviations by Cluster for the domain of Cognitive Dysregulation

Measure	Cluster 1 (*n*=21)		Cluster 2 (*n*=51)	
	M	*(SD)*	*M*	*(SD)*
MCMI-III Thought Disorder scale				
Pre	71.13	(10.71)	26.40	(23.11)
Post	68.22	(12.00)	9.40*****	(4.50)
MCMI-III Delusional Disorder scale				
Pre	25.67	(27.90)	60.11	(24.26)
Post	24.28	(24.57)	49.85*****	(31.57)
TSI – Dissociation scale				
Pre	52.71	(10.54)	71.43	(10.14)
Post	51.47	(8.62)	68.80	(11.62)
Mindful Attention Awareness Scale				
Pre	53.71	(12.39)	39.94	(9.49)
Post	57.95	(13.45)	45.23*****	(11.24)

Note. ***** denotes statistically significant difference

In this domain, the analyses for main effect of phase within illness severity between clusters showed that the decrease in mean scores which occurred on the MCMI-III Thought Disorder scale at the end of the intervention for both clusters, was significant only for individuals in Cluster 2 (Cluster 1, $\Lambda = 0.98$, F (1, 69) = .90, p = .35, $\eta_p^2 = .01$; Cluster 2, $\Lambda = 0.94$, F (1, 69) = 4.58, p = .036, $\eta_p^2 = .06$).

A similar finding of significant positive change in the mean scores of individuals in Cluster 2 over the time of the intervention occurred on both the MCMI-III Delusional Disorder scale (Cluster 1, $\Lambda = 1.00$, F (1,69) = .04, p = .84, $\eta_p^2 = .001$; Cluster 2, $\Lambda = 0.93$, F (1, 69) = 5.60, p = .02, $\eta_p^2 = .07$), and the Mindful Attention Awareness Scale (Cluster 1, $\Lambda = 0.96$, F (1,69) = 3.05, p = .08, $\eta_p^2 = .04$; Cluster 2, $\Lambda = 0.88$, F (1, 69) = 11.56, p = .001, $\eta_p^2 = .14$). Although

mean scores decreased on the TSI – Dissociation scale in this domain, these changes were not statistically significant for either cluster (Cluster 1, $\Lambda = 1.00$, F (1, 69) = .19, p = .66, $\eta_p^2 = .003$; Cluster 2, $\Lambda = 0.97$, F (1, 69) = 2.06, p = .15, $\eta_p^2 = .03$).

Self Dysregulation

Dysregulation of self is also conceptualised as a key area of difficulty for individuals with BPD. These individuals frequently report problems with identity, self concept, and low self-esteem, and have a view of "self" as overwhelming defective in major ways. They often have difficulties with recognising and maintaining boundaries between "self" and "other", resulting in tensions in interpersonal relationships.

On the scales included in this domain, the analyses of main effect of phase within illness severity displayed in Table 35, showed significant positive changes on five of the six scales for the individuals in Cluster 2 across the intervention period. For Individuals in Cluster 1, there was little change in any scale, although self esteem appeared to increase slightly at the end of the intervention period.

Table 35

Pre and post Mindfulness intervention means and standard deviations by Cluster for the domain of Self Dysregulation

Measure	Cluster 1 (*n*=21)		Cluster 2 (*n*=51)	
	M	*(SD)*	*M*	*(SD)*
YSQ-S2 – Enmeshment				
Pre	2.19	(1.50)	2.94	(1.46)
Post	2.28	(1.35)	2.39*****	(1.51)
YSQ-S2 – Defectiveness/shame				
Pre	2.81	(1.75)	4.61	(1.22)
Post	2.76	(1.58)	3.86*****	(1.62)
YSQ-S2 – Social Isolation				
Pre	2.81	(1.66)	4.69	(1.29)
Post	2.81	(1.60)	4.14*****	(1.43)
TSI – Impaired self reference				
Pre	56.33	(9.89)	71.14	(6.70)
Post	53.43	(6.50)	67.21*****	(11.03)
Coopersmith Self Esteem Inventory				
Pre	38.62	(19.86)	23.96	(13.47)
Post	44.05	(21.52)	26.45	(15.81)

Note. ***** denotes statistically significant difference

On the YSQ-S2 – Enmeshment schema scale, a positive change occurred for individuals in Cluster 2 but not for those in Cluster 1 (Cluster 1, $\Lambda = 1.00$, $F (1, 69) = .13$, $p = .72$, $\eta_p^2 = .002$; Cluster 2, $\Lambda = 0.87$, $F (1, 69) = 10.71$, $p = .002$, $\eta_p^2 = .13$).

A similar result occurred on the YSQ-S2 – Defectiveness/shame schema scale with the mean score for individuals in Cluster 2 decreasing significantly across the intervention period Cluster 2, ($\Lambda = 0.86$, $F (1, 69) = 11.48$, $p = .001$, $\eta_p^2 = .14$), in contrast to the result for individuals in Cluster 1 (Cluster 1, $\Lambda = 1.00$, $F (1,69) = .02$, $p = .89$, $\eta_p^2 = .000$).

These results were also observed in individuals in Cluster 2 on the Social Isolation ($\Lambda = 0.91$, $F (1, 69) = 6.54$, $p = .013$, $\eta_p^2 = .08$), and Impaired Self Reference schema scales ($\Lambda = 0.92$, $F (1, 69) = 6.27$, $p =. 015$, $\eta_p^2 = .08$). However, the changes in mean scores observed in individuals in Cluster 1 were not significant for either the Social Isolation schema ($\Lambda = 1.00$,$F (1, 69) = .000$, $p = 1.00$, $\eta_p^2 = .00$), or the Impaired Self Reference schema ($\Lambda = 0.98$, $F (1, 69) = 1.42$, $p = .24$, $\eta_p^2 = .02$). Whilst the increase in mean score on the Coopersmith Self Esteem Inventory observed within individuals in Cluster 1 approached significance, ($\Lambda = 0.95$, $F (1, 69) = 3.64$, $p = .06$, $\eta_p^2 = .05$), mean score changes in individuals in cluster 2 did not ($\Lambda = 0.97$, $F (1, 69) = 1.85$, $p = .18$, $\eta_p^2 = .03$), although it could be considered that any improvement in measures of self esteem in this population is positive, regardless of statistical significance.

Discussion

This study investigated differential treatment response to mindfulness treatment in individuals previously categorised (see Chapter 9) into two identifiable subtypes of BPD symptomatology. Two distinct groups of participants had been identified at entry to TMC mindfulness programme, using a two step cluster analysis procedure, and participant Cluster membership was observed to remain stable across the intervention period. The groups were significantly different on many of the scales measuring self-reported symptoms and difficulties used in this study prior to the initial mindfulness intervention, with individuals in Cluster 2 describing higher levels of symptom severity, particularly in the area of depression and anxiety. In addition, individuals in Cluster 2 reported higher levels of cognitive dysregulation (transient

psychotic symptoms, paranoid feelings), and greater problems with self identity and self esteem. Significantly higher levels of borderline psychopathology (as measured by the Millon MCMI-III BPD scale) were also reported by those in this cluster.

In terms of demographic characteristics, individuals within Cluster 1 were less likely to have been treated by a CATT team or admitted to a psychiatric inpatient unit and were also less likely to report experiencing symptoms on an ongoing basis, as well as being less likely to report having previously experienced one or more traumatic events. Cluster 1 individuals were also less likely to be supported by Centrelink benefits, and were more likely to have completed Year 12 of High School and to have completed post-Year 12 training. However, none of these between group differences in demographic characteristics were statistically significant.

In this study, mean scores on the measures within each domain were compared between individuals in these two clusters at the completion of the eight week mindfulness treatment programme to investigate the relationship between outcomes on illness variables and treatment phase. Overall, where a significant change occurred across the intervention period, this was most likely to occur within individuals in Cluster 2.

In terms of response to mindfulness treatment, both groups reported improvements in symptoms at the end of the intervention despite their pre-intervention differences. However, statistically significant changes were more likely to occur within individuals within Cluster 2 suggesting that the more severely disturbed individuals benefitted from the mindfulness training to a greater degree. As observed in the analyses for the total group of mindfulness participants, when post-intervention results were compared between clusters, significant changes in the symptoms included in varying domains of dysfunction (Linehan, 1993) occurred. Reported levels of depression and anxiety decreased for individuals in both clusters, with angry reactions also reported as having decreased in Cluster 2 individuals. This suggests that the mindfulness intervention enhanced the ability to regulate, or at least tolerate, negative emotions in both the less and more severely ill individuals.

Although there was only one significant change in one mean score for individuals in Cluster 2 in the domain of behavioural dysregulation, this is an important finding as it occurred on a scale which measures inappropriate behaviours (e.g. self harm, alcohol use) used as coping strategies.

Similarly, in the interpersonal domain, the significant changes in mean scores for Cluster 2 suggest that they were less likely to prioritise others' needs over their own, and were also less likely to mistrust others by the end of the intervention.

In terms of cognitive dysregulation, the mindfulness intervention appears to have resulted in a significant lessening of reported psychotic symptomatology and dissociative symptoms, with an associated increase in the ability to focus attention in the present.

Similar results were found in the area of self dysregulation. At the end of the mindfulness intervention, individuals in Cluster 2 were less likely to view themselves as being basically unloveable and socially defective, and more likely to report slight inceases in self esteem.

It is important to note that individuals in Cluster 1 (less severe illness) also reported overall improvements at the end of the mindfulness intervention despite the lack of statistically significant results observed in this group. However, despite the improvements noticed, the initial differences between the clusters in terms of severity of symptomatology remained and cluster membership remained stable throughout.

The results of this part of the study suggest that the *"dysregulated/defective self"* group (the most severely ill individuals) experienced a slightly greater degree of positive response to mindfulness treatment than did the less severely unwell group. This result is in contrast to findings reported in the broader literature, where individuals reporting more severe symptoms have been found to be usually less responsive to treatment (Digre et al., 2009). It is possible that one of the main impacts of this stand-alone mindfulness treatment may have been in terms of positive changes to the individual's relationship with their unpleasant and negative thoughts and emotions, and this explains the significant impact observed on self-reported mood in this study. This change in relationship with thoughts and emotions may have enhanced the ability to tolerate negative affect, which led to a decrease in the associated emotional and behavioural responsivity amongst the more severely unwell individuals. The results from these analyses strongly suggest that mindfulness alone is an effective way of helping to reduce unpleasant affect, and improve self esteem and overall functioning in even the most severely ill of the BPD individuals included in this study.

The following chapter discusses the results of the analyses of the effects of completing the remaining nine months of the DBT programme for individuals in each cluster.

Chapter 11

Cluster Membership and response to DBT

Previous studies in this research programme have reported positive changes in participant functioning after participating in a mindfulness training module, as well as completing the remaining modules of the full DBT treatment. In addition, two clinically significantly different groups of individuals have been identified (Cluster 1 and Cluster 2) and the response of these two groups to treatment examined. Differential responses to mindfulness treatment were identified across the domains of dysregulation investigated. Within the domain of emotional dysregulation, individuals in both clusters reported significant reductions in levels of depression, whilst individuals in Cluster 2 also reported a significant decrease in angry reactions. In the domain of cognitive dysregulation, individuals in Cluster 2 reported significant decreases in thought disorder and delusional beliefs, together with significant improvements in the ability to regulate and focus attention. Similarly, individuals in Cluster 2 reported significant improvements in the domain of self-dysregulation. In the light of these improvements observed after a short intervention, it is of interest to examine differential treatment responses following completion of the remaining DBT modules offered at TMC.

In terms of response to DBT treatment, as previously discussed, other researchers have noted differential responses to DBT treatment amongst individuals with BPD. For example, Linehan's (1993) observed differences in attachment to the therapists and success in treatment between client groups in the original treatment studies led to identification of two different groups of patients. The group who were able to attach well to the therapists and were more successful in the therapy were identified as the "attached" group, whilst the less committed group who did less well in therapy were described as "butterfly-like" (Linehan, 1993). A later study by Bohus

(2001), found a bimodal response to an inpatient DBT treatment programme. Results of studies such as these have prompted investigations into attempts to identify subtypes of BPD amongst clinical groups (e.g., Fossati et al., 1999; Russ, Shearin, Clarkin, Harrison, & Hull, 1993; Ryan & Shean, 2007; Whewell, Ryman, Bonanno, & Heather, 2000), based on diagnostic and interpersonal features. More recent research by Digre et al. (2009) and Nesci et al. (2009) extended earlier research by investigating treatment response in subtypes of individuals with BPD being treated in a government funded specialist residential DBT-influenced treatment programme in Melbourne, Australia. Both these groups of researchers found that their participants could be divided into clinically meaningful subgroups on the basis of characteristics and symptoms, Sand that a differential response to treatment occurred between individuals within these groups.

Digre et al. (2009) identified three distinct clusters of individuals from their sample, and individuals within these groups responded differentially to the treatment. A considerable decrease in dissociative experiences was found in one group, and a significant reduction in ratings of depressive symptoms occurring in another. However, virtually no improvement on any of the remaining measures used was observed in the more severely disturbed group.

Nesci et al.'s (2009) study identified two distinct sub groups of individuals with BPD amongst the participants. Consistent with Beck et al.'s (2004) theory relating to the role of dysfunctional beliefs and attributional patterns in personality disorders, individuals within these two groups were able to be differentiated by their use of problem-focused coping strategies and patterns of attributions of responsibility for negative events. Nesci et al. (2009) found attributions for negative events discriminated between groups. One group tended to blame themselves for the occurrence of such events whilst the other group were more likely to blame others.

The groups could also be distinguished on their clinical characteristics, with one group reporting being more fearful of losing control of anxious or depressed moods than the other. In addition, self-harm acts and substance use also varied between the groups. Nesci et al. (2009) suggested that for these participants, self-harm and substance use may function as a method of regulating emotions such as depression or anxiety. The groups also differed in their reported use of problem-focused coping strategies and in reported fear of losing control of negative emotions. The clusters appeared to be relatively stable in this sample, as they were identified at

both entry and at discharge from the treatment programme. However, within the clusters, there were some individuals who had changed their cluster membership at the end of treatment, presumably as a response to participation in the treatment.

In terms of treatment response, differences in changes on outcome measures occurred between the groups, with one group reporting decreases in depressive symptoms and fear of losing control of negative emotions, decreases in self harm and increases in use of problem-focused coping strategies. In contrast, the other group reported improvement only in depressive symptoms. Nesci et al. (2009) concluded that the differences in results supported the hypothesis that the two groups would respond differentially to the intervention.

Further research in this area of BPD subtypes and treatment response will add to the body of knowledge relating to effective treatment for this complex, and often difficult to treat, patient group. In the current study, the group of participants who went on to undertake the remaining nine months of the full DBT programme following completion of the mindfulness programme, was composed primarily of individuals who had been identified in Cluster 2 (more disturbed) in the analyses described in Chapter nine. Only five individuals from Cluster 1 (less disturbed) went on to participate in this part of the treatment. Once again, cluster membership remained stable throughout the intervention. Given that this part of the intervention spanned a full nine months, this adds support to the notion of stability of the area of dysphoria/emotional dysregulation as a relatively stable domain in individuals with BPD.

Method

Participants

Participants in this study were 27 of the total of 88 participants involved in the overall research programme. These 27 participants were invited to participate in the remaining three DBT skills training modules following completion of the mindfulness training module and are described in detail in Chapter seven. Of these 27 individuals, six participants were offered entry to the remaining DBT modules immediately following completion of mindfulness training. The remaining participants were those who experienced a delay following completion of mindfulness training, as previously discussed in Chapter seven. Four of the 27 participants did not complete the full DBT

training, leaving an overall sample size of 23 for analyses. Of the four participants who left the group, two gained employment, one moved house, and the other withdrew from the group for personal reasons. Participants had previously been categorised into two distinct clusters based on analyses of pre-mindfulness intervention reported symptomatology.

Participants' demographic characteristics

Age

Within the group of 27 individuals, participant ages ranged from 20 years to 69 years (M = 38, SD = 11). There were no significant differences in participant ages between clusters (χ^2=1.70, df =2, p =.59).

Gender and marital status

Twenty-three (85%) of the group were female, with four (15%) males making up the remainder of the total number. Eleven participants (41%) were in a relationship (married or de facto), three (11%) were divorced, one (4%) was separated, and twelve (44%) were single.

Country of origin and preferred language

Twenty four participants (89%) were born in Australia, with two (7%) having been born in the U.K. One (4%) participant was born in another European country. English was the preferred language for all participants.

Educational level

In terms of educational level, 11 participants (41%) had completed a tertiary degree, and 16 (59%) had completed Year 12 of secondary school or below. No significant differences in education level between individuals in each cluster were found (χ^2=3.92, df =1, p =.12)

Source of income and income level

Fifteen of the participants, (55%) received Centrelink benefits, with 12 (45%) participants supported by their partners or family, or own earnings from part-time employment. For those who were employed, reported occupations ranged from professional (26%) and administrative/clerical (22%) to unskilled (4%). The majority of participants indicated that their annual income level was less than $20,000 ($n$=16, 60%), whilst two (7%) received between $20,000 and $30,000, three (11%) recorded an income between $40,000 and $50,000, and five (18%) indicated an income level of above $50,000 per annum. There were no significant differences between individuals in each cluster (χ^2=.60, df =1, p =.63) in this area.

Participants' clinical presentation

Partcipants' illness duration and treatment

Participant reported age of onset of psychological difficulties of any sort ranged from 7 years to 43 years (*M*=19 years, *SD*=9 years) and no significant difference between clusters existed in this area (χ^2=.12, *df*=1, *p*=1.00). Reported age at which Borderline Personality Disorder was diagnosed ranged from 15 years to 47 years (*M*=31 years, *SD*=10 years) with no significant difference found between clusters (χ^2=18.16, *df*=18, *p*=.67).

Participants' reported total number of admissions to psychiatric units prior to entry into TMC programme varied from none to 30 (*M*=7, *SD*=8). Once again, there was no significant difference between the clusters in this area (χ^2=.12, *df*=1, *p*=1.00). The length of time that participants had been treated at TMC at time of entry into the treatment programme ranged from one month to 13 years, (*M*=3 years, *SD*=3 years), with no difference between participants (χ^2=.94, *df*=1, *p*=.62) found.

Participants' trauma history

All participants reported some experience of trauma during their life. Overall seventeen participants (63%) had experienced a crime related event. Thirteen (48%) of Cluster 2 individuals had experienced an event of this type, compared to nine reports in Cluster 1 individuals. However, this difference was not significant (χ^2=76, *df*=1, *p*=.37). In terms of unwanted sexual contact, 14 (52%) of individuals in Cluster 2 and eight 28%) of Cluster 1 individuals reported an event of this kind. However, there was no significant difference between the clusters in this area (χ^2=.02, *df*=1, *p*=1.00).

Number of BPD criteria met

As was reported in the General Method section (Chapter five), the number of BPD criteria met by each participant was established from the record of their initial assessment interview. Overall, all participants in this research programme met at least five criteria (the minimum requirement to meet the diagnosis of Borderline Personality Disorder). Participants' mean score on the MCMI-III clinical BPD personality scale was 75 (*SD*=20), with a range of scores from -1 to 97. As previously stated, a score of 76 or above is considered to represent an individual who possesses the trait of severe personality pathology of the borderline type. There was no significant difference between Cluster 1 and Cluster 2 individuals in this area (χ^2=3.86, *df*=5, *p*=.63).

Alcohol and other drug use

Five (18%) participants denied using alcohol at all, eleven (41%) reported using alcohol only occasionally, whilst 3 (14%) reported using it sometimes. Four participants (15%) reported using alcohol often, whilst five (18%) reported daily use. When individuals in Cluster 1 and Cluster 2 were compared, no significant differences were found (χ^2=.98, *df*=2, *p*=.80).

Most participants (63%) reported never using illicit drugs, five (18%) reported occasional use, and three (11%) reported using "sometimes". Only two participants (7%) reported using illicit drugs every day. There were no differences between individuals in the clusters in this area (χ^2=3.51, *df*=2, *p*=.06).

Participants' reported symptoms

Overall, most participants reported experiencing mixed symptoms on an ongoing basis. These symptoms included depression/mood swings (*n*=15, 56%), anxiety (*n*=2, 7%), and suicidal ideation (*n*=3, 11%) whilst seven (26%) individuals reported experiencing a mixture of all of these. In terms of frequency of symptoms, 19 participants (70%) reported experiencing symptoms on an ongoing or daily basis. Three (11%) participants experienced symptoms three to four times a week, and three (11%) individuals reported experiencing these difficulties from one to two times a week to a few times a month. There were no significant differences between individuals in Cluster 1 when compared with individuals in Cluster 2 in reported symptom type (χ^2=3.14, *df*=3, *p*=.37) or frequency (χ^2=2.71, *df*=1, *p*=.14).

Self harm thoughts

Type of self-harm thoughts participants reported included overdose (*n*=6, 22%), cutting (*n*=10, 37%), or a combination of these behaviours (*n*=4, 15%). Once again, there were no significant differences between individuals in Cluster 1 and individuals in Cluster 2 in this area (χ^2=1.39, *df*=1, *p*=.33).

Summary of cluster clinical characteristics

Overall, individuals in Cluster 2 reported higher levels of difficulties in controlling fluctuating mood and angry feelings and were also more likely to have low self esteem. In addition, this group of individuals were more likely to fear being abandoned by others, struggle with impulse control, and experience higher levels of cognitive dysregulation (e.g., dissociation, transient psychotic symptoms). As a result, the term "dysregulated/defective self" was generated to describe this cluster.

In contrast, whilst individuals in Cluster 1 reported some elevations in these areas of functioning, their scores were more likely to fall within the "normal" range of scores for the measures, albeit sometimes at the "ceiling" of this range. However, they also reported low self-esteem and difficulties across all domains, but these were reported to be of lower levels of severity than the level of symptoms reported by individuals in Cluster 2. The term "dysregulated/more functional self", was developed to describe individuals in this cluster. The majority of those individuals continuing on to the remainder of the DBT programme were identified as belonging to Cluster 2 (*n*=18), with only five participants from Cluster 1 continuing with DBT treatment following completion of mindfulness. All individuals maintained their cluster membership throughout the mindfulness and DBT interventions. Since the remaining DBT modules spanned a full nine months, this finding provides some support for the notion of stability in the area of dysphoria/emotional dysregulation in individuals with BPD, and of the existence of identifiable and relatively stable BPD sub-types.

Measures

The suite of diagnostic measures utilised at baseline assessment are described in full in the General Method section (Chapter five), as are the standardised psychometric measures utilised in this study across the intervention.

Procedure

As discussed in Chapter nine, DBT participants had been separated into two distinct clusters by entering their baseline scale mean scores within each domain of dysregulation into the SPSS V17 two step cluster analysis procedure. Clear differences emerged between the two groups, leading to Cluster 1 being named *"dysregulated/more functional self"*, and Cluster 2 individuals being named *"dysregulated/dysfunctional self"*, in keeping with these differences.

The battery of scales utilised in the cluster analysis procedure was re-administered throughout the duration of the remaining DBT skills training interventions and the mean scores on these scales compared between Cluster 1 and Cluster 2 individuals to determine if a differential treatment response had occurred between clusters.

Results

In order to determine if a differential response to treatment occurred between the two clusters following completion of the mindfulness intervention, data from this point was entered into SPSS V17 and the post intervention symptoms reported by members of each cluster compared. Analyses (t-tests) within each domain (with cluster membership as the group variable) showed that the clusters had remained significantly different in some areas of dysregulation at the end of the mindfulness intervention (prior to commencing the remaining DBT modules), despite the positive changes in scores which occurred throughout that period. The clinical characteristics of the two clusters at entry into the remaining DBT skills training modules are discussed in the following section.

Following completion of the remaining three DBT modules, the results of these assessments post DBT training, were again entered into SPSS V17 and tests on the simple main effect of phase within illness severity conducted for each scale within the domains of dysregulation. Overall, results showed that there were some significant differences in symptomatology between the clusters at the end of the mindfulness intervention and that there were significant changes over the time of the remaining DBT intervention on some scales for individuals in both clusters. These findings are reported separately for each domain.

Emotional Dysregulation

Scales in this domain were selected to measure the frequently reported symptoms of dysregulated mood (depression, anxiety, and anger) and overall borderline personality pathology. The results of between cluster comparisons in this domain are shown in Table 36. As inspection of Table 36 shows, Cluster 2 individuals continued to report significantly higher levels of depression and anxiety following the mindfulness intervention, despite a level of improvement in symptoms at the end of the intervention. However, with the exception of the mean score on the YSQ-S2 Insufficient self control/self discipline, there was very little difference between the clusters in the ability to exercise self-control over angry reactions or anger expression, or in levels of borderline personality pathology (e.g., affective lability, thoughts of suicide and self harm, etc.).

Table 36

Post-Mindfulness comparisons by Cluster for the domain of Emotional Dysregulation

Measure	Cluster 1 (*n*=5)		Cluster 2 (*n*=18)				
	M	*(SD)*	*M*	*(SD)*	*t(25)*	*p*	*d*
Depression							
MCMI-III depression	50.00	(41.14)	80.00	(20.10)	-2.45	.021	-0.93
DASSdepression	1.29	(1.59)	2.89	(1.34)	-2.33	.028	-1.09
TSI depression	55.60	(13.13)	69.14	(8.29)	-2.97	.007	-1.23
Anxiety							
MCMI-III anxiety	54.00	(36.34)	90.32	(13.55)	-3.83	.001	-1.31
DASS anxiety	1.13	(0.92)	2.55	(1.44)	-2.09	.050	-1.17
TSI anxious arousal	57.40	(9.84)	65.18	(10.00)	-1.57	ns	
Anger							
YSQ Insuff. self control/ self discipline	2.60	(1.14)	3.95	(1.32)	-2.16	.045	-1.09
TSI Anger/Irritability	52.40	(7.40)	59.27	(12.31)	-1.19	ns	
STAXI-II Angry Reaction	44.80	(9.75)	46.36	(9.39)	-0.33	ns	
STAXI-II Anger Expression – Out	46.00	(10.00)	51.45	(12.44)	-0.91	ns	
STAXI-II Anger Expression – In	44.00	(7.87)	52.09	(11.52)	-1.48	ns	
MCMI-III Borderline personality pathology	68.20	(40.74)	77.23	(13.30)	-0.89	ns	

Interpersonal Dysregulation

Individuals with BPD typically report difficult and at times chaotic interpersonal relationships. As a consequence, scales in this domain were selected to assess the degree of interpersonal dysregulation reported by participants. The schemas selected from the YSQ-S2 seek information about the extent to which an individual fears or expects abandonment by others, together with the degree of mistrust of others generated by the expectation of being used or abused in some way, and the degree to which subjugation of the individual's own needs occurs to avoid these possibilities.

Table 37 presents the results of comparison analyses of mean scores in this domain at the completion of mindfulness.

Table 37

Post-Mindfulness comparisons by Cluster for the domain of Interpersonal Dysregulation

Measure	Cluster 1 (*n*=5)		Cluster 2 (*n*=18)				
	M	*(SD)*	*M*	*(SD)*	*t(25)*	*p*	*d*
YSQ-S2 Abandonment	2.20	(1.30)	4.04	(1.49)	-2.54	.018	-1.31
YSQ-S2 Mistrust/abuse	2.00	(0.71)	3.59	(1.53)	-2.24	.034	-1.33
YSQ-S2 Subjugation	2.00	(0.71)	3.77	(1.44)	-2.62	.014	-1.56

As shown in the table, all mean scores on the schemas included in this domain were significantly different between the groups at the end of mindfulness training. Mean scores on these schemas were significantly higher in Cluster 2 individuals, indicating that these beliefs are more likely to be active in the cognitive and behavioural functioning of these individuals, and perhaps would be associated with higher levels of interpersonal difficulties.

Behavioural Dysregulation

Scales in this domain were selected to assess the degree to which particpants utilised alcohol and illicit drugs to cope with tension related to negative events and emotions. In addition, the coping strategies of self-harm behaviours were also assessed. Results for between Cluster comparisons of mean scale scores in this domain at the completion of the mindfulness module are presented in Table 38.

Table 38

Post-Mindfulness comparisons by Cluster for the domain of Behavioural Dysregulation

Measure	Cluster 1 (*n*=5)		Cluster 2 (*n*=18)			
	M	*(SD)*	*M*	*(SD)*	*t(25)*	*p*
MCMI-III Alcohol Dep	57.80	(18.82)	65.86	(11.51)	-1.26	ns
MCMI-III Drug Dep	52.40	(26.06)	61.14	(15.92)	-0.09	ns
TSI Tension Reductn Beh	48.20	(7.15)	63.77	(16.73)	-2.01	ns

As can be seen, there was no significant difference between individuals in either cluster on any of the measures, although the difference between the clusters on the TSI Tension Reduction Behaviour scale approached significance (*p*=.06).

Cognitive Dysregulation

Dysregulation in this domain is conceptualised as consisting of transient stress-related episodes of psychotic symptoms, together with experiences of dissociation and difficulties in attentional focus and control. The results of mean score comparisons between clusters on scales in this domain (utilising t-tests) are shown in Table 39 below.

Table 39

Post-Mindfulness comparison analyses by Cluster for the domain of Cognitive Dysregulation

Measure	Cluster 1 (*n*=5)		Cluster 2 (*n*=18)				
	M	*(SD)*	*M*	*(SD)*	*t(25)*	*p*	*d*
MCMI-III Thought Dis	47.60	(34.18)	72.27	(13.11)	-2.73	.011	-0.95
MCMI-III Delusional Dis	42.00	(25.52)	59.73	(28.62)	-1.27	ns	
TSI Dissociation	55.00	(8.37)	71.91	(11.91)	-2.99	.006	-1.64
Mindful Attn Awareness	63.80	(13.50)	46.95	(8.66)	3.54	.002	1.49

As can be seen from the data, Cluster 2 individuals were significantly more likely to report symptoms of thought disorder than Cluster 1 individuals. They were also significantly more likely to report symptoms of dissociation, and reported significantly lower levels of attentional focus and control, although their reported level of symptoms decreased following mindfulness training.

Self Dysregulation

Scales included in this domain measure dissatisfaction with the self, feelings of being isolated from others, difficulties in maintaining the boundary between self and others and overall self-esteem. Individuals with BPD typically report difficulties in all of these areas. The results of the post-mindfulness training comparisons between clusters are shown in Table 40.

Table 40

Post-Mindfulness comparison analyses by Cluster for the domain of Self Dysregulation

Measure	Cluster 1 (*n*=5)		Cluster 2 (*n*=18)				
	M	*(SD)*	*M*	*(SD)*	*t(25)*	*p*	*d*
YSQ-S2 Enmeshment	2.20	(1.30)	2.27	(1.48)	-0.10	ns	
YSQ-S2 Defect/shame	2.60	(1.34)	4.13	(1.64)	-1.94	ns	
YSQ-S2 Social isolation	2.00	(1.22)	4.23	(1.44)	-3.18	.000	-1.66
TSI Impaired self ref	54.40	(7.83)	68.81	(8.85)	-3.34	.003	-1.72
Coppersmith SEI-A	48.20	(24.98)	29.27	(16.49)	2.11	.045	0.89

As shown in Table 40, data from scales in this domain indicate that individuals in Cluster 2 were more likely to see themselves as defective in some way and more likely to report lowered levels of social contact as a consequence. They were also more likely to report perceived deficits in personal identity and to experience inner feelings of emptiness, and to have a higher need to rely on others for direction and structure.

Following the completion of the remainder of the DBT programme, participants' mean scores on all scales were compared to investigate any main effects

of phase within illness severity. In order to distinguish any differences in response to treatment between the two clusters, tests on the simple main effect of phase within illness severity conducted for the scales within each domain were also conducted on the data obtained from post mindfulness and post completion of DBT assessments. Overall results showed that there were significant changes over the time of the intervention on some scales for individuals in both clusters. These findings are discussed separately for each domain in the following section.

Emotional Dysregulation

Scales chosen for inclusion in this domain measure reported symptoms of depression, anxiety, and anger, as well as overall borderline personality pathology. The inability to regulate affect effectively is a core characteristic of inidividuals with a diagnosis of BPD. Mean scores on these measures were entered into a simple main effect of phase within illness severity analysis. Table 41 presents the means and standard deviations by Cluster at completion of the mindfulness and remaining DBT interventions.

Table 41

Comparisons of mean scores by Cluster by Cluster for the domain of Emotional Dysregulation

Measure	Cluster 1 (*n*=5)		Cluster 2 (*n*=18)	
	M	*(SD)*	*M*	*(SD)*
Depression				
MCMI-III Depression scale				
Post Mindfulness	50.00	(41.14)	85.39	(18.11)
Post DBT	38.00	(29.66)	63.17*****	(28.25)
DASS Depression scale				
Post Mindfulness	1.29	(1.59)	3.17	(1.18)
Post DBT	0.70	(0.92)	2.04*****	(1.80)
TSI Depression scale				
Post Mindfulness	55.60	(13.12)	71.17	(7.64)
Post DBT	52.60	(6.69)	64.94*****	(12.48)
Anxiety				
MCMI-III Anxiety scale				
Post Mindfulness	54.00	(36.34)	92.72	(13.81)
Post DBT	63.60	(34.41)	81.44*	(13.03)
DASS Anxiety				
Post Mindfulness	1.13	(0.92)	2.78	(1.46)
Post DBT	0.50	(0.71)	2.23	(1.55)
TSI Anxious Arousal				
Post Mindfulness	57.40	(9.84)	67.55	(9.21)
Post DBT	53.20	(11.26)	61.61*****	(11.88)
Anger				
YSQ-S2 Insufficient self control/self discipline				
Post Mindfulness	2.60	(1.14)	3.88	(1.37)
Post DBT	2.20	(1.31)	3.39	(0.98)
TSI – Anger/Irritability scale				
Post Mindfulness	52.40	(7.40)	60.39	(13.01)
Post DBT	51.40	(8.47)	54.44*****	(11.14)
STAXI-II Angry Reaction scale				
Pre	44.80	(9.76)	46.22	(10.40)
Post DBT	40.40	(7.92)	41.67*****	(7.19)
STAXI-II Anger Expression – Outward				
Post Mindfulness	46.00	(10.00)	52.00	(12.65)
Post DBT	46.40	(6.54)	46.00*****	(10.36)
STAXI-II Anger Expression – Inward				
Post Mindfulness	44.00	(7.87)	54.33	(11.50)
Post DBT	40.40	(2.97)	46.77*****	(11.35)
MCMI-III Borderline Personality pathology				
Post Mindfulness	68.20	(40.37)	79.39	(12.85)
Post DBT	58.80	(32.61)	65.39*****	(25.75)

Note. ***** denotes statistically significant difference

Depressed mood

In terms of depression, the tests on the simple main effect of phase within illness severity found a significant pre- to post-DBT change in mean score on the mean scores of individuals in Cluster 2 on the MCMI-III depression scale ($\Lambda = 0.45$, F (1, 21) = 26.05, $p = .000$, $\eta_p^2 = .55$), and the DASS depression scale ($\Lambda = 0.66$, F (1, 21) = 11.49, $p = .003$, $\eta_p^2 = .35$). However, no significant change in mean scores occurred on the TSI Depression scale ($\Lambda = 0.88$, F (1, 21) = 2.79, $p = .11$, $\eta_p^2 = .12$). Overall, the changes in mean scores on these scales suggest that individuals in Cluster 2 derived greater benefit from continued DBT skills training than did individuals within Cluster 1.

Anxiety

Consistent with the changes in depression scores, Cluster 2 individuals continued to improve on the MCMI-III Anxiety scale ($\Lambda = 0.74$, F (1, 21) = 7.26, $p = .014$, $\eta_p^2 = .26$). In contrast, on the DASS anxiety scale, no significant change occurred for individuals in either cluster (F (1, 21) = 3.36, $p = .08$, $\eta_p^2 = .14$). The improvement observed in the mean score on this scale for Cluster 1 individuals approached, but did not reach statistical significance. However, scores on the TSI anxious arousal scale did change differentially ($\Lambda = 0.82$, F (1, 21) = 4.67, $p = .042$, $\eta_p^2 = .18$) with Cluster 2 individuals improving significantly at the end of the DBT programme in comparison to individuals in Cluster 1, where mean scores remained almost unchanged .

Anger

Four statistically significant changes in mean scale scores occurred in this domain, again occurring in individuals in Cluster 2 (the more unwell group). Although there was no significant change in scores on the YSQ-S2 insufficient self control/self discipline, for either group, scores for Cluster 2 individuals changed significantly on the TSI Anger/Irritability scale ($\Lambda = 0.65$, F (1, 21) = 10.96, $p = .003$, $\eta_p^2 = .34$), the STAXI-II Angry Reaction scale ($\Lambda = 0.76$, F (1, 21) = 6.43, $p = .019$, $\eta_p^2 = .23$), the Anger Expression – Outward scale ($\Lambda = 0.65$, F (1, 21) = 11.31, $p = .003$, $_p^2 = .35$), and the Anger Expression – Inward scale ($\Lambda = 0$ .64, F (1, 21) = 11.99, $p = .002$, $\eta_p^2 = .36$).

A similar pattern occurred in individuals in Cluster 2 in relation to reported levels of borderline personality pathology ($\Lambda = 0.68$, F (1, 21) = 9.714, p = .005, $\eta_p^2 = .32$). The reduction in mean scores observed on this scale for individuals in Cluster 1 was not statistically significant.

Overall, these observed changes suggest that individuals in Cluster 2 benefitted more from participation in the remaining modules of the DBT intervention.

Interpersonal Dysregulation

Measures in this domain were chosen to represent difficulties in the area of interpersonal functioning typically reported by individuals with BPD (low self esteem; subjugation of individual needs to others to avoid rejection or abandonment; and often deeply felt distrust of others and expectations of being used or abused in relationships). Analyses for a main effect of phase within illness severity were conducted on the means of scales chosen for inclusion in this domain of dysregulation. Table 42 presents the means and standard deviations for these scales post mindfulness completion and at the end of the DBT intervention.

Table 42

Comparisons of mean scores by Cluster for the domain of Interpersonal Dysregulation

Measure	Cluster 1 (n=5)		Cluster 2 (n=18)	
	M	*(SD)*	*M*	*(SD)*
YSQ-S2 Abandonment				
Post Mindfulness	2.20	(1.30)	4.22	(1.55)
Post DBT	2.20	(1.09)	3.89	(1.74)
YSQ-S2 Mistrust/Abuse				
Post Mindfulness	2.00	(0.71)	3.61	(1.65)
Post DBT	2.00	(0.71)	3.67	(1.84)
YSQ-S2 Subjugation				
Post Mindfulnes	2.00	(0.71)	4.05	(1.43)
Post DBT	2.00	(1.00)	3.17*****	(1.54)

Note. *****denotes statistically significant difference

Once again, virtually no change occurred in mean scores for individuals within Cluster 1 on any schema. Although mean scores for individuals in Cluster 2

decreased overall, these decreases were statistically significant on the YSQ-2 Subjugation scale ($\Lambda = 0.75$, F (1, 21) = 7.15, p = .014) only. There was little change on the YSQ-S2 Abandonment scale ($\Lambda = 0.95$, F (1, 21) = 1.167, p = .29, η_p^2 = .05) or on the YSQ – S2 Mistrust/Abuse scale ($\Lambda = 0.99$, F (1, 21) = .027, p = .87, η_p^2 = .00). There was little difference between the groups in the rate at which they responded to treatment.

Behavioural Dysregulation

Measures in this domain were chosen to represent inappropriate use of alcohol and other drugs, together with self-harm or impulsive behaviours employed as a way of dealing with the impact of negative emotions or stressful life situations. Mean scores on each scale were entered into the analysis of main effect of phase within illness severity. The means and stardard deviations of these scales post completion of mindfulness and post completion of DBT are presented in Table 43 below.

Table 43

Comparisons of mean scores by Cluster for the domain of Behavioural Dysregulation

Measure	Cluster 1 (n=5)		Cluster 2 (n=18)	
	M	*(SD)*	*M*	*(SD)*
MCMI-III Alcohol Dependence				
Post Mindfulness	57.80	(18.82)	66.89	(12.46)
Post DBT	56.60	(18.17)	59.33	(18.15)
MCMI-III Drug Dependence				
Post Mindfulness	52.40	(26.03)	61.39	(17.64)
Post DBT	58.20	(31.81)	49.72*****	(20.19)
TSI – Tension Reduction Behaviour Scale				
Post Mindfulnes	48.20	(7.15)	65.89	(17.29)
Post DBT	51.20	(5.54)	57.61	(12.33)

Note. *denotes statistically significant difference

As shown, whilst most mean scores decreased overall, only one of the changes was statistically significant and the rate of change did not differ between the clusters. On the MCMI-III Alcohol Dependence scale mean scores changed little across the intervention period for either group ($\Lambda = 0.88$, F (1, 21) = .81, p = .38,

η_p^2 = .04). Similarly, mean scores on the MCMI-III Drug Dependence scale remained virtually unchanged for individuals in Cluster 1, but decreased significantly for individuals in Cluster 2 (Λ = 0.75, F (1, 21) = .75, p = .014, η_p^2 = .25). Mean scores on the TSI – Tension Reduction Behaviour scale decreased across the time of the intervention for individuals in Cluster 2 but rose slightly for individuals in Cluster 1, however, given the small sample size and large variability, this is unlikely to be of major concern. None of the changes in this scale were statistically significant (Λ = 0.86, F (1, 21) = .30, p = .59, η_p^2 = .01).

Cognitive Dysregulation

Measures chosen for inclusion in this domain reflect the often-reported transient psychotic symptoms experienced by individuals with BPD. In addition, a measure of dissociative experiences and the ability to focus and maintain attention were also added. Mean scores on these scales were entered into the analyses to test for a main effect of phase within illness severity analyses. The means and standard deviations by cluster of these measures are shown in Table 44.

Table 44

Comparisons of mean scores by Cluster for the domain of Cognitive Dysregulation

Measure	Cluster 1 (*n*=5)		Cluster 2 (*n*=18)	
	M	*(SD)*	*M*	*(SD)*
MCMI-III Thought Disorder scale				
Post Mindfulness	47.60	(24.14)	75.00	(10.14)
Post DBT	49.20	(41.14)	65.83*****	(18.11)
MCMI-III Delusional Disorder scale				
Post Mindfulness	42.00	(25.52)	62.17	(30.15)
Post DBT	36.40	(20.91)	52.50	(21.86)
TSI – Dissociation scale				
Post Mindfulness	55.00	(8.36)	74.00	(11.92)
Post DBT	48.60	(4.50)	61.55*****	(12.43)
Mindful Attention Awareness Scale				
Post Mindfulness	63.80	(13.49)	45.83	(8.99)
Post DBT	65.20	(12.19)	54.05*****	(10.82)

Note. ***** denotes statistically significant difference

In this domain, the analyses showed that the mean scores on the MCMI-III Thought Disorder scale for individuals in Cluster 1 had increased slightly at the end of the intervention, but not significantly ($\Lambda = 0.99$, F (1, 21) = .04, p = .83, $\eta_p^2 = .00$). This slight apparent increase amongst individuals in Cluster 1 is most likely related to the small sample size and large variability in the group. However, a significant decrease in mean score occurred in individuals in Cluster 2 indicating an improvement in symptoms of cognitive dysregulation ($\Lambda = 0.80$, F (1, 21) = 5.357, p = .031, $\eta_p^2 = .20$) for the more unwell individuals.

The positive changes in the mean scores of individuals across the remaining scales in this domain suggest that no significant worsening of symptoms occurred in either group overall. For example, the significant decrease in mean scores on the TSI Dissociation scale observed in individuals in Cluster 2 ($\Lambda = 0.49$,F (1, 21) = 21.99, p = .000, $\eta_p^2 = .51$) reduces the weight that should be given to the finding of an apparent slight worsening on the MCMI-III Thought Disorder scale for individuals in Cluster 1. In particular, this decrease in reported dissociative experiences is important, as it suggests that individuals in both groups reported less symptoms of dissociation at the end of the full DBT intervention, a finding that is confirmed by the associated increase in mean scores on the MAAS for all individuals. This increase was significantfor individuals in Cluster 2 ($\Lambda = 0.62$, F (1, 21) = 12.661, p = .002, $\eta_p^2 = .38$) . Mean scores on the MCMI-III Delusional Disorder scale also decreased in both groups ($\Lambda = 0.88$, F (1, 21) = 1.57, p = .10, $\eta_p^2 = .12$), although these decreases were not statistically significant.

Self Dysregulation

Scales in this domain were chosen to represent measures of difficulties with personal identify and negative sense of self typically experienced by individuals with a diagnosis of BPD. Thus, this domain includes a measure of self-esteem, as well as measures of feelings of being socially isolated from others; feelings of being basically defective in some way; and inability to maintain appropriate boundaries between self and others. All participants mean scores on these measures were entered in to the analyses to test for main effects of phase within illness severity. The means and standard deviations by cluster are displayed in Table 45.

Table 45

Comparisons of mean scores by Cluster for the domain of Self Dysregulation

Measure	Cluster 1 (*n*=5)		Cluster 2 (*n*=21)	
	M	*(SD)*	*M*	*(SD)*
YSQ-S2 – Enmeshment				
Post Mindfulness	2.20	(1.30)	2.44	(1.58)
Post DBT	1.80	(0.84)	2.05	(1.21)
YSQ-S2 – Defectiveness/shame				
Post Mindfulness	2.60	(1.34)	4.17	(1.69)
Post DBT	1.60	(0.89)	3.33*****	(1.85)
YSQ-S2 – Social Isolation				
Post Mindfulness	2.01	(1.22)	4.28	(1.49)
Post DBT	2.00	(1.00)	4.00	(1.19)
TSI – Impaired self reference				
Post Mindfulness	54.40	(7.83)	71.22	(7.85)
Post DBT	53.60	(7.02)	62.89*****	(13.92)
Coopersmith Self Esteem Inventory - Adult				
Post Mindfulness	48.20	(24.98)	27.33	(17.26)
Post DBT	62.40	(15.19)	34.67	(18.89)

Note. ***** denotes statistically significant difference

The analyses showed significant positive changes on only two of the six scales in this domain. On the YSQ-S2 schemas, there was little change in mean scores amongst the individuals in either group at the end of the intervention period on the Enmeshment schema ($\Lambda = 0.91$, F (1, 21) = 2.08, $p = .16$, $\eta_p^2 = .09$), however, the decrease in mean scores on the Defectiveness/Shame schema was statistically significant ($\Lambda = 0.78$, F (1, 21) = 5.90, $p = .02$, $\eta_p^2 = .22$). A further slight decrease in the mean score occurred on the Social Isolation schema but this was not statistically significant ($\Lambda = 0.98$, F (1, 21) = .43, $p = .52$, $\eta_p^2 = .02$). A statistically significant decrease in mean score occurred on the TSI Impaired Self Reference scale for individuals in Cluster 2 ($\Lambda = 0.58$, F (1, 21) = 15.01, $p = .001$ $\eta_p^2 = .16$). In addition, a small but statistically significant increase in mean scores on the Coopersmith Self-Esteem inventory - A ($\Lambda = 0.81$, F (1, 21) = 4.94, $p = .04$, $\eta_p^2 = .19$) was observed for individuals in Cluster 1. Taken together, the overall positive changes in mean scores

for individuals in both Clusters, suggest that completion of the DBT treatment programme was helpful for both groups in this area.

Discussion

The results of this study provide further support for the existence of sub-types of individuals within the broad patient group of individuals with BPD, and for differential treatment response between individuals in different sub-types.

An overall pattern of general improvements was observed for both groups of participants at the end of the remaining three modules of the DBT programme, albeit to a varying degree. Although most mean scores improved throughout the additional nine months of intervention, statistically significant improvements occurred only in the area of depressed mood and response to anger, symptoms of dissociation, and feelings of defectiveness/shame and low self esteem. A greater number of statistically significant positive changes in mean scores on instruments occurred amongst indivduals in Cluster 2, thus supporting the benefit of longer treatment interventions for more unwell individual.

The results of the analyses reported in this Chapter provide further support for the argument that there is a therapeutic benefit to be gained by individuals with BPD who complete a full DBT treatment programme, particularly those with more severe symptomatology. Despite the differing degrees of illness severity between the two groups as previously identified, there were members of individuals in both Clusters who improved throughout the course of the remaining DBT skills training modules, particularly in the areas of emotional dysregulation (depression, anxiety, and anger), cognitive dysregulation (increased ability to focus attention, decreases in reports of dissociative experiences), and self dysregulation (improvements in self esteem and self identity).

It is important to note that participants in both clusters expressed high levels of satisfaction with the programme, the therapists, and the programme outcomes overall throughout the entire intervention period. While this very positive evaluation may have influenced participants' reported level of symptoms and difficulties throughout the intervention, earlier analyses revealed a lack of relationship between these high levels of consumer satisfaction with the treatment and the treatment outcomes on any variable - a somewhat surprising finding given the emphasis placed

on the therapeutic relationship in psychotherapy generally. However, it may be that this lack of relationship is a function of participants' consistently high satisfaction ratings with all aspects of the treatment and the therapists, thus perhaps reducing the contribution of distinct therapy variables to the outcomes of treatment.

Following completion of the remaining modules of the DBT programme, most participants reported further improvements in mood, self esteem, and symptoms of dissociation, with the more unwell individuals reporting higher levels of improvement. In addition, in common with results for the Mindfulness alone group participants, improvements occurred in reports of level of self esteem, and reduction in symptoms of dissociation.Overall, the results obtained in this study support findings of previous research into the efficacy of the full DBT intervention programme (e.g., Brassington & Krawitz, 2006; Koerner & Dimeff, 2000; Koons, et al., 2001; Kroger, et al., 2006; Prendergast & McCausland, 2007; Robins, 2002; Miller, Rathus, Linehan, Wetzler, & Leigh, 1997; Simpson et al., 1998; Swales, Heard, & Williams, 2000).

The statistically significant improvements which were observed on some of the dysfunctional schemas in the domain of self dysregulation suggest that the continuing practice of mindfulness techniques occurring throughout DBT skills training may continue to change the relationship between an individual's schemas and their belief in the accuracy of those schemas, with associated reductions in negative affect. The improvements reported on measures of self-esteem in this domain are particularly pleasing given that dysregulation of the sense of self is fundamental to BPD. Regardless of cluster membership, all participants reported improvements in self esteem throughout the remaining DBT intervention, supported by the improvement (reduction) in reported level of belief in the "defective self" schema. As previously discussed, it may be that the frequent application of mindfulness skills and techniques through the constant practice which occurs in a DBT intervention functioned to continue to change the participants' relationship with unhelpful cognitions in a positive way, leading to reported improvements in mood. Whether or not these changes translated into behavioural change was not able to be determined, but should be investigated in future research endeavours.

Overall, the general improvements reported by participants in this study and the statistically significant improvements reported in the symptoms of the more unwell group, together with the high level of acceptability of this treatment approach

support the continued use of DBT interventions with this clinical population. However, participants in this study were not randomly allocated to the DBT treatment group and may not be representative of the general population of BPD sufferers. In addition, the lack of a control group of necessity leads to a need for caution in the interpretation of these results. However, despite these limitations, the fact that these participants (particularly the most unwell individuals) reported improvement on valid and reliable measures of psychological difficulties over the course of this intervention supports the continued use of this treatment approach. The utility of subgroups of BPD as a concept is also supported to continue to enhance theoretical and therapeutic understandings of the disorder, and to assist in informing interpretations of outcome data.

The following chapter reports on the clinical significance of the results observed in participants completing the eight-week mindfulness intervention.

Chapter 12

Clinical significance and Mindfulness

The results of the studies into BPD subtypes, together with the investigations of the efficacy of mindfulness and DBT treatment reported in this thesis have demonstrated that both treatments led to some significant improvements, albeit variable across measures, in the psychological health of participants. In addition, it has been demonstrated that clinically meaningful subtypes of BPD can be identified utilising cluster analysis. Some of the improvements noted in participant reports of symptomatology (demonstrated by a reduction in mean scores on selected instruments) were statistically significant, suggesting that these results did not occur solely by chance.

However, a finding of statistical significance (or lack thereof) in analyses of results of treatment studies does not necessarily imply (or deny) clinical significance. The question of the best way of measuring clinical significance has been discussed by researchers since the 1950's (e.g., Campbell, 2005; Jacobsen, Follette, & Revenstorf, 1984; Meehl, 1954, 1957; Ogles, Lunnen, & Bonesteel, 2001; Pintea, 2010; Seggar, Lambert, & Hansen, 2002). In a seminal work, Meehl (1954) conducted a review of twenty published research studies, and as a consequence, argued for the importance of reports of statistical significance with confidence intervals, to assist in determining treatment efficacy, rather than the reliance on clinical judgement alone (prevalent at the time) in decision making relating to treatment efficacy. In contrast, Campbell (2005) argues that a reliance on statistical significance alone is misleading as score changes do not necessarily relate to changes in clinical presentations or behaviour. In order to assist in measuring change resulting from interventions, effect size

calculations were developed and increasingly utilised as a means of quantifying the effects of the treatment under review, and the reporting of both statististical significance and effect sizes provides increased support for the existence of a treatment effect. However, as several commentators (e.g., Campbell, 2005; Jacobson et al., 1984; Jacobson, Roberts, Berns, & McGlinchey, 1999) have argued, effect sizes do not provide any information about the proportion of individuals within a group who have improved or recovered following the intervention, can be influenced by "within group" variance, and do not provide information about the clinical meaningfulness of the results (Kazdin, 1999).

As a consequence, the concept of measurement of "clinical significance" has been suggested as an alternative method to aid in interpretation of results of clinical intervention studies (Campbell, 2005). This concept has been discussed in the literature since the 1980's (e.g., Jacobson et al., 1984), and was developed to represent a way of estimating the practical or applied value of the change in an individual's everyday life (Campbell, 2005; Kazdin, 1999). It is important to note however, that the definition of a clinically significant change in symptomatology varies with the type of intervention and presenting problem under consideration. In some cases, remission of symptoms or difficulties to the point where a return to more adaptive functioning occurs represents "improvement", regardless of whether or not scores on standardised measures have returned to the "normal" range (Campbell, 2005).

Jacobson and Truax (1991) proposed a number of criteria that have been utilised by numerous researchers to estimate the clinical significance of treatment outcomes in different populations (e.g., Abramowitz, 1998; Bohus et al., 2004; Koons et al., 2001; Sheldrick, Kendall, & Heimberg, 2001). Jacobsen and Truax suggest that an assumption of a relationship between clinically significant change and return to normal functioning can be made, and that clinicians and consumers expect therapy to reduce or eliminate the problems which prompted the entrance into treatment. In other words, those entering therapy are part of a dysfunctional population, and those who successfully complete therapy should no longer fall into this population, but ideally, return to the levels of the normal population. Jacobson and Truax (1991) suggested three aspects to operationalising this concept:

1. An individual's post-treatment level of functioning should be outside of the range of the dysfunctional population, where range is defined as

extending to two standard deviations beyond the mean for that population, in the direction of functionality

2. An individual's post-therapy level of functioning should fall within the range of the normal or functional population, again where range is defined as within two standard deviations of the mean of that population
3. An individual's post-treatment level of functioning is closer to the mean of the functional population than to the mean of the dysfunctional population.

The third of these criteria is the least arbitrary and is based on the "relative likelihood of a particular score ending up in a dysfunctional versus functional population distribution" (Jacobsen & Truax, 1991, p.13). In this situation, if a post-treatment score falls closer to the mean of the "normal" population for the measure than the pre-treatment mean, then clinically significant change is inferred to have occurred. Jacobsen and Truax (1991) further proposed the calculation of a Reliable Change Index (RCI), in combination with the three criteria detailed above, to assist in determining whether a change in test scores is due to chance or measurement error or to a true change in the characteristic or symptom being measured. They proposed that if the RCI is larger than 1.96 standard deviations, then the change is likely to be due to statistically significant change rather than measurement error or chance fluctuations in scores. The RCI is calculated by subtracting the mean of the baseline score from the mean of the post-intervention score, and dividing this figure by the standard error of the difference between the scores. Jacobsen and Truax (1991) further suggest that if any of the three criteria (above) is met, then clinically significant (CS) change is likely to have occurred. The combination of use of the RCI and one (or all) of the three criteria described above forms the basis of the decision regarding whether or not the obtained result is clinically significant and statistically reliable.

However, given that an appropriate normative group to calculate the RCI cannot always be identified, other researchers (Tingey, Lambert, Burlingame, & Hansen, 1996) have proposed that the use of multiple samples to form a normative continiuum is more appropriate than comparing participants' scores to a functional distribution. Similarly, although test-retest reliability was the coefficient originally used to calculate the RCI, the alpha coefficient has also been used (Campbell, 2005; Seggar, et al., 2002). Indeed, one group of researchers (Martinovich, Saunders, & Howard, 1996) have highlighted the difficulty of calculating accurate test-retest

reliabilities in psychotherapy samples, since change can occur before formal treatment commences. As a consequence, Martinovich et al. suggest that test-retest reliabilities in the psychotherapy outcome context are likely *"to be deflated by real individual differences in treatment response"* (*p. 130)* and suggest that internal consistency reliability is a more appropriate statistic to use.

Wise (2004) extended Jacobson and Truax's (1991) concept by suggesting that individuals in treatment studies could be "classified as "*Recovered"*(passed at least one of the three normative criteria for determining clinical significance shown above, and the RCI criteria); "*Improved"* (passed RCI criteria alone); "*Unchanged/Indeterminate"* (passed neither criteria); or "*Deteriorated"* (passed RCI in a negative direction)" (p.52). However, these and similar criteria have not received significant amounts of attention from researchers and initial studies have reported mixed results, and may have been affected by methodological constraints or the sensitivity of the measures utilised (Lunnen & Ogles, 1998; Ogles et al., 2001). This has prompted further alterations to the original formula of the RCI (Abramowitz, 1998) to allow for calculation of the reliability of group change scores. However, in practice, researchers continue to utilise Jacobsen and Truax's (1991) methodology and criteria to assess clinical significance in treatment efficacy investigations.

The findings of other researchers in the area of clinical significance (e.g., Digre & Reece, 2009; Nesci et al., 2009) suggest that this avenue of research is both clinically and theoretically significant. However, the clinical significance of changes resulting from mindfulness training has not been fully investigated. In the light of this, the current study sought to expand the current research programme to include an investigation of whether or not treatment response to mindfulness alone differed between individuals in the two clusters of participants previously identified in Chapter nine. Specifically, this study sought to identify whether or not the changes in mean scores observed on scales in the domains of dysregulation assessed in this research programme following completion of mindfulness training, could be considered to be reliable and clinically significant, and to establish whether or not individuals in the two clusters responded differentially to the intervention.

Method

Participants

Participants were the total number of individuals who had previously participated in TMC mindfulness treatment programmes over the duration of this research programme. Their demographic and clinical characteristics at entry into TMC programmes have been previously discussed in the General Method section in Chapter five. Participants were divided into two separate clusters of individuals based on their self-reported level of symptoms (as discussed in Chapter nine). Individuals within the clusters differed in their clinical characteristics in some areas of dysregulation at baseline assessment and were named accordingly, with Cluster 1 being termed *"dysregulated/more functional self"* and Cluster 2 being named *"dysregulated/dysfunctional self"*. Chapter nine presents fuller descriptions of the process undertaken to identify individuals within these two clusters and describes each cluster in terms of clinical characteristics.

The response to participation in the mindfulness training module was then considered and compared between individuals within these two clusters (as discussed in Chapter ten).

For the current study, only those 78 participants for whom a full set of pre and post intervention measure scores were available were included.

Measures

The measures used in this section of the study are described in full in Chapter five. No changes were made to the battery of scales employed throughout this project in this study.

Procedure

As previously discussed, the conceptualisation of ways to appropriately measure therapeutic outcomes in terms of reliable change and clinical significance has undergone several revisions since its inception. and the alpha coefficient has also been used (Campbell, 2005; Seggar, et al., 2002) to calculate the RCI. Since this study relates to measuring the effectiveness of a psychotherapy intervention, it is argued that the decision to utilise alpha coefficients rather than the tes-retest reliability coefficient to assess clinical significance is appropriate.

The clinical significance and reliability of changes in scores following completion of mindfulness training for each scale in each domain of dysregulation, were examined for clinically significant change Following this examination, results were further assessed against Wise's (2004) extended definitions for determining clinically significant change (*Recovered* - passed RCI and CS criteria; *Improved* – passed RCI criteria alone; *Unchanged/Indeterminate* – passed neither criteria; and *Deteriorated* – passed RCI in a negative direction).

The alpha co-effficients and standard deviations used to calculate the Reliable Change Indices for each scale included in this study were drawn from a variety of sources. For the Trauma Symptom Inventory scales, the STAXI-II scales, the Coopersmith SEI-A and the DASS the details were obtained from the manual for each measure. The YSQ-S2 data was taken from Hoffart et al. (2005), who investigated the psychometric properties of both the long and short form of the Young Schema Questionnaire, in a sample of 1037 psychiatric patients and non-patients (male and female). This was determined to be an appropriate comparison since all of the participants in the current project were patients at a private psychiatric hospital day programme.

The MCMI-III data was taken from the manual (alpha co-efficients) and Blood (2008), who investigated the use of the MCMI-III in court-ordered parenting capacity assessments. The sample utilised in this study was drawn from individuals completing parenting capacity assessments as part of child custody evaluations in the context of divorce proceedings (n=22) or in the context of child welfare issues (n=325) and contained both males and females. Given the context of the evaluation, it is likely that participants were experiencing some difficulties in functioning and thus, the data reported for that sample can be appropriately utilised in this study.

Data used to calculate the RCI for the MAAS was drawn from the studies by Brown et al. (2003) which examined the theoretical and empirical basis of the role of mindfulness in psychological well-being in a variety of samples, including a sample of adults.

Data from all measures within each domain of dysregulation pre and post the mindfulness interventions, were assessed against Wise's (2004) extended definitions for clinical change (*Recovered* - passed RCI and CS criteria; *Improved* – passed RCI criteria alone; *Unchanged/Indeterminate* – passed neither criteria; and *Deteriorated* – passed RCI in a negative direction).

Results

Results of the examination of clinical significance of observed changes within each domain of dysregulation for individuals in each cluster following completion of the mindfulness intervention are discussed in the following section by domain.

Emotional dysregulation domain

This is the first of Linehan's (1993) hypothesised domains of BPD functioning and is conceptualised as primarily relating to dysregulated affective responses, such as chronic problems with anger, hostility and irritability, and chronic negative affect (Linehan (1993). Table 46 displays the results of pre-post mindfulness comparisons for both clusters in the domain of emotional dysregulation, together with the indices of clinical change (RCI's). The number and percentages of participants within each cluster classified using Wise's (2004) extended criteria definitions for change are displayed in Tables 47 and 48.

As shown, whilst there were some statistically significant differences between the pre-post mean scores for each group of individuals, these were not clinically significant and most effect sizes were small. However, it is important to note that even if the observed changes in mean scores were not clinically or statistically significant for the group as a whole, the majority of mean scores in this domain changed in a positive direction, indicating that a degree of improvement in the domain of emotional dysregulation had occurred, including a decrease in mean scores on the borderline personality pathology scale.

Table 46

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness completion for the domain of Emotional Dysregulation

	Cluster 1 (*n*=21)						**Cluster 2** (*n*=51)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
Depression												
MCMI-III Depression scale												
Pre	56.90	(23.93)					81.50	(18.64)				
Post	38.81*	(32.49)	24.42	-18.09	.002	0.69	75.43	(23.25)	23.42	-6.07	ns	0.23
DASS Depression scale												
Pre	0.88	(1.11)					2.93	(1.17)				
Post	1.15	(1.35)	0.25	+0.27	ns	0.18	2.82	(1.36)	0.25	-0.11	ns	0.07
TSI Depression scale												
Pre	58.05	(13.09)					70.94	(5.95)				
Post	56.05	(10.18)	5.44	-2.00	ns	0.01	67.51*	(9.04)	5.44	-3.43	.014	0.35
Anxiety												
MCMI-III Anxiety scale												
Pre	69.24	(29.01)					89.86	(10.48)				
Post	61.09*	(29.39)	35.71	-8.15	.029	0.48	87.76	(14.51)	35.71	-2.10	ns	0.12
DASS Anxiety												
Pre	0.65	(0.99)					3.01	(1.15)				
Post	0.74	(1.04)	0.50	+0.09	ns	0.06	2.61*	(1.50)	0.50	.040	.043	0.29
TSI Anxious Arousal												
Pre	55.28	(10.76)					66.06	(5.60)				
Post	54.57	(8.68)	5.42	-0.71	ns	0.06	63.06	(11.86)	5.42	-3.00	ns	0.27

Continued overleaf

Table 46 *(Cont'd)*.

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness completion for the domain of Emotional Dysregulation

	Cluster 1 (*n*=21)						**Cluster 2** (*n*=51)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
Anger												
YSQ-S2 Insufficient self control/self discipline												
Pre	3.28	(1.38)					4.29	(1.17)				
Post	2.81	(1.47)	1.43	-0.47	ns	0.43	4.02	(1.29)	1.43	-0.27	ns	0.25
TSI – Anger/Irritability scale												
Pre	51.00	(9.26)					61.16	(8.79)				
Post	51.90	(7.49)	5.60	-0.90	ns	0.05	59.58	(11.35)	5.60	-1.58	ns	0.12
STAXI-II Angry Reaction scale												
Pre	43.81	(8.10)					50.43	(8.96)				
Post	42.95	(8.48)	3.57	-0.86	ns	0.10	47.41*	(9.26)	3.57	-3.02	.015	0.35
STAXI-II Anger Expression – Outward												
Pre	47.24	(10.34)					52.15	(10.93)				
Post	46.57	(8.74)	5.33	-0.67	ns	0.06	51.45	(10.40)	5.33	-0.70	ns	0.06
STAXI-II Anger Expression – Inward												
Pre	51.52	(5.89)					52.98	(9.21)				
Post	49.14	(9.09)	5.87	-2.38	ns	0.23	52.92	(9.86)	5.87	-0.06	ns	0.01
MCMI-III Borderline personality pathology												
Pre	62.05	(23.28)					81.49	(11.72)				
Post	60.33	(29.20)	28.08	-1.72	ns	0.06	77.41	(15.78)	28.08	-4.08	ns	0.29

Note. ***** denotes statistically significant pre-post difference in group mean score

Table 47

Outcomes for participants in Cluster 1 following completion of mindfulness training for the domain of Emotional Dysregulation

	Cluster 1 (*n* = 21) *Dysregulated/more functional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
Depression							
MCMI-III Depression scale	56.90 (23.93)	38.81 (32.49)	24.42	8 (38%)	6 (29%)	-	7 (33%)
DASS Depression scale	0.88 (1.11)	1.15 (1.35)	0.25	5 (24%)	2 (10%)	6 (28%)	8 (38%)
TSI Depression scale	58.05 (13.09)	56.05 (10.18)	5.44	8 (38%)	3 (14%)	4 (20%)	6 (28%)
Anxiety							
MCMI-III Anxiety scale	69.24 (29.01)	61.09 (29.39)	35.71	3 (15%)	7 (33%)	-	11 (52%)
DASS Anxiety	0.65 (0.99)	0.74 (1.04)	0.50	5 (24%)	-	9 (43%)	7 (33%)
TSI Anxious Arousal	55.28 (10.76)	54.57 (8.68)	5.42	8 (38%)	7 (33%)	-	6 (29%)
Anger							
YSQ-S2 Insufficient self control/self discipline	3.28 (1.47)	2.81 (1.47)	1.43	3 (14%)	5 (24%)	11 (52%)	2 (10%)
TSI – Anger/Irritability scale	51.00 (9.26)	51.90 (7.49)	5.60	3 (14%)	5 (24%)	11 (52%)	2 (10%)

Continued overleaf

Table 47 *(Cont'd)*

Outcomes for participants in Cluster 1 following completion of mindfulness training for the domain of Emotional Dysregulation

	Cluster 1 (n = 21) *Dysregulated/more functional self*						
	Baseline score	Post Treatment score		*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	Critical RCI	Recovered	Improved	Unchanged	Deteriorated
Anger *(Cont'd)*							
STAXI-II Angry Reaction scale	43.81 (8.10)	42.95 (8.48)	3.57	7 (33%)	-	6 (29%)	8 (38%)
STAXI-II Anger Expression – Outward	47.24 (10.34)	46.57 (8.74)	5.33	7 (33%)	2 (10%)	4 (19%)	8 (38%)
STAXI-II Anger Expression – Inward	51.52 (5.89)	49.14 (9.09)	5.87	6 (28%)	4 (20%)	6 (28%)	5 (24%)
MCMI-III Borderline personality pathology	62.05 (23.28)	60.33 (29.20)	28.08	3 (14%)	6 (29%)	3 (14%)	9 (43%)

As shown in Tables 46 and 47, individuals in Cluster 1 (*dysregulated/more functional self*) showed clinically significant improvement on only two (MCMI-III Depression and MCMI-III Anxiety) of the 12 scales included in the domain of emotional dysregulation, while individuals in Cluster 2 (*dysregulated/dysfunctional self*) improved on three of these scales (TSI Depression, DASS Anxiety, and STAXI-II Angry Reaction) following completion of the training (see Table 48).

Despite the overall lack of statistical significance in the results, when participants in both clusters were compared on Wise's (2004) extended criteria, the number of individuals in the combined "recovered" and "improved" categories, and the combined "unchanged" and "deteriorated" categories were similar on all scales across both cluster groups.

Table 48

Outcomes for participants in Cluster 2 following completion of mindfulness training for the domain of Emotional Dysregulation

	Cluster 2 (*n* = 51) *Dysregulated/dysfunctional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
Depression							
MCMI-III Depression scale	81.50 (18.64)	75.43 (23.25)	23.42	13 (25%)	14 (28%)	4 (8%)	20 (39%)
DASS Depression scale	2.93 (1.17)	2.82 (1.36)	0.25	18 (36%)	-	14 (27%)	19 (37%)
TSI Depression scale	70.94 (5.95)	67.51 (9.04)	5.44	21 (41%)	11 (22%)	3 (6%)	16 (31%)
Anxiety							
MCMI-III Anxiety scale	89.86 (10.48)	87.76 (14.51)	35.71	1 (2%)	29 (57%)	4 (8%)	17 (33%)
DASS Anxiety	3.01 (1.15)	2.61 (1.50)	0.50	18 (35%)	4 (9%)	15 (29%)	14 (27%)
TSI Anxious Arousal	66.06 (5.60)	63.06 (11.86)	5.42	22 (43%)	7 (14%)	1 (2%)	21 (41%)
Anger							
YSQ-S2 Insufficient self control/self discipline	4.29 (1.17)	4.02 (1.29)	1.43	7 (14%)	15 (29%)	18 (35%)	11 (22%)
TSI – Anger/Irritability scale	61.16 (8.79)	59.58 (11.35)	5.60	24 (47%)	4 (8%)	3 (6%)	20 (39%)

Continued overleaf

Table 48 *(Cont'd)*

Outcomes for participants in Cluster 2 following completion of mindfulness training for the domain of Emotional Dysregulation

	Cluster 2 (n = 51) *Dysregulated/dysfunctional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
Anger *(Cont'd)*							
STAXI-II Angry Reaction scale	50.53 (8.96)	47.41 (9.26)	3.57	25 (49%)	5 (10%)	4 (8%)	17 (33%)
STAXI-II Anger Expression – Outward	52.15 (10.93)	51.45 (10.40)	5.33	16 (31%)	11 (22%)	1 (2%)	23 (45%)
STAXI-II Anger Expression – Inward	52.98 (9.21)	52.92 (9.86)	5.87	17 (33%)	7 (14%)	4 (8%)	23 (45%)
MCMI-III Borderline personality pathology	81.49 (11.72)	77.41 (15.78)	28.08	2 (4%)	31 (61%)	3 (6%)	15 (29%)

Interpersonal dysregulation

Scales chosen to measure functioning in this domain relate to the typical difficulties reported by individuals with BPD in the context of interpersonal relationships. These include distrust of others together with the expectation of being abandoned, used or abused by others, and a tendency to subjugate individual needs to avoid this possibility. Results of the analyses relating to the clinical significance of results for the domain of interpersonal dysregulation for both clusters, together with the indices of clinical change (RCI's), are shown in Table 49. The number and percentages of participants within each cluster classified using Wise's (2004) extended criteria definitions for change are displayed in Tables 50 and 51.

Statistically significant decreases in mean scores occurred in individuals in Cluster 2 at post treatment on the YSQ-S2 schema scales measuring the tendency to mistrust others and have expectations of being abused by others in some way (YSQ-S2 Mistrust/Abuse); and on the scale measuring the individual's tendency to subjugate their own needs to ensure those of others are met to avoid rejection or abandonment (Subjugation). These changes were statistically significant for individuals in Cluster 2 on these two schemas, but overall generally not clinically significant.

However, investigation of the proportion of participants within each cluster who met Wise's (2004) extended definition for change revealed that similar percentages of individuals in Cluster 1 fell into the combined "recovered" or "improved" category as fell into the combined "unchanged" and "deteriorated" category, except for the scores on the YSQ-S2 Mistrust/Abuse schema. A similar picture was observed within individuals in Cluster 2. Overall, approximately the same proportions of individuals fell into the "unchanged" or "deteriorated" criteria in each cluster.

Table 49

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness completion for the domain of Interpersonal Dysregulation

	Cluster 1 (*n*=21)						**Cluster 2** (*n*=51)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
YSQ-S2 – Abandonment												
Pre	3.14	(1.80)					4.37	(1.37)				
Post	2.71	(1.49)	1.05	-0.43	ns	0.21	4.08	(1.41)	1.05	-0.29	ns	0.23
YSQ S2 – Mistrust/abuse												
Pre	1.90	(0.83)					3.63	(1.50)				
Post	1.81	(0.93)	0.90	-0.11	ns	0.07	3.15*****	(1.53)	0.90	-0.48	.020	0.33
YSQ S2 – Subjugation												
Pre	2.67	(1.02)					4.18	(1.13)				
Post	2.43	(1.03)	1.03	-0.24	ns	0.22	3.49*****	(1.35)	1.03	-0.69	.000	0.65

Table 50

Outcomes for participants in Cluster 1 following completion of mindfulness training for the domain of Interpersonal Dysregulation

	Cluster 1 (*n* = 21) *Dysregulated/more functional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
YSQ-S2 – Abandonment	3.14 (1.80)	2.71 (1.49)	1.05	1 (5%)	10 (48%)	7 (33%)	3 (14%)
YSQ S2 – Mistrust/abuse	1.90 (0.83)	1.81 (0.93)	0.90	7 (33%)	-	9 (43%)	5 (24%)
YSQ S2 – Subjugation	2.6 (1.02)	2.43 (1.03)	1.03	1 (5%)	6 (29%)	11 (52%)	3 (14%)

Table 51

Outcomes for participants in Cluster 2 following completion of mindfulness training for the domain of Interpersonal Dysregulation

	Cluster 2 (n = 51) *Dysregulated/dysfunctional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
YSQ-S2 – Abandonment	4.37 (1.37)	4.08 (1.41)	1.05	7 (14%)	9 (18%)	24 (47%)	11 (21%)
YSQ S2 – Mistrust/abuse	3.63 (1.50)	3.15***** (1.53)	0.90	23 (45%)	-	17 (33%)	12 (22%)
YSQ S2 – Subjugation	4.18 (1.13)	3.49***** (1.35)	1.03	13 (25%)	14 (28%)	16 (31%)	8 (16%)

Behavioural dysregulation

Behaviours such as suicide threats and parasuicidal behaviours, and the often self-damaging behaviours of alcohol and drug abuse, are conceptualised within this domain of functioning. The scales included here measure these and other similar behaviours.

Results of the analyses relating to the clinical significance of results for the domain of behavioural dysregulation for individuals in both clusters, together with the indices of clinical change (RCI's), are shown in Table 52. The number and percentages of participants within each cluster classified using Wise's (2004) extended criteria definitions for change are displayed in Tables 53 and 54.

The decrease observed in mean scores on the TSI Tension Reduction Behaviour scale for individuals in both Cluster 1 and Cluster 2 was clinically significant, indicating that a meaningful change had occurred. However, no other statistically or clinically significant changes in mean scores occurred.

Overall, mean scores on each measure had decreased slightly at the end of the intervention for individuals in Cluster 1 indicating a slight improvement. However, for individuals in Cluster 2 mean scores on the alcohol and drug dependence scales had increased slightly at the end of the intervention. The change in mean scores on the mean scores on the MCMI-III Drug Dependence scale for individuals in Cluster 2 was statistically significant, but not clinically significant for the group as a whole. However, on the TSI Tension Reduction Behaviour scale, a clinicially significant change in mean scores occurred in individuals in Cluster 2.

As shown by the data presented in Tables 53 and 54, individuals in both Cluster 1 and Cluster 2 exhibited a variable response to the mindfulness intervention on the scales included in this domain. A proportion of individuals' mean scores improved considerably within both Clusters, particularly on the TSI Tension Reduction Behaviour Scale. However, in contrast, a significant proportion of individuals in both groups appear to have deteriorated in the area of alcohol and drug abuse. However, given the large amount of variability in scores on these scales, it is salient to note that changes of this magnitude may not represent behavioural changes in participants.

Table 52

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness completion for the domain of Behavioural Dysregulation

	Cluster 1 (*n*=21)						**Cluster 2** (*n*=51)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
MCMI-III Alcohol Dependence												
Pre	60.76	(12.95)					64.25	(12.52)				
Post	59.81	(16.25)	30.42	-0.95	ns	0.08	65.31	(14.47)	30.42	+1.06	ns	0.09
MCMI-III Drug Dependence												
Pre	56.14	(25.51)					57.80	(15.93)				
Post	54.48	(25.10)	30.24	-1.66	ns	0.08	61.14	(15.60)	30.24	+3.34	ns	0.15
TSI – Tension Reduction Behaviour Scale												
Pre	53.05	(13.21)					72.41	(12.55)				
Post	48.67	(13.89)	3.81	-4.38	cs	0.26	64.67*****	(16.49)	3.81	-7.74	cs/.002	0.45

Note. ***** denotes statistically significant pre-post difference in group mean score
cs = clinically significant change

Table 53

Outcomes for participants in Cluster 1 following completion of mindfulness training for the domain of Behavioural Dysregulation

	Cluster 1 (n = 21) *Dysregulated/more functional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
MCMI-III Alcohol Dependence	60.76 (12.95)	59.81 (16.25)	30.42	1 (5%)	8 (38%)	3 (14%)	9 (43%)
MCMI-III Drug Dependence	56.14 (25.51)	54.48 (25.10)	30.24	3 (14%)	5 (24%)	3 (14%)	10 (48%)
TSI – Tension Reduction Behaviour Scale	53.05 (13.21)	48.67 (13.89)	3.81	10 (48%)	2 (9%)	7 (34%)	2 (9%)

Table 54

Outcomes for participants in Cluster 2 following completion of mindfulness training for the domain of Behavioural Dysregulation

	Cluster 2 (*n* = 51) *Dysregulated/dysfunctional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
MCMI-III Alcohol Dependence	64.25 (12.52)	65.31 (14.47)	30.42	1 (2%)	22 (44%)	3 (7%)	24 (47%)
MCMI-III Drug Dependence	57.80 (15.93)	61.14 (15.60)	30.24	1 (2%)	23 (45%)	6 (12%)	21 (41%)
TSI – Tension Reduction Behaviour Scale	72.41 (12.55)	64.67 (16.49)	3.81	30 (59%)	5 (10%)	6 (11%)	10 (20%)

Cognitive dysregulation

Scales chosen for inclusion in this domain measure the transient psychotic symptoms of thought disorder and delusions often reported by individuals with BPD. In addition, scales measuring dissociative experiences (TSI Dissociation) and the ability to focus and maintain attention (MAAS) which would be expected to reduce the frequency of these dissociative experiences are also included.

The results of the analyses of the clinical significance of results (Wise, 2004) are shown in Tables 55, 56 and 57 below. Although there was a statistically significant pre-post treatment positive change in group means in the areas of delusional thinking patterns (MCMI-III Delusional Disorder) in individuals in Cluster 2, there was no change in mean scores on this scale for individuals in Cluster 1. However, the observed change on this scale within inidividuals in Cluster 2 was not clinically significant. Mean scores on the scale measuring the ability to focus attention in the present without judgement (MAAS) increased for both groups, indicating a positive change had occurred. Analyses showed that the change was clinically significant for both clusters and statistically significant with a medium effect size, for individuals in Cluster 2.

Results of comparisons) in this domain are similar to those observed in other domains, with a number of participants moving into the “recovered” and “improved” categories, whilst a minority remained “unchanged”, and some individuals in each cluster reported some deterioration or worsening of symptoms on each scale.

Table 55

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness completion for the domain of Cognitive Dysregulation

Measure	**Cluster 1** (n=21) *M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	**Cluster 2** (n=51) *M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
MCMI-III Thought Disorder scale												
Pre	71.13	(10.71)					26.40	(23.11)				
Post	68.22	(12.00)	24.33	-2.91	ns	0.21	9.40	(4.50)	24.33	-17.00	ns	0.30
MCMI-III Delusional Disorder scale												
Pre	25.67	(27.90)					60.11	(24.26)				
Post	24.28	(24.57)	39.82	-1.39	ns	0.45	49.85*****	(31.57)	39.82	-10.26	.021	0.30
TSI – Dissociation scale												
Pre	52.71	(10.54)					71.43	(10.14)				
Post	51.47	(8.62)	4.62	-1.24	ns	0.09	68.80	(11.62)	4.62	-2.63	ns	0.20
Mindful Attention Awareness Scale												
Pre	53.71	(12.39)					39.94	(9.49)				
Post	57.95	(13.45)	1.24	+4.24	cs	0.38	45.23*****	(11.24)	1.24	+5.29	cs/.001	0.48

Note. ***** denotes statistically significant pre-post difference in group mean score
cs = clinically significant change

Table 56

Outcomes for participants in Cluster 1 following completion of mindfulness training for the domain of Cognitive Dysregulation

	Cluster 1 (*n* = 21) *Dysregulated/more functional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
MCMI-III Thought Disorder scale	71.13 (10.71)	68.22 (12.00)	24.33	3 (14%)	6 (29%)	2 (9%)	10 (48%)
MCMI-III Delusional Disorder scale	25.67 (27.90)	24.28 (24.57)	39.82	8 (38%)	6 (29%)	-	7 (33%)
TSI – Dissociation scale	52.71 (10.54)	51.47 (8.62)	4.62	8 (38%)	5 (24%)	1 (5%)	7 (33%)
Mindful Attention Awareness Scale	53.71(12.39)	57.95 (13.45)	1.24	12 (57%)	1 (5%)	1 (5%)	7 (33%)

Table 57

Outcomes for participants in Cluster 2 following completion of mindfulness training for the domain of Cognitive Dysregulation

	Cluster 2 (*n* = 51) *Dysregulated/dysfunctional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
MCMI-III Thought Disorder scale	26.40 (23.11)	9.40 (4.50)	24.33	5 (10%)	23 (45%)	3 (6%)	20 (39%)
MCMI-III Delusional Disorder scale	60.11 (24.26)	49.85 (31.57)	39.82	3 (14%)	2 (10%)	8 (38%)	8 (38%)
TSI – Dissociation scale	71.43 (10.14)	68.80 (11.62)	4.62	27 (53%)	5 (10%)	3 (6%)	16 (31%)
Mindful Attention Awareness Scale	39.94 (9.49)	45.23 (11.24)	1.24	34 (67%)	4 (8%)	1 (2%)	12 (23%)

Self dysregulation domain

Chronic feelings of emptiness, low self-esteem, an unstable sense of self and poor self image are central to this domain of dysregulation in individuals with BPD. Together with chronic negative affect and affective instability, these feelings may also contribute to suicidal and parasuicidal behaviours and other impulsive behaviours such as promiscuity. Scales included in this domain are designed to measure aspects of the individual's sense of self, as well as overall self esteem.

Results of analyses relating to the clinical significance of results for the domain of self dysregulation for both clusters are shown in Tables 58, 59 and 60 below. Whilst mean scores tended to change in a positive direction for individuals in Cluster 1, these changes were minor and not clinically or statistically significant. Similar changes were observed in the mean scores for individuals in Cluster 2, with some of these being statistically significant (YSQ-S2 Enmeshment; Defectiveness/Shame; TSI Impaired Self Reference). However, none of the observed changes were clinically significant.

Tables 59 and 60 show that within Cluster 1, the majority of participants were categorised as "unchanged" using Wise's (2004) extended criteria on the YSQ-S2 schema scales. In contrast, the majority were categorised as "recovered" and "improved" on the TSI Impaired Self Reference scale. A similar situation was observed for scores on the Coopersmith SEI; however, participants were more evenly divided between a combination of the "recovered" and "improved" categories, and the "unchanged" and "deteriorated" categories.

A similar pattern occurred within individuals in Cluster 2, with a relatively even number of individuals falling into a combination of the "recovered"and "improved" categories and a combination of the "unchanged" and "deteriorated" categories on the three YSQ-S2 scales. On the TSI Impaired Self Reference scale, the analyses showed that participants were divided almost equally between the combination of the "recovered" and "improved" categories and the "deteriorated" category. None remained "unchanged". For the Coopersmith SEI-A, the total number of participants in the combination of the "unchanged" and "deteriorated" categories was slightly more than the number of participants in the combination of the "recovered" and "unchanged" category.

Table 58

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness completion for the domain of Self Dysregulation

	Cluster 1 (*n*=21)						**Cluster 2** (*n*=51)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
YSQ-S2 – Enmeshment												
Pre	2.19	(1.50)					2.94	(1.46)				
Post	2.28	(1.35)	0.88	+0.09	ns	0.08	2.39*	(1.51)	0.88	-0.55	.002	0.46
YSQ-S2 – Defectiveness/shame												
Pre	2.81	(1.75)					4.61	(1.22)				
Post	2.76	(1.58)	0.96	-0.05	ns	0.03	3.86*	(1.62)	0.96	-0.75	.001	0.47
YSQ-S2 – Social Isolation												
Pre	2.81	(1.66)					4.69	(1.29)				
Post	2.81	(1.60)	1.08	0.00	ns	< 0.01	4.14*	(1.43)	1.08	-0.55	.013	0.36
TSI – Impaired self reference												
Pre	56.33	(9.89)					71.14	(6.70)				
Post	53.43	(6.50	5.64	-2.90	ns	0.26	67.21*	(11.03)	5.64	-3.93	.015	0.35
Coopersmith Self Esteem Inventory												
Pre	38.62	(19.86)					23.96	(13.47)				
Post	44.05	(21.52)	24.78	+10.43	ns	0.21	26.45	(15.81)	24.78	+2.49	ns	0.19

Note. ***** denotes statistically significant pre-post difference in group mean score

Table 59

Outcomes for participants in Cluster 1 following completion of mindfulness training for the domain of Self Dysregulation

	Cluster 1 (*n* = 21) *Dysregulated/more functional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M* *(SD)*	*M* *(SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
YSQ-S2 – Enmeshment	2.19 (1.50)	2.28 (1.35)	0.88	4 (19%)	-	12 (57%)	5 (24%)
YSQ-S2 – Defectiveness/shame	2.81 (1.75)	2.76 (1.58)	0.96	6 (28%)	-	10 (48%)	5 (24%)
YSQ-S2 – Social Isolation	2.81 (1.66)	2.81 (1.60)	1.08	1 (5%)	4 (19%)	12 (57%)	4 (19%)
TSI – Impaired self reference	56.33 (9.89)	53.43 (6.50	5.64	10 (48%)	2 (10%)	3 (14%)	6 (28%)
Coopersmith Self Esteem Inventory	38.62 (19.86)	44.05 (21.52)	24.78	1 (5%)	10 (48%)	1 (5%)	9 (42%)

Table 60

Outcomes for participants in Cluster 2 following completion of mindfulness training for the domain of Self Dysregulation

	Cluster 2 (*n* = 51) *Dysregulated/dysfunctional self*						
	Baseline score	Post Treatment score	Critical	*Number of participants*			
Outcome measure	*M* *(SD)*	*M* *(SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
YSQ-S2 – Enmeshment	2.94 (1.46)	2.39 (1.51)	0.88	23 (45%)	-	21 (41%)	7 (14%)
YSQ-S2 – Defectiveness/shame	4.61 (1.22)	3.86 (1.62)	0.96	24 (47%)	-	17 (33%)	10 (20%)
YSQ-S2 – Social Isolation	4.69 (1.29)	4.14 (1.43)	1.08	11 (22%)	13 (25%)	16 (31%)	11 (22%)
TSI – Impaired self reference	71.14 (6.70)	67.21 (11.03)	5.64	27 (53%)	7 (14%)	-	17 (33%)
Coopersmith Self Esteem Inventory	23.96 (13.47)	26.45 (15.81)	24.78	4 (8%)	19 (37%)	7 (14%)	21 (41%)

Discussion

Although most of the existing studies in this area, including this one, have some methodological limitations, mindfulness training has been shown to be beneficial in improving the symptoms associated with several disorders, including chronic pain and other physical difficulties, and anxiety, eating disorders and depression (Baer, 2003, 2006). The current results with respect to the utility of mindfulness as a thereapeutic intervention for BPD are consistent with this body of research outcomes. However, a variable response to the training was observed between individuals in the two previously identified clusters in each domain of dysregulation.

Overall, in all domains of dysregulation, individuals in Cluster 2 appear to have improved to a greater extent than individuals in Cluster 1. Many of these observed changes in mean scores on some measures of dysregulation for individuals in Cluster 2, were clinically significant when compared against Jacobson et al.'s (1991) Criteria 3 (scores moving from the dysfunctional to the functional normative range). When individuals were grouped in terms of Wise's (2004) extended criteria, there was a relatively even division of individuals between the combined "recovered" and "improved" categories, and the combined "unchanged" and "deteriorated"categories across both cluster groups in most domains of dysregulation.

Together, these findings indicate that individuals with a higher level of symptomatology, at least as measured by the self-report measures included in this study, derived more benefit from the mindfulness intervention than did those with less severe symptomatology. The fact that few of the participants in either cluster met Wise's (2004) criteria for "recovery" (passed both clinically significant normative and reliable change index criteria) is not particularly surprising, as BPD is a chronic condition with persistent symptomatology. It is therefore unlikely that an intervention of only eight weeks duration would lead to recovery in this population. However, the fact that some individuals, albeit a minority of those in either category across all domains, did report improved symptomatology to the extent that they could be categorised as "recovered" is encouraging. In addition, the fact that there were any clinically significant improvements in symptoms (at least as measured by these

instruments), particularly within individuals in Cluster 2 (the more severely unwell), is important to note.

It is also important to note that some individuals remained "unchanged" or even "deteriorated" during this intervention. Remaining unchanged is perhaps not surprising given that most participants' difficulties were of a long standing nature, however, that some participants report a worsening in symptoms, or deteriorated, is concerning. The reasons for this may be that individuals symptomatology genuinely worsened, or alternatively, that these individuals reported their level of symptomatology more truthfully following mindfulness training, as a consequence of becoming more aware of the nature of their thoughts and emotions following the training.

The lack of clinically significant change in schemas in both groups of individuals is not unexpected, given that schemas are conceptualised as being longstanding in nature and are relatively stable over time, even when they are directly targeted by intervention (e.g., cognitive therapy) for change. However, the fact that there were some positive changes in mean scores in individuals in both clusters is noteworthy, and supports the importance of addressing cognitions, directly and indirectly, in treatment for BPD.

Since the impact of mindfulness alone has not previously been assessed in participants with BPD, these results cannot be directly compared with previous studies (e.g., Koons et al., 2001; Bohus et al., 2004; Nesci et al., 2009), however, a finding of reported improvements in symptom measures, particularly in those with more severe symptomatology, after such a brief intervention are encouraging. It is also important to note that although not all changes in mean scores met criteria for clinically significant improvement, most changed in a positive direction over the course of the intervention.

Participation in the eight week mindfulness programme undertaken in this research appears to have led to reported improvements in overall symptoms on measures of psychological functioning, particularly in more severely unwell participants, with an associated reported decrease in psychological distress. This may have resulted from the development of the participants' ability to alter their perception of their thoughts and feelings from one where these thoughts and feelings were considered to be an accurate representation of "reality" and therefore innately "true", to a position where participants were able to be more detached observers of these

experiences, and as a consequence become less judgemental and more accepting of them as relatively transient phenomena which do not necessarily have to be acted on. In other words, it is likely that these participants changed the relationship they had with their negative thoughts and feelings to one which was more accepting of them as transient and more bearable phenomena. This acceptance of thoughts and feelings as being relatively transient phenomena without making judgements about them could have resulted in both decreased individual psychological dysregulation and distress (as measured on these scales), and could potentially lead to the individual developing the ability to delay impulsive reactions or behaviours in response to the experiences.

Segal et al. (2000) hypothesised that depressive cognitions in those with chronic depressive illnesses could be triggered by slight negative changes in mood, which is then compounded by the activation of these depressive cognitions and schemas. It may be that the reverse phenomenon occurs in that a slight improvement in mood decreases the extent and influence of the negative cognitions and schemas present in an individual's psyche. Such a mechanism could assist in understanding the changes in schemas found amongst participants in these groups. That is, this change in the extent to which these schemas were held as "true" could have been decreased by the improvements in mood reported, and the distancing from negative thoughts and feelings resulting from participation in mindfulness training.

Development of mindfulness skills may also assist in early recognition of a potential problem area, which allows for more effective behaviours to be utilised, and encourages recognition of the consequences of the various options for action to be considered (Linehan, 1993b), rather than the individual making global judgements about the limitations of the self.

Alternatively, as Baer (2003; 2006) notes, several proponents of mindfulness as a clinical intervention suggest that the act of allowing unpleasant thoughts, feelings or bodily sensations to occur can function as a type of exposure. Thus repeated exposure reduces the reaction to these sensations over time, and the individual spends less time trying to avoid or change them. From this perspective, mindfulness epitomises the core concept of DBT, that of acceptance of "what is" whilst working constructively to improve the future (Linehan, 1993b). A study by Len and Wicker (2007) supports the notion that suppression of unpleasant or unwanted thoughts increases their frequency and intensity, whilst exposure to them has a positive effect. Further information regarding the impact of thought suppression is provided in a

study by Rosenthal, Cheavens, Lejuez, and Lynch (2005). In this study it was found that the relationship between negative affective reactivity and intensity and BPD symptoms was mediated by thought suppression. These authors suggested that the chronic efforts to suppress unpleasant thoughts made by those with BPD, function as an attempt at a negative affect regulation strategy. However, the impact of this thought suppression is to increase, rather than reduce, negative affect intensity, therefore, learning to tolerate rather than suppress unpleasant mental events may have had the effect of reducing negative affect in these participants.

Overall, the findings of this study show that the TMC mindfulness intervention, which was designed to teach the individual to tolerate and accept unpleasant or negative thoughts and emotions, rather than suppress them, has been effective in reducing signs and symptoms of psychological distress for participants in the initial eight week intervention. Thus, these results offer further evidence in support of the therapeutic efficacy of mindfulness training.

The clinical significance of the treatment outcomes for individuals who went on to complete the remaining DBT modules following mindfulness training is discussed in the following chapter.

Chapter 13

Clinical Significance and DBT

In the previous chapter, the concept of clinical significance was introduced and an examination undertaken of the the extent to which mindfulness training alone resulted in clinically signigicant reductions in the sypmptom profiles of individuals in each of the subtypes of BPD indentified in this thesis. The results of that investigation showed that participant response to mindfulness treatment varied between individuals in the two clusters. Overall, there were clinically significant improvements in the symptomatologies of participants in both clusters across all domains of functioning examined, with individuals in Cluster 2 seemingly deriving more benefit from the intervention. When results were further compared against Wise's (2004) extended criteria for "recovery", "improvement", "unchanged", and "deterioration", participants were almost equally divided between a combination of categories in each domain, offering further support for the clinical efficacy of mindfulness training with individuals with a diagnosis of BPD.

The clinical significance of treatment outcomes for individuals within samples with a diagnosis of BPD has previously been investigated utilising Jacobson and Truax's (1991) third criteria (Bohus et al., 2004; Koons et al., 2001) of post treatment scores being placed closer to the mean of the functional population than the mean of the dysfunctional population. Bohus et al. (2004) reported that almost 50% of their DBT group participants showed clinically significant and reliable decreases in symptomatology at the end of the intervention, whilst Koons et al.'s (2001) study reported clinically significant changes in measures of anger, dissociation, depression, and hopelessness following a DBT intervention in the treatment group when compared to the treatment as usual group.

Nesci et al.'s (2009) study also reported a differential response to a residential treatment programme related to cluster membership. Together, these findings suggest that this avenue of research is both clinically and theoretically significant. In the light of this, the current study sought to expand the investigation to establish whether or not treatment response following completion of the remaining DBT modules differed between individuals in the two clusters of participants previously identified in Chapter nine. Specifically, this part of the research programme sought to identify whether or not the changes in mean scores observed on scales in each domain of dysregulation examined, could be considered to be reliably and clinically significantly changed, and further, to investigate whether or not individuals in the two clusters responded differentially to the interventions.

Thus, in this chapter, the clinical significance of the outcomes for the group of participants who completed the remaining DBT modules is examined and discussed.

Method

Participants

Participants were a total of 23individuals who had participated in TMC DBT treatment programmes throughout the duration of this research project. The demographic and clinical characteristics of all participants at time of entry into TMC programmes have been previously discussed in the General Method section in Chapter five. As previously discussed in Chapter nine, participants were divided into two separate clusters of individuals based on their reported level of symptoms. Individuals within the clusters differed in their clinical characteristics in some areas of dysregulation at baseline assessment and were named accordingly, with Cluster 1 being termed *"dysregulated/more functional self"* and Cluster 2 being named *"dysregulated/dysfunctional self"*. Chapter nine presents a full description of the process undertaken to identify individuals within these two clusters, and describes individuals within each cluster in terms of their clinical characteristics. The response to participation in the remaining DBT modules was then considered and compared between individuals within these two clusters (as discussed in Chapter eleven) in terms of statistical significance.

Only those 23 participants for whom a full set of pre and post intervention measure scores were available were included in the current study.

Measures

The measures employed in this section of the study are described in full in Chapter five. No changes were made to the battery of scales in this study.

Procedure

In common with the procedure employed in the analyses for the mindfulness intervention, the alpha coefficient was also used to calculate the RCI to assess clinical significance of the changes observed in the DBT group within each cluster of individuals. The clinical significance and statistical reliability of changes in scores within each domain were then compared against Wise's (2004) extended definitions (*Recovered* - passed RCI and CS criteria; *Improved* – passed RCI criteria alone; *Unchanged/Indeterminate* – passed neither criteria; and *Deteriorated* – passed RCI in a negative direction).

As previously stated, the alpha co-effficients and standard deviations used to calculate the Reliable Change Indices for each scale included in this study were drawn from a variety of sources. For the Trauma Symptom Inventory scales, the STAXI-II scales, the Coopersmith SEI-A and the DASS scales details were obtained from the manual, and the study by Hoffart et al. (2005) provided the data for the YSQ-S2 comparisons. The MCMI-III manual provided the alpha-coefficients for the selected scales in this project, in addition to the study by Blood (2008), utilising the MCMI-III in court-ordered parenting capacity assessments. The data used to calculate the RCI for the MAAS was drawn from the studies by Brown et al. (2003).

For participants in this study, data from all measures within each domain of dysregulation post-completion of the remaining DBT modules after the mindfulness training, were compared against Wise's (2004) extended definitions (*Recovered* - passed RCI and CS criteria; *Improved* – passed RCI criteria alone; *Unchanged/Indeterminate* – passed neither criteria; and *Deteriorated* – passed RCI in a negative direction). The results of these comparisons are discussed by domain in the following section.

Results

Tables 61 to 75 present the results of the analyses of the clinical significance of the results for individuals by cluster membership, following completion of the remaining DBT modules. Clinically significant changes occurred in individuals in both clusters at the end of the DBT intervention period on some scales in most domains. It is worth noting that the changes observed in Cluster 2 individuals across all domains were usually both clinically and statistically significant, and were greater in number than the changes observed in individuals in Cluster 1, indicating that those with higher levels of symptomatology and greater disruption to sense of self derived added benefit from completing the full DBT intervention, rather than by completing mindfulness training alone. These results are discussed by domain of dysregulation and cluster in the following section.

Emotional dysregulation domain

Scales included in this domain measure the extent of the negative affective states, feelings of anxiety, and difficulties with anger expression, commonly reported by individuals with BPD.

Results of the analyses relating to the clinical significance of overall results for the domain of emotional dysregulation for both clusters, together with the indices of clinical change (RCI's) are shown in Table 61. The number and percentages of participants within each cluster classified using Wise's (2004) extended criteria definitions for change are displayed in Tables 62 and 63.

As shown, there were clinically and statistically significant changes in mean scores (primarily for individuals in Cluster 2) with reasonable effect sizes, on almost all the measures included in this domain. Specifically, clinically significant changes occurred for individuals in both clusters on the DASS depression scale, but for individuals in Cluster 2 only on the TSI Depression scale. The changes in means on the DASS Anxiety and TSI Anxious Arousal scales observed in individuals in Cluster 2 were clinically and statistically significant, as were the changes in means on the TSI Anger/Irritability and STAXI-II Angry Reaction, Anger Expression – Outward, and Anger Expression – Inward scales. The decrease in mean score on the MCMI-III Borderline Personality Pathology scale observed in individuals in Cluster 2 was both clinically and statistically significant. For individuals in Cluster 1 however, only the change in mean on the STAXI-II Angry Reaction scale was clinically significant.

These results were then further compared against Wise's (2004) extended definitions to determine the number and proportion of participants who could be categorised within each category. These comparisons revealed that for most of the sub-domains examined, the majority of individuals in Cluster 1 could be classified as falling in the combination "recovered" and "improved" category for the MCMI-III Depression and Anxiety scales, the TSI Depression and Anxious Arousal scales, and the STAXI-II Angry Reaction, Anger Expression – Outward and Anger Expression – Inward scales, with a relatively small number of individuals falling into the "unchanged" and "deteriorated" category on these measures. Numbers were almost equal between the "recovered"/"improved" combination and the "unchanged" category on the YSQ-S2 Insufficient Self Control/Self Discipline schema, with no individuals classified in the "deteriorated" category. However, for the DASS Depression and Anxiety scales, slightly more individuals fell into the "unchanged" and "deteriorated" categories than were able to be categorised into the "recovered" category.

The pattern of positive results was also observed when changes in mean scores for individuals in Cluster 2 were examined (see Table 63). On most scales (MCMI-III Depression and Anxiety scales; TSI Depression, Anxious Arousal, and Anger/Irritability scales; STAXI-II Angry Reaction, Anger Expression – Outward and Anger Expression – Inward scales) within the subdomains, the majority of participants were able to be classified as "recovered" or "improved", with the minority falling into the "unchanged" or "deteriorated" category. However, in common with the results for individuals in Cluster 1, slightly more individuals from Cluster 2 were classified in the "unchanged"/"deteriorated" category on the DASS Depression scale, and on the YSQ-S2 Insufficient Self Control/Self Discipline scales.

When changes on the the MCMI-III Borderline Personality Pathology scale were examined for individuals in Cluster 2, twice the number of individuals could be classified into the "recovered"/"improved" category, than were categorised into the "unchanged"/"deteriorated" category.

Table 61

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness (T2) and post-DBT (T5) for the domain of Emotional Dysregulation

	Cluster 1 (*n*=5)						**Cluster 2** (*n*=18)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
Depression												
MCMI-III Depression scale												
T2	50.00	(41.14)					85.39	(18.11)				
T5	38.00	(29.66)	23.42	-12.00	ns	0.65	63.17*****	(28.25)	23.42	-22.22	.001	1.20
DASS Depression scale												
T2	1.29	(1.59)					3.17	(1.18)				
T5	0.70	(0.92)	0.25	-0.59	cs	0.42	2.04*****	(1.80)	0.25	-1.33	cs/.003	0.80
TSI Depression scale												
T2	55.60	(13.12)					71.17	(7.64)				
T5	52.60	(6.69)	5.44	-3.00	ns	0.28	64.94*****	(12.48)	5.44	-6.23	cs/.025	0.57
Anxiety												
MCMI-III Anxiety scale												
T2	54.00	(36.34)					92.72	(13.81)				
T5	63.60	(34.41)	35.71	+9.60	ns	0.54	81.44	(13.03)	35.71	-11.28	ns	0.63
DASS Anxiety												
T2	1.13	(0.92)					2.78	(1.46)				
T5	0.50	(0.71)	0.50	-0.63	ns	0.49	2.23	(1.55)	0.50	-0.55	cs	0.44
TSI Anxious Arousal												
T2	57.40	(9.84)					67.55	(9.21)				
T5	53.20	(11.26)	5.42	-4.20	ns	0.36	61.61*****	(11.88)	5.42	-5.94	cs/.042	0.51

Continued overleaf

Table 61*(Cont'd)*

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness (T2) and post-DBT (T5) completion for the domain of Emotional Dysregulation

	Cluster 1 (*n*=5)						**Cluster 2** (*n*=18)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
Anger												
YSQ-S2 Insufficient self control/self discipline												
T2	2.60	(1.14)					3.88	(1.37)				
T5	2.20	(1.31)	1.43	-0.40	ns	0.35	3.39	(0.98)	1.43	-0.49	ns	0.43
TSI – Anger/Irritability scale												
T2	52.40	(7.40)					60.39	(13.01)				
T5	51.40	(8.47)	5.60	-1.00	ns	0.13	54.44*****	(11.14	5.60	-5.95	cs/.003	0.78
STAXI-II Angry Reaction scale												
T2	44.80	(9.76)					46.22	(10.40)				
T5	40.40	(7.92)	3.57	-4.40	cs	0.58	41.67*****	(7.19)	3.57	-4.55	cs/.030	0.60
STAXI-II Anger Expression – Outward												
T2	46.00	(10.00)					52.00	(12.65)				
T5	46.40	(6.54)	5.33	+0.40	ns	0.05	46.00*****	(10.36)	5.33	-6.00	cs/.003	0.79
STAXI-II Anger Expression – Inward												
T2	44.00	(7.87)					54.33	(11.50)				
T5	40.40	(2.97)	5.87	-3.60	ns	0.39	46.77	(11.35)	5.87	-7.56	cs/.002	0.82
MCMI-III Borderline personality pathology												
T2	68.20	(40.73)					79.38	(12.85)				
T5	58.80	(32.61)	28.08	-1.72	ns	0.25	65.39*****	(25.75)	28.08	-14.00	cs/.005	0.69

Note. ***** denotes statistically significant pre-post difference in group mean score
cs = clinically significant change

Table 62

Outcomes for participants in Cluster 1 following completion of DBT training for the domain of Emotional Dysregulation

	Cluster 1 (*n* = 5) *Dysregulated/more functional self*						
Outcome measure	Post Mindfulness score *M* *(SD)*	Post DBT score *M* *(SD)*	Critical RCI	*Number of participants* Recovered	Improved	Unchanged	Deteriorated
Depression							
MCMI-III Depression scale	50.00 (41.14)	38.00 (29.66)	23.42	2 (40%)	2 (40%)	-	1 (20%)
DASS Depression scale	1.29 (1.59)	0.70 (0.92)	0.25	1 (20%)	1 (20%)	2 (40%)	1 (20%)
TSI Depression scale	55.60 (13.12)	52.60 (6.69)	5.44	3 (60%)	1 (20%)	-	1 (20%)
Anxiety							
MCMI-III Anxiety scale	54.00 (36.34)	63.60 (34.41)	35.71	-	3 (60%)	-	2 (40%)
DASS Anxiety	1.13 (0.92)	0.50 (0.71)	0.50	1 (20%)	-	3 (60%)	1 (20%)
TSI Anxious Arousal	57.40 (9.84)	53.20 (11.26)	5.42	2 (40%)	2 (40%)	-	1 (20%)

Continued overleaf

Table 62 *(Cont'd)*

Outcomes for participants in Cluster 1 following completion mindfulness and DBT training for the domain of Emotional Dysregulation

	Cluster 1 (n = 5) *Dysregulated/more functional self*								
	Post Mindfulness score		Post DBT score			*Number of participants*			
Outcome measure	*M*	*(SD)*	*M*	*(SD)*	Critical RCI	Recovered	Improved	Unchanged	Deteriorated
Anger									
YSQ-S2 Insufficient self control/self discipline	2.60	(1.14)	2.20	(1.31)	1.43	1 (20%)	1 (20%)	3 (60%)	-
TSI – Anger/Irritability scale	52.40	(7.40)	51.40	(8.47)	5.60	1 (20%)	1 (20%)	-	3 (60%)
STAXI-II Angry Reaction scale	44.80	(9.76)	40.40	(7.92)	3.57	4 (80%)	-	-	1 (20%)
STAXI-II Anger Expression – Outward	46.00	(10.00)	46.40	(6.54)	5.33	1 (20%)	3 (60%)	1 (20%)	-
STAXI-II Anger Expression – Inward	44.00	(7.87)	40.40	(2.97)	5.87	3 (60%)	-	-	2 (40%)
MCMI-III Borderline personality pathology	68.20	(40.73)	58.80	(32.61)	28.08	-	2 (40%)	1 (20%)	2 (40%)

Table 63
Outcomes for participants in Cluster 2 following completion of mindfulness and DBT training for the domain of Emotional Dysregulation

	Cluster 2 (n = 18) *Dysregulated/dysfunctional self*						
	Post Mindfulness score		Post DBT score				
Outcome measure	*M*	*(SD)*	*M*	*(SD)*	Critical RCI	*Number of participants* Recovered	Improved	Unchanged	Deteriorated
Depression									
MCMI-III Depression scale	85.39	(18.11)	63.17	(28.25)	23.42	8 (44%)	3 (17%)	-	7 (39%)
DASS Depression scale	3.17	(1.18)	2.04	(1.80)	0.25	8 (22%)	-	3 (17%)	7 (39%)
TSI Depression scale	71.17	(7.64)	64.94	(12.48)	5.44	8 (44%)	3 (17%)	-	7 (39%)
Anxiety									
MCMI-III Anxiety scale	92.72	(13.81)	81.44	(13.03)	35.71	2 (11%)	9 (50%)	-	7 (39%)
DASS Anxiety	2.78	(1.46)	2.23	(1.55)	0.50	10 (55%)	1 (5%)	2 (12%)	5 (28%)
TSI Anxious Arousal	67.55	(9.21)	61.61	(11.88)	5.42	8 (44%)	2 (11%)	1 (6%)	7 (39%)

Continued overleaf

Table 63*(Cont'd)*

Outcomes for participants in Cluster 2 following completion of mindfulness and DBT training for the domain of Emotional Dysregulation

	Cluster 2 (n = 18) *Dysregulated/dysfunctional self*						
	Post Mindfulness score	Post DBT score		*Number of participants*			
Outcome measure	*M (SD)*	*M (SD)*	Critical RCI	Recovered	Improved	Unchanged	Deteriorated
Anger							
YSQ-S2 Insufficient self control/self discipline	3.88 (1.37)	3.39 (0.98)	1.43	4 (22%)	5 (28%)	6 (33%)	3 (17%)
TSI – Anger/Irritability scale	60.39 (13.01)	54.44 (11.14)	5.60	12 (67%)	-	1 (5%)	5 (28%)
STAXI-II Angry Reaction scale	46.22 (10.40)	41.67 (7.19)	3.57	10 (55%)	1 (5%)	3 (18%)	4 (22%)
STAXI-II Anger Expression – Outward	52.00 (12.65)	46.00 (10.36)	5.33	9 (50%)	4 (22%)	-	5 (28%)
STAXI-II Anger Expression – Inward	54.33 (11.50)	46.77 (11.35)	5.87	9 (50%)	3 (17%)	-	6 (33%)
MCMI-III Borderline personality pathology	79.38 (12.85)	65.39 (25.75)	28.08	4 (23%)	8 (44%)	-	6 (33%)

Interpersonal dysregulation domain

This domain is conceptualised as relating to interpersonal problems such as unstable and conflictual relationships, low levels of social support and efforts to avoid perceived threats of loss, or actual experience of loss.

Results of the analyses relating to the overall clinical significance of results for the domain of interpersonal dysregulation for both clusters, together with the indices of clinical change (RCI's) are shown in Table 64. The number and percentages of participants within each cluster classified using Wise's (2004) extended criteria definitions for change are displayed in Tables 65 and 66.

Only one statistically significant change in mean scores occurred in this domain. For individuals in Cluster 2, the mean score on the YSQ –S2 schema of Subjugation had decreased significantly at the end of the intervention period (see Table 64). However, differences between individuals in each cluster were observed when the results of comparisons against Wise's (2004) extended criteria for clinical significance were examined. No individuals in Cluster 1 could be classified as "recovered" on any schema scale (see Table 65). However, three individuals were able to be classified as "improved" on three separate schema scales (YSQ-S2 Mistrust/Abuse, Abandonment, and Subjugation). Most participants in Cluster 1were classified in the combined "unchanged"/"deteriorated" category on these schema scales.

In contrast, participants in Cluster 2 (see Table 66) were more evenly divided between the combined "recovered"/"improved", "and "unchanged"/"deteriorated" categories on the YSQ-S2 Abandonment and Subjugation schema. However, on the Mistrust/Abuse schema, slightly more participants in Cluster 2 were classified as "unchanged"/"deteriorated" than were classified as "recovered"/"improved".

Table 64

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness (T2) and post-DBT (T5) for the domain of Interpersonal Dysregulation

	Cluster 1 (*n*=5)						**Cluster 2** (*n*=18)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
YSQ-S2 – Abandonment												
T2	2.20	(1.30)					4.22	(1.55)				
T5	2.20	(1.09)	1.05	0.00	ns	<0.01	3.89	(1.74)	1.05	-0.33	ns	0.26
YSQ S2 – Mistrust/abuse												
T2	2.00	(0.71)					3.61	(1.65)				
T5	2.00	(1.00)	0.90	0.00	ns	<0.01	3.67	(1.84)	0.90	+0.06	ns	0.04
YSQ S2 – Subjugation												
T2	2.00	(0.71)					4.05	(1.43)				
T5	2.00	(1.00)	1.03	0.00	ns	<0.01	3.17*****	(1.54)	1.03	-0.88	.014	0.63

Note. ***** denotes statistically significant pre-post difference in group mean score

Table 65

Outcomes for participants in Cluster 1 following completion of mindfulness and DBT training for the domain of Interpersonal Dysregulation

	Cluster 1 (n = 5) *Dysregulated/more functional self*						
	Post Mindfulness score	Post DBT score	Critical	*Number of participants*			
Outcome measure	*M* *(SD)*	*M* *(SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
YSQ-S2 – Abandonment	2.20 (1.30)	2.20 (1.09)	1.05	-	1 (20%)	4 (80%)	-
YSQ S2 – Mistrust/abuse	2.00 (0.71)	2.00 (1.00)	0.90	-	1 (20%)	3 (60%)	1 (20%)
YSQ S2 – Subjugation	2.00 (0.71)	2.00 (1.00)	1.03	-	1 (20%)	3 (60%)	1 (20%)

Table 66

Outcomes for participants in Cluster 2 following completion of mindfulness and DBT training for the domain of Interpersonal Dysregulation

	Cluster 2 (*n* = 18) *Dysregulated/more functional self*						
	Post Mindfulness score	Post DBT score	Critical	*Number of participants*			
Outcome measure	*M* *(SD)*	*M* *(SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
YSQ-S2 – Abandonment	4.22 (1.55)	3.89 (1.74)	1.05	7 (39%)	2 (11%)	4 (22%)	5 (28%)
YSQ S2 – Mistrust/abuse	3.61 (1.65)	3.67 (1.84)	0.90	7 (39%)	-	6 (33%)	5 (28%)
YSQ S2 – Subjugation	4.05 (1.43)	3.17 (1.54)	1.03	7 (39%)	6 (33%)	1 (5%)	4 (23%)

Behavioural dysregulation domain

This domain includes measures designed to assess the degree of alcohol and other drug use employed by the individual in their day to day lives, as well as a measure of unhelpful coping strategies to reduce negative affect or internal tension. Individuals with BPD frequently report experiencing difficulties in regulating all of these behaviours.

In the domain of behavioural dysregulation (see Table 67), minor and non-significant changes occurred in mean scores on the MCMI-III Alcohol Dependence scale for individuals in both clusters. However, a statistically significant change occurred in mean scores on the MCMI-III Drug Dependence scale for individuals in Cluster 2, although this change was not clinically significant. In contrast, on the TSI Tension Reduction Behaviour scale, a clinicially significant (but not statistically significant) positive change in mean scores occurred in individuals in Cluster 2.

Results of the analyses relating to the clinical significance of results in this domain for both clusters, together with the indices of clinical change (RCI's) are shown in Table 67. The number and percentages of participants within each cluster classified using Wise's (2004) extended criteria definitions for change are displayed in Tables 68 and 69.

The results of these comparisons show that for individuals in Cluster 1, the number of individuals falling into each category on the MCMI-III Alcohol Dependence scale, and the TSI Tension Reduction Behaviour scale was fairly evenly spread across the four categories. However, for the MCMI-III Drug Dependence scale, slightly more individuals were classified as "deteriorated" than classified as "improved". No individuals were classified as "recovered" or "unchanged".

A similar result was observed for individuals in Cluster 2 (see Table 69). The number of individuals in the combined "deteriorated"/"unchanged" category was slightly more than the number classified in the "recovered" and "improved" categories on the MCMI-III Alcohol Dependence Scale. In terms of the MCMI-III Drug Dependence scale, slightly more individuals in Cluster 2 could be classified as "recovered" or "improved" than were classified in the "deteriorated" category. However, when the results of the changes on the TSI Tension Reduction Behaviour scale were examined, the majority of individuals in Cluster 2 were classified as "recovered" or "improved", with a minority classified in the "deteriorated" category.

Table 67

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness (T2) and post-DBT (T5) for the domain of Behavioural Dysregulation

	Cluster 1 (*n*=5)						**Cluster 2** (*n*=18)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
MCMI-III Alcohol Dependence												
T2	57.80	(18.82)					66.89	(12.46)				
T5	56.60	(18.17)	30.42	-1.20	ns	0.06	59.33	(18.15)	30.42	-7.56	ns	0.39
MCMI-III Drug Dependence												
T2	52.40	(26.03)					61.39	(17.64)				
T5	58.20	(31.81)	30.24	+5.80	ns	0.28	49.72*****	(20.19)	30.24	-11.67	.014	0.44
TSI – Tension Reduction Behaviour Scale												
T2	48.20	(7.15)					65.89	(17.29)				
T5	51.20	(5.54)	3.81	+3.00	ns	0.16	57.61	(12.33)	3.81	-8.28	cs	0.43

Note. ***** denotes statistically significant pre-post difference in group mean score
cs = clinically significant change

Table 68

Outcomes for participants in Cluster 1 following completion of mindfulness and DBT training for the domain of Behavioural Dysregulation

	Cluster 1 (n = 5) *Dysregulated/more functional self*							
	Post Mindfulness score		Post DBT score		Critical	*Number of participants*			
Outcome measure	*M*	*(SD)*	*M*	*(SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
MCMI-III Alcohol Dependence	57.80	(18.82)	56.60	(18.17)	30.42	1 (20%)	1 (20%)	1 (20%)	2 (40%)
MCMI-III Drug Dependence	52.40	(26.03)	58.20	(31.81)	30.24	-	2 (40%)	-	3 (60%)
TSI – Tension Reduction Behaviour Scale	48.20	(7.15)	51.20	(5.54)	3.81	1 (20%)	1 (20%)	1 (20%)	2 (40%)

Table 69

Outcomes for participants in Cluster 2 following completion of mindfulness and DBT training for the domain of Behavioural Dysregulation

	Cluster 2 (*n* = 18) *Dysregulated/more functional self*						
	Post Mindfulness score	Post DBT score		*Number of participants*			
Outcome measure	*M* *(SD)*	*M* *(SD)*	Critical RCI	Recovered	Improved	Unchanged	Deteriorated
MCMI-III Alcohol Dependence	66.89 (12.46)	59.33 (18.15)	30.42	4 (22%)	4 (22%)	1 (6%)	9 (50%)
MCMI-III Drug Dependence	61.39 (17.64)	49.72 (20.19)	30.24	6 (33%)	5 (28%)	-	7 (39%)
TSI – Tension Reduction Behaviour Scale	65.89 (17.29)	57.61 (12.33)	3.81	11 (61%)	3 (17%)	-	4 (22%)

Cognitive dysregulation domain

Dichotomous and rigid thinking, and cognitive disturbances, such as transient psychotic symptoms are conceptualised within this domain of functioning. Results of the analyses relating to the clinical significance of results for the domain of cognitive dysregulation for both clusters, together with the indices of clinical change (RCI's) are shown in Table 70. The number and percentages of participants within each cluster classified using Wise's (2004) extended criteria definitions for change are displayed in Tables 71 and 72.

As shown, whilst mean scores tended to change in a positive direction for individuals in Cluster 1, these changes were minor and not clinically or statistically significant on two measures (MCMI-III Thought Disorder and Delusional Disorder scales). In contrast, the changes on the TSI Dissociation scale and the MAAS were both clinically significant.

Similar results were observed in the changes in mean scores for individuals in Cluster 2, with three of these being statistically significant (MCMI-III Thought Disorder scale; TSI Dissociation; MAAS), with medium to large effect sizes. The changes on the TSI Dissociation scale and the MAAS were also clinically significant.

Examinations of the results against the extended criteria (Wise, 2004) for individuals in Cluster 1 (see Table 71), showed that whilst almost fifty percent of these participants fell into the "improved" category on the MCMI-III Thought Disorder scale, the majority fell into the "unchanged" or "deteriorated" classifications. On the MCMI-III Delusional Disorder, a majority of these participants fell into the "recovered"/"improved" categories, with two falling into the "deteriorated" category. On the TSI Dissociation scale, most Cluster 1participants fell into the "recovered" or "improved" category, with only one participant being categorised into the "deteriorated" category. For the MAAS, all participants fell into the "recovered" category.

For participants in Cluster 2 (see Table 72), similar results were obtained for the MCMI-III Thought Disorder and Delusional Disorder scales as were observed in individuals in Cluster 1with slightly more of these participants falling into the "recovered"/"improved" category than into the "deteriorated" group on both MCMI-III scales. In contrast, the majority of Cluster 2 participants were classified as "recovered" or "improved" on the TSI Dissociation scale, with most also being

classified as “recovered” on the MAAS. A very small number of individuals fell into the “deteriorated” category on both of these scales.

Table 70

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness (T2) and post-DBT (T5) for the domain of Cognitive Dysregulation

	Cluster 1 (*n*=5)						**Cluster 2** (*n*=18)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
MCMI-III Thought Disorder scale												
T2	47.60	(24.14)					75.00	(10.14)				
T5	49.20	(41.14)	24.33	+2.40	ns	0.09	65.83*****	(18.11)	24.33	-9.17	.031	0.54
MCMI-III Delusional Disorder scale												
T2	42.00	(25.52)					62.17	(30.15)				
T5	36.40	(20.91)	39.82	-5.60	ns	0.23	52.50	(21.86)	39.82	-9.67	ns	0.40
TSI – Dissociation scale												
T2	55.00	(8.36)					74.00	(11.92)				
T5	48.60	(4.50)	4.62	-6.40	cs	0.57	61.55*****	(11.62)	4.62	-12.45	cs/.000	1.10
Mindful Attention Awareness Scale												
T2	63.80	(13.49)					45.83	(8.99)				
T5	65.20	(12.19)	1.24	+1.40	cs	0.14	54.05*****	(10.82)	1.24	+8.22	cs/.002	0.84

Note. ***** denotes statistically significant pre-post difference in group mean score
cs = clinically significant change

Table 71

Outcomes for participants in Cluster 1 following completion of mindfulness and DBT training for the domain of Cognitive Dysregulation

	Cluster 1 (n = 5) *Dysregulated/more functional self*								
	Post Mindfulness score		Post DBT score			*Number of participants*			
Outcome measure	*M*	*(SD)*	*M*	*(SD)*	Critical RCI	Recovered	Improved	Unchanged	Deteriorated
MCMI-III Thought Disorder scale	47.60	(24.14)	49.20	(41.14)	24.33	-	2 (40%)	2 (40%)	1 (20%)
MCMI-III Delusional Disorder scale	42.00	(25.52)	36.40	(20.91)	39.82	1 (20%)	2 (40%)	-	2 (40%)
TSI – Dissociation scale	55.00	(8.36)	48.60	(4.50)	4.62	3 (60%)	1 (20%)	-	1 (20%)
Mindful Attention Awareness Scale	63.80	(13.49)	65.20	(12.19)	1.24	5 (100%)	-	-	-

Table 72

Outcomes for participants in Cluster 2 following completion of mindfulness and DBT training for the domain of Cognitive Dysregulation

	Cluster 2 (*n* = 18) *Dysregulated/more functional self*							
	Post Mindfulness score		Post DBT score		Critical	*Number of participants*			
Outcome measure	*M*	*(SD)*	*M*	*(SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
MCMI-III Thought Disorder scale	75.00	(10.14)	65.83	(18.11)	24.33	4 (22%)	7 (39%)	-	7 (39%)
MCMI-III Delusional Disorder scale	62.17	(30.15)	52.50	(21.86)	39.82	2 (12%)	8 (44%)	-	8 (44%)
TSI – Dissociation scale	74.00	(11.92)	61.55	(11.62)	4.62	11 (61%)	4 (22%)	-	3 (17%)
Mindful Attention Awareness Scale	45.83	(8.99)	54.05	(10.82)	1.24	16 (89%)	-	-	2 (11%)

Self dysregulation domain

An unstable sense of self and poor self image, together with low self-esteem and chronic feelings of emptiness, are central to this domain. When coupled with ongoing and chronic negative affect and affective instability, dysregulation in this domain may also contribute to suicidal and parasuicidal behaviour, and other impulsive behaviours such as promiscuity and excessive substance use.

Results of the analyses relating to the clinical significance of results for this domain of dysregulation for both clusters, together with the indices of clinical change (RCI's) are shown in Table 73. The number and percentages of participants within each cluster classified using Wise's (2004) extended criteria definitions for change are displayed in Tables 74 and 75.

There was no significant clinical change for individuals in either cluster on the YSQ-S2 Enmeshment and Social Isolation schemas. A clinically and statistically significant change in mean scores on the YSQ-S2 Defectiveness/Shame schema occurred for individuals in Cluster 1 only, although the mean score on this scale also decreased for individuals in Cluster 2. The reverse finding occurred on the TSI Impaired Self Reference scale where individuals in Cluster 2 showed a statistically and clinically significant decrease in mean scores with a large effect size. For the Coopersmith SEI-A, there was no clinically or statistically significant change for individuals in either cluster.

A mixed picture emerged when comparisons against extended criteria were made (Wise, 2004). For individuals in Cluster 1 (see Table 74), most participants fell into the "unchanged" or "deteriorated" category on the YSQ-S2 Enmeshment, Defectiveness/shame and Social Isolation schema. A single participant fell into the "recovered" category on the Enmeshment schema, whilst another single individual fell into the "improved" category on each of the remaining YSQ-S2 schemas. On the TSI Impaired Self Reference scale, Cluster 1 participants were almost evenly divided between the "recovered" and "deteriorated" category.

In contrast, for participants in Cluster 2 (see Table 75), a majority fell into the "recovered" category on the YSW-S2 Enmeshment and Defectiveness/Shame schemas, with the remaining individuals categorised as "unchanged" or "deteriorated". A similar result was observed on the TSI Impaired Self Reference scale, where most participants fell into the "recovered" or "improved" category. The

Cluster 2 individuals were more evenly divided between categories on the YSQ-S2 Social Isolation schema and the Coopersmith SEI-A. Numbers of these participants in the "recovered" and "improved" category were equal to the total numbers in the "unchanged" and "deteriorated" category on the YSQ-S2 Social Isolation schema, whilst a slight majority fell into the "recovered" and "improved" catgegories, rather than the "unchanged" and "deteriorated" categories on the Coopersmith SEI-A.

Table 73

Results of analyses of Clinical Significance for Individuals in Cluster 1 & Cluster 2 post-Mindfulness (T2) and post-DBT (T5) for the domain of Self Dysregulation

	Cluster 1 (*n*=5)						**Cluster 2** (*n*=18)					
Measure	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*	*M*	*(SD)*	Critical RCI	Obtained RCI	*p*	*d*
YSQ-S2 – Enmeshment												
T2	2.20	(1.30)					2.44	(1.58)				
T5	1.80	(0.84)	0.88	-0.40	ns	0.35	2.05	(1.21)	0.88	-0.39	ns	0.34
YSQ-S2 – Defectiveness/shame												
T2	2.60	(1.34)					4.17	(1.69)				
T5	1.60*****	(0.89)	0.96	-1.00	.024/cs	0.69	3.33	(1.85)	0.96	-0.84	ns	0.57
YSQ-S2 – Social Isolation												
T2	2.01	(1.22)					4.28	(1.49)				
T5	2.00	(1.00)	1.08	- 0.00	ns	<0.01	4.00	(1.19)	1.08	-0.28	ns	0.15
TSI – Impaired self reference												
T2	54.40	(7.83)					71.22	(7.85)				
T5	53.60	(7.02)	5.64	-0.80	ns	0.09	62.89*****	(13.92)	5.64	-8.33	cs/.001	0.91
Coopersmith Self Esteem Inventory												
T2	48.20	(24.98)					27.33	(17.26)				
T5	62.40	(15.19)	24.78	+14.20	ns	0.76	34.67	(18.89)	24.78	+7.34	ns	0.39

Note. ***** denotes statistically significant pre-post difference in group mean score
cs = clinically significant change

Table 74

Outcomes for participants in Cluster 1 following completion of mindfulness and DBT training for the domain of Self Dysregulation

	Cluster 1 (*n* = 5) *Dysregulated/more functional self*						
	Post Mindfulness score	Post DBT score	Critical	*Number of participants*			
Outcome measure	*M* *(SD)*	*M* *(SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
YSQ-S2 – Enmeshment	2.20 (1.30)	1.80 (0.84)	0.88	1 (20%)	2 (40%)	2 (40%)	-
YSQ-S2 – Defectiveness/shame	2.60 (1.34)	1.60 (0.89)	0.96	-	1 (20%)	4 (80%)	-
YSQ-S2 – Social Isolation	2.01 (1.22)	2.00 (1.00)	1.08	-	1 (20%)	3 (60%)	1 (20%)
TSI – Impaired self reference	54.40 (7.83)	53.60 (7.02)	5.64	3 (60%)	-	-	2 (40%)
Coopersmith Self Esteem Inventory	48.20 (24.98)	62.40 (15.19)	24.78	-	1 (20%)	-	4 (80%)

Table 75

Outcomes for participants in Cluster 2 following completion of mindfulness and DBT training for the domain of Self Dysregulation

	Cluster 2 (n = 18) *Dysregulated/more functional self*							
	Post Mindfulness score		Post DBT score		Critical	*Number of participants*			
Outcome measure	*M*	*(SD)*	*M*	*(SD)*	RCI	Recovered	Improved	Unchanged	Deteriorated
YSQ-S2 – Enmeshment	2.44	(1.58)	2.05	(1.21)	0.88	11 (61%)	-	2 (11%)	5 (28%)
YSQ-S2 – Defectiveness/shame	4.17	(1.69)	3.33	(1.85)	0.96	12 (66%)	-	3 (17%)	3 (17%)
YSQ-S2 – Social Isolation	4.28	(1.49)	4.00	(1.19)	1.08	4 (22%)	5 (28%)	5 (28%)	4 (22%)
TSI – Impaired self reference	71.22	(7.85)	62.89	(13.92)	5.64	10 (55%)	3 (17%)	-	5 (28%)
Coopersmith Self Esteem Inventory	27.33	(17.26)	34.67	(18.89)	24.78	4 (22%)	7 (39%)	3 (17%)	4 (22%)

Discussion

The aim of this study was to investigate the clinical significance of changes in mean scores on the standardised measures employed in this research programme, following completion of the complete series of DBT techniques training modules as developed by Linehan (1993). Results of analyses showed that individuals in Cluster 2 showed clinically significant improvement on most scales in each domain of dysregulation investigated. In contrast, whilst individuals in Cluster 1 also improved, they showed fewer clinically significant changes on the measures in some domains.

In the domain of emotional dysregulation, clinically significant improvements occurred in individuals in both clusters on most scales measuring depression, anxiety and anger. Importantly, following completion of DBT training, overall borderline pathology (as measured by the MCMI-III Borderline Personality Pathology scale) improved significantly more in Cluster 2 individuals than in individuals in Cluster 1. Individuals in Cluster 2 were also more likely to have experienced clinically significant change in the domain of interpersonal dysregulation, whilst little change for individuals in either Cluster occurred in the area of behavioural dysregulation. In the area of cognitive dysregulation, although mean scores for individuals in Cluster 1 changed in a positive direction, these changes were minor and not clinically significant on the measures of alcohol and other drug use included in this domain. In contrast, individuals in Cluster 2 improved significantly on the scale measuring drug use. Further, individuals in Cluster 2 also showed clinically significant improvements in the area of inappropriate tension reduction behaviours (e.g., inappropriate sexual behaviours; impulsive self harm behaviours). For individuals in both clusters, clinically significant changes occurred in the domain of cognitive dysregulation, particularly on measures of dissociation and ability to focus attention and awareness in the present. Further positive change occurred in the area of self dysregulation, with individuals in Cluster 2 showing significant improvement in the area of self identity and awareness.

The results obtained in this study provide support to previous findings (e.g., Bohus et al., 2004; Brassington & Krawitz, 2006; Koerner & Dimeff, 2000; Koons et al., 2001; 2001; Kroger et al., 2006; Linehan, 1993; Prendergast & McCausland, 2007; Miller, Rathus, Linehan, Wetzler, & Leigh, 1997; Robins, 2002; Simpson et al., 1998; Swales, Heard, & Williams, 2000; Williams et al., 2010) related to the efficacy

of DBT training in assisting those with a diagnosis of BPD reduce their level of dysregulation in each of the domains of dysregulation postulated by Linehan (1993).

In addition, in common with investigations into the clinical significance of changes in participants reported in previous studies (e.g., Bohus, et al., 2004; Koons et al., 2001; Nesci et al., 2009) and the clinical significance of observed changes, a variable response was observed when individuals in Cluster 1 and Cluster 2 were compared in each domain of dysregulation investigated. This investigation revealed that Cluster 2 participants in this study improved to a greater degree in more areas, than did individuals in Cluster 1.

This part of the research demonstrated that both the severely unwell and less severely unwell individuals participating in TMC DBT programme derived benefit from participation in the entire DBT programme. Although there were improvements in individuals in both clusters following completion of the mindfulness module, a greater number of improvements were observed in both groups of participants at the end of the full DBT programme. Some of the observed changes were both clinically significant (Wise, 2004) and often statistically significant with medium to large effect sizes, and participants improved on several measures across all domains of dysregulation investigated.

Overall, the findings of the analyses of clinical significance conducted at the completion of the remainder of the DBT modules show that individuals in both clusters of participants benefitted from the interventions, but to different degrees as differences between treat responses in individuals in the two clusters occurred. This finding indicates that treatment response varied according to cluster membership and length and type of intervention and provides support for the concept of tailoring treatment to differing subtypes of individuals with BPD symptoms (e.g., Digre et al., 2009; Nesci et al., 2009) to maximise treatment efficacy.

The overall aim of the full DBT programme at TMC is to assist participants to better manage their lives on a day-to-day basis by establishing skills in cognitive, emotional, interpersonal and self-regulation to assist in reducing and managing crises in these areas of functioning. Based on the current results it appears that this aim was achieved since the participants in this study, particularly those with more severe symptoms (Cluser 2), continued to improve in clinically significant ways in all domains of functioning assessed, after completing the mindfulness intervention.

Following completion of the initial mindfulness module, all of the more severely ill individuals in Cluster 2 went on to participate in the remaining DBT modules. Clinically significant improvements in the symptom profiles of these individuals were found across this intervention period. Such an outcome is consistent with Linehan's (1993) argument that it is the DBT intervention as a whole that has maximum benefit for severely ill individuals. It is particularly important to note that the largest number of changes following DBT training occurred in the group with more severe symptomatology, a finding that can engender optimism in clinicians working with severely ill individuals in numerous settings and employing DBT interventions.

The final chapter summarises the overall findings of the research programme discussed in this thesis.

Chapter 14

General conclusion and future directions

BPD symptoms are often regarded by therapists as challenging and difficult to treat due to the chronic difficulties and unpredictable behaviours often observed in individuals with this diagnosis. In addition, families and partners often struggle to cope with the behavioural and emotional symptoms displayed by individuals with BPD (Krawitz & Watson, 2000).

The causes of BPD remain unknown, but research has highlighted the importance of physical and environmental factors, such as differences in brain functioning between individuals with BPD symptoms and those without such symptoms, found in neuroimaging studies (e.g., Ajamieh, & Ansseau, 2006). Environmentally oriented theorists highlight the importance of early attachment experiences and family functioning during the individual's early years (e.g., Bandelow et al., 2005), in combination with genetic and temperamental factors.

The differences in theoretical causal and treatment orientation amongst psychotherapists has led to the development of both psychodynamically oriented and cognitively based psychotherapies, with varying levels of treatment success being reported. Cognitive therapies have received considerable attention more recently, in particular Linehan's (1993a) seminal work in DBT treatment of parasuicidal and suicidal behaviours in those with BPD symptoms. Other cognitive therapists have also offered assistance to therapists (e.g., Beck et al., 2004; Bloo et al., 2006; Young et al., 2003) in addressing symptom levels in sufferers, and considerable success in treatment has been reported. The eight studies reported in this thesis add further to the body of knowledge relating to the efficacy of the Eastern, cognitively and behaviourally based therapies of mindfulness training and DBT interventions for BPD symptoms.

Differential responses to treatment programmes have been observed across studies as a consequence of the heterogeneity of symptoms present in this disorder, leading researchers to investigate the existence of subtypes of individuals with BPD to assist with developing targeted treatments (e.g., Bohus et al., 2004; Digre & Reece, 2009; Nesci et al., 2009). Some success has been reported in this area, and the research described in this thesis extends the research in this area of BPD subtypes and differential treatment response.

Since BPD is a heterogeneous disorder, Linehan (1993a) rearranged the diagnostic criteria for the disorder into domains of dysregulation (emotional; behavioural; interpersonal; cognitive; and self), and developed a coherent treatment approach designed to address symptoms in each area of dysregulation. This thesis investigated the efficacy of both mindfulness and DBT skills training for groups of participants in a private hospital day patient programme. Overall, the results of this research programme support the efficacy of mindfulness training alone as an effective treatment for BPD symptoms, at least in the shorter term. The results also support Linehan's (1993) hypothesis that participation in the full DBT intervention leads to greater gains. However, the more severely unwell individuals in this group of participants seemed to benefit from the full DBT programme to a greater degree than did the less unwell individuals. The present research programme also supports the notion that the treatment responses of individuals presenting with different symptom profiles are likely to vary significantly. Overall summaries of the findings of each section of this research programme follow.

Response to mindfulness training

Mindfulness training (an eight week "stand-alone" programme at TMC) resulted in positive changes in mean scores on a number of the objective psychometric measures included in this programme. These positive changes after training occurred in all of the areas of BPD dysregulation hypothesised by Linehan (1993a), and appear to be quite robust as some of the gains were maintained for up to six months after completion of the initial training for a number of participants.

Following mindfulness training, participants reported improvements in symptomatology such as positive changes in reported levels of depression and anxiety, and decreases in angry reactions and expressions of anger. Reported level of ability to tolerate frustration and exercise self control to achieve personal goals was

also reported to be improved. It is worth noting that these changes also included positive changes in mean scores on the MCMI-III scale measuring borderline pathology.

In addition, participants reported decreased levels of tension reduction behaviours such as self-harm, often utilised to soothe negative internal states; however, little change was reported in participants' use of alcohol and illicit drugs to soothe these negative emotional states.

Positive changes also occurred in the area of interpersonal functioning with participants reporting being less likely to meet others' needs at the expense of their own at the end of the intervention period. Further positive changes were reported in the areas of fear of abandonment by others and expectations of abuse from others, suggesting that participants were likely to experience improved interpersonal relationships as a result of these positive changes.

Significant changes occurred in participants' ability to focus their attention on their actions in the present without judgements or intense reactions to their thoughts, rather than experiencing dissociative or dream like states during everyday tasks or events. In addition, reported symptoms of dissociation also decreased. Thus, mindfulness training enabled participants to reduce the impact of their negative thoughts and emotions on their behaviour, and assisted them to achieve improved concentration and attention, and experience a decreased number of dissociative experiences. Participants' sense of self identity and self esteem was also reported to have changed in a positive direction following the training.

Overall, completion of the eight week mindfulness training programme led to some statistically and clinically significant reported improvements in participants' general psychological functioning, with an associated reported decrease in symptoms of psychological distress. As mentioned previously, a particularly noteworthy finding is that at six-month follow-up of a small group of these participants (who were on a waiting-list for entry to a DBT treatment group to complete the remaining three modules of skills training), indicated that these gains in functioning were maintained in a number of individuals over this time period.

Response to DBT training

In terms of the results of the investigation into the efficacy of TMC DBT programme, the findings of this thesis support the findings of previous research (e.g.,

Brassington & Krawitz, 2006; Koerner & Dimeff, 2000; Koons et al., 2001; Kroger et al., 2006; Linehan, 1993; Prendergast & McCausland, 2007; Robins, 2002; Miller, Rathus, Linehan, Wetzler & Leigh, 1997; Simpson et al., 1998; Swales, Heard, & Williams, 2000; Williams et al., 2010).

Participants reported statistically and clinically significant improvements in the ability to control anger and negative mood states such as anxiety and depression, following completion of DBT training. Self-reported inappropriate tension reduction behaviours (such as use of alcohol and drugs, and self harm) utilised to regulate affect were also reported as having decreased throughout the intervention, together with a reported decrease in borderline personality pathology. These reported changes are consistent with changes in other measures of affect dysregulation reported by previous studies (e.g., Brassington & Krawitz, 2006).

DBT training also resulted in reported sustained improvements in the ability to focus attention in the present moment and as a consequence, presumably assisted to decrease participants' focus on unhelpful thoughts and emotions, allowing the influence of these thoughts and feelings on functioning to decrease.

Consistent with the reported changes in symptomatology in the domain of dysregulation of self previously reported at completion of mindfulness training, significant improvements were reported to have occurred on some of the scales measuring dysfunctional-self schemas included this domain. This suggests that the continuing practice of mindfulness techniques throughout DBT skills training modules may enhance the changes in the relationship between an individual's schema and their belief in the accuracy of those schemas, and lead to reductions in negative affect, even though these schemas are not directly addressed in Stage one of DBT.

Participant self-esteem was also reported to have improved. This finding is noteworthy since dysregulation of the sense of self and self-identity is fundamental to the BPD experience. It is possible that changes such as these may eventually lead to reductions in the severity of core BPD features such as negative interpersonal relationships and affective instability, similar to those reported by Stepp et al. (2008).

Participants' reported levels of satisfaction with both the mindfulness training and the DBT programme were consistently high. In particular, overall ratings of satisfaction with the programmes and their outcome improved throughout the time of the intervention, suggesting that these individuals perceived that they experienced "real world" benefits from their involvement. The high levels of acceptability of this

treatment approach and the positive changes reported by partipants at the completion of the training support the use of these interventions with this patient population.

Subtypes of BPD

Other researchers have suggested the existence of sub-types of individuals with BPD to help explain differential treatment responses observed in other treatment outcome studies (e.g., Bradley et al., 2005; Koons et al. 2001; Linehan, 1993; Digre & Reece, 2009; Nesci et al., 2009). In this research programme, two stable groups (clusters) of individuals who shared characteristics consistent with the subtypes proposed by other researchers (e.g., Bradley, Conklin, & Westen et al., 2005; Grinkler, 1968; Layden et al., 1993; Millon et al., 2000; Nesci et al., 2009; Westen & Shedler, 1999; Whewell, et al., 2000) in terms of reported symptoms of affective, cognitive and self dysregulation, were identified.

Whilst individuals in both Clusters reported emotional and affective dysregulation such as labile mood, depression and anxiety, and anger/irritability, they differed in the degree of dysfunction reported. Cluster 2 individuals reported significantly more depressive experiences and symptoms than those included in Cluster 1, and also reported significantly higher levels of anxiety symptoms and psychological and physiological arousal. Individuals in Cluster 2 were more likely to experience difficulty in controlling angry feelings and reactions, in addition to reporting more difficulty in controlling impulsive behaviours and excessive expressions of emotion, than individuals in Cluster 1.

In other domains of dysregulation, individuals in Cluster 2 were more likely to experience difficulties in impulse control and cognitive functioning, and reported significantly lower levels of self-esteem than did individuals in Cluster 1. Individuals in Cluster 2 were also more likely to express negative internal states in self destructive or aggressive behaviours than individuals in Cluster 1. Overall, Cluster 2 individuals were more dysregulated across all the domains of dysregulation hypothesised by Linehan (1993). The terms “dysregulated/defective self” was generated to describe individuals in Cluster 2 and individuals in Cluster 1 were described by the term “dysregulated/more functional self”.

The findings of this research programme add weight to the suggestion that the domain of dysphoria/emotional dysregulation is a stable domain of functioning within which to identify subtypes of BPD (Westen and Shedler (1999). Since membership of

clusters remained unchanged throughout both the mindfulness and DBT interventions, the stability of this distinction is further supported. In this research programme, individuals maintained the stability of their cluster membership throughout both interventions, further indicating that this is a robust finding of difference between participants in this research programme. Moreover, differential responses to the interventions were observed between individuals in these clusters.

Differential treatment response between clusters

Mindfulness

Overall, in all domains of dysregulation, individuals in Cluster 2 appear to have improved to a greater extent than individuals in Cluster 1following mindfulness training. These changes were clinically significant (Jacobson & Truax, 1991) on several measures of dysregulation for individuals in Cluster 2. When treatment response between clusters was compared, and participants were grouped in terms of Wise's (2004) extended criteria, there was a relatively even division of individuals between the combined "recovered" and "improved" categories, and the combined "unchanged" and "deteriorated"categories across both groups in most domains of dysregulation.

These findings suggest that individuals with a higher level of symptomatology (as measured by the self-report measures included in this research programme), derived more benefit from the mindfulness intervention in some domains of dysregulation than did those with less severe symptomatology. Since BPD is a chronic condition with persistent symptomatology, the fact that few of the participants in either cluster met Wise's (2004) criteria for "recovery" is not particularly surprising as it is unlikely that an intervention of only eight weeks duration would lead to recovery in individuals with this type of chronic symptomatology. However, the finding that some (albeit the minority) individuals reported improved symptomatology in some areas of dysregulation, to the extent that they could be categorised as "recovered" is encouraging. It is also important to note that the more serverely symptomatic individuals (those in Cluster 2) reported clinically significant improvements in symptoms, a finding which supports the continued use of mindfulness training as an effective intervention for indivduals with BPD symptoms.

The reasons for the deterioration reported by some individuals are unknown, but it may be that levels of symptomatology were more truthfully reported following

mindfulness training, as individuals became more aware of the nature of their thoughts and emotions following the training. However, it is also important to note that the means on most measures changed in a positive direction over the course of the intervention, although not all these changes met criteria for clinically significant improvement.

Overall, participation in the eight week mindfulness programme investigated in this thesis, led to reported improvements in symptoms on measures of psychological functioning, particularly in more severely unwell participants, with an associated reported decrease in psychological distress. It is possible that this reported improvement resulted from a change in the relationship participants had with their negative thoughts and feelings to one which was more accepting of them as transient and more bearable phenomena. This acceptance of thoughts and feelings as being relatively transient phenomena is likely to result in both decreased individual psychological dysregulation and distress, and an increased or further developed ability to resist or delay impulsive reactions or behaviours in response to the thoughts.

DBT

This part of the research demonstrated that both the severely unwell and less severely unwell individuals derived benefit from their participation in the entire TMC DBT programme. Although there were improvements in individuals in both clusters following completion of the mindfulness module, a greater number of improvements were observed in both groups of participants at the end of the full DBT programme. Some of the observed changes were both clinically significant (Jacobson et al., 1991; Wise, 2004) and often statistically significant with medium to large effect sizes, and participants improved on several measures across all domains of dysregulation investigated.

The results of the analyses of the clinical significance of reported changes in all domains of dysfunction at the completion of the remainder of the DBT modules, demonstrate that individuals in both clusters of participants benefitted from the interventions. However, there were differences in treatment response between individuals in the identified clusters. Treatment response varied according to cluster membership and length and type of intervention and this finding provides support for the concept of tailoring treatment to differing subtypes of individuals with BPD symptoms (e.g., Digre et al., 2009; Nesci et al., 2009) to maximise treatment efficacy. In this research programme, participants reporting more severe symptoms derived

further significant benefits from completing the remaining DBT training modules, while those with less severe symptoms derived fewer benefits. All of the individuals in Cluster 2 (more severely ill) participated in the remaining modules of DBT training, and continued to improve in clinically significant ways across the second intervention period. The improvements in all domains of functioning reported by these individuals following the mindfulness intervention continued and expanded further throughout the DBT intervention. Thus Linehan's (1993) argument that it is the DBT intervention as a whole that has maximum benefit is supported, at least for the more severely ill individuals in this research programme.

Clinical implications

The results observed across this series of eight studies have several implications for clinical practice and clinical training programmes. Treatment effects may be further enhanced by including individuals with similar symptom profiles in the group component of the DBT treatment intervention programmes. Individual practitioners may benefit from specifically targeting the length and components of treatment when dealing with more severely unwell individuals, since it is likely that these individuals will benefit more from participating in treatment with duration of at least 12 months. Unfortunately, this finding does not fit well within current service provision preferences in public settings, where throughput (as quickly as possible) of those with mental health difficulties is emphasised. For the most severely unwell individuals, this is less than ideal since they derived most benefit from the full 12 month DBT treatment intervention.

However, mindfulness training as a "stand-alone" intervention proved beneficial for both clusters of individuals with BPD in this research, and the gains made were maintained across a six month period for some individuals, with little, if any, significant negative change. This suggests that for less severely unwell individuals, mindfulness training alone may be sufficient to engender considerable improvement in symptomatology, and thus reduce dysfunction in daily life. For the more severely ill, mindfulness may be an effective way of reducing self reported symptoms of depression, anxiety and anger, at least for a six month period. It may be possible to fit recurrent episodes of mindfulness training for those with mental health problems, into the current models of service provision in Australia.

Current therapists and practitioners in training would benefit from training in mindfulness skills, possibly included in post-graduate clinical training, since the evidence base for this as an effective intervention for many disorders is expanding. It is therefore likely that many individuals, who present for treatment for a multiplicity of difficulties in many treasatment settings, would benefit from training in these skills in terms of reduced feelings of depression and anxiety. Since most participants in these research studies reported a history of traumatic experiences, inclusion of training in this area would also be helpful. This training could include knowledge of the impact of trauma on individual functioning, as well as effective treatment interventions.

Further research

Despite the acknowledged methodological limitations, this research programme adds to the body of support for both mindfulness and DBT training as effective treatments for BPD symptoms. The results also point to the utility of the concept of subtypes of individuals diagnosed with the heterogeneous cluster of diagnostic criteria that represents BPD. Further research to expand the notion of subtypes of individuals with BPD, and related treatment responses, would assist in developing treatments specifically designed to treat particular sub-types of participants.

In addition, longer term follow up of the effect of mindfulness training on individuals diagnosed with BPD, who are considered amongst the most difficult clients to treat, may assist in providing and developing cost effective short-term interventions with relatively lasting effects. Such interventions may be most suitable as a stand-alone intervention for those individuals with lower intensity of BPD symptoms, as well as those with other psychological disorders.

The inclusion of measures of post-intervention observed behavioural change obtained from significant others in the participants' lives would be a valuable extension in future studies, and would assist in assessing the "real-life" impact of changes in symptoms reported by participants following treatment. Inspection of differences in number and length of psychiatric unit admissions prior to intervention, and post-completion of treatment would also be useful, as would similar comparisons in the area of self-harm acts.

In terms of assessment of treatment efficacy, these findings suggest that wide ranging assessments will assist in determining whether or not positive change in symptom level has occurred. It is clear that the domain of emotional dysregulation is particularly important to assess, along with measures of dissociation and the ability to focus attention and awareness in the present moment (cognitive dysregulation). The observed changes in schemas (traditionally viewed as relatively treatment resistant) despite the lack of specific attention directed to interventions in this area in a 12 month Stage one DBT programme, suggests that measures of this domain of cognitive functioning, particularly in the area of the individual's post-treatment relationship with their thoughts, should also be included in assessment of treatment efficacy. This finding also adds support to cognitive theorists' conceptualisation of the importance of core beliefs or schemas in the development and treatment of BPD (Beck et al., 2004; Young et al., 2003)

Methodological limitations

It is acknowledged that the studies within this research programme are limited by the lack of random assignment to a control or alternative treatment group. Unfortunately, the ideal of a randomly controlled trial of an intervention is often unachievable in a clinical treatment programme situation, particularly in a private treatment setting. Participants in this series of studies reported high levels of symptoms such as negative affect and anger, and psychological distress at initial assessment, and many of them had been struggling with their difficulties for extended periods of time. Consequently, the improvements participants reported at the end of the interventions are likely to be clinically, even if not always statistically, significant, and provide support for the efficacy of participation in both mindfulness and DBT skills training programmes in reducing symptoms of psychological distress in indivdiuals with BPD.

However, these participants may not be representative of the general population of BPD sufferers overall, and the lack of a control group and random allocation to treatment groups leads to a need for caution in the interpretation of these results. However, despite these limitations, the fact that participants improved on objective measures of psychological difficulties over the course of these interventions supports the continued use of this treatment approach. Despite the significant benefits

of the mindfulness intervention alone observed in the initial part of this project, the finding that participants continued to report improvements throughout the remaining DBT training, suggests that there is additional benefit to be gained from participation in the full 12 month programme.

It is also possible that the high levels of satisfaction with the programme and the therapists overall, as well as non-specific factors involved in belonging to a psychotherapy group, contributed to the improvement in functioning reported by the participants, despite the finding of lack of statistical relationship to the positive changes reported in symptom levels. Certainly, the reported levels of satisfication suggest that the therapeutic milieu at TMC was very positive, and this may have artificially inflated the improvements reported. However, the fact that the rate of participant non-completion in the studies in this research programme was comparable to that reported in other studies, mitigates against this as a major influence in the positive results obtained.

Conclusions

The results of this series of eight studies investigating the treatment outcomes of eight weeks of "stand alone" mindfulness training and a 12 month DBT training programme are positive, and add to the body of evidence supporting the existence of effective short and long term treatments for those with BPD symptoms. Mindfulness training in particular seems to be particularly effective in reducing self-reported symptoms of depression, anxiety and anger in individuals of varying levels of symptomatology. Increased use of this intervention could be expanded within the current model of clinical training and service provision in Australia to increase the efficacy of time-limited treatment of psychological difficulties.The existence of sub-types of individuals with BPD symptoms seems to be a robust finding across studies, and this could assist in enhancing treatment outcomes by enabling a focus on particular areas of difficulty within individuals presenting for treatment, rather than adopting a "one size fits all" approach to treatment. It is also possible that sub-types of individuals with other psychological disorders could be identified, thereby enabling treatment outcomes to be enhanced by specifically targeting particular areas of difficulties. Individuals within the two different clusters identified in this research reported differing levels of belief in common schemas, and responded differently following treatment, thereby emphasising the importance of considering particular

types of cognitions in treatment of individuals with BPD. Taken together, the results of this series of studies add to the body of evidence relating to assessment and treatment of the complex and heterogeneous disorder known as BPD.

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