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The relationship between autobiographical memory and Borderline Personality Disorder.

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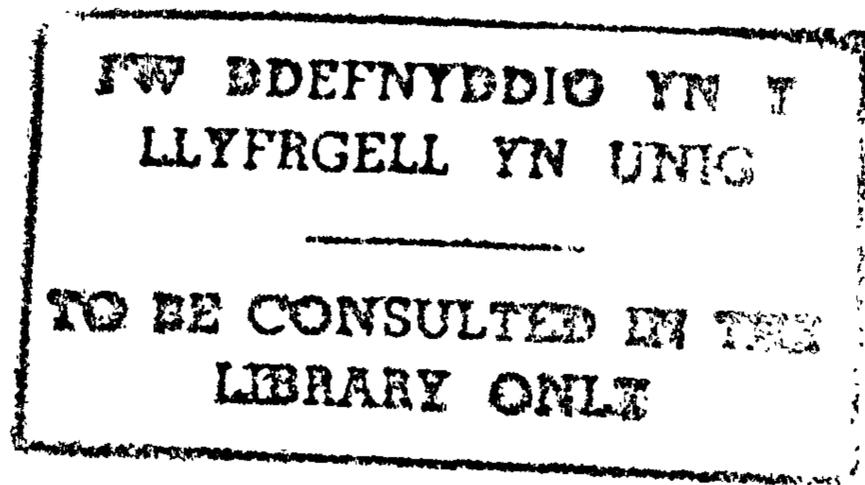
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The Relationship Between Autobiographical Memory and Borderline Personality Disorder.

Bethan Amanda Jones

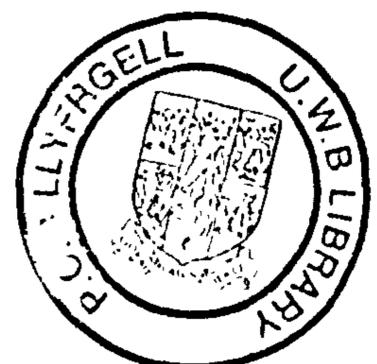
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SUMMARY

Previous research has shown that people who are depressed, have recently attempted suicide or experienced childhood sexual abuse have difficulties recalling specific autobiographical events from memory. This overgeneral memory bias has been found for both negative and positive events and has been found to be a maladaptive cognitive style.

The present study is an investigation of autobiographical memory retrieval in people diagnosed with Borderline Personality Disorder, a disorder which has para-suicidal behaviour as one of its diagnostic criterion. The BPD group (n = 23) was compared with a control group (n = 23) on i) a measure for autobiographical memory retrieval, ii) various measures of mood, iii) a dissociative experiences scale and iv) frequency of para-suicidal incidents.

In line with hypotheses, results indicated that the subject group produced significantly more overgeneral autobiographical memories than the control group. This memory bias remained for positive and negative events when depression was statistically controlled. No differences were found between the two groups on autobiographical memory for neutral events when depression was statistically controlled.

Analysis indicated that dissociation positively correlated with overgeneral autobiographical memory and that both depression and anxiety correlated with self-harm. A trend was also found between overgeneral autobiographical memory and self-harm, suggesting that overgeneral memory may function as a defence mechanism, protecting individuals from self-harming behaviour.

These results are discussed in relation to the current theories of autobiographical memory and the nature of dissociation in memory disturbance. The importance of assessing Axis I disorders and targeting of mood in clinical practice, to decrease self-harm, is highlighted. The study also highlights the heterogeneous nature of Borderline Personality Disorder. The implications for clinical practice are discussed and guidelines for further research are outlined.

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INTRODUCTION

Autobiographical Memory

The present study focuses on the area of autobiographical memory. Previous research has noted that when attempting to recall specific memories of past events, depressed clients and parasuicidal clients retrieve overgeneral autobiographical memories. This study is an investigation of this memory bias in one client group which has chronic depression and parasuicidal behaviour as diagnostic criteria, that being Borderline Personality Disorder (BPD).

Autobiographical memory is the capacity to remember personal events that have occurred. This has been an attractive area of investigation for cognitive researchers as it encompasses areas relating to memory processes, the self, emotions and personal meanings. It is also an area which can be effectively investigated using current research methods (Conway & Rubin, 1993; Conway, Rubin, Spinnler & Wagenarr, 1992). The investigation of autobiographical memory in psychopathology is not new. Freud theorised that childhood emotional (traumatic) memories were repressed from consciousness as a protection from the exposure of the memory, with other non-traumatic memories acting as a protective 'screen' (Brown & Pedder, 1991).

Earlier studies found evidence that people who had attempted suicide produced more overgeneral memories than controls on an autobiographical memory task (Williams & Broadbent, 1986). Using the Autobiographical Memory Test (Robinson, 1976), a word-cueing paradigm in which subjects are given cue words and are instructed to recall specific past events associated with that word, it was found that the parasuicidal patients had a memory deficit in that they produced over-generalised memories. They were less able than controls to recall specific events unless given extra cues to do so. An over-generalised response to the cue-word "happy" might be "when I go to the park", or "spending a summer's day at the beach". In comparison, a non-depressed individual would typically answer in more specific terms such as "when I took the children to feed the ducks last Saturday in the park" or "last Bank Holiday Monday we went hill walking".

Several studies have since supported this finding and have demonstrated this overgeneral tendency in autobiographical recall among depressed and para-suicidal individuals, and those who had been sexually abused as children (Singer & Salovey, 1988; Williams, Watts, MacLeod, & Mathews, 1988; Williams & Scott, 1988; Williams & Dritschel, 1988; Evans, Williams, O'Loughlin & Howells, 1992; Kuyken & Brewin, 1995). In some of these studies other cognitive tests in which subjects

performed normally were administered alongside the testing of autobiographical memory. This demonstrated that it was unlikely that the results of the autobiographical memory test were due to poor motivational factors in the subjects (Williams & Dritschel, 1988). The identification of non-specific memory retrieval in these clinical groups has had direct implications for the development of psychological treatment interventions for depression and suicidal ideation (Linehan, 1993).

In their study of autobiographical memory in anxiety however, Richards and Whittaker (1990) did not find a difference between low and high anxious groups. This indicates that overgeneral memory is not found in all individuals with emotional disturbance.

Developmental Aspects of Autobiographical Memory.

Research into memory development has established that, in general, children under three and a half years old hold descriptions for events in memory in a general way (Nelson & Gruendel, 1981; Morton, 1990). Following from such studies, important information has been sought regarding the autobiographical memory retrieval process. Firstly these findings have established that general event representations are the preferred mode of recollecting events during early development. Secondly, they suggest that there are various stages within the retrieval process, with the stage for accessing general descriptions of the event occurring prior to accessing the stage where specific descriptions are available. These studies provided support for the hierarchical search that has been proposed within the descriptions theory of the mechanisms underlying overgeneral retrieval (Norman & Bobrow, 1979).

Cognitive theorists propose that during the following stages of cognitive development (i.e. from about the age of three and a half years and upwards) children develop the ability to inhibit the categoric description process so that they can access further contextual (time and place) information. Using this retrieval process the child will then continue searching for a specific recollection of the event beyond the intermediate, generic stage and will tend to access specific details regarding the event.

Mechanisms of overgeneral autobiographical memory

The study of autobiographical memory in clinical populations has led researchers to believe that children who suffer adverse experiences after the age of three and a half or four years old (after they have acquired the skill to access further extended and specific memories) will retreat to using the more primitive general way of retrieving memories for emotionally related events as a way of controlling exposure to negative affect

(Singer, 1984). According to this theory it is suggested that individuals who have a tendency to stop the search for the specific memory at the intermediate categoric stage of the memory retrieval process, will continue to do so for all types of memories. Within this cognitive framework overgeneral retrieval is viewed as being partly due to a long-term cognitive style.

In summary, it has been proposed that if a person grows up in an environment in which retrieval of events in specific details is too painful or punishing, the individual will resort to using an earlier type of retrieval process which aborts the specific memory search at an intermediate level. If they do this, then they effectively avoid specific recollection of adverse experiences by stopping the search at an intermediate level, retrieving only a general memory. This is therefore in effect a coping mechanism. Williams (1996) theorises further that if the search for a specific memory is aborted, another retrieval process 'kicks in' and will attempt to access the specific information via other intermediate descriptions. This results in the retrieval process accessing a network of negative categoric descriptions as another route to the specific event. The result of this is the clinical presentation of "negative self-rumination" that is often seen in depressed individuals. This over-elaboration of categories has been termed a "mnemonic interlock".

Studies investigating autobiographical memory retrieval have consistently found overgeneral responses to both negative and positive cue words (Williams & Scot, 1988; Brittlebank, Scott, Williams & Ferrier, 1993; Kuyken & Brewin, 1995). It has been hypothesised that depressed clients have difficulties retrieving positive events as there may be few positive mnemonic cues in the environment to help the retrieval process.

It has therefore been suggested that children who suffer adverse experiences may continue to use overgeneral retrieval of memory as a way of controlling the affect associated with the trauma (Williams, 1996). If this theory is correct then we would expect a relationship among adults between a history of negative experiences in childhood and later tendencies to retrieve in generic form. This has recently been researched among adult survivors of childhood sexual abuse. The effects of trauma on autobiographical memory have also been studied among people who suffered traumatic experiences during adulthood as in Post Traumatic Stress Disorder (PTSD). The following section reviews these studies.

The Effects of Trauma on Autobiographical Memory.

A study which looked at autobiographical memory among adult survivors of Childhood Sexual Abuse (CSA) found that they retrieved significantly more events in a generic rather than specific manner (Kuyken & Brewin, 1995). However, Kuyken and Brewin's (1995) investigation of autobiographical memory in CSA survivors used a clinical sample of depressed women. As it had been previously found that depressed samples report more inappropriate non-specific memories this study may have only supported this finding. Yet, this study also found that depressed women survivors of CSA gave significantly more non-specific memories than the depressed sample that had not experienced CSA.

A recent study by Henderson (1996) investigated autobiographical memory in a non-clinical sample of survivors of childhood sexual abuse using Williams and Broadbent's (1986) Autobiographical Memory Test (AMT). Henderson's findings replicated Kuyken and Brewin's (1995) study. The individuals who had experienced sexual abuse retrieved, on average, 47% specific memories, compared to 62% of the non-abused control group. This is an important clinical finding as it lends support to the cognitive theory that non-specific autobiographical memory retrieval is a general defensive mechanism rather than being a clinical state dependant phenomenon (Henderson, 1996). This was earlier hypothesised by Williams and Dritschel (1988) as individuals who had recovered from depression continued to retrieve overgeneral autobiographical memory for negative and positive cue words.

In their study of Vietnam war veterans, McNally, Litz, Prassar, Shin and Weathers (1994) found that those suffering from PTSD also had overgeneral retrieval of autobiographical memory in comparison to veterans without PTSD. Since it had been indicated that individuals who are most vulnerable to develop PTSD have a history of early abuse, this may be an indication that it is childhood trauma which accounts for overgeneral autobiographical memory. These results may also indicate that adults who experience trauma during adulthood will resort to their earlier cognitive style of only accessing overgeneral, intermediate descriptions to cope with negative affect as the specific details of the event would be too painful to remember.

Problem-Solving Abilities and Autobiographical Memory.

A popular perspective within psychology is that depression develops due to a transaction between stressful events and lack of problem solving skills. Whilst working with individuals who had attempted suicide, Williams (1986) observed that they had poor problem-solving abilities and tended to recall reasons for their sense of

hopelessness in generic forms with the most frequently reported reason for taking the overdose being "the situation was so unbearable, I had to do something but did not know what else to do". Studies investigating this relationship using a measure of problem solving abilities (Means Ends Problem Solving - MEPS) provided empirical evidence that parasuicidal patients, who were more overgeneral than controls on the AMT, had the greatest difficulties producing effective problem solutions on the MEPS (Evans, Williams, O'Loughlin & Claridge, 1992). Because autobiographical memory retrieval has been viewed as part of the process required in the activity of problem-solving (Williams & Hollan, 1981), when there are distortions in this process the ability to problem solve is likely to suffer. The examination of the relationship between autobiographical memory and poor problem-solving has been particularly important for clinical practice as it has highlighted the importance of incorporating strategies which help the client retrieve events in a more specific way.

Autobiographical memory retrieval has been examined in many areas. Research findings indicate that clinical populations who are depressed, suicidal, or have experienced childhood sexual abuse have non-specific autobiographical memory. Surprisingly, this memory phenomenon has not been investigated in a clinical group who are typically depressed, engage in parasuicidal behaviours and have often suffered abusive experiences.

Borderline Personality Disorder

Individuals with Borderline Personality Disorder (BPD) are baffling to researchers, are expensive to the health service, contribute significantly to the national statistics of suicides and are renowned as a client group that is difficult to treat. If non-specific memory retrieval was found to be a cognitive style used by individuals with BPD then this would have implications for future treatment developments for this population for whom, to date, clinical psychology and psychiatry have had very few evidence based interventions to offer.

Definition

Throughout this century various clinicians and researchers have identified a clinical group who did not "fit" the classic neurotic or psychotic categorical groups and were not benefiting from the various treatments available (Pollack, 1986; Stern, 1938; see Kroll, 1988 for review). Several conceptualisations of BPD have been suggested over the years including cognitive and affective instability due to underlying dynamic disturbances, problems with self-concept, schizotypal personality disorder, mood and

chronic dysphoria, a disorder on an impulsive spectrum, a disorder on a post-traumatic spectrum and a dissociative disorder (Kernberg, 1975; Stone, 1987; Zanarini, 1993; Brieri & Zaidi, 1989).

Although there is currently reasonable clarity regarding the diagnostic criteria for BPD in the Diagnostic and Statistical Manual of Mental Disorders - IV (see appendix 13), there remain difficulties as the people with BPD are such a heterogeneous group. The fact that people diagnosed with BPD often meet the criteria for Axis I syndromes such as major depression or bipolar disorder (Pope Jonas, Hudson & Gunderson, 1993), and other Axis II disorders such as narcissistic personality disorder (Plakun, 1991), confounds this issue further. The present DSM-IV diagnostic criteria for BPD have drawn heavily upon an "eclectic-descriptive" approach since the defining characteristics have not been derived from empirical investigation but largely by consensus of DSM-IV committee members and observations of clinicians from their experience of borderline individuals (Chatham, 1985; Gunderson, 1984). The validity of this definition, without empirical evidence, therefore may be questioned.

Prevalence

Due to the varied definitions that have been used in studies, and the potential overlap between BPD and Axis I disorders, the actual reported prevalence rates of BPD are difficult to estimate precisely. Estimates in the literature range from 1.6% to 19% (Myers et.al., 1984; Kroll, Sines & Martin et.al., 1981; Widiger & Frances, 1989). There is currently a gender bias in BPD with approximately 75% being female (Widiger & Frances, 1989). Although there have been claims that the prevalence of BPD decreases with age (Ryle, 1997), the handful of longitudinal studies of BPD have suggested otherwise (McGlashen, 1984; Paris, Brown & Noris, 1987; Loranger, 1987).

Service Related Issues

Borderline individuals are usually clinically depressed and two of the identified core features of the disorder are affective instability and parasuicidal behaviour. Suicide rates and a high prevalence of parasuicidal behaviour categorises the borderline population as a high suicide risk group. If mental health services aim to reach their target of reducing the overall number of suicides by 15% by the year 2000 then it would probably be highly beneficial for clinical research to focus upon high risk groups (Rose, 1992), such as BPD.

Health professionals have a widespread reluctance and pessimism about working with individuals with BPD as they are a client group that places emotional demands upon them. Individuals with BPD are also expensive to the service due to frequent hospitalisations and crisis behaviour (Mehlum, Friis, Vaglum & Hoffman, 1994).

Autobiographical Memory and Borderline Personality Disorder

Overgeneral memory retrieval has been found to be a cognitive bias demonstrated by depressed and parasuicidal clients, and individuals who have been sexually abused. Depression and recurrent suicidal threats are both diagnostic criterion for BPD and a history of childhood trauma is very common among individuals diagnosed with the disorder. Yet, autobiographical memory has still to be examined within BPD. Due to the similarities between the clinical groups that have been shown to retrieve significantly more general autobiographical responses than controls, it may be expected that the same cognitive bias would be demonstrated by individuals with BPD. However, this cannot be assumed without examination of autobiographical memory in BPD as there are great differences between those individuals that are clinically depressed and/or suicidal and those individuals that meet the criteria for BPD. This therefore requires investigation as knowledge of the memory processes of BPD would enhance our understanding of some of the cognitive processes underlying BPD which would guide future treatment developments.

Autobiographical Memory, Problem-Solving and BPD

Overgeneral memory is considered a central feature in the maintenance of depression as specific memory has been indicated to be needed for problem-solving skills (Goddard, Dritschel & Burton, 1996). Evans, Williams, O'Loughlin and Howells (1992) found that para-suicidal individuals who had greatest difficulties with producing specific memories also had the greatest difficulty with producing effective solutions on a problem-solving task. Within Dialectical Behaviour Therapy (DBT) for individuals diagnosed with BPD, parasuicidal behaviours have been regarded as maladaptive problem-solving strategies for dealing with affective or cognitive disturbances (Linehan, 1993). Any parasuicidal behaviour is regarded as the client's solution to a problematic situation. One aim of DBT is to help clients generate other more adaptive and less harmful solutions.

However, the subjects in the Evans et.al (1992) study were individuals who had overdosed and been admitted to a casualty department. It is not known whether the subjects in the study were individuals who failed an attempted suicide or overdosed

without the intent to die. The distinction between these may be important as investigations have found differences between them, such as in levels of anger (Williams & Pollock, 1993). Individuals with BPD however, often engage in life-threatening behaviours without the intent to die which is also defined as para-suicidal behaviour. This study aims to examine autobiographical memory in a sample who frequently engage in para-suicidal behaviours as short-term solutions to personal crises.

Autobiographical memory, Trauma and BPD

Research into general and specific retrieval of autobiographical memories has noted that chronic stress or trauma in childhood may affect the ability to retrieve events in a specific way. Williams (1996) suggested that children who a) experience negative events during the years when they only use generic representation of events in memory, b) children who are particularly sensitive to negative events or, c) have temperamental difficulties with emotion regulation, will regress to retrieving generic memories of events as an affect regulation strategy.

With regard to BPD, it is generally agreed that there is an association between the disorder and a history of early adversity. Physical abuse and/or sexual abuse, and/or other types of trauma and neglect are frequently reported (Ryle, 1997; Perry & Herman, 1993; Linehan, 1993). The prevalence of childhood sexual abuse in the female borderline population is alarming, with studies reporting estimates of CSA in borderline inpatients between 67% and 86% (Stone, 1981; Herman, Perry & van der Kolk, 1989; Bryer, Nelson, Miller, & Krol, 1987). Linehan's (1993) bio-social theory of the development of BPD suggests that individuals who develop BPD are emotionally dysregulated due to a combination of biological and environmental factors in that they have experienced non-supportive and chaotic social experiences during childhood.

In line with the theory that individuals learn to use an over-general autobiographical recall as means of controlling negative affect, it is hypothesised that individuals with BPD, who have typically experienced early trauma and difficulties regulating affect, would continue to retrieve events in a general way as a means of controlling exposure to negative affect. This however, has not been investigated in individuals with BPD. Since investigations into autobiographical memory have had a direct impact upon clinical work with depressed clients this seems an important area of investigation because if overgeneral autobiographical memory retrieval is found to be evident in BPD this would have clinical implications for the treatment of Borderline Personality Disorder. Yet, if the function of over-general memory is to regulate affect, the facto

that people with BPD still exhibit high levels of depression, anxiety and anger, raises questions about this theory and warrants further investigation into this phenomenon.

Depression, Autobiographical Memory and Borderline Personality Disorder.

"Chronic feelings of emptiness, or boredom" is a diagnostic criterion for BPD in DSM-IV. Individuals with BPD typically suffer from chronic depression and are often prescribed anti-depressants among other medications. An outcome trial comparing various modes of treatment for BPD found that the BPD group means were in the severely depressed category as measured by the Beck Depression Inventory (BDI) at pre-intervention (Linehan, Heard & Armstrong, 1992). Although the treatment had successfully reduced parasuicidal behaviour, inpatient days and trait anger, the BPD group remained as severely depressed at post-intervention. Various studies have investigated the concurrent diagnosis of BPD and major affective disorders (Charney, Nelson & Quinlan, 1981; Gaviria, Flaherty & Val, 1982; Kroll, Sines & Martin, 1981) and consistently find that BPD and various affective disorders (i.e. bi-polar, major depressive, dysthymic and recurrent uni-polar) co-exist. It has been noted that there appear to be differences in the type of depression that individuals with BPD experience compared to the more typical affective disorders with regards to symptom presentations, and responsiveness to medication. Individuals with BPD appear to be less responsive to antidepressants (Gunderson, 1984). Although group differences have been found on autobiographical memory recall between depressed clients and controls, this has not been investigated in BPD. It is therefore not known whether this memory bias is also found in depressed individuals diagnosed with BPD and thus requires investigation.

Although group differences have been found between depressed clients and controls, and there have been significant correlations between depression and memory across groups, no correlations have been found between depression and concurrent general autobiographical response within groups. This raises questions of the relationship between depression and memory. Two longitudinal studies have demonstrated that clients who have recovered from depression continue to retrieve more general autobiographical memories than controls (Williams & Dritschel, 1988; Brittlebank, Scott, Williams & Ferrier, 1993) which suggests that overgeneral memory may be a maintaining factor in depression. Brittlebank, Scott, Williams and Ferrier (1993) found a correlation between autobiographical memory when the participants were depressed and follow-up levels of depression. This has led researchers to believe that overgeneral autobiographical memory is a cognitive style that is not dependent upon depression. Furthermore, a study of autobiographical memory in anxious subjects did not find group differences between high and low anxious clients (Richards &

Whittaker, 1990) which suggested that autobiographical memory is not associated with all types of emotional disturbance. However, considering the overlap between anxiety and depression among clients, the findings so far in the autobiographical memory literature are far from conclusive and raise many questions regarding the relationship between autobiographical memory and mood.

Anger in Borderline Personality Disorder and Autobiographical Memory

From the evidence in the literature it would appear likely that individuals with BPD retrieve non-specific autobiographical memories yet, to date, this has not been investigated. The research also indicates that there is not a causal relationship between depression and overgeneral memory and it has been regarded as a trait phenomenon. Therefore, overgeneral memory is a phenomenon that may function independently of depression and this raises the question of what accounts for this phenomenon in BPD? One possibility is that anger, which has been recognised as a predominant problem for borderline individuals, is responsible for overgeneral memory in BPD. Gardner, Leibenfult, O'Leary and Cowdry (1991) found that anger was not related to depression and argued that anger and depression are distinct, independent affective states with "independent biological mechanisms".

Anger is one of the emotions which is usually a problem for an individual with BPD and difficulties that individuals with BPD have with anger have been highlighted in many ways. In DSM-IV, anger is a separate diagnostic criterion: "inappropriate, intense anger and difficulty controlling anger", and it is also a central feature in Kernberg's psychoanalytic theory of BPD organisation, in terms of an "excessive aggressive drive" (Kernberg, 1975). Other psychoanalytic / dynamic oriented authors have also noted that borderline individuals are observed to be more angry, argumentative and sarcastic than other clinical groups (Gunderson, Carpenter & Strauss, 1975; Perry & Klerman, 1980; Soloff, 1981). Anger therefore clearly plays an important role in BPD and has been recognised as a predominant problem for borderline individuals, yet surprisingly there has been relatively little research in this area.

There have been some investigations of the role of anger in suicidal and parasuicidal behaviour. A popular viewpoint is that anger is a protective factor against suicide but a risk factor for parasuicide (MacLeod, Williams & Linehan, 1992; Williams & Pollock, 1993). However, caution should be taken with these results as only expressed anger was assessed. Another study of anger which measured trait anger found that individuals who recurrently attempted suicide demonstrated high scores on an anger trait scale (van Elderen, Verkes, Arkesteijn & Kompore, 1996). It is of interest to the

current study that 66% of this sample met criteria for BPD. These findings suggest a number of common characteristics between individuals that have been shown to have overgeneral memory and fulfill criteria for BPD, yet, very little research has been conducted on the effect of trait anger on memory processes in BPD. Furthermore, as anger is a mood that is often seen in para-suicidal individuals, Evans, et.al. (1992) hypothesised links between anger and overgeneral autobiographical memory. Although Evans et.al. (1992) found significantly higher levels of anger in the parasuicide group compared to controls, and found correlations between anger and memory across groups, again, no correlations between anger and memory were found within the clinical group.

The effect of anger upon memory processes has been examined previously in psychoanalytic theory and had its basis in Piaget's developmental theory. Piaget's theory of the six stages of development fuelled the work of Fraiberg (1969) on the development of recognition and evocative memory. Piaget found that during stage IV of the six stages (8 - 13 months) a child will only continue to look for a hidden object if it observes the movement of the object being taken from view. Fraiberg coined the term 'recognition ability' for this ability. At the sensory-motor stage VI (18 months) of development however Piaget noted that a child's memory would have developed such that it will look for a toy that is hidden even if it did not observe the object being removed. Fraiberg designates this phenomenon as "evocative memory".

Psychoanalysts have used this developmental theory to help explain the development of the chronic sense of aloneness and rage that is typically expressed among individuals with BPD (see Adler & Buie, 1979 for a review).

Fraiberg (1969) suggested that if a child is deprived of "good enough mothering" (thereby comfort is either inconsistent or unavailable) during the time that the child is developing their evocative memory capacity, there is the risk that the child will not 'remember' their mother when she has gone away, and will express this confusion and sense of abandonment as rage. This rage may be expressed during the time they are feeling alone and also when the mother returns either because they do not recognise her as the source of comfort or are angry towards her for the abandonment in the first instance. It has been suggested that this results in the inability to achieve solid evocative memory in the area of affect and that this is relevant to the development of borderline psychopathology (Adler & Buie, 1979). It has therefore been suggested that anger is associated with difficulties in memory in BPD yet the link between anger and overgeneral memory, which is a memory process that has been found to be associated with parasuicidal individuals, has not been examined.

At this stage it is difficult to hypothesise the direction of the relationship between anger and overgeneral memory. If we are to hypothesise the direction based on the theory

that overgeneral retrieval of autobiographical events is a mechanism for controlling negative affect then it is plausible that there is a negative correlation between overgeneral memory and anger. However, based upon the psychoanalytic argument, it is plausible to hypothesise that there is a positive correlation as problems with memory would correlate with increased anger. Finally, the non-significant results within clinical samples in previous studies suggest that there is not a linear relationship between anger and memory yet this relationship has not been studied within a sample of BPD who have, by definition, grave difficulties with anger.

Dissociation, Autobiographical Memory and Borderline Personality Disorder

Another key feature of BPD which has been shown to affect memory processes is dissociation. One criterion for a Dissociative Identity Disorder (DID) is "inability to recall important personal information that is too extensive to be explained by ordinary forgetfulness" (DSM-IV). The resemblance between this description and the inability to retrieve specific autobiographical details of events is uncanny. This also raises the question of the role that dissociation may play in overgeneral memory in BPD.

Dissociation is considered by some schools of thought to be a defence mechanism, a form of "self-generated hypnosis, developed to deal with unbearable pain or terror" (Mollon, 1996). Although it is one of diagnostic criterion for BPD, dissociation remains a comparatively un-researched aspect of the disorder (Ryle, 1997). Until recently, dissociative symptoms were predominantly studied within individuals diagnosed with DID. In recent years however, there has been increasing evidence that dissociative symptoms are more common among psychiatric conditions than was previously believed. Studies have found high prevalence of dissociative experiences among adult survivors of childhood sexual and physical abuse, and among individuals with eating disorders, post-traumatic stress disorder, somatization disorder and borderline personality disorder (Chu & Dill, 1990; Putnam, Carlson, Ross et.al, 1996; Saxe, van der Kolk, Berkowitz et. al, 1993; Herman et. al, 1989; Saxe et.al., 1994).

The research and literature on memory disturbance and dissociative experiences is vast and is mainly concentrated upon investigations of Post Traumatic Stress Disorder (PTSD). Contemporary research has demonstrated the complexity of memory systems and the multi-faceted ways that trauma can affect memory. One popular viewpoint is that traumatic memories are processed in a fragmentary way (van der Kolk & Fisler, 1995). There is increasing evidence that individuals who experience early trauma have access to implicit material of the event but have amnesia for more explicit material (Saxe, van der Kolk, Berkowitz, Chinman, Hall, Lieberg & Schwartz, 1993; Christianson, 1984). Therefore they will remember affective, sensory and reflexive

elements of the event but will not remember the descriptive content of the actual event itself. Furthermore, it would appear that if trauma occurs during childhood the infant does not have the mental capacities to make a coherent narrative of the event and will consequently only have a general autobiographical account of the event (van der Kolk & Fisler, 1995). This absence of a narrative may be similar to what is demonstrated on the AMT when subjects are unable to give a specific details of the event.

It has been well established that emotional arousal affects cognitive functioning (Beck, 1979; Williams 1992; Segal & Blatt, 1993; Foa & Hearst-Ikeda, 1994; Williams, Watts, MacLeod & Mathews, 1997). Christianson (1984) hypothesised that when individuals are threatened there is a narrowing of consciousness which may evolve into amnesia and contemporary research has found that trauma, dissociation and affective dysregulation frequently co-occur (Terr, 1991; Lewis, 1992).

Investigations of dissociation in BPD have mainly been confined to examining the relationships between dissociation, childhood trauma and self-harm (Herman, Perry, van der Kolk, 1989; Chu & Dill, 1990; Zweig-Frank, Paris & Guzder, 1994a, 1994b, 1994c; Brodsky, Cloitre, Dulit, 1995). Studies have consistently found high levels of dissociation, as measured by the DES. A common assumption between theorists is that these pathological levels of dissociation in BPD are present due to experiences of childhood trauma. It is therefore likely that some individuals with BPD would develop dissociative strategies to cope with, or numb the pain associated with the trauma. Indeed studies have found a significant relationship between severity of trauma history, severity of PTSD symptoms and a diagnosis of BPD and have suggested that an individual with a dissociative disorder is very likely to also have PTSD, substance abuse, Borderline Personality Disorder and at least one major episode of depression (Herman, Perry and van der Kolk ,1989).

Variables that are associated specifically with a diagnosis of BPD therefore have been associated with memory functioning and this raises the question of the association between dissociation and affective instability with autobiographical memory.

It has been suggested that overgeneral memory retrieval is a mechanism that defends against negative affect, thus, the function of both dissociation and overgeneral autobiographical memory appear similar. It is therefore hypothesised that there is an association between overgeneral memory and dissociation. Considering the lack of research in this area, the study of dissociation in this research will aim to help our general understanding of this phenomenon in BPD.

This study therefore aims to examine the levels of dissociation in a group of individuals with BPD and to assess to what extent anger, dissociation and para-suicidal

behaviour can account for overgeneral memory which is hypothesised to be present in BPD.

Self-harm in Borderline Personality Disorder and Autobiographical Memory.

Self-harm is a behaviour which creates feelings of helplessness, anxiety, and fear amongst mental health practitioners and it may be argued that is one of the least well understood behaviours within mental health care. Because of the complexity of the behaviour it is often difficult for mental health clinicians, when faced with a client who self-harms, to know how best to manage the situation (Tantam & Whittaker, 1992).

Defining self-harming behaviours is difficult due to the wide category of behaviours that are associated with destruction to the body. It is predominantly encountered in three groups of mental health clients: in those with learning disabilities; in those with psychoses; and in those with personality disorders - mainly being borderline personality disorder. One diagnostic criterion for BPD in DSM-IV is "recurrent suicidal threats, gestures, or behavior, or self-mutilating behavior". This criterion is problematic as it encompasses two distinct behaviour patterns. Suicide threats refer to behaviours with the intent to die. On the other hand, self-mutilation is defined as deliberate self-harm to the body which results in tissue damage, without conscious intent to die (Simeon, Stanley, Frances, et.al., 1992).

Linehan (1993) describes life-threatening behaviours as being attempted, but maladaptive, solutions. Within DBT, self-harm is regarded as the client's best effort to cope with a problem, such as interpersonal difficulties or affective disturbance. The aim of DBT is to help the client use more adaptive, and less harmful ways of coping.

Previous studies have found a relationship between: i) self-mutilation and hostility or anger (Bennum & Phil, 1983); ii) self-mutilation and dissociation (Stone, 1987; van der Kolk, Perry & Herman, 1991); self-mutilation and both somatic anxiety and depression (Simeon, Stanley, Frances et.al., 1992). Various functions of self-harm have been reported including relief from mounting tension, grounding from dissociative states, self-hatred, punishment, establishing control and venting of anger (Babiker & Arnold, 1997). One of the aims of the study therefore is to investigate self-harm in BPD and its relationship with mood variables, dissociation and overgeneral memory.

Summary of Investigation

Firstly, this study aims to investigate a sample with Borderline Personality Disorder in North Wales, expecting a similar ratio bias between males and females as previously reported in American studies, and similar demographic characteristics.

The central hypothesis of the study is that, compared to a control group, individuals with Borderline Personality Disorder (BPD) will demonstrate overgeneral recall of autobiographical memory, as measured by the AMT. Similarly to previous studies of para-suicidal and depressed clients, it is expected that the BPD group will demonstrate overgeneral memory for both positive and negative events. The study will also examine retrieval of autobiographical memory for neutral cue words. Furthermore, this study aims to examine the relationship between depression and overgeneral retrieval of autobiographical memory in a BPD sample. It is proposed that, compared to the control group, the BPD group will continue to demonstrate overgeneral autobiographical memories when depression is statistically controlled.

This study will also examine the relationship between anger and autobiographical memory in this population. Anger is a mood which is ubiquitous in para-suicidal individuals and a diagnostic criterion for BPD.

Additionally, due to the recognised high levels of dissociation in psychiatric groups such as BPD and the association that has been found in other studies between dissociation and memory processes, this study aims to investigate the relationship between these phenomena.

Finally, this study aims to investigate the relationship between parasuicidal behaviour and overgeneral memory, mood and dissociation in BPD.

METHOD

Study Design

The study used a between groups design. The independent variable was fulfilling or not fulfilling the DSM-IV criteria for Borderline Personality Disorder (BPD) as measured by the Semi-structured Clinical Interview for the Diagnosis of BPD - II (SCID-II). The groups were compared on various psychometric measures.

Participants

i. Clinical Group

The participants for the clinical group were users of the county's Mental Health Services who either had received a diagnosis of Borderline Personality Disorder from the Consultant Psychiatrist or who were believed to meet the criteria by their care manager. Of the 28 patients that were contacted, 26 agreed to participate. Two of these participants were excluded from the analysis as they did not meet the SCID-II criteria for BPD, and another client was excluded as she was not able to complete the assessments due to low intellectual ability. Due to limited resources and limited client's agreement to be tape-recorded, reliability measures for the SCID-II were unobtainable. However, post-interview discussions were held with a trained professional in the SCID-II assessment of BPD to review cases. Other subject exclusion criteria included being outside the range of 18 to 50 years of age or if they met criteria for schizophrenia, bipolar disorder, primary substance dependence, or mental retardation.

ii. Control Group

The control group were obtained from various sources. Eleven participants were obtained via the University's Volunteer Participation Panel. The other 12 were obtained from various sources within the Health Authority and the locality. Twenty-three participants for the control group were assessed. The control group participants were matched as closely as possible to the subject group with respect to age, gender and years of education.

Measures

An assessment battery was used which consisted of a demographic information sheet (which may be seen in appendices 3 - 12), eight questionnaires which are

described in more detail below, and a diagnostic interview for Borderline Personality Disorder. As the assessment battery was designed for a larger outcome trial, one of the questionnaires was not applicable to this study and is subsequently not reported.

1. Autobiographical Memory Test (AMT).

Measures of autobiographical memory specificity were obtained by administering a version of the Autobiographical Memory Test (AMT) (Williams and Broadbent, 1986). As the assessment was part of a pre-post design for a controlled outcome trial study, a version of the AMT which had two lists of words, which had been matched for emotionality, was used so that any learning effects were minimised.

In the autobiographical memory test participants are required to recall a specific memory in response to a list of cue words that were read aloud by the researcher. A 30 second time limit was set for each word. A specific memory was considered to be a recollection of a particular independent past experience. For example, in response to the word "ladder" a response such as " I used the ladder last week to get the christmas decorations from the attic" would be considered a specific memory. In contrast, a response such as "the window cleaner always uses a ladder when he cleans my windows" would be considered a generic type memory response.

Three cue words were used for practice before each test so that the participants understood the task. Thirty six words were used as cues to prompt specific memories, 12 positive, 12 negative and 12 neutral words. The positive and negative words were matched for high emotionality, whilst the neutral words had low emotionality ratings. In this version of the AMT, the words were split into two sets (A & B) of eighteen words each containing 6 positive, 6 negative and 6 neutral cue words. Forms A and B were administered alternately . The cue words may be seen in the copy of the Autobiographical Memory Test in appendix 6).

The cue words were presented verbally by the researcher. The latency period for each response was noted. If a subject firstly responded with a generic memory they were prompted to be more specific. Responses were coded either specific, generic or an omission if the subject could not recall any event or if they exceeded the 30 second time limit. The total number in each category were used as main measures.

Inter-rater agreement of 100% was obtained on a sample of 10% of responses. This rate of agreement was higher than that found by Williams and Dritschel (1988).

2. State Trait Anger Expression Inventory (STAXI).

A measure of trait anger was obtained from the State-Trait Anger Expression Inventory (STAXI) (Spielberger, 1996). The STAXI is a 44-item self-report questionnaire designed to measure experiences and expression of anger. The STAXI provides scoring instructions for eight scales relating to various types of anger. In this study the trait anger (T-Anger) scale was used to measure trait anger.

Trait-Anger Scale.

High scorers on the Trait-Anger scale have a stable predisposition to respond to a wider range of stimuli with an angry response. They frequently experience anger and have a general propensity to express anger without provocation. The T-Anger sub-scale score is obtained from 10 statements that people use to describe themselves when they are angry. Subjects were asked to rate themselves from 'almost never' to 'almost always' for each statement.

The STAXI manual reports coefficient alphas for the trait sub-scale at .82. Coefficient alpha levels for the three expression scales that are used to calculate the anger-expression sub-scale range from .73 to .86. Internal consistency reliabilities of the scale demonstrated minimal differences between gender and age on both sub-scales (Spielberger, 1991). The complete version of the scales may be seen in appendix 7.

3. Dissociative Experiences Scale (DES).

The frequency of dissociative experiences were measured by the Dissociative Experiences Scale (DES) (Bernstein & Putnam, 1986). The DES is a brief, self-report measure of the frequency of dissociative experiences. The instrument was designed for the purpose of screening for dissociative symptoms in a variety of psychiatric disorders as well as clients with major dissociative psychopathology. Note that the DES was not developed as a diagnostic instrument, therefore high scores on the DES "should not be construed as an indicator of a dissociative disorder diagnosis" (Carlson & Putnam, 1993).

Subjects are required to rate the percentage of time in their daily lives that they have various experiences that are described. The rating scale ranges from 0% to 100% in 10% increments with 0% representing that the experience never happens to 100% indicating that it constantly happens.

The scale score is determined by calculating the average score for all items. Various studies that have conducted validity and reliability measures of the DES have established that the scale has a high degree of test-retest reliability and internal reliability (Bernstein & Putnam, 1986; Frischholz, 1990; Pitblado & Sanders, 1991). There is variation in the literature for normative data within clinical populations on the DES with studies demonstrating means from 10.5 to 20.6 for individuals with schizophrenia, from 26.1 to 41.1 for individuals with PTSD and 40.7 to 57.1 for individuals with Multiple Personality Disorder (see Carlson & Putnam, 1993 for a review).

4. Beck Anxiety Inventory (Beck, 1993).

The Beck Anxiety Inventory (BAI) is a short self-report measure of anxiety. It consists of 21-items which are descriptive statements of anxiety symptoms. Subjects rate the severity of anxiety symptoms from 0 (not at all) to 3 (Severely, I could hardly stand it). The sum of the ratings given provide the overall anxiety score.

The ranges of the anxiety intensity are as follows: 0-7 = minimal level of anxiety; 8-15 = mild anxiety; 16-25 = moderate anxiety and; 26+ = severe anxiety. Reliability and validity analysis of the BAI have consistently found a high degree of internal consistency with a Cronbach's alpha of .92, and content validity with Cronbach's alpha of .93, .92 and .91 for Panic Disorder with Agoraphobia, Panic Disorder Without Agoraphobia and Social Phobia samples respectively (Beck & Steer, 1993).

5. Beck Depression Inventory (Beck, 1993).

To assess levels of depression the 21-item revised Beck Depression Inventory (BDI) was administered (Beck & Steer, 1993). This self-report questionnaire has become one of the most widely accepted and used instruments to measure severity of depression. Subjects are asked to rate each item on a four point scale rating from 0 to 3 which increase in terms of severity. The sum of all ratings gives the overall depression score. A high score on the BDI therefore indicates a high level of depression.

Studies examining its validity and reliability have indicated a high degree of stability with test-retest reliability at .90; and a high degree of validity (Beck & Steer, 1993). Definitions of severity of depression are as follows : 0 - 9 = not depressed; 10-15 =

mildly depressed; 16-24 = moderately depressed and; 25+ = severely depressed (Williams, 1992).

6. Parasuicide Behaviour.

To obtain frequency measures of parasuicidal behaviour, relevant elements of the Parasuicidal History Interview (PHI) (Linehan, Heard & Wagner, 1994) were administered. Parasuicide was defined as any acute, intentional behaviour which created self-injury either with or without intent to die. Thus, placing a knife blade onto skin without cutting was not considered parasuicidal behaviour. To qualify for parasuicide the behaviour needed to create tissue damage, illness, risk of death, taking an over-prescribed amount of medication with intent to cause harm, or death. The PHI was interview based and for the purposes of this study, the participants were asked to report the number of parasuicidal behaviours that they had engaged in over the previous four months.

7. Semi-structured Clinical Interview for the Diagnosis of BPD - II.

The SCID-II is a semi-structured interview for the DSM-IV criteria for BPD (First, Spitzer, Gibbon & Williams, 1994). The researcher was trained in conducting the interview by a colleague of the large-scale research study. Ratings were continually discussed post-interview.

Procedure

Ethical permission was granted from the relevant University department and the relevant Health Authority department for a controlled outcome trial of Dialectical Behaviour Therapy for Borderline Personality Disorder. The data from the assessment battery for the outcome trial was used in this study. A copy of the Ethical proposal may be seen in appendix 1. The Community Mental Health Teams (CMHT) within one county were approached and were given verbal and written information about the study. The mental health professionals were asked to inform their clients who had received a diagnosis of Borderline Personality Disorder about the study and to ask if they would permit the researcher to contact them. Following poor response rates from the CMHT's the researcher also approached the Support Bed Units, the Day Hospital, and individual Consultant Psychiatrists for further participants.

After a client had been informed of the study by their key worker and had given verbal consent to be contacted, the researcher arranged an appointment by telephone. If the client was not on the phone an appointment letter was sent. It was stressed that their participation was voluntary and that it would not affect any care that they would normally receive if they declined. Some of the clients were able to travel to a Mental Health setting for assessment. A domiciliary visit was arranged for the other clients. Clients were asked to read an information sheet regarding the study and sign a consent form which stressed that their participation was voluntary and that participation or non-participation and that if they declined this would not affect any treatment that they would normally receive (appendixes 3 and 4). The assessment battery was then administered. The duration of the assessments varied from one hour to two and a half hours.

The assessment battery was administered in the order that they are described above. This order was specifically set to reduce the effect of mood measures influencing the AMT. The PHI was placed towards the end of the battery as a rapport between the researcher and the client would enhance self-report from the client. The SCID-II was placed last in the battery as this also required a rapport and would be aided by information obtained indirectly from the client.

RESULTS

The sample

The final sample comprised 23 subjects in each group. Gender ratio of the control group was matched to the BPD group being 18 females (78%) and 5 males (22%). Age range was the same in both groups, from 18-47 years old with a mean of 31.08 (S.D. = 7.74) and 31.17 (S.D. = 8.55) in the BPD and control group respectively. Independent sample *t* tests indicated that the two groups did not differ significantly in age ($t(44) = 0.04, p = .971, n.s.$).

Number of years in education ranged from 15 to 20 years and from 15 to 23 years in the subject and control groups respectively. Mean number of years for the BPD group was 16.6 years (S.D. = 1.72) and 17.5 years (S.D. = 2.42) for the control group. An independent sample *t* test indicated that there was no significant difference in the mean number of years of education between the two groups ($t(39) = 1.47, p = 0.149, n.s.$).

Table 1 presents the percentage of subjects in each marital status group. Chi-square analysis indicated a significant difference between the two groups ($\chi^2 = 7.52, d.f. = 3, p < 0.05$). It is of interest to note that almost half of the control group were married compared to only 13% ($n = 3$) of the BPD group and that the number of divorcees in the BPD group was more than double the number of divorcees in the control group. No subjects reported co-habitation.

Table 1. The Marital Status of the BPD and the Control Groups.

	Single	Married	Separated	Divorced
BPD Group	61% (n=14)	13% (n=3)	4% (n=1)	22% (n=5)
Control Group	43% (n=10)	48% (n=11)	0% (n=0)	9% (n=2)

Statistical Analysis and Data Inspection.

Data analysis was performed on S.P.S.S., version 6.1 Mac. Chi-square tests were used for nominal data, and *t* tests (unrelated design, two-tailed) were used for continuous measures. Whenever the variances for the two groups (as shown by the Levene's test for equality of variance) were significantly different then the *t*-tests for

unequal variances were used. The variables that had significantly different variances were the BAI, BDI, DES, Overgeneral Memory, Specific Memory, Trait Anger and Frequency of Self-harm.

Multivariate analysis of covariance was used to calculate the difference between the two groups on each type of cue words in the AMT with depression controlled for. Pearson correlation coefficients were calculated to examine the relationship between the psychometric variables, frequency of self-harm and specificity of autobiographical memory.

One subject scored 90 out of a possible 100 on the DES. As this was such a high score and one and a half standard deviations from the group mean, a "box and whisker" chart, which may be seen in appendix 17, was produced using SPSS Explore. This clearly identified this subject (subject 7) to be an outlier on the DES and this score was subsequently removed from further analysis on the DES.

Because the distribution of the self-harm measure was highly positively skewed, a logarithmic transformation was applied and the transformed variable was used in all subsequent analyses.

Differences Between BPD and Control Group on the BDI, BAI, Trait Anger sub-scale, DES, and frequency of self-harm.

A MANOVA was conducted with the BDI, BAI, Trait Anger sub-scale of the STAXI, DES and measure of self-harm as the dependent variables and group as the independent variable. The multivariate analysis produced a significant effect ($F(5,39) = 31.97, p < .0001$). To assess the difference between the two groups on the mood variables, dissociation and self-harm, independent sample t tests were calculated. These revealed significant differences between groups at $p < .0001$ on all of these variables. The means, standard deviations, degrees of freedom and t -values may be seen in Table 2.

Table 2. The means, standard deviation, degrees of freedom and t-values from Independent Sample *t* tests between the BPD and control group for the mood variables, dissociation and self-harm.

	BPD Group		Control Group		df	t-value
	Means	SD	Means	SD		
BAI	35.60	12.27	11.08	11.06	43.54	7.12****
BDI	35.17	10.67	4.73	5.49	32.89	12.16****
DES	42.08	19.63	8.86	7.34	28.04	7.6****
STAXI	26.86	5.61	17.65	5.54	43.99	5.6****
Self-harm	13.26	25.21	.04	.21	22	6.16****

$p < .0001****$

The mean scores for the BPD group on the BAI therefore placed them in the severely anxious category and the severely depressed category of the BDI. The median score for the BPD on the DES was 37.5. These are compared to Bernstein and Putnam's (1986) data of various psychiatric disorders on the DES who found that the median score of a group with schizophrenia was 20.1, the median score of a group with Post Traumatic Stress Disorder was 31.3 and the median score for a group with Dissociative Identity Disorder was 57.1. The mean score of the BPD group on the DES, at 42.08 was much higher than the cut-off point of 30 that is used to screen for a probable dissociative disorder. 74% ($n = 17$) of the BPD group scored 30 or above on the DES. To give a better indication of the actual number of self-harm incidents, in Table 2 the mean and standard deviation are given for the frequency of self-harm measure, but the t-test is calculated for the log-frequency measure.

Autobiographical Memory Test (AMT)

i. Differences between forms A & B on the AMT.

A MANOVA analysis with the two versions of the AMT as independent variables, and the numbers of specific and overgeneral memories as the dependent variables showed no significant differences between the forms [$F(2, 41) = 1.04, p = .361, n.s.$].

ii. Differences between groups on the AMT.

Overall mean scores, standard deviations and range scores between both groups on the AMT are shown in Table 3. Table 3 demonstrates these scores for the total number of specific memories and total number overgeneral memories recalled and omissions. This is also broken down into the differences between the two groups for overgeneral memories and specific memories that were recalled on each cue type.

Independent sample t tests indicated highly significant difference between the BPD and control groups on the number of specific responses recalled [$t(29.48) = -6.94, p < .0001$], on the number of overgeneral responses recalled [$t(25.46) = 5.9, p < .0001$], and on the number of omissions [$t(36.4) = 2.13, p = < .04$].

Table 3. Means, Standard Deviations and Range of Specific and Overgeneral Responses in the AMT Between the BPD and Control Groups

AMT	BPD GROUP	CONTROL GROUP
<u>Total of Overgeneral Responses on the AMT</u>	Mean 7.34 S.D. 4.21 Range 1 - 15	Mean 1.95 S.D. 1.18 Range 0 - 4
<u>Total of Specific Responses on the AMT</u>	Mean 8.04 S.D. 4.18 Range 0 - 17	Mean 14.60 S.D. 1.75 Range 11 - 18
<u>Overgeneral Responses on Positive Cues</u>	Mean 2.17 S.D. 1.7 Range 0 - 6	Mean 0.69 S.D. 0.82 Range 0 - 3
<u>Specific Responses on Positive Cues</u>	Mean 2.56 S.D. 1.77 Range 0 - 6	Mean 4.78 S.D. 1.27 Range 2 - 4
<u>Overgeneral Responses on Negative Cues</u>	Mean 3.13 S.D. 1.5 Range 0 - 6	Mean 0.47 S.D. 0.59 Range 0 - 2
<u>Specific Responses on Negative Cues</u>	Mean 2.6 S.D. 1.5 Range 0 - 6	Mean 4.82 S.D. 1 Range 3 - 6
<u>Overgeneral Responses on Neutral Cues</u>	Mean 2.04 S.D. 1.6 Range 0 - 5	Mean 0.78 S.D. 0.85 Range 0 - 3
<u>Specific Responses on Neutral Cues</u>	Mean 2.82 S.D. 1.74 Range 0 - 6	Mean 4.78 S.D. 1.16 Range 2 - 6
<u>Omissions</u>	Mean 2.0 S.D. 1.9 Percentage 13.8%	Mean 1.4 S.D. 1.3 Percentage 7.5%

To investigate the statistical difference between the two groups for specific responses and for overgeneral responses on each cue type, two separate Multivariate Analyses of Variance were conducted. The independent variable in each of the MANOVA analyses was group, while the specific responses to the 3 cue types were the dependent variables in one (see Table 4a) and the overgeneral responses to the 3 cue types were the dependent variables in the other (see Table 4b). The MANOVA's indicated that the two groups significantly differed for the retrieval of specific memories [$F(3,42) = 15.6, p <.001$] and of overgeneral memories [$F(3,42) = 18.7, p <.001$].

Table 4a. Univariate Results of the Specific Scores obtained by the BPD and Control Groups Within the AMT.

Cue Type	effect size ETA Square	df	F	p
Positive	0.348	(1,44)	23.56	<0.0001
Negative	0.437	(1,44)	34.18	< 0.0001
Neutral	0.311	(1,44)	19.92	< 0.0001

The univariate results for the specific responses indicated that the two groups significantly differed for each individual cue. The two groups mainly differ on the negative cue type and the least difference is on the neutral cue types.

Table 4b. Univariate Results of the Overgeneral Scores obtained by the BPD and Control Groups Within the AMT.

Cue Type	effect size ETA Square	df	F	p
Positive	0.238	(1,44)	13.79	0.001
Negative	0.572	(1,44)	58.97	<0.000
Neutral	0.192	(1,44)	10.46	0.002

The univariate results for the overgeneral responses indicate that the two groups significantly differed on each cue type. However, there is a much bigger effect size for retrieval of overgeneral memory for negative words than positive or neutral words.

iii. Examination of AMT with Depression Controlled for.

To examine whether individuals with BPD differed from the control group when the depression scores were controlled for, 2 separate MANCOVA's were administered with BDI score as a covariate and scores for specific and overgeneral memories as the dependent variables.

The first MANCOVA indicated that even with depression controlled for there was a significant difference between the two groups [$F(3,41) = 0.79, p < .025$] on the total of specific memories retrieved (as shown in Table 5a). Univariate tests showed that there remained a significant difference between both groups on specific recall of memories on the emotionally valenced cue types when depression was controlled for but not on the neutral cue words.

Table 5a. The Results of a Univariate Analyses of Covariance (with depression as the covariate) of the Specific Responses that were Recalled on the AMT Between the BPD and Control Groups.

	ETA Square (effect size)	Degrees of freedom (df)	F ratios	p
Positive	.02	(1,43)	4.85	0.033
Negative	.15	(1,43)	8.03	0.007
Neutral	.02	(1,43)	1.27	0.265

The second MANCOVA analysis indicated a significant difference between the two groups on the number of general memories retrieved on the AMT [$F(3,41) = 0.25, p = .007$]. Univariate results indicate a highly significant difference between the two groups on overgeneral responses on the negative words. Significant differences were also found between the groups on the general responses given for the positive and neutral cue words. These are shown in Table 5b.

Table 5b. The Results of a Univariate Analyses of Covariance (with depression as the covariate) of the Overgeneral Responses that were Recalled on the AMT Between the BPD and Control Groups.

	ETA Square (effect size)	Degrees of freedom (df)	F ratios	p
Positive	0.068	(1,43)	3.15	0.083*
Negative	0.251	(1,43)	14.47	<0.0001
Neutral	0.062	(1,43)	2.85	0.098*

* p<.05 at one-tailed

Correlational Analysis

As it had been established that the BPD group was more over-general than the control group in their responses even when depression was controlled for, further analysis was required to investigate what other factors were contributing to this difference. Pearsons correlation coefficient analysis was therefore performed between total number of specific memories and other mood variables.

Table 6 presents the correlations of the depression, trait anger, anxiety, dissociation and self-harm measures with specific and overgeneral memories recalled on the AMT across both groups. This was administered to replicate the correlational analyses across groups in previous studies, however, the analysis probably merely reflects the mean differences between groups.

Table 6. Correlations Between Number of Specific and Overgeneral Memories with Measures of Depression, Anger, Anxiety, Dissociation and Self-harm.

	Total of Specific Recalled	Total of Overgen. Responses	Depression	Trait Anger	Anxiety	Dissoc.	Self-harm
Total of Specific	1.0	-.90***	-.65***	-.50***	-.56***	-.67***	-.37**
Total of Overgeneral		1.0	.57***	.46***	.50***	.67***	.28*
Depression			1.0	.64***	.75***	.78***	.79***
Trait Anger				1.0	.52***	.51***	.38*
Anxiety					1.0	.72***	.72***
Dissociat.						1.0	.59***

***p <.0001

**p <.001

*p <.05

Specific and overgeneral memories on the AMT were found to correlate significantly with depression, anger, anxiety, dissociation and self-harm across groups.

Correlations between each cue type on the AMT and the BAI, BDI, Tr-STAXI, DES and logarithmic transformation of frequency of Self-harm.

Due to the difference found in neutral cues compared to positive and negative cues between groups when depression was controlled for, correlations between the variables and each cue type were also calculated. These are shown in Table 7a for the specific responses on each cue-type and in Table 8b. for the overgeneral responses on each cue-type.

Table 7a. Correlations Between Specific Responses on Each Cue Type on the AMT and the Independent Variables.

	Depression	Anger	Anxiety	Dissociation	Self-harm
Negative	-.57***	-.39**	-.55***	-.63***	-.39*
Positive	-.52***	-.33*	-.41**	-.45**	-.34 ^a
Neutral	-.55***	-.48**	-.42**	-.51***	-.18

***p <.0001

**p <.001

*p <.01

^ap <.05

As seen in Table 7a significant correlations were found between each variable and specific responses for each cue type with the exception for the correlation between specific neutral words and self-harm.

Table 7b. Correlations Between Overgeneral Responses on Each Cue Type on the AMT and the Independent Variables.

	Depression	Anger	Anxiety	Dissociation	Self-harm
Negative	0.65***	0.46**	0.62***	0.75***	0.45**
Positive	0.42*	0.26	0.29 ^a	0.53***	0.20
Neutral	0.37 ^a	0.47**	0.34 ^a	0.44*	0.03

***p <.0001

**p <.001

*p <.01

^ap <.05

Table 7b indicates significant correlations between the variables and general responses on each cue type with the exception of positive cue types and anger, and positive and neutral cue words with self-harm.

Within Group Correlations

Previous studies have reported significant correlations between variables across clinical and control groups but no significant correlations between these variables within clinical groups. The exception being Brittlebank et al, (1993) who found a significant correlation between autobiographical memory at baseline and depression at 3 months and the 7 month follow up. This suggests that poor autobiographical memory may be a maintaining factor in depression. However, previous studies were unable to report similar correlations within a clinical group, thus, this analyses requires replication.

To assess this within the BPD group further correlational analyses were conducted within both groups. Table 8 shows the correlation coefficients for the BPD scores on the AMT, BDI, BAI, STAXI, DES and self-harm. (The correlations for the control group may be seen in appendix 18).

Table 8. Pearson Correlations for the BPD Group's Scores on the AMT, BDI, STAXI (Tr-Sub-scale), BAI, DES and Self-harm.

	Total of Specific Recalled	Total of Overgeneral Responses	Depression	Trait Anger	Anxiety	Dissoc.	Self-harm
Total of Specific	1.0	-.85***	-.09	-.09	-.09	-.22	-.17
Total of Overgeneral Responses		1.0	-.04	.02	.04	.38*	-.32
Depression			1.0	.14	.25	.15	.60***
Trait Anger				1.0	-.20	-.08	-.17
Anxiety					1.0	.35	.55**
Dissoc.						1.0	-.13

***p <.001 **p <.01 *p <.05 (all one-tailed significance)

Significant correlations were found within the BPD group between: i) overgeneral memory and specific memory; ii) overgeneral memory and dissociation; iii) self-harm and depression; and iv) self-harm and anxiety. A negative correlation between self-harm and overgeneral memory was marginally significant [$r(21) = -.32, p = .068$, two-tailed].

Table 9. Pearson Correlations Between Anxiety, Depression, Dissociation, Self-harm and Anger and each Cue Type on the AMT Within the BPD Group.

	BAI	BDI	DES	Self-Harm	Tr-Ang
Gen Neg	.31	.004	.52 ^a	-.12	-.08
Gen Pos	-.11	-.03	.23	-.22	-.08
Gen Neut	-.07	-.06	.26	-.45 ^a	.20
Spec Neg	-.33	-.09	-.52 ^a	.10	.004
Spec Pos	-.001	.01	-.18	.12	.003
Spec Neut	.07	-.18	-.20	.39	-.21

^ap <.05 (two-tailed)

Multiple Regression Analyses.

In order to examine which variables make significant and independent contributions to the prediction of self-harm for the BPD sample, a multiple regression analysis was conducted with the transformed measure of self-harm as the dependent variable and with the BDI, BAI, Tr-STAXI, Overgeneral Memories on the AMT, and the DES as predictors, using the direct entry method. The multiple R was .81, which was highly significant [Adjusted $R^2 = .55$, $F(5,16) = 6.17$, $p < .003$]. However, the only predictors which individually accounted for significant proportions of the variance were the BDI ($t = 3.1$, $p < .007$), and the BAI ($t = 2.36$, $p < .04$). It is interesting to note, however, that the measure of overgeneral memory was marginally significant as a predictor ($t = -1.85$, $p < .09$) but that this measure was negatively related to self-harm.

In order to examine in more detail how increases in depression and anxiety were related to increases in self-harm, the multiple regression was repeated with only the BDI and the BAI as predictors. The resulting regression equation [$\text{Log}(\text{self-harm}+1) = (.062 \times \text{BDI}) + (.047 \times \text{BAI}) - 2.08$] can then be used to predict the amount of self-harm expected from different levels of depression and anxiety. For example, when the sample's mean scores for the BDI (35.17) and the BAI (35.61) are entered into the equation, 4.9 episodes of self-harm are predicted. When the scores for the BDI and the BAI are both increased by 5, 9.1 episodes are predicted, and when the scores are both increased by 10, the number of predicted episodes increases to 16.5. Thus, when individuals with BPD have scores as high as 45 on both the BDI and the BAI, more than 1 episode of self-harm a week can be expected.

Summary of Results

In summary, these results indicated that there were differences between the BPD and control groups on marital status with more individuals diagnosed with BPD being either single or divorced.

The BPD group was significantly more depressed, anxious, and experienced greater chronic anger as measured by the BDI, BAI and the trait anger sub-scale from the STAXI respectively. They also reported significantly more dissociative experiences as measured by the DES. With regards to self-harming behaviours, only one of the control group reported an incident of self-harm compared to 17 of the BPD group reporting at least one incident of self-harming behaviour.

Performances on the AMT indicated group differences on the number of specific and overgeneral memories that were retrieved and this difference remained even when depression was controlled for. Further analysis of the three different types of cue words on the AMT indicated group differences on each cue type. However, when depression was statistically controlled no significant difference was found between the BPD and control groups on the neutral cue words.

When all of the scores from both groups were included in Pearsons correlational analysis significant results were obtained for all variables with autobiographical memory. Within the BPD group significant correlations were found between overgeneral autobiographical memory and dissociation. Significant correlations were also found between self-harm and anxiety and between self-harm and depression.

DISCUSSION

This section will begin with a discussion of the representativeness and the demographic features of the BPD group in this study. There then follows the main body of discussion which will be divided into a number of headings being: i) Individuals with BPD demonstrate an overgeneral memory bias; ii) Overgeneral memory is found in individuals with BPD independent of depression; iii) Overgeneral memory is a trait and not a mood-dependent state phenomenon; iv) When depression is controlled for, individuals with BPD continue to recall overgeneral autobiographical memories for emotionally related cue words but not for neutral cue words; v) Anger is not responsible for overgeneral memory in BPD; vi) Dissociation and its relationship with autobiographical memory, and vii) self-harm and mood. The final section will then summarise the clinical implications of these findings.

Representativeness of the BPD Sample

As expected, apart from level of specificity in autobiographical memory, the BPD sample scored highly on all of the measures and there were large standard deviations for all variables. This indicated that the BPD group was consistent with the variability and heterogeneity that was expected because of the multiple diagnostic criteria for BPD.

To give an indication of the heterogeneity of the group, there are approximately 100 possible combinations of the symptoms for BPD which would meet the criteria for BPD in DSM-IV. For example, somebody could meet criteria for BPD if they presented with frequent cutting of their arms, had frequent mood swings, experienced many dissociative symptoms, engaged in many verbal and physical fights and had a chaotic history of unstable and intense personal relationships. However, someone else could also meet the BPD criteria without showing any of the above symptoms such as someone who was engaging in impulsive binge eating and shoplifting, was clinically depressed and experiencing chronic feelings of emptiness, experienced paranoid ideations, engaged in frantic, extreme behaviours if their partner suggested leaving the relationship, and had great difficulties with their sense of sexuality and self-identity.

The gender ratio in this sample was similar to what has been previously found in samples of Borderline Personality Disorder (BPD). Widiger and Frances (1989) estimated that between 70% and 77% of individuals meeting the BPD criteria are women.

The large gender difference suggests that there are gender-specific issues which contribute to the behaviours that are described within the DSM-IV criteria for BPD. In

their developmental review of mental health, Flaherty and Richman (1989) report that female children who present talents that are more typically associated with males, are often ignored, invalidated, punished, or considered as having a difficult temperament. Linehan (1993) describes how many of the females diagnosed with BPD are talented in areas that are traditionally considered male areas of achievement in Western culture, such as in mechanical or intellectual pursuits. Linehan elaborates that, in her clinical observation, women often report having experienced difficulties for not being "feminine", or for not meeting the cultural ideal for women.

Twenty of the 23 (87%) BPD sample were under 40 years of age, which would appear to support the notion that BPD is one of the personality disorders that improves over time, that is, one of the 'immature' personality disorders (Tyrrer & Seiverwright, 1988; McGlashan, 1984). Recruitment of subjects for this study however had been restricted to adult mental health services and had not expanded to older adult mental health services which provide mental health provision for individuals over 65 years of age and therefore may not have been a true representative sample of BPD among adults. Furthermore, due to the high prevalence of suicide among individuals with BPD, it may be that many actually die before reaching old age rather than improve.

Although there is limited comparable data available in the literature with regards to marital status in BPD, the fact that individuals with BPD have great difficulties with interpersonal relations is well established. Studies consistently report that individuals with BPD show a tendency to have markedly unstable relationships which are typically due to demanding, hostile and angry behaviours by the borderline individual. Although the difference between the two groups was not statistically significant, the trends that were present were not surprising, with a greater number of the BPD group being; i) single, ii) separated and iii) divorced. These trends are remarkably similar to the marital status of Perry and Klerman's (1980) sample (n = 18) in which they reported that 10 were single, 7 were either separated / widowed and only one was married. This highlights the need to incorporate social and interpersonal components within a treatment programme for BPD, possibly even marital or couple therapy if relevant.

Autobiographical Memory

1. Pre-Post Measure of the AMT.

A version of the AMT, which had two forms (A & B) was used in this study because of the larger treatment outcome trial that this study was a part of, required re-assessment of autobiographical memory. Statistical analysis revealed that there was no difference between mean scores on the two forms (A & B) that were used alternately between subjects. This indicates that this version of the AMT is a robust measure of AMT and that either form A or B may be used in further studies. A correlational analysis of the two forms, completed by the same person, would however provide a better test of their equivalence, but this was not possible as the repeated measures had not been collected at the time of writing.

2. Individuals with BPD demonstrate an overgeneral memory bias.

The main hypothesis of the study was that there would be a significant difference between the BPD and control groups on levels of specificity on an autobiographical memory cueing task. This hypothesis was confirmed. This study, I believe, is the first study to show this memory bias in this clinical group. The mean proportion of specific responses on the AMT was 44% in the BPD group, and 77% in the control group. The result for the clinical group was similar to that found in Williams and Scott's (1988) study of depressed patients, where the depressed and control group had means of 40% and 70% respectively.

This study found that overgeneral memory was used for positive, negative and neutral cue-types. People who are diagnosed with BPD generally experience many negative events, and few positive ones in their lives, yet they did not produce less material for positive events. This suggests that it was unlikely the memories that were retrieved were due to a frequency effect. These findings support the theory that overgeneral memory is a cognitive style and not dependent upon frequency of events or present circumstances (Williams, 1996).

However, the effect size of the univariate results between the groups on the different cue types indicates a much greater difference on the number of generic memories retrieved for the negative events. This therefore suggests that retrieving negative memories is more problematic for individuals with BPD than any other type of memories and that they will protect themselves from specific details of negative related events (by retrieving overgeneral memories) more than for positive and neutral events.

It should be noted that although the effect size is larger between the groups on specific memories than on overgeneral memories the significant correlation was between recall of 'overgeneral memories' with dissociation and not between the retrieval of 'specific memories' with dissociation. The data therefore suggests that it is retrieving general memories, rather than failure to retrieve specific memories, that is more important. This therefore has implications for scoring the AMT as it seems that the measure of general memories, rather than the measure of retrieving specific scores, is more telling. If the omissions on the AMT had been included into the generic category, the reciprocal of specificity would be obtained and no correlation would have been found, however by ignoring the omissions from the analysis, better results were obtained. Nevertheless, due to the larger effect size with the specific memories it is recommended that the measures for both overgeneral and specific retrieval are included in any future analyses of investigation into autobiographical memory.

It is clear to see why the retrieval process would inhibit specific retrieval for negative events as a coping mechanism, but it may not be so immediately obvious why this same retrieval process would occur for retrieval of positive events. One possible explanation is that for people diagnosed with BPD positive events are as problematic as negative events, and that positive events are associated with negative affect. When emotional, individuals diagnosed with BPD often become behaviourally dyscontrolled and impulsive and therefore previous positive experiences may well have had negative consequences and outcomes. Furthermore, people who are depressed often have a sense of fear and dread when there are positive stimuli, fearing that the positive stimuli will end (Beck, 1979). Linehan et al (1991) theorised that following an invalidating environment, during childhood, individuals with BPD have difficulties trusting their perception of any type of emotion, therefore positive affect may bring with it negative memories of invalidation.

However, as previous investigations of autobiographical memory in clinical samples have identified differences between non-clinical and clinical groups, when the clinical groups demonstrated high levels of depression, this study needed to clarify whether this overgeneral bias was seen in this clinical sample because of the presence of depression or whether other factors were associated with this phenomenon. As no correlations had been previously found between depression and autobiographical memory it was hypothesised that depression was not the variable that accounted for the overgeneral memory bias. This was tested by re-analysing with statistical control of depression.

3 Overgeneral memory is found in individuals with BPD independent of depression.

Studies have consistently found overgeneral memory in subjects suffering from depression, yet, research indicated that depression is not the factor that affects overgeneral memory in BPD. For instance, overgeneral memory has been found to remain as depression remitted (Brittlebank, Scott, Williams & Ferrier, 1993) and secondly, Henderson's (1996) non-clinical sample of childhood abuse survivors, who were not depressed, demonstrated this overgeneral cognitive style. Furthermore, it is not necessary for a person to be clinically depressed to meet the criteria for BPD.

In this study 87% (n = 20) of the BPD group were severely depressed, 9% (n = 2) were moderately depressed and 4% (n = 1) suffered from mild depression. It might therefore be assumed that the differences between the groups were found because the BPD group were depressed. To investigate whether or not it was the depression that was responsible for overgeneral memory differences, further analyses were conducted while controlling for the effects of depression. It was found that a significant difference remained between the BPD and control group in recalling specific autobiographical memories, even when depression was controlled for, suggesting that other variables were associated with overgeneral retrieval of autobiographical memory in BPD.

4. Overgeneral memory is a trait and not a mood-dependent state phenomenon.

The evidence therefore suggests that overgeneral memory is not dependent upon mood at time of retrieval. For example, Williams and Dritschel (1988) found that individuals who had taken an overdose some time before being assessed showed the same overgeneral bias as individuals that had recently taken an overdose. Furthermore, other investigations have failed to demonstrate concurrent significant correlations between mood and level of specificity which would be expected if mood disturbance was strictly responsible for overgeneral memory (Kuyken & Brewin, 1995; Evans, Williams, O'Loughlin & Howells, 1992). Consistent with these findings, this study also failed to demonstrate a significant correlation between autobiographical memory and mood within the BPD group. This suggests that overgeneral memory in BPD, similar to that found in depressed and para-suicidal populations, is not a mood dependent phenomenon.

The findings of this study therefore suggest that autobiographical memory processes in individuals diagnosed with BPD are similar to those autobiographical memory processes in the other clinical groups that have been investigated. One study which examined the persistence of overgeneral autobiographical memory after recovery from depression found that subjects continued to have poor autobiographical memory for

positive and negative events at 7 month follow-up (Brittlebank, Scott, Williams & Ferrier, 1993). From this a trait-theory of autobiographical memory has been proposed. In view of the similar findings in this study to those, the trait-theory of overgeneral memory may possibly be also relevant to the BPD group.

The trait theory of overgeneral autobiographical memory has been supported from studies which have examined the development of memory in children and findings from studies of adult clinical populations who experienced trauma during childhood. It has been suggested that children who suffer negative events will retrieve these events in a generic way so as to control the painful negative affect that would otherwise accompany a more specific memory (Williams, 1996). From this, it has been suggested that such children are likely to use this cognitive style as means of controlling affect later in life and, indeed, two studies have found that adults who were sexually abused as children are more likely than controls to use overgeneral memory (Kuyken & Brewin, 1995, Henderson, 1996). Individuals with BPD are typically adults who have experienced adverse and inadequate early environments.

Linehan's (1993) bio-social theory of BPD proposes that the invalidating family environment that many individuals with BPD have experienced is one of the key factors that leads to the development of the disorder. Indeed, one of the main criticisms of Kernberg's traditional psychoanalytic theory of BPD is that it neglects the developmental factors between self in relation to others in its account of BPD (Ryle, 1997). Therefore, as individuals with BPD have usually experienced a negative upbringing, according to Williams' (1996) theory it would be expected that they used overgeneral memory retrieval at the time of the negative experiences as children and would continue to use this overgeneral memory style as a coping mechanism to avoid negative affect thereafter. However, despite the likelihood that these assumptions are correct, there is no evidence that the individuals in the BPD group of this study did learn this cognitive style as children. Thus, this theory is based upon speculation rather than fact and should therefore be used with some caution.

Nevertheless, the theory that overgeneral memory is used by children who suffer negative events and that they continue to use this style as a means of controlling negative affect does help to explain the development of depression in these individuals later in life. It has been suggested that the inability to remember events in specific details has repercussions for the development and maintenance of depression and an increased sense of hopelessness, but across various studies, no correlations within clinical samples between levels of overgeneral memory and depression have been found. The relationship between memory and depression therefore requires further investigation.

The trait theory suggests that overgeneral memory is a trait marker indicating vulnerability to depression. However, this theory has been based upon measures of autobiographical memory at baseline and follow-up assessments. No prospective study has been reported in the literature. Without evidence of autobiographical memory style prior to the depressed state it may be argued that overgeneral memory is a cognitive style that may have been "learnt" during a state of depression, which individuals continue to use after the depression has remitted. It is however recognised that a longitudinal study would be required to be able to prove that these developmental theories are accurate and that conducting such a study would be very difficult indeed.

5. When depression is controlled for, individuals with BPD continue to recall overgeneral autobiographical memories for emotionally related cue words but not for neutral cue words .

Further analysis of the results showed that the two groups differed on the emotionally loaded cue-words but did not differ on the neutral cue words when depression was controlled for. This finding on neutral cue words was slightly unexpected as it has been implied that poor autobiographical memory is a cognitive style (Williams, 1996). It was therefore expected that the BPD group would be less specific than the control group on all cue types.

Differences have been found between the positive and negative cue words used in the AMT with depressed patients being less specific in their memories for positive events (Williams & Dritschel, 1988; Brittlebank, Scott, Williams & Ferrier, 1991), yet, Kuyken and Brewin (1995) did not find differences between the negative and positive cue words. In this study, before depression was statistically controlled, there was a group difference on the neutral cue words, but when depression was statistically controlled this difference was no longer significant. The findings of the present study therefore suggest that, independent of depression, individuals diagnosed with BPD will use overgeneral autobiographical memory to emotionally related cues, but not for non-emotional cue words. A similar result has been obtained by Brittlebank et.al. (1993) at their 7 month-follow up assessment as their depressed group were more specific than at baseline in their responses to the neutral cue words, although they remained as overgeneral for the positive and negative cue-words

Because neutral words do not have the same effect as positive and negative cue words, there may be an implication that people with BPD have some ability to exercise control or that they "switch" or choose the pathway of the retrieval process used for one type of word or another. Although this is an interesting speculative idea, there is in fact no evidence for this. An equally plausible explanation is that this is a well learnt protective

strategy that is used for any emotionally laden words and that specific retrieval strategies for non-emotional events can be used when people are well.

It would seem that overgeneral recall of autobiographical events is a global retrieval strategy in individuals with BPD when they are depressed to protect them from further negative affect. We may then assume that this retrieval strategy would therefore become unnecessary when they are not depressed. However, this is not indicated in the results as when depression was statistically controlled this strategy only changed for the neutral events. This overgeneral retrieval strategy possibly continues to function in individuals with BPD as a protective factor for emotionally loaded words.

6. Anger is not responsible for overgeneral memory in BPD.

Theorists and clinicians have regarded anger as a major component of the psychopathology found in BPD. For instance, Kernberg's psychoanalytic theory considers BPD features to derive from their "destructive and aggressive drives" and DSM-IV includes a separate criterion for "inappropriate and intense anger". Anger is often seen in para-suicidal individuals (who have been found to use overgeneral memory in previous studies), is one of the main problematic emotions for BPD, and has been theorised to be implicated in memory disturbances in BPD (Adler & Buie, 1979). Nevertheless, the hypothesis that anger would be one component that would be strongly associated with overgeneral autobiographical memory in BPD was not supported. The results did not suggest that anger was influencing autobiographical memory in BPD as there were no correlations between overgeneral memory retrieval and anger in the BPD group. No evidence was found indicating that anger has a direct impact upon autobiographical memory. Since 91% ($n = 21$) of the BPD group scored higher than the average norms on the STAXI and were clearly a sample who did experience problems with anger, the findings suggest that overgeneral autobiographical memory functions independently of levels of trait anger

7. Dissociation and overgeneral memory in BPD.

It was hypothesised that there would be an association between dissociation and autobiographical memory. Significant differences were found between the two groups on both of these variables. The dissociative scores of the BPD were extremely high which is represented by 74% (n = 17) of the BPD group having a score above the cut-off point (30+) used on the DES for identification of a probable dissociative disorder.

When the data of both groups were used in a correlational analysis, a significant correlation was found between dissociation and overgeneral memory. Unlike all the other variables in the analysis a significant correlation was also found between dissociation and overgeneral autobiographical memory within the BPD group. At .38, this is a particularly strong correlation between a performance and a self-report measure. A relationship between these variables had been hypothesised due to the memory disturbances that are associated with dissociative experiences. It is possible that it is dissociation that may be the variable that accounts for poor autobiographical memory in other non-BPD disorders such as depression and para-suicidal patients.

Psychogenic amnesia for personal history is one of the dissociative phenomena. Indeed, dissociative amnesia is one of the five major dissociative disorders identified in DSM-IV. Therefore, by definition it is possible that this is a circular correlation, that is, that the overgeneral memory measured on the AMT is the same phenomenon as the dissociative amnesia that is measured on the DES. However, various factors make this unlikely as the DES is not only a measure of dissociative amnesia; other dissociative experiences, being depersonalisation, absorption, imaginative involvement, and derealisation are also included in the measure. It would therefore be of interest to examine the relationship between overgeneral memory with each of the dissociative phenomena using a factor analysis of the DES so that the relationship between dissociation and overgeneral memory is explored further.

Furthermore, recent research has indicated that individuals who report childhood sexual abuse and cancer patients experience specific intrusive memories, similar to those that are a cardinal feature of PTSD, when they are depressed (Brewin, et al., in press; Kuyken & Brewin, 1994). In his review on intrusive autobiographical memory, Brewin (1998) suggested that in depression and PTSD, attempts to block out negative events from memory may have the paradoxical effect of increasing intrusive memories. In therapy, people with PTSD or who were sexually abused as children often report experiencing intrusive fragments of the event but rarely enter therapy with a full account of the event. It is as if they successfully dissociate from certain elements of the negative event, but are not able to completely forget.

The function of dissociation is regarded as a defence mechanism against the stress of painful events. The link between childhood physical and sexual abuse and later dissociative disorders has been well established (Chu & Dill, 1990). In a study of female inpatients diagnosed with BPD, a history of childhood abuse correlated with later dissociative experiences (Brodsky, Cloitre & Dulit, 1995), which suggests that dissociation serves as a way of dealing with intolerable negative affect, images and memories related to the abuse. In this study, dissociation correlated with poor autobiographical memory. Thus, one interpretation of this finding is that the retrieval of overgeneral memories and dissociation co-occur as ways of coping. Although this argument is weakened because abuse history was not assessed, the prevalence of pathological levels of dissociation and a history of abuse/trauma among individuals with BPD has been well established (Gunderson & Sabo, 1993). Furthermore, many of the BPD subjects informally disclosed to the researcher that they had a history of childhood sexual abuse.

On the other hand, individuals with BPD also report that their dissociative experiences are disturbing and therefore dissociation does not always protect them from painful affect. Being unable to remember hours or days is often frightening and depersonalisation and derealisation have been reported to be very distressing. Thus, it may be that although people dislike dissociative experiences, the negative affect associated with the dissociative states may be preferable to the painful affect they are initially defending against.

Williams (1996) suggests that children who experience negative life events will regress to retrieving such memories in an overgeneral way to avoid the painful affect associated with the event. As a result of generic descriptions, such individuals are vulnerable to develop depression because of the sense of hopelessness that can arise from such overgeneral negative thoughts. However, this study revealed a correlation between overgeneral memory and dissociation, not depression, which suggests that individuals with BPD also use dissociation as a way of coping with adverse experiences. It is therefore proposed that individuals who experience negative experiences may develop increased dissociative experiences and increased overgeneral memory as attempts to defend against the painful affect. However, no measures of dissociation were used in previous studies of autobiographical memory, which looked at people who are depressed, para-suicidal, and those who have a history of childhood sexual abuse, therefore this has not been investigated. It is therefore recommended that dissociation is examined in further studies of autobiographical memory as it may be that it is dissociative symptoms and overgeneral memory that are directly associated with adverse experiences, and not depression. This could explain why Henderson (1996) found overgeneral autobiographical memory recall in a sample of CSA survivors who

had not been depressed, and why many studies have not found a correlational relationship between depression and autobiographical memory.

In a study of psychiatric inpatients, it was found that a high proportion (mainly those who had been diagnosed with major depression, PTSD and BPD) had significant dissociative pathology which went unrecognised by clinicians (Saxe, van der Kolk, Berkowitz, 1993). It would therefore appear that dissociation is not generally examined within studies of depression or on a clinical level.

8. Para-suicide, overgeneral autobiographical memory and BPD.

The distribution of the frequency of self-harm measure for the BPD group was highly skewed thus, a logarithmic transformation was used. Similarly to previous studies who termed subjects as 'parasuicide' patients, this study found that the BPD group, who had a median score of 6 separate self-harm incidences over the past 4 months, produced significantly more overgeneral memories than controls on the AMT. However, the correlation between self-harm and overgeneral memory was non-significant suggesting that this is not a simple, linear relationship. However, the logarithm of the frequency of self-harm did correlate with measures of depression and anxiety. The multiple regression indicated that both depression and anxiety were significantly and independently related to the logarithm of the self-harm measure. There was also a statistical trend toward a negative correlation between overgeneral memory and the logarithm measure of self-harm. These findings will now be discussed.

i. Anxiety and Self-harm

The findings are similar to that of Simeon, Stanley, Frances et. al, (1992) in their study of self-mutilation within personality disorders which found that chronic, somatic anxiety significantly correlated with self-mutilation. The BAI is a measure which lists physiological symptoms of anxiety and therefore is closely related to somatic anxiety. This is further evidence that anxiety is a clinical correlate with self-harm and suggests that mounting tension may be a direct pathway to self-harm or that associated thoughts, anxiety related behaviours or affect may be important influential factors or triggers to self-harm. The analysis of the regression coefficients suggested that a 5 point increase on the BAI and the BDI would lead to approximately a two-fold increase in the incidence of self-harm, and a 10 point increase on the BAI and the BDI would lead to approximately a four-fold increase. This information has important implications for

clinical practice and highlights the value of using repeated psychometric assessment of anxiety with a client who self-harms.

The strong relationship found between self-harm and anxiety is not surprising. Recently, more attention has been given to self-harm in women from a subjective standpoint (Babiker & Arnold, 1997). One of the main functions that has been reported is that self-harm regulates distress and anxiety. From a behavioural perspective self-harming therefore becomes a powerful negative reinforcer as it is effective as a tension reducer and emotion regulator. By creating physical pain through self-harm, some women report a relief from unbearable emotional pain (Wagner, Linehan & Wasson, 1989) as physical pain is easier to manage and control. Indeed, gaining a sense of control and reducing a sense of helplessness are also common reported functions of self-harm.

Another common reason for self-harming is that individuals are unable to make sense of their painful experiences and are subsequently very confused with their feelings and are unable to process or communicate to others what they are experiencing. In these instances it appears that the individuals are more likely to self-harm as a physical solution to the emotional pain. The parallel here may be drawn with Linehan's (1993) invalidating environment theory of the development of BPD in which individuals are not taught how to understand or cope with their feelings. Linehan argues that they subsequently become emotionally dysregulated, and are not able to trust their own emotional responses. As adults, these individuals adopt the characteristics of the invalidating environment, and will therefore invalidate their own emotional experiences, and will be unable to self-regulate affect.

ii. Depression and Self-harm.

Depression was found to correlate with self-harm and in a multiple regression depression had the strongest relationship with the logarithm of the frequency of self-harm. Major depression has been found to increase the risk of self-mutilation in BPD (Dulit, Fyer, Leon et.al., 1994) yet, individuals with BPD appear to be less responsive to anti-depressants. This suggests that there are differences between the depression presented in BPD and that more typically presented in clinical groups without an Axis II disorder (Gunderson & Elliott, 1985). The findings supports the need for careful assessment of depression with BPD and suggest that repeated psychometric measures should be taken. Once more, the regression coefficient indicated that a five point increase on the BDI and BAI is related to an approximated two-fold increase in self-harm incidents. Therefore, the importance of continuous clinical observation and assessment of affective disorders are important in the treatment of individuals with BPD

who self-harm. Naturally, the findings imply that therapy should target depression. Although the cross-sectional nature of this study does not allow for any conclusion regarding causality, it is possible that depression may be the result of or cause of self-harming behaviours, or, alternatively the presence of self-harm, depression and anxiety are indicators of underlying etiological factors, such as childhood sexual abuse or trauma.

In summary, the findings indicate a need for careful assessment of Axis I disorders in BPD, careful evaluation of any anti-depressant medication and even more reason to enhance psychological therapies that address the different underlying factors that are influencing depression in BPD.

iii. Overgeneral Memory and Self-harm.

A statistical trend was found in the multiple regression for a relationship between overgeneral memory and self-harm. This was a negative trend indicating that increased retrieval of overgeneral memory reduced the risk of self-harm. It may be therefore that overgeneral memory is a protective factor from self-harm. If this result is confirmed in future studies, it would have major implications for treatment as it is possible, that if strategies are used in therapy to help the client retrieve more specific memories (with the aim to combat hopelessness and depression), then the risk for self-harm may increase.

Clinically, the findings present difficulties with knowing how to develop an effective treatment for BPD. Perhaps this is why therapists have generally found traditional therapeutic techniques to be inadequate in the treatment of BPD. The results indicate that anxiety and depression are associated with increased self-harm, yet, the findings suggest that overgeneral memory may be protecting the individual from more self-harm. Therapeutic efforts therefore need to address the anxiety and depression to reduce the risk of self-harm. However, if targeting the anxiety or depression in therapy results in the person acquiring or enhancing the skill to think and remember in more specific terms, this may subsequently make them more vulnerable to self-harm. It is therefore suggested that therapeutic techniques which address mood should also teach other ways of coping, to replace the function of the overgeneral memory. Dialectical Behaviour Therapy incorporates the teaching of distress tolerance skills and emotion regulation skills which could be used.

This finding however would appear to fit with received opinion based on clinical experience of clients who enter therapy with vague recollections of past trauma. As the client begins to recall more specific details of the adverse event(s), then often, there is an increase in life-threatening behaviours which are a real impediment to therapy. This

has such important clinical implications that replication of this relationship is needed with a larger sample.

Another possible therapeutic strategy that may reduce the anxiety and depression in the long term would be to help the client process the traumatic experience that they are defending against. This is a strategy that is widely used with PTSD and abuse survivors. The eventual outcome may then be reduced anxiety and depression and because the traumatic experiences will have been processed by the client, they will have less to guard themselves against with overgeneral memory.

However, caution must be taken in the interpretation of this findings as the correlation was only marginally significant and was also in the opposite of the predicted direction. Nevertheless, the finding has important clinical implications and warrants further investigation with a larger sample.

iv. Problems with the Self-harm measure (PHI).

Unlike many previous studies, no relationship was found between self-harm and dissociation in the BPD group. One possible reason for this was the definition of self-harm used in the study. Vagueness of the definition of para-suicidal behaviour is often a problem in the research literature. According to the Parasuicide History Interview (PHI) para-suicidal behaviour is "any self-injurious behaviour with or without intent to die". Such a definition has problems for research such as this as we know that there are differences between people who self-harm and people who intend to kill themselves (Babiker & Arnold, 1997). The definition used in the PHI does not distinguish between injury with and without the intent to die and therefore may be assessing two very different phenomena. Thus, the suicide attempts may have contaminated the relationship between the self-harm without intent to die and dissociation.

Furthermore, individuals who self-harm do so for different reasons in different instances. That is, the function of self-harm for one individual may be very different in various circumstances. For example, cutting may be a strategy used at time A to ground themselves from a dissociative state, at time B the individual may cut to punish themselves for a sense of badness, while at time C the same individual will take an overdose of medication to numb emotional pain. Therefore, the investigation of the relationship of variables with self-harm requires clarification of the type and function of the behaviour. Perhaps including a more qualitative approach to self-harm would aid further investigations in this area.

A measure of self-harm over the previous 4 months may not have reflected recent or life-time self-harm. However, this time-period was unavoidable in this particular study as it was part of the treatment outcome study which required comparison data of the 4 months prior to the assessment. Furthermore, due to the reliance upon self-report it is possible that the rate of self-harm reported in this study was artificially high or low. Previous researchers have noted that such under-reporting of self-harm is common (Ogata, Silk, Goodrich, 1990) and would not be surprising considering that such painful, personal information is difficult to disclose to an unfamiliar researcher.

What implications does this have for clinical practice?

This study has highlighted the importance of cognitive investigation to guide the development of psychological treatment for BPD. Studies have found that being unable to think of events in specific details affects successful problem solving and may contribute to the maintenance of depression (Williams, 1996). Typically, individuals with BPD are clinically depressed and one perspective on BPD patients is that they are extremely poor at problem solving (Linehan, 1991). Their lives are typically chaotic and are generally characterised by waves of unrelenting crises which they appear to be unable to resolve. In view of the frequency of crises that borderline individuals experience it may have been surprising that they do not learn how to avoid similar crises or how to cope with crisis situations that have occurred previously. This study has provided evidence that individuals with BPD are more likely than controls to retrieve overgeneral memories. Although this study has not directly examined problem-solving abilities of BPD it is quite likely that an association between problem solving and overgeneral memory exists in BPD as has been found in studies of parasuicide clients (Evans, Williams, O'Loughlin & Howell, 1992). Thus, it is possible that one of the reasons why individuals with BPD are frequently unable to defuse crises is because they do not access specific information from memory which is deemed necessary for problem solving skills. Williams (1992) suggests that "problem solving becomes inhibited" when only the intermediate descriptions from memory are retrieved as this non-specific information is considered inefficient for generating effective solutions. Problem-solving training may therefore be required.

However, this study found that dissociation was associated with overgeneral memory, which suggests that clinical interventions should focus more upon dissociative experiences in the treatment of BPD. Ryle (1997) has begun to address dissociation in his 'Multiple Self - States Model' in Cognitive Analytical Therapy for BPD. Other techniques, such as grounding and extensive behavioural analyses (such as is used in Dialectical Behaviour Therapy) may be useful to identify the triggers to dissociative

experiences. Dissociation acts as a defence mechanism from negative affect, and overgeneral memory serves a similar function. As discussed previously, individuals with BPD typically have endured negative or traumatic experiences. It is possible that the individual does not process the traumatic experience in a cognitive, narrative way and as a result does not psychologically deal with the traumatic experience.

Cognitive therapy has also been described as being an useful, practical way of helping clients deal with the distress of dissociative experiences. For example, management of the triggers for dissociative states may be implemented through planned avoidance and management of the dissociative experience may be possible with distraction, re-focusing and grounding techniques. Cognitive restructuring techniques have also been found useful as cognitive distortions often exacerbate the individual's discomfort. These are all fundamental techniques of cognitive-behavioural therapy that may be adapted to individuals with dissociative experiences (see Kennerley (1996) for a full review).

It is therefore suggested that treatments for BPD are developed to help sufferers be more specific in their recall of memories and to learn other ways of regulating emotions (especially anxiety) other than dissociation. Techniques such as specific record keeping of events and emotions (e.g. mood diaries), and specific questioning during a behavioural analysis have been suggested as strategies to help enhance a person's level of specificity of recall of events. Incorporating the task of reporting an event in a coherent manner on a regular basis, for example as a homework task, may possibly help the client become used to retrieving more specific accounts of events. Furthermore, due to the similarities between BPD and PTSD with regards to experiencing trauma, similar techniques from work with individuals with PTSD, which concentrates upon making a narrative from the sensory fragments that they remember of the traumatic event, may be helpful.

Nevertheless, if such techniques, which help the client acquire skills to use more specificity with memory, are implemented it may be that self-harm will increase due to the loss of the protective factor of overgeneral memory. As mentioned earlier, DBT incorporates both emotional regulation and distress tolerance modules. However, as there are not many trained clinicians in DBT in the U.K. this treatment is not available to most individuals. Nevertheless, the clear outline of the modules in the DBT skills training manual that is available in the U.K. makes it possible for clinicians to adapt the module so that it would be possible to deliver these strategies to individuals who are not receiving the complete DBT treatment programme. Linehan has not ordered the skill modules and therefore the order in which each skill is taught is at the discretion of the group therapist. The data in this study however, suggests that it may be beneficial for the 'distress tolerance module' to be taught prior to the 'emotion regulation module'.

Furthermore, based on the relationship that was found between self-harm and mood, more traditional approaches, such as CBT for anxiety or depression, would be applicable. Since anti-depressants are not always as effective for depression in BPD as in other clinical groups, more attention may be required to the underlying dysfunctional schemas in BPD which are slightly different to the schemas frequently addressed in traditional CBT for depression. For a full account of the dysfunctional underlying assumptions that are typically related to people diagnosed with BPD the reader is referred to Beck and Freeman (1990). Thus, the application of treatment approaches targeting anxiety and depression, is expected to help in the reduction of self-harming behaviour.

Limitations of this study

There are various limitations to this study. One possible limitation is the question of the reliability of the self-reporting on the measures. The AMT was an interview based cognitive performance measure which probably reduced the likelihood of someone misinterpreting the instructions, compared with a written, self-completion, un-timed version. All of the mood measures and the DES were self-report measures, yet, (apart from one client on the DES) these were within the normal range for a BPD sample. As mentioned earlier, the PHI, is an interview based measure which is solely reliant on the person's memory of the incidents. The reporting of the frequency of incidents of self-harm may therefore have not been entirely reliable. It would have been informative to have double-checked the frequency of self-harm measures with the clients' key-workers.

Another possible limitations of the study was that there were no measures of general cognitive ability to check for: i) motivational factors; ii) that poor performance on the AMT was not due to lower general intelligence and ii) the effects of medication. Nevertheless, every person managed to retrieve at least one specific event on the AMT, and the groups were matched for years of education. However, it is also recognised that the number of years in education is not as good a measure of cognitive ability as formal cognitive assessment. If the comparison group had been a clinical sample then it would have been possible to control for the effects of medication.

Another possible gain would be to have a control group of people that self-harm without the diagnosis of BPD to compare the levels and effects of anxiety and depression.

The borderline population is a heterogeneous group, thus, the sample in this study may be too small to be able to make any firm conclusions regarding this heterogeneous

clinical group. Nevertheless, this study's sample was similar in size to the BPD samples in recent investigations of dissociative experiences in clinical populations. Another weakness of this study was that it did not assess for co-morbidity of dissociative disorders in this sample. With hindsight, due to the high mean scores on the DES, this may have been useful information in the investigation of the similarities that have been described between the two groups.

Finally, as discussed previously, the negative correlation between overgeneral autobiographical memory and self-harm was only marginally significant and therefore sound conclusions cannot be made from this study. Due to the important clinical implications of this finding, replication of this investigation is required with a larger sample.

Conclusion

This study has demonstrated that individuals with BPD have difficulty retrieving specific autobiographical memories and that this is a cognitive style that they use which functions independently of depression. This investigation found a significant correlation between dissociation and retrieval of overgeneral autobiographical memory in the BPD group and that both depression and anxiety correlated with self-harm. Furthermore, the findings indicated a trend that overgeneral memory negatively correlated with self-harm, suggesting that overgeneral memory may protect individuals with BPD from self-harm.

This has been a preliminary investigation of autobiographical memory in BPD and has provided enough evidence that this is a feature of the disorder. It is argued that poor autobiographical memory retrieval may be a dissociative phenomenon and requires further investigation in other groups that have been identified as using non-specific memory retrieval. Further investigations are required so that treatment interventions may be developed taking into account the cognitive bias and the relation between memory and dissociation that this study has found. Finally, it is proposed that further developments in the treatment of BPD target depression and anxiety to help reduce self-harm, but that other emotion regulation strategies should be incorporated to replace the possible protective function of overgeneral memory in self-harm.

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Appendix I

Ethics Committe Proposal

1. Title of Investigation

Dialectical Behaviour Therapy for parasuicidal behaviour: efficacy and mechanisms.

2. Purpose

The current proposal aims to pilot the efficacy of Linehan's Dialectical Behavioural in the treatment of patients with Borderline Personality Disorder and the mechanisms of change underlying progress during the first four months of therapy.

3. Background

Parasuicide is an important mental health issue. During the 1960's and 1970's there was a steep rise in numbers of people harming themselves. A slight fall at the end of the 1980's was followed by a steep rise at the beginning of the 1990's particularly amongst young men, which shows no sign of abating. In the UK in 1992, the parasuicide rate was around 265 per 100,000 for men, and 370 per 100,000 for women. However, recent reports from various centres around the UK suggest that the gap has closed. In Oxford, whereas the male to female ratio had been 2:1 in the mid 1970's, the ratio changed rapidly in the 1990's and in 1994 stood at 1.35:1. This comes on top of a general upward trend for the total number of parasuicides over the period 1992-94. The rise between 1993 and 1994 alone was 21.8%, the increase occurring in both sexes. Despite these changes, the age ratio has not changed, with 71% of attempters in Oxford in 1994 being under 35, and the most vulnerable age for women remaining at 15 to 19 years, and for men, 20 to 24 years (Williams, in press).

This would be consistent with figures from other parts of the UK. Data from Leeds shows that , whereas from 1987-1989 the ratio of men to women being referred for psychiatric assessment after hospital attendance for parasuicide was 45%:55%; in 1990 the proportion was 50:50, and, for the first time in 1991 the ratio reversed, 51% male, 49% female. Furthermore, like Oxford, Leeds has witnessed a disturbing increase in parasuicide episodes in the 1990's (an increase of 18% between 92-93 to 94-95 alone). The change in the sex ratio is not due to a fall in the number of women harming themselves; their numbers have also risen, but the rise in males has been steeper. The data from these two Centres in the UK parallel a report for the same period from the Samaritans, that for the first time ever, the number of calls from men exceeded those from women (Williams, in press). There appears to be, for the first time since records have been kept, a reversal of the usual female/male bias in parasuicide. The pressure to find effective therapies for parasuicide is intense.

Past reviews of treatment for suicidal people have been pessimistic (MacLeod, Williams & Linehan, 1992). Until recently, attempts to reduce the risk of future suicidal behaviour with psychological, medical or social work treatments had all failed to demonstrate significant reductions in repetition of parasuicide. Although these studies were pessimistic about the treatment of parasuicide and prevention of suicide, it has become clear that there are grounds for hope. Several of the studies converge on the conclusion that brief, problem-focused treatment approaches can produce marked changes in social functioning, and in hopelessness. Several have demonstrated a reduction in repetition rates that have not been statistically significant because they suffered from insufficient power. Increasing the power in such trials of brief problem-focused treatments is a priority, and is the subject of a related MRC-funded project by House, Creed, Hawton & Williams. The latter aims to examine the best way to help the majority of attenders to A & E following a parasuicide episode. However, an important supplementary strategy is to focus attention on the group of patients who are at greatest risk of a repeated parasuicide, those patients who meet criteria for borderline personality disorder. These patients show impulsive self-damaging behaviour in the context of unstable and intense inter-personal relationships, affective instability in general and inappropriate and intense anger in particular. It is in the treatment of such patients that there has recently been a major development through the work of Professor Marsha Linehan at the University of Washington, Seattle.

Linehan's approach, Dialectical Behaviour Therapy (DBT) is a new form of cognitive-behavioural treatment (Linehan, 1993) specifically designed to treat patients suffering from Borderline

Personality Disorder. It combines weekly individual and weekly group therapy over a one-year period, using behavioural skills training, contingency management, cognitive modification and exposure to emotional cues. The behavioural/problem solving component focuses on enhancing capability, generating alternative ways of coping, clarifying and managing contingencies, all with the emphasis on the 'here and now'.

Individual therapy (lasting for one hour each week) stays within a strict agenda and prioritises themes related to parasuicide. Thus, for example, any parasuicidal act, threat or thought that has occurred since the last therapy session, will be the priority for the current session. The therapist and client will then investigate in great detail the circumstances surrounding each suicidal episode even if there was no overt suicidal behaviour. Throughout, the emphasis is on teaching patients how to manage emotional crises rather than reducing the trauma or withdrawing from them. These individual therapy sessions are supplemented by weekly group therapy, focusing on inter-personal problem-solving skills, mindfulness, distress tolerance and reality acceptance skills, and emotional regulation.

In Linehan et al's outcome study (1991) clients meeting DSM III criteria for Borderline Personality Disorder received either DBT or Treatment as Usual (TAU). Results showed that DBT significantly reduced parasuicide episodes over the year. The TAU group had a median of nine parasuicide episodes over the year, compared to the DBT group's median of 1.5. Importantly for health economic considerations, DBT patients spent a median of 17 days in psychiatric hospital over the period of the treatment, whereas the TAU group spent a median of 51 days in psychiatric hospital. Furthermore, the parasuicide episodes of the TAU group were likely to incur greater medical risk than those of the DBT group. Comparing risk for just those TAU control subjects (n=10) and DBT (n=5) who needed medical treatment for a parasuicide, the difference in medical risk remained significant. Significantly for the purposes of the present proposal, these differences emerged early in the trial. During the first four months of treatment, the mean number of parasuicidal acts in the DBT group was 3.5, significantly lower than the TAU group's 15.9.

In the follow-up study by Linehan et al (1993), further assessments of the frequency of parasuicidal behaviour and any medical treatment that had resulted were made at 6 months and 12 months. Results showed that over the entire year the repetition rate for parasuicide was lower in the DBT group (26%) than the TAU group (60%). This difference was maintained into the second six months of follow-up, when none of the DBT groups were hospitalised, contrasting with a mean of 5.3 psychiatric hospital days for the TAU group. Thus, the results of this study are clearly very encouraging for this structured psycho-social approach to chronically suicidal clients.

However, there were a number of factors that may limit the conclusions that can be drawn from the study, which now need to be addressed. First, its efficacy has not yet been evaluated outside the United States. The extent to which the therapy may need modification for the UK context remains unclear. If we are to examine how transferable this treatment package is to the UK context we need to train mental health practitioners to deliver the treatment. The present proposal is to bring an accredited DBT trainer, Heidi Heard, to the UK for a year to train practitioners to use the treatment with an already identified sample of borderline patients. She has been involved with the development and evaluation of the therapy in Seattle, important for our aim to assess which components are central in transferring the approach to UK clinical settings. The current proposal will focus on the first four months of treatment, during which the major change in parasuicidal ideation and behaviour takes place in those who are going to respond best to the treatment (Linehan et al., 1991).

Second, the original trial used only women, so it is an open question whether it would be comparably effective for men. We aim to apply the therapy to both men and women, especially important in view of the recent increase in male parasuicide.

Third, the original study did not address the question of what the mechanisms underlying change were. If the therapy is to be sharpened in its focus, it is important to determine which aspects are critical to its success. We therefore propose to examine the processes which mediate successful treatment, and it is to this that we now turn.

Research on cognitive processes mediating parasuicide has focused on the way memory is affected in such individuals. In previous work in suicidal patients, we have found that they have particular

deficits in recalling specific events, even neutral or trivial events (the 'mnemonic interlock' phenomenon; Williams, 1996). They respond instead with generic memories which summarize a category of events (e.g. "going to parties"; "arguments with my boyfriend") rather than select one (e.g. "the party last Friday"; Williams & Broadbent, 1986). The phenomenon occurs in patients who are able to perform normally on other cognitive tasks suggesting that it is not simply due to poor task motivation (Williams & Dritschel 1988). Furthermore, such a memory deficit has been found to be related to an inability to solve current problems (Evans et al., 1992), and causes individuals to be vague in imagining future events, a critical aspect of hopelessness (Williams et al., 1996). In summary, non-specificity in recalling the past limits the ability to image the future in a specific way and blocks active problem solving. It is a particular problem for those patients most at risk of parasuicidal behaviour.

We suggest that Dialectical Behaviour Therapy has its therapeutic effects because it involves repeated practice at accessing specific episodes and using the information to redirect inappropriate coping strategies. That is, it is the emphasis on fine-grained and specific analysis of behaviour that is the critical component of the therapy. Such analysis addresses the tendency of suicidal patient's memories to be unfocused and over-general. Such unfocused summaries of affective experience lead to reduced problem solving because the data-base which is used to define the problem and generate alternative coping strategies is inadequate. The very detailed analysis of parasuicide episodes which is essential to DBT involves a great deal of specific rehearsal. It involves repeated practice at going beyond a general summary of what occurred. The implication of this is that first, more problem solving alternatives become available to the person. Second, the person is enabled to recollect in detail the situation which has caused them distress. Such detailed recollection may assist the process of reconstruction and reattribution of past events.

We predict that all borderline patients will show some degree of abnormality in this aspect of autobiographical memory, compared to existing normative data (with which patients can be matched for age and sex). Second, those patients who show the greatest deficit at the outset will change least during the first four months of treatment. Third, for those patients who do show changes during therapy, there will be an associated increase in their ability to retrieve specific episodes.

4. Plan of investigation

Participants Thirty-six patients (18 males, 18 females), between the ages of 18 and 50, who meet DSM IV criteria for Borderline Personality Disorder and have had at least two parasuicide episodes, will be recruited, and informed consent obtained to participate in a pilot trial of DBT. Following Linehan et al. (1991,1993), patients who meet DSM IV criteria for schizophrenia, bipolar disorder, substance dependence, or mental retardation (learning disabilities) will be excluded.

Treatment All patients will be offered 12 months' treatment, which will follow the Manual laid down by Linehan (1993, see earlier). It will involve weekly individual and group sessions conducted by mental health staff from Gwynedd Community (NHS) Trust, trained and supervised by Heidi Heard.

The present proposal focuses on the first four months of this treatment. Twelve staff have already agreed to participate in the training, and have attended a preliminary training and information workshop conducted by Michaela Swales to discuss how a DBT approach might best be used with such patients. Following training, due to take place during the first four months of the project, each member of staff will be assessed by Heard for adherence to and competence in delivery of DBT. Each member of staff will take on three patients for treatment (N = 36) so that, allowing for an estimated attrition rate around 20% (Linehan et al., 1991), we will achieve our goal of thirty patients treated for at least 4 months. (Although we expect competence to vary, all staff are already experienced mental health professionals, familiar with the Linehan Manual for DBT. We therefore expect all staff to deliver the treatment sufficiently well to carry out an adequate pilot study of this nature. Since we will have ratings of adherence and competence we can take account of these in statistical analyses, and in subsequent assessments of the costs and benefits of such treatment for the NHS).

Assessments

A. Baseline assessment.

Patients will initially be assessed on a full set of ratings. Ratings will be made by a postgraduate psychologist as part of their doctoral research in clinical psychology, supervised by Professor Williams. The assessment will take place over two testing sessions.

Schedule for Affective Disorders and Schizophrenia-Lifetime (SADS-L; Endicott & Spitzer, 1978) an interview used to assess past and present diagnostic status on DSM criteria.

Diagnostic Interview for Borderlines (DIB; Gunderson et al, 1981), the most widely used method of assessing Borderline symptomatology; a score of at least 7 is required for a diagnosis of BPD.

Parasuicide History Interview (PHI; Linehan, Wagner & Cox, 1989), which obtains information about all parasuicide behaviour over a particular time period, and yields an estimate of the number of parasuicide *episodes*, parasuicide *acts* (which may be judged to cluster into a single episode), and serious suicide *attempts*. A medical risk score is obtained by summing method lethality (0 to 5), physical condition (0 to 4) and medical treatment (0 to 5).

Beck Depression Inventory (BDI; Beck et al, 1967), a 21-item scale for measuring severity of depression, particularly sensitive at low-moderate severity levels and for self-esteem aspects of depression.

Beck Hopelessness Scale (BHS; Beck et al, 1974) a 20-item scale for measuring hopelessness, a variable that has been found to mediate the link between depression and suicidality.

SF36 Health Profile (Ware & Sherbourne, 1992), a 36-item measure of general health and well-being, assessing eight domains including physical and/or emotional restrictions on work and leisure activities.

State-Trait Anger scale (STAS; Spielberger, et al., 1983), the most commonly used assessment of hostility levels, including state and trait measures.

Autobiographical Memory Test (AMT; Williams & Dritchel, 1992) is an 18 item cue-word task used to assess the extent to which patients retrieve generic or specific memories when asked to recall events from their past.

Use of Services Measure, completed by the assessor after interviewing the patient, and includes all usage of NHS and voluntary services over a specified time interval. Developed for an ongoing trial on preventing depressive relapse (Williams, Segal & Teasdale), it will enable us to complete a preliminary health economic analysis of DBT.

B. Subsequent ratings during and after treatment phase;

Clinical monitoring of patients for the purposes of this project will take place throughout the first four months of treatment. The *Parasuicide History Interview* will be completed at the start of each individual therapy session. After 4 months of treatment, symptoms will be re-assessed by administration of the *BDI*, *BHS*, *STAS*, and *SF-36*. The *Autobiographical Memory Test* will also be re-administered.

Data Analysis. Symptom status and parasuicide repetition rates in the patients over the first four months of treatment is the main variable of interest. Separate analyses will be made (a) on an intention to treat basis, and (b) on those patients who have completed at least 2 months of treatment. The initial measures will be used in a *multiple regression analysis* to examine the extent to which they predict symptom status during and after this treatment phase.

Sample sizes and power calculation. The results will allow us to estimate how many participants we should need to obtain sufficient power in a full Randomised Controlled Trial of the treatment.

Time-line

March-June 1997:	Recruitment and staff training
July-December 1997:	Treatment, pre and post assessment of change during first 4 months
Jan-Feb 1998:	Data analysis and write-up.

5. Justification for support requested

DBT is the only treatment for Borderline Personality Disorder that has proven efficacy. It directly addresses behaviours that are known to be difficult to manage (especially where parasuicide involves self-mutilation) both in a residential setting and in the community. At present the treatment of these problems is not systematic and the absence of effective strategies impacts on patients and staff alike. These behaviours create a high level of anxiety in patients, their families and the mental health professionals who work with them.

The grant will pay the salary of an experienced DBT therapist, Heidi Heard, to visit University of Wales, Bangor, for a year in order to train individuals and teams in the therapy, to help evaluate preliminary outcomes on the same dependent measures as used in Seattle, and to investigate the processes underlying change. She has been trained by Professor Linehan in Seattle, and has contributed both to the development of the therapy and the research evaluation studies, published in the *Archives of General Psychiatry*.

Other resources are requested for travel by patients to the Clinic, for travel by the Assessor to their homes on two occasions, for purchase of a portable PC for Heidi Heard for data entry and analysis, and for purchase of copyrighted questionnaires and photocopying of unpublished instruments.

6. Plan of dissemination and implementation

The results of the study will be disseminated through publications in the same range of journals in which the applicants have published their previous work (e.g. *Behaviour Research and Therapy*, *Behavioural Psychotherapy*). The results will also be publicised through papers at international meetings (e.g. World Congress of Behavioural and Cognitive Therapy). In addition to clinical and research seminars in UK and USA, the applicants contribute regularly to training workshops in Europe. There are thus excellent opportunities to disseminate such findings about new clinical approaches. Should this pilot study find evidence that the therapy is useful in the UK context, it is likely to become widely used and evaluated in other clinical settings. Our health economic analysis will be an important component of such dissemination, and an application for a full RCT would follow.

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Appendix 2

Ethics Committe Approval Letter

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Please refer to original text to see this material.



Appendix 3

Information Sheets for Participants - Subject Group

Information

The purpose of the assessment is to get a better understanding of people who often feel suicidal and who have problems with their emotions. We want to understand what are the factors that influence these things so that effective treatments may be developed.

Your key worker has told us that you have these sort of difficulties so we are asking you to think about taking part in our study. This will involve answering questions about your emotions, impulses, memory, and past and present treatment. We are also interested in any changes that may occur over time therefore, we would need to see you again in about four months.

Part of the assessment will be an interview and part will be questionnaires for you to complete. These assessments will be conducted at a place that is convenient for you and will take about two to three hours. The assessor will be a graduate psychologist.

Some people may find some of the questions difficult, but we hope that all will find it useful to talk about how they feel. Your key worker will be informed of the time of the appointment.

Important: your participation is voluntary. If you do not wish to take part in the study this will not affect the treatment you receive in any way. Also, if you do decide to take part but then change your mind, this will not affect any treatment you receive either.

If you would like more information please contact Heidi Heard on 01248 382205. Thank you for taking the time to read this information.

Professor J. Mark G. Williams
Dr. Michaela A. Swales
Ms. Heidi Heard
Dr. Sadie Francis
Ms. Bethan Jones

Professor of Clinical Psychology
Chartered Clinical Psychologist
Clinical Psychologist
Consultant Psychiatrist
Trainee Clinical Psychologist

School of Psychology
University of Wales Bangor

Appendix 4

Consent Form - Subject Group

Consent Form for an Assessment Session.

I have agreed to take part in the above named study. I have read the information sheet and I understand that I can withdraw from the study at any time without my treatment being affected in any way.

Name:

Signature:

Date:

Witness:

Thank-you for your agreement to participate.

Professor J. Mark G. Williams

Dr. Michaela A. Swales

Ms. Heidi Heard

Dr. Sadie Francis

Ms. Bethan Jones

Professor of Clinical Psychology

Chartered Clinical Psychologist

Clinical Psychologist

Consultant Psychiatrist

Trainee Clinical Psychologist

Cover Sheet - Demographic Details.

Reference Number :

Assessment Date :

Assessment 1 / Assessment 2 (delete as appropriate)

Gender :

Name :

Address :

Date of Birth :

Marital Status :

/

Occupation :

Education :

Appendix 5

Information and Consent Form for the Control Group

**Consent Form for an Assessment Session for a Research which is
part of a Doctorate in Clinical Psychology.**

The purpose of the study is to get a a better understanding of people who often feel suicidal and who have problems with their emotions. Your participation will provide comparative data for the study as part of a group that does not have the above problems.

Your participation is voluntary. The assessment will take apporximately one hour and will consist of a combination of interview-based and self-completion questionnaires.

Thank you for your participation.

Name:

Signature:

Date:

Witness:

Thank-you for your agreement to participate.

Appendix 6

Autobiographical Memory Test - AMT

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Please refer to original text to see this material.



Appendix 7

Spielberger's Anger Expression Inventory - STAXI

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Please refer to original text to see this material.

Appendix 8

Dissociative Experiences Scale - DES

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Please refer to original text to see this material.

Appendix 9

Beck Depression Inventory -BDI

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Appendix 10

Beck Anxiety Inventory - BAI

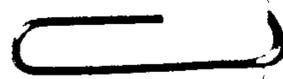
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Appendix 11

**Components that were used of the Parasuicide History Inventory -
PHI**

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Please refer to original text to see this material.*



Appendix 12

**Semi-structured Clinical Interview for the Diagnosis of Borderline
Personality Disorder -II**

SCID-II for BPD

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9

Appendix 13

DSM-IV Criteria for BPD

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Appendix 14

**T-tests comparing ages and years of education between BPD and
Comparison groups**

T-test for Independent samples of Group for AGE

	Mean	Standard Deviation	SE of Mean
BPD Group	31.0870	7.740	1.614
Control Group	31.1739	8.553	1.783

Levene's Test for equality of Variances: F = .393 P = .534

Variance	t value	df	2 - Tail Sig	SE of Diff
Equal	-.04	44	.971	2.405

T-test for Independent samples of Group for YEARS OF EDUCATION

	Mean	Standard Deviation	SE of Mean
BPD Group	16.6087	1.725	.360
Control Group	17.5217	2.428	.506

Levene's Test for equality of Variances: F = 4.604 P = .037

Variance	t value	df	2 - Tail Sig	SE of Diff
Unequal	-1.47	39.70	.149	.621

Appendix 15

**Chi-square Calculations of marital statuses between BPD and
Comparison Groups.**

**Chi-square Calculations of marital statues between BPD and
Comparison Groups.**

Status	BPD Group		Control Group		Raw Total	Total Percentage
	n	%	n	%		
Single	14	61	10	43	24	52.2%
Married	7	13	11	48	14	30.4%
Separated	1	4	0	0	1	2.2%
Divorced	5	22	2	9	7	15.2%

Chi-Square : Pearsons

Value : 7.523

DF: 3

Significance : .0569

Appendix 16

**Pearson Correlation Coefficient Analysis within the Comparison
group**

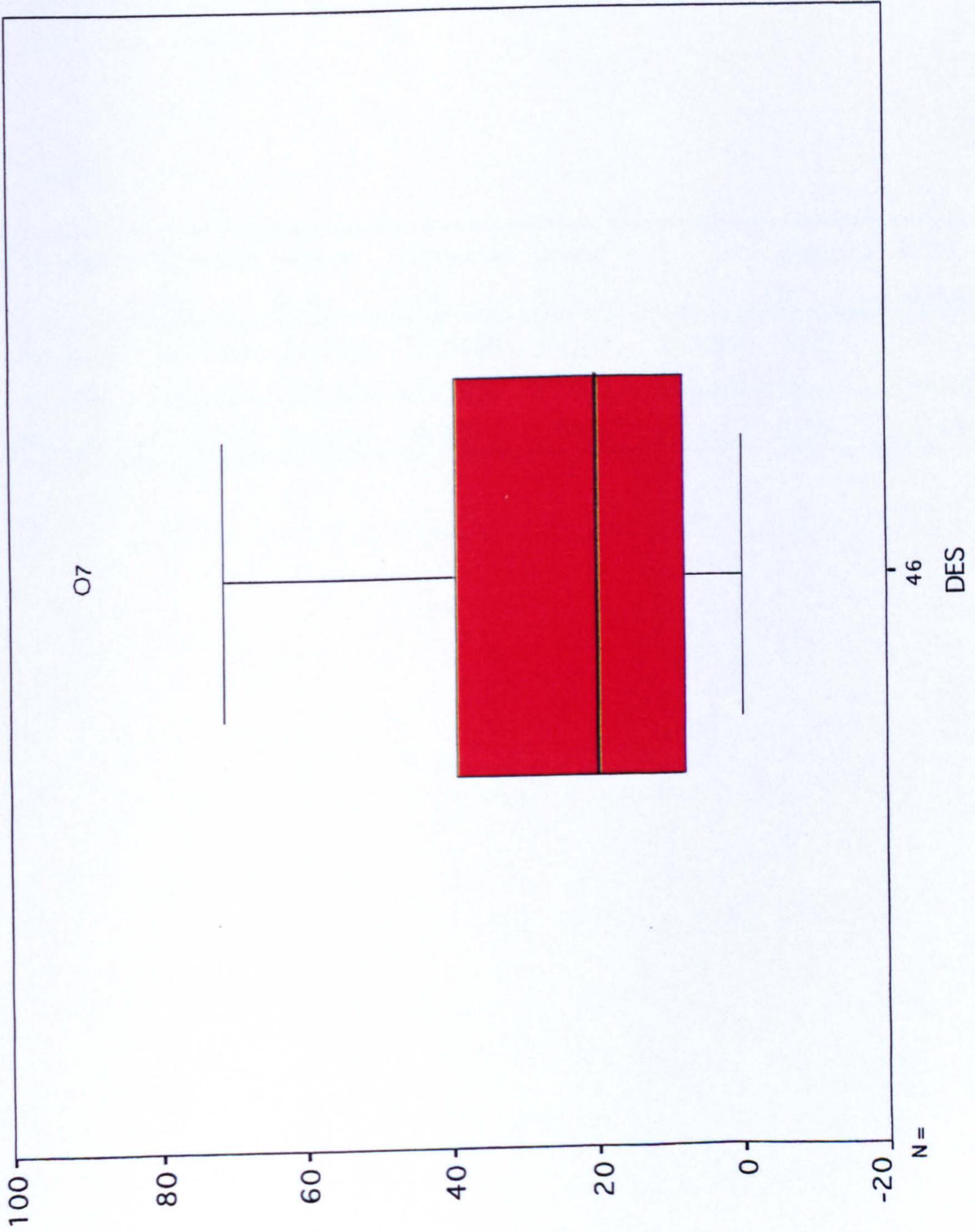
Correlation Coefficients within the Control Group

	Total of Specific Recalled	BDI	Tr-STAXI	BAI	DES
Total of Specific	1.0	.0361	-.0006	-.0310	.0665
BDI		1.0	.4039	.5916**	.6343**
Tr-STAXI			1.0	.4418*	.4083
BAI				1.0	.7396***

***p = <.001 **p = <.01 *p = <.05

Box and Whisper Chart Identifying an Outlier on the DES

MANOVA calculations between Cue Types on the AMT for Specific Responses



Appendix 18

MANOVA calculations between Cue Types on the AMT for Specific Responses

MANOVA calculations between Cue Types on the AMT for Specific Responses

Multivariate Test of Significance

Value : .47285
 Exact F : 15.60762
 DF : 3
 Error DF : 42
 Sig. of F : .000
 Effect size : .527

ANOVA

Variable	Hypoth SS	Error SS	Hypoth MS	Error MS	F	Sig. of F	ETA square
<i>Negative</i>	56.5434	72.7826	56.5434	1.6541	34.1828	.000	.43722
<i>Positive</i>	56.5434	105.565	56.5434	2.3992	23.5675	.000	.34880
<i>Neutral</i>	44.0217	97.2173	44.0217	2.2094	19.9239	.000	.31168

MANOVA calculations between Cue Types on the AMT For General Responses.

Multivariate Test of Significance

Value : .42710
 Exact F : 18.77
 DF : 3
 Error DF : 42
 Sig. of F : .000
 Effect size : .573

ANOVA

Variable	Hypoth SS	Error SS	Hypoth MS	Error MS	F	Sig. of F	ETA square
<i>Negative</i>	80.89	60.34	80.89	1.37	58.97	.000	.572
<i>Positive</i>	25.13	80.17	25.13	1.82	13.79	.001	.238
<i>Neutral</i>	18.28	76.86	18.28	1.74	10.46	.002	.192

Appendix 19

**Summary of the MANCOVA of the on each cue type recalled on the
AMT**

**Summary of MANCOVA With Group as the Dependent Variable,
Specific Responses for each Cue Type as Independent Variables, While
Controlling for Depression.**

Multivariate Test of Significance : Wilkinson Test

Value : .79906
 Exact F : 3.43682
 DF : 3
 Error DF : 41
 Sig. of F : .025
 Effect size : .201

Covariate : BDI

ANOVA

Variable	Hypoth SS	Error SS	Hypoth MS	Error MS	F	Sig. of F	ETA square
<i>Negative</i>	13.6006	72.7730	13.6006	1.6924	8.0363	.007**	.15746
<i>Positive</i>	11.9214	105.536	11.9214	2.4543	4.8573	.033*	.02394
<i>Neutral</i>	2.79653	94.2747	2.79653	2.1924	1.2755	.265	.02881

***p = <.001 **p = <.01 *p = <.05

**Summary of MANCOVA With Group as the Dependent Variable,
General Responses for each Cue Type as Independent Variables,
While Controlling for Depression.**

Multivariate Test of Significance

Value : 748
 Exact F : 4.6
 DF : 3
 Error DF : 41
 Sig. of F : .007
 Effect size : .252

Covariate : BDI

ANOVA

Variable	Hypoth SS	Error SS	Hypoth MS	Error MS	F	Sig. of F	ETA square
<i>Negative</i>	20.29	60.29	20.29	1.4	14.47	.000***	.025
<i>Positive</i>	5.88	80.17	5.88	1.86	3.15	.083	.068
<i>Neutral</i>	5.0	76.81	5.0	1.78	2.85	.098	.062

***p = <.001 **p = <.01 *p = <.05

Appendix 20

**A Scatter Plot Diagram of the Correlation between the Groups for
BDI and AMT (Specific)**

Specific memory score by BDI for two groups

