'A Preliminary Investigation of Affective Responsiveness in Borderline Personality Disorder: A Test of the Affect Dysregulation Hypothesis'

& Research Portfolio

Part One (Part Two bound separately)

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Part One (this bound copy)

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Chapter 1

Small Scale Service Related Project

**'An Investigation of Adult Mental Health & Older Adult
Clinical Cases seen by Clinical Psychology Trainees
in the West of Scotland'**

*Small Scale Service Related Project submitted in partial fulfilment of the requirements for
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Introduction

Doctoral degrees in Clinical Psychology (D.Clin.Psy / Clin.Psy.D) are postgraduate courses extending over three calendar years, involving full time study in conjunction with periods of practical experience in clinical settings. The courses aim to provide clinical psychology trainees (CPT's) with sufficient teaching and supervised clinical experience to fulfil the requirements of the Professional Affairs Board of the British Psychological Society (BPS) and the Department of Health.

The West of Scotland D.Clin.Psy course has the aim of preparing CPT's as skilled clinicians and applied researchers for employment as Chartered Clinical Psychologists within the NHS and in areas of clinical research, adhering to a national model and to the model of scientist-practitioner. The main objectives of this course are to provide CPT's with a working knowledge of psychological problems, encompassing aetiological factors, theoretical and therapeutic models, and knowledge of relevant literature, in addition to a broad range of professional and practical skills within a clinical and research capacity.

An important requirement, as part fulfilment of the D.Clin.Psy, is the need for each CPT to work within clinical placements for at least 50-60% of the total available course time. This is to enable the development of core skills through experiences with different client groups and to achieve a full range of psychological work experience in various health settings. In the West of Scotland D.Clin.Psy course, it is necessary for CPT's to gain core experience working with adults (ten month placement), older adults (experience is often gained within the ten month adult placement), children (six month placement) and clients with a learning disability (six month placement). There are also two six-month specialist placements within the last year of study.

Within each clinical placement there are a number of requirements. These include the development of skills in assessment, formulation, intervention, evaluation and reporting, within a wide range of clinical problems across the age spectrum and in a variety of settings. Within core experience of *Adult* psychological problems, CPT's are required to gain, 'supervised experience with a range of clinical approaches and techniques of assessment and intervention. There should be experience within a range of psychological problems including acute, severe and long-term problems with a range of severity and across the lifespan' (BPS, 1995). Similar types of experience are to be gained from the *Older Adult* placement, including assessment and intervention of both functional and organic problems, both directly with older adults and indirectly with families and/or carers.

Emphasis is placed particularly on gaining 'core experience', this being distinguished from 'core placements', as the former requires trainees to gain all of the required experience with a particular client group. Detailed monitoring of clinical experience is therefore necessary and essential by all CPT's in order to safeguard the continuity and quality of core experience. Evaluation of the services provided by clinical psychology trainees is also important in order to monitor the efficacy of such services within the NHS, to facilitate their appropriate development, and to improve the clinical and cost effectiveness of such health care interventions.

It must be noted that core experience may not be gained within one core placement alone, but across a number of placements. For example, the West of Scotland D.Clin.Psy course allows CPT's to complete their Older Adult experience over the Adult Mental Health (AMH) placement, and also within a specialist placement later on in the course.

The following report covers the first placement in which CPT's were engaged, that is the AMH placement, which was undertaken at various hospitals and clinics in the West of Scotland.

Aims & Research Questions

The main aim of this study was to investigate and compare particular aspects of Adult and Older Adult clinical cases seen by CPT's across the first ten-month clinical placement (AMH) on the West of Scotland D.Clin.Psy course. Such investigations aimed to assist the evaluation of the services provided by CPT's.

The research questions to be answered were:

- What is the nature of the clinical cases being referred to CPT's within Adult and Older Adult placements?
- What services are CPT's providing to the NHS?

These questions were answered by investigation of the following areas:

- The number of cases seen by each trainee, over the AMH placement.
- The number of therapeutic sessions with each client.
- The nature of the problem for which the client was referred.
- Intervention used with each client.
- Outcome following intervention.

Sample

The sample comprised of both Adult and Older Adult clients who were assessed and/or treated by CPT's within their first year AMH placement. The study focused on the first year trainee intake from the previous three years (1995 – 1997), comprising a total of thirty CPT's. Particular CPT's were omitted from the study due to incomplete or unavailable 'log books'.

Methodology

Information required to answer the research questions was made available from CPT 'log books'. Such logbooks contain a record of clinical cases seen by each CPT whilst on placement. Information in each log book includes the clients date of birth, the nature of the problem for which they were seen, the number of sessions the given treatment encompassed, the intervention applied within treatment, and the outcome of treatment.

All information in the logbooks was made anonymous regarding the CPT, supervisor and placement. The researchers supervisor ensured that such information was omitted from each logbook before presentation to the researcher. The CPT's who submitted the logbooks previously adhered to client confidentiality. All logbooks were returned following completion of the study, and no photocopies were made within its duration.

Analysis predominantly relied on categorisation and interpretation of the information in the CPT's logbooks, using Microsoft Excel (Version 5.0) as outlined in the results section. In order to obtain a degree of uniformity and reliability, the main strategies used for intervention, in addition to outcome after intervention, were coded according to the project

formulatory categories of Effective Purchasing and Providing in the Community (EPPIC) (White & MacPhail, 1995).

The coding for three logbooks according to the EPPIC formulatory categories was subjected to a test of inter-rater reliability from two raters. In order to ensure reliability, the two raters coded the stated interventions and outcomes, with this resulting in 74% agreement regarding intervention and 76% regarding outcome. Where disagreement was present, particular rules were agreed upon and results were recoded to ensure 100% reliability, with final agreement being reached regarding methods of systematic categorisation.

The following rules regarding categorisation were adopted:

- Descriptions of the nature of the problem, intervention and outcome, within CPT's logbooks, were coded as *specified* within the logbooks and were *not* inferred by the researcher.

- In the absence of specification regarding any of the above, the category 'unknown' was adopted.

- Intervention specified as 'relaxation' was categorised under 'anxiety management'.

Results

The results were divided into five main sections: (I) number of clinical cases, (II) number of sessions, (III) nature of the problem, (IV) intervention, and (V) outcome after intervention.

I & II. *Number of Clinical Cases & Number of Sessions*

The variability of the amount of clinical cases seen by each CPT (including clients who did not attend (DNA) their first appointment) over the AMH placement was investigated by measures of central tendency and dispersion as shown below in Table 1 and Figure 1. The mean percentage of Older Adult clients within each CPT's AMH caseload was also calculated, in addition to the amount of client contact (the number of sessions) that was taken as an average of the sessions for all clients seen by each CPT. These results are also shown in Table 1.

[Insert Table 1 here]

[Insert Figure 1 here]

III. *Nature of Problem*

The nature of the problem for which the client was referred was categorised under main headings in accordance with particular DSM IV Axis I clinical disorders (Appendix 1.2). Note that certain Axis I clinical disorders, in addition to Axis II personality disorders, were included under 'other' due to only a small number of clients presenting such disorders (Appendix 1.3). Clinical disorders which were commonly seen by CPT's, but classed under DSM IV's category 'Other Conditions That May Be a Focus of Clinical Attention', were given their own heading throughout analysis. Such disorders included 'sexual abuse', 'relational problems', 'bereavement', 'anger problems' and 'behavioural problems'.

Figures 2 and 3 depict the percentage of disorders (within the Adult and Older Adult placements, respectively) most often seen for psychological *treatment,* overall by CPT's within this study.

[Insert Figure 2 here]

[Insert Figure 3 here]

It is important to note that the percentages of treatment cases seen in Figures 2 and 3 were derived *independently* of comorbidity. Coding each stated disorder present in the logbook for each client seen by the CPT's elucidated such percentages. Comorbidity was then estimated by calculating the mean number of diagnoses for each client seen by each CPT (Table 2).

[Insert Table 2 here]

It can be seen from Figures 2 and 3 that anxiety disorders were highly prevalent within the CPT caseloads. This was investigated further to elucidate the exact nature of such anxiety disorders. These results are depicted in Figures 4 & 5 (Appendix 1.4), for Adult and Older Adult anxiety disorders respectively. Analysis was additionally conducted regarding *assessment* cases only. For adult clients, 20% of assessments were regarding intellectual functioning, 38% regarding memory functioning, 15% for assessment of dementia, and 27% were classed as 'other'. For older adult clients, 38% were regarding memory functioning, 54% regarding dementia, and 8% were classed as 'other'.

IV. *Intervention*

Table 3 shows the most common interventions employed by trainees for both Adult and Older Adult groups, in order of descending frequency in accordance with the Adult group.

[Insert Table 3 here]

V. *Outcome after Intervention*

Table 4 shows the main outcomes following treatment, for both client groups. Particular reasons for the aims of treatment *not* being achieved are additionally outlined.

[Insert Table 4 here]

Discussion

The number of clients who were seen for assessment and/or treatment over the AMH placement varied considerably. The number of Adult clients ranged from 12 to 29, with the mean being 20 (SD=5), and the number of Older Adult clients ranged from 0 to 8, with a mean of 3.13 (SD=2.1). Of the thirty CPT's within this study, seven did not gain experience with two or more older adult clients, despite this being a specified course requirement to fulfil Older Adult core experience criteria. This may have been due to a lack of AMH placements offering opportunities to work with Older Adults, but it would mean that such experience would need to be fulfilled within a placement in a later year of training, which could lead to logistical problems. The reasons for almost a quarter of trainees not fulfilling Older Adult core experience were beyond the scope of this study. They would require further detailed analysis to ensure that future CPT's gain sufficient Older Adult experience within the first placement. The mean percentage of Older Adult

clients seen within the AMH placement (13%) across all trainees appears to be reasonable, however the large standard deviation (8.61) again reflects the amount of trainees who did not gain sufficient Older Adult experience.

Upon consultation of the logbooks, it was speculated that some CPT's did not include the cases who did not attend (DNA) their first appointment, as many log books had *no* clients who initially DNA, this being unlikely over a ten month placement. Since other CPT's included clients who DNA their first appointment, these were included when calculating the overall number of clinical cases, to enable subsequent calculation of the DNA rates. The overall DNA rate for Adults was only 3% for the first appointment. However, such a low rate may not be truly representative due to suspected discrepancies in the completion of the CPT logbooks. Thus in order to reach firm conclusions regarding the amount of clients seen over the AMH placement and the initial DNA rates, stricter guidelines regarding logbook criteria must be outlined to future CPT's.

The number of sessions which clients were given during the AMH placement reflected the mean amount of *direct* client contact, *excluding* those who DNA initial and subsequent appointments. The mean number of sessions for Adults was six, suggesting that the majority of clients were seen for short-term therapy. This finding was expected due to the nature of the AMH placement in terms of duration and the nature of clients referred to CPT's. Similar findings were apparent regarding Older Adults, despite the range of sessions being greater. However, this latter observation was likely to have been due to the smaller numbers of Older Adults seen over the placement.

From the figures in Table 1, it was possible to deduce the mean amount of client contact that CPT's experienced over the AMH placement. First year CPT's are on clinical placement for 120 days over the ten months (excluding annual and study leave), and are estimated to be in direct client contact for 120 hours (1session = 1 hour). Thus CPT's experience direct client contact for approximately one hour per placement day. This appears reasonable if consideration is given to the hours allocated to placement induction, departmental meetings, supervision, administration, research whilst on placement, annual and study leave, in addition to travelling time within placement and hours lost due to clients missing appointments. From this information however, the net gains being made to the NHS via the employment of CPT's remain inconclusive and require further research.

Upon investigation of the nature of the problem for which clients received treatment, anxiety disorders were ascertained as the most prevalent problem for both client groups. Figure 2 shows that anxiety disorders comprised almost half (47%) of the disorders within the Adult client group, although it is again important to note that the results in Figure 2 are independent of comorbidity. Anxiety disorders were investigated further by analysing exactly which disorders were presented within this group. Figure 4 showed that the majority (28%) remained unspecified, this again reflecting the importance of adopting stricter criteria regarding logbook completion. Similar results for Older Adult clients were found, again with a large proportion of unspecified anxiety disorders. Anxiety states are common in both psychiatric and general practice (Hawton, Salkovskis, Kirk & Clark 1989), with the stated clients reflecting this. Such disorders may also be particularly prevalent in CPT caseloads, with CPT's being more likely to be allocated the treatment of less complex cases due to their relative clinical inexperience.

Mood disorders, comprising mainly of 'depression' were frequently presented within both Adult and Older Adult groups. Again, this result was not unexpected due to the high prevalence rates of depression within clinical practice. Bereavement was commonly seen within the Older Adult group, reflecting the greater likelihood of this occurring with increasing age. Behavioural problems were also common in Older Adults, likely to be a consequence of the increased prevalence of dementia with age. Memory problems were frequently assessed in both client groups and, as expected, a greater number of dementia assessments were conducted in the Older Adult population. IQ assessments were frequently conducted with Adults but were absent for Older Adults, perhaps due to the greater use of memory and dementia assessments in this latter group. The category 'Other', regarding Adult assessment cases, included head injuries, various medical conditions and unspecified assessment cases, and comprised just under a third of all assessment cases.

It was interesting to note that CPT's were treating clients who had a history of sexual abuse, eating disorders or substance related disorders. These problems are likely to involve more complex issues that may pose difficulties for inexperienced CPT's. However, supervisors may hold varying opinions regarding the appropriateness of CPT's treating such cases. Inspection of the logbooks showed that most of these disorders were part of a comorbid diagnosis, thus it is a possibility that the clients were not initially referred with the above problems, but that they were secondary disorders that became apparent as treatment progressed. The actual degree of comorbidity was difficult to ascertain, again due to differences in logbook completion. Thus Table 2 may not be an accurate reflection of the actual amount of comorbidity present.

Common interventions used with clients appeared to reflect the dominant cognitive-behavioural approach within the West of Scotland D.Clin.Psy teaching, as cognitive, behavioural and anxiety management techniques were the most frequent. These interventions may also frequently be used due to the nature of the disorders being referred. It should be noted that the interventions were coded according to those *stated* in the CPT logbooks, and since CBT can include elements of anxiety management and vice versa, such interventions may be misrepresented in Table 3. Clients seen for assessment only appeared to be rather frequent, reflecting significant DNA rates following the first appointment.

Regarding outcome following intervention, roughly half of both client groups achieved the aims of treatment, either fully or partially. A quarter of Adult clients did not achieve treatment goals, this mainly being a consequence of consistent non-attendance thus leading to early discharge from treatment. Non-compliance with treatment and adverse environmental factors additionally affected treatment progression. The former factor was especially prevalent in the Older Adult group, possibly reflecting negative attitudes regarding psychological treatment. 10% of Adult cases were referred on to the CPT's supervisor at the end of placement. This percentage could be decreased by CPT's treating cases near the end of placement for which an early discharge is envisaged. It may again be suggested that CPT's keep full and accurate logbook records, as a number of CPT's did not state the intervention used or the outcome found, these being classed under 'unknown'.

CONCLUSION

From this study, it may be concluded that CPT's are mainly treating common psychological problems such as anxiety and mood disorders within well-established

treatment frameworks. Outcomes following intervention are favourable, with approximately half of all clients fulfilling treatment aims. The main reasons for clients not achieving treatment goals appeared to be similar to those that are common in general clinical practice, often out-with the trainees control (e.g., high non-attendance rates). These findings, in addition to the amount of direct client contact, clinical and research work, suggest that CPT's are providing a useful service and may be providing a net gain to the NHS. However, in order for the evaluation of the services provided by CPT's to be conclusive, further research is required.

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Table 1: Number of cases, sessions & Older Adults seen over the AMH placement.

	Number of Clinical Cases		Number of Sessions		Older Adult Clients Seen (%)
	ADULT	*OLDER ADULT*	*ADULT*	*OLDER ADULT*	
Mean	20	3.13	6	4.3	13
Standard Deviation	5	2.1	1.2	2.7	8.61
Mode	19	2	5.5	4	10
Range	12 - 29	0 - 8	4.2 - 8.5	1 - 12	0 - 40

Figure 1: Number of clinical cases during AMH placement
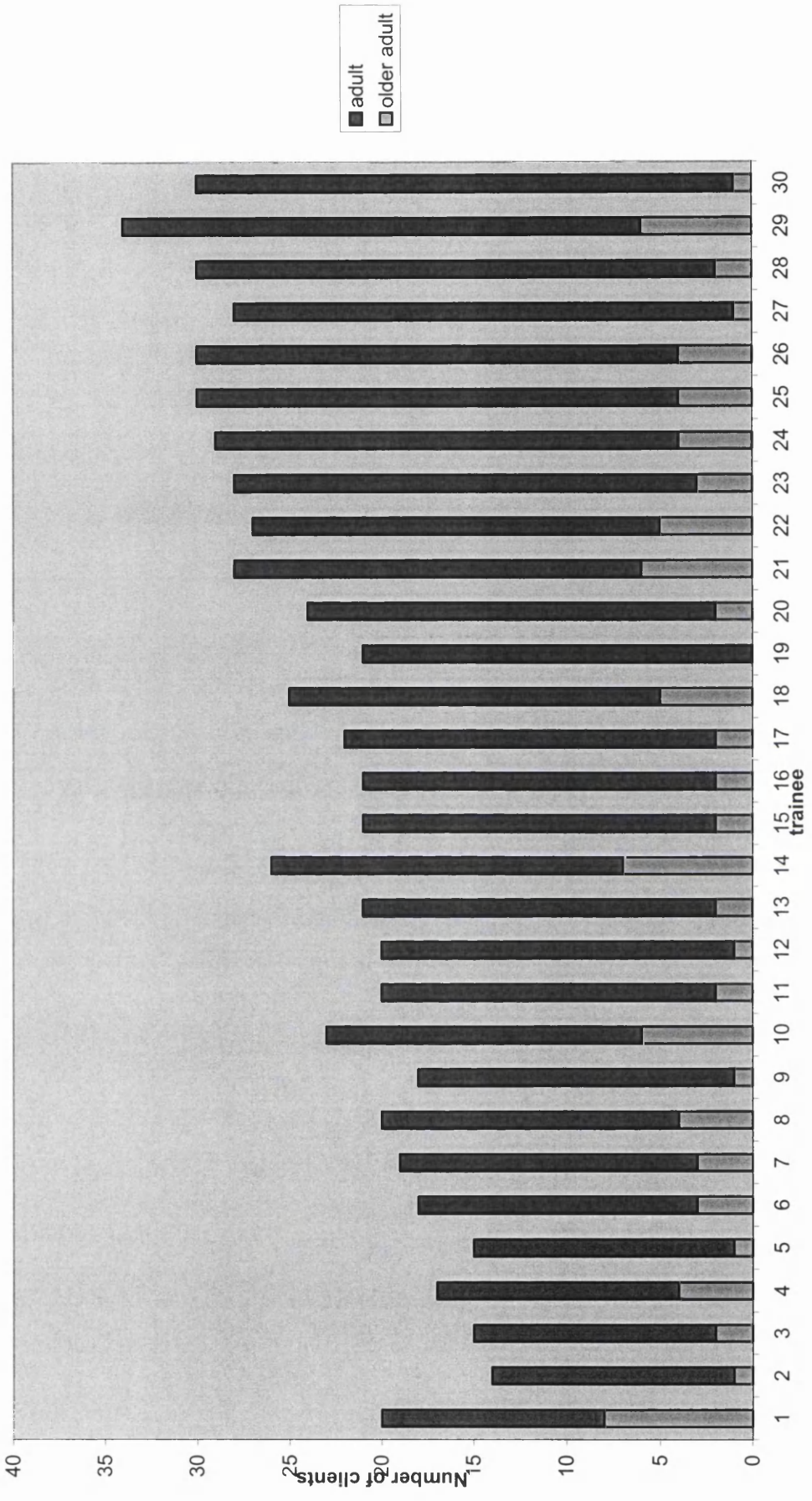
Figure 2: Adult treatment cases

- anxiety disorders 47%
- mood disorders 20%
- other 9%
- sexual abuse 2%
- anger problems 4%
- somatoform disorders 3%
- interpersonal problems (inc. sexual & marital difficulties) 5%
- bereavement 3%
- eating disorders 5%
- substance related disorders 2%
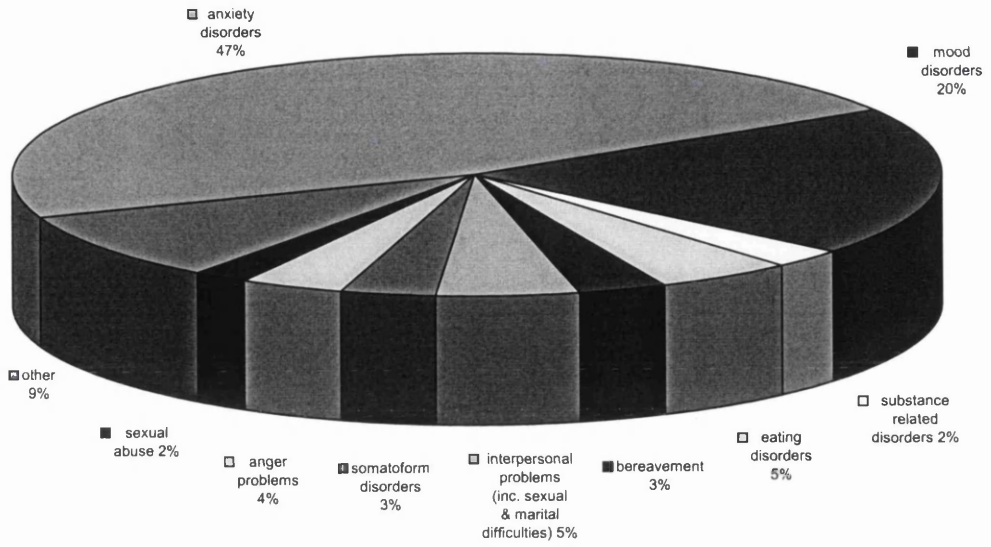
Figure 3: Older adult treatment cases

- anxiety disorders 45% (n=38)
- mood disorders 25% (n=22)
- other 5% (n=6)
- anger 3% (n=3)
- behavioural problems 7% (n=7)
- bereavement 11% (n=10)
- somatoform disorders 2% (n=1)
- substance related disorders 2% (n=2)
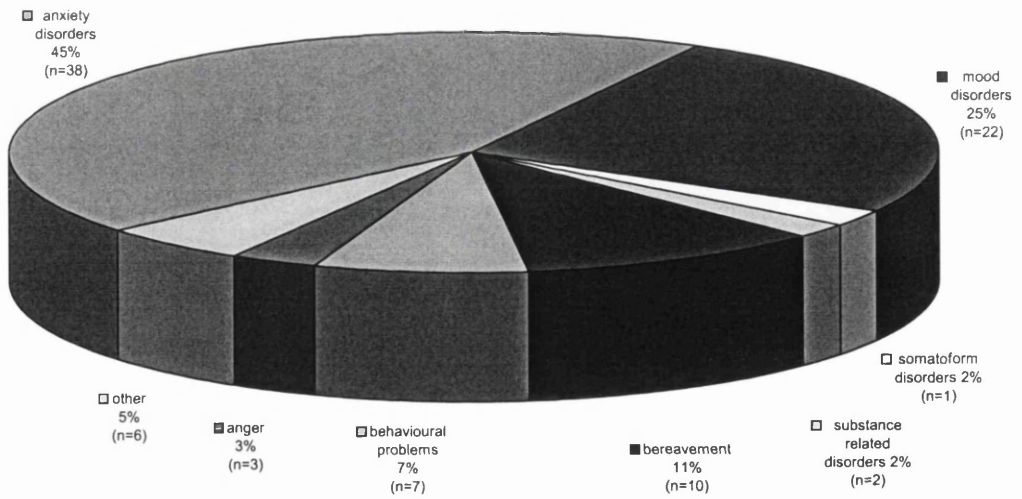
Table 2: Number of comorbid diagnoses present

	ADULT	*OLDER ADULT*
Mean	1.5	1.3
Standard deviation	0.3	0.2
Range	1.1 - 2.3	1 - 2.2

Table 3: Main Interventions Employed within the AMH Placement

	ADULT	OLDER ADULT
INTERVENTION	*FREQUENCY (%)*	*FREQUENCY (%)*
Anxiety Management	20	13
Unknown	15	12
Psychometric Assessment	13	35
Cognitive-Behavioural Therapy	12	6
Behavioural Therapy	12	13
Assessment only	8	13
Cognitive Therapy	5	4
Education	4	1
Problem Solving	4	–
DNA 1st appt.	3	–
Other*	3	–
Counselling	1	2
Behavioural Programme	–	1

* 'other' includes Interpersonal therapy & Psychodynamic therapy

Table 4: Outcome following intervention

	ADULT	OLDER ADULT
OUTCOME	*FREQUENCY (%)*	*FREQUENCY (%)*
aim fully achieved	25	40
aim partially achieved	22	18
problem resolved by first appointment	1	2
inappropriate referral	0	2
reassessment required (re: psychometric assessment)	2	12
refer to supervisor	10	3
refer to specialist	4	4
unknown	12	7
aim not achieved:	24	12
-consistent non-attender	63	20
-non-compliance	18	46
-adverse environ. factors	10	7
-moved from area	4	7
-admitted to hospital	1	0
-deceased	1	13
-deteriorated condition	1	7
-other	2	0

Chapter 2

Literature Review

**'Affect Responsiveness & Dysregulation in
Borderline Personality Disorder'**

*Literature review submitted in partial fulfilment of the requirements for the degree
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1. Introduction

The experience of emotion, or affect, is a feature of everyday life that involves various components including behaviour, physiology, communication and experience (Levenson, 1992). (The words 'affect' and 'emotion' are used synonymously). We often attempt to influence not only how we feel, but also our emotional experiences both consciously and unconsciously. Such attempts at emotion regulation are considered necessary for optimal daily functioning and essential for 'mental health' (Freud, 1961).

Emotion regulation involves the ability to inhibit inappropriate behaviour related to strong emotions, to reduce or increase arousal induced by emotions, and to refocus attention according to various contextual demands and the individual's personal resources for regulation (Gottman & Katz, 1990). Within certain conditions, patterns of emotion regulation may interfere or impair emotional functioning, and symptoms of psychopathology may then develop. Such interference may compromise the optimal functioning of other processes such as attention, social interactions and emotional expression (Keltner & Kring, 1998). Should such difficulties occur, *emotion dysregulation* results. The term 'emotion dysregulation' is synonymous with the term 'affective instability' (Linehan, 1987). 'Emotional oversensitivity' and 'excessive mood fluctuations' have also been used to describe such inability to regulate affective responses (e.g., Farchaus-Stein, 1996; Lumsden, 1993).

This review will focus on previous studies that have examined affective instability within a particular DSM IV Axis II personality disorder: *borderline personality disorder* (BPD). Studies of emotion dysregulation have primarily focused on psychiatric populations with diagnoses of schizophrenia or affective disorders (Levine, Marziali & Hood, 1997).

However, despite the acknowledgement of affective instability as a core feature of BPD (American Psychiatric Association, 1994; Farchaus-Stein, 1996), there have been few systematic studies of such instability, emotional responsiveness and emotional processing in the BPD population. Previous studies have provided inadequate knowledge regarding the processes involved in emotional dysregulation, in addition to its specific nature (e.g., Cowdry, Gardner, O'Leary, Leibenluft & Rubinow, 1991). Research in such areas is clearly important, not only from a theoretical perspective, but is also of great clinical significance, as such emotion dysregulation may subsequently lead to maladaptive behaviours (e.g., parasuicide, aggression, impulsive acts) aimed at relieving intense affect (e.g., Linehan, 1987; Paris, 1992; Shearin & Linehan, 1994). Prior to reviewing studies in these areas, an outline of affective instability in BPD, in addition to models of emotional (dys)regulation, will be introduced.

2. Emotional dysregulation in BPD

Affective instability in persons with BPD is characterised by short lasting, rapidly changing and extreme shifts in mood from baseline emotional state into dysphoria, irritability or anxiety (APA, 1994). Linehan (1987; 1993) hypothesises that, as a result of 'affective hyperarousal', such shifts in affect reflect a high sensitivity to emotional events. This sensitivity includes a heightened awareness of emotional (especially negative) cues in the environment, a low threshold for emotional reactivity (therefore a quicker reaction to such cues), and a slow return to emotional baseline state. Such emotional appraisal (involving both attention to and interpretation of emotional cues) may be viewed as one of the essential precursors to emotional responding (e.g., Dodge, 1991) and may relate to emotional dysregulation in BPD individuals.

Research regarding the regulation of *different* affect states is unclear. The theory and definition of affective dysregulation in BPD mainly points toward regulation difficulties in *negative* affect (Linehan, 1987; DSM IV (APA, 1994)). Additionally, clinical and research reports suggest that affect is predominantly dysphoric, with many individuals with BPD reporting chronic and intense feelings of negative emotions, including anger, depression, anxiety and loneliness (e.g., Coid, 1993; Kruedelbach, McCormick, Schultz && Grueneich, 1993; Snyder & Pitt, 1985). However, it has been suggested that borderline individuals may also have difficulty regulating positive emotions and their sequelae (Herpertz, A.Gretzer, Steinmeyer, Muehlbauer & Schuerkens, 1997). Further research into emotional reactions toward both positive and negative emotional stimuli would therefore aid understanding regarding the nature of emotional cues contributing to intense affect, and subsequent dysregulation.

3. Models of emotion regulation

Various models of emotion regulation have been forwarded, regarding emotion in general and from within the framework of BPD. Figure 1 outlines Gross's (1998) model of emotion, adapted from similar models by Levenson (1994), Ekman (1972) and Plutchik (1990).

[insert Figure 1 here]

According to this model, our interpretation (or appraisal) of the 'emotional cues' in our environment mediates their subsequent impact. When a situation is interpreted as presenting a challenge or opportunity, a biologically based 'emotion program' is triggered (Lazarus, 1991). A set of 'response tendencies' is then triggered to facilitate adaptive

responding. Such adaptive responses may then be modulated (e.g., exaggerated or inhibited) prior to production of the final manifest emotion. There are vast individual differences regarding each of these processes. For example, individuals' everyday experiences vary widely, and different emotional cues may be evaluated to varying degrees. There are also important individual differences in the activation thresholds of emotional responses, relating to how their emotional response tendencies are translated into emotional responses (Larsen & Diener, 1985; 1987).

In relation to BPD, such individual differences are apparent. For example, emotional responses of borderline individuals appear to consist of both excesses and deficits, and may relate to their aforementioned dysfunctional behaviours (Figueroa & Silk, 1997; Linehan, 1993). Additionally, the hypothesised high emotional sensitivity of BPD individuals may have a bearing on subsequent emotional responding. Indeed, researchers have investigated such individual differences in BPD. A comprehensive theory, proposed by Linehan (1987), provides an account of emotional dysregulation in BPD, outlining possible predispositions and influences toward individual differences.

4. Theoretical accounts of emotional dysregulation in BPD

Linehan's (1987) biosocial theory is based on transactional and learning models, with the hypothesis that emotion dysregulation is the *primary* underlying mechanism for BPD. Features of BPD are produced by a combination of emotional vulnerability, and maladaptive and inadequate emotion regulation. Characteristics of emotional dysregulation include intense emotional responses toward emotional stimuli, a low threshold for emotional reactivity, and a slow return to baseline emotional state. Her theory suggests that the aetiology of emotional vulnerability in BPD is partly biologically

based, and partly exacerbated by exposure to an 'invalidating environment'. In such an environment, an individual's beliefs about themselves and their circumstances are continually devalued, invalidated, and enforced as wrong or pathological. Examples of such environments include neglect, physical abuse, sexual abuse, and direct verbal forms of communicating invalidation (Wagner & Linehan, 1999). Thus borderline individuals appear to be emotionally vulnerable as well as deficient in emotion regulation skills, with such difficulties being biologically predisposed and exacerbated by specific environmental experiences. The result of this combination often leads to a failure to understand and control emotions.

Actual biological mechanisms of emotion dysregulation in BPD are unclear. Possible influences point to various stages in development (e.g., genetic influences, intrauterine events, and disadvantageous childhood environments.) It has been hypothesised that some BPD individuals may have a low threshold for limbic brain activation, an area associated with emotion regulation (Cowdry, Pickar & Davies, 1985). Further support comes from neurochemical research, showing that cholinergic systems located in limbic structures are often imbalanced in BPD individuals (Kellner, Post, Putnam et al, 1987). Dysregulation in noradrenergic or gamma-aminobutyric acid (GABA)-minergic systems may also play an important role in affective instability (Gurvits, Koenigsberg & Siever, 2000).

5. Findings from affective instability research

As previously mentioned, initial appraisals of emotion may relate to emotional dysregulation in BPD. Indeed, studies have examined and found some support for the theory that BPD individuals have a heightened sensitivity to emotional stimuli. For example, Frank & Hoffman (1986) designed a study to investigate 'empathy' in borderline

individuals (i.e., the ability to be aware of the emotional experience of others). The accuracy of identifying the emotional content (as positive or negative) of videotaped vignettes was investigated, among ten BPD individuals, compared to a general outpatient control sample. Results suggested that the BPD participants were more accurate in their identification than the control participants. However, this study did not specifically investigate how the various vignettes influenced the participant's own levels of affect, but only focussed on their perception of different affective states.

Wagner & Linehan (1999) explored the recognition of emotional facial expressions among a group having been diagnosed with BPD, compared with a group having a history of childhood sexual abuse (CSA) (with no diagnosis of BPD), and a control group. Recognition was investigated by employing two slide sets of 'emotional' and 'neutral' faces: (1) 'Japanese & Caucasian Facial Expressions of Emotion' and (2) 'Japanese & Caucasian Neutral Faces' (Ekman & Matsumoto, 1992). Responses of recognition toward these two sets of pictures were categorised by a computer program, the Human Interaction Laboratory Emotion Lexicon (HELEX; Ekman & Irwin, unpublished manuscript). This study also revealed that borderline individuals were more sensitive toward negative emotional cues, although the effect was weaker than initially hypothesised. In comparison to both the control and CSA groups, the BPD group was more accurate on the identification of expressions of fear only, thus allowing the authors to conclude that facial recognition ability may not be strongly related to emotion dysregulation within the BPD population. However, they noted that the small sample sizes might have had an effect on the study's ability to detect further significant group differences.

A criticism of this study relates to the possibility that the results were influenced by the experimental instructions. For example, the BPD group were less accurate in recognising neutral slides. This may have been influenced by a statement asking participants to 'make their best guess' in identifying emotion in the slides, even in those with neutral emotion. The BPD group may have been influenced by this instruction, and therefore actively sought *any* emotion even if there was none evident. In addition, was difficult to determine whether the BPD group's ability to identify facial expressions was due to a general heightened ability, or to a state-dependent ability, influenced by their current emotional state. The mood dependent nature of behaviour in BPD, having been investigated previously by Linehan (1993), tends to suggest that BPD individuals may indeed demonstrate heightened recognition ability under emotionally arousing conditions. Such ambiguity suggests that future research should identify and control for baseline emotional state prior to experimental investigations.

Studies regarding emotional processing in BPD may additionally provide further insight into affective responsiveness and dysregulation. For example, studies investigating the recall and recognition of presented emotional stimuli may provide insight into the hypothesised 'high sensitivity' of BPD individuals toward emotional stimuli, in addition to the persistence of induced affect over time. To the authors' knowledge, only one study has examined such information processes in BPD (Kurtz & Morey, 1999). This study investigated recall and recognition abilities, using words of differing emotional valence in three participant groups: 1) major depressive disorder (MDD) with BPD, 2) MDD without BPD, and 3) adult controls. The prediction was that the BPD group would show deficits in recalling and recognising emotive words without displaying the mood congruent effect typical of MDD (where memory performance is enhanced for material that matches the

learners' mood (Ashcraft, 1994)).   This was hypothesised due to the unstable nature of mood state and self-concept in BPD (Millon & Davis, 1996), as a result of a 'relatively underdeveloped or poorly integrated self-schema' (Kurtz & Morey, 1999).   This underdeveloped schema is in contrast with the typical schemas of MDD, which are seen to emphasise negative content, and therefore bias information processing toward negative material (Beck, Rush, Shaw & Emery, 1979).

Results indicated that the BPD group significantly recalled and recognised fewer words than controls, whilst the MDD participants and controls did not differ significantly. Consistent with other studies (e.g., Burt, Zembar & Niederehe, 1995) the controls recalled more positively valenced words, in comparison with negative ones.   This effect was also found in the BPD group (but not in the MDD group) supporting hypotheses that the self-schema functioning and depressed state in BPD are qualitatively distinct from MDD (Gunderson & Phillips, 1991).   Replication of this study would be necessary to confirm such findings, in addition to similar research with BPD participants who do not have MDD.   Additionally, as responses on the recognition task were only measured in terms of accuracy, future studies should also consider providing information regarding the *speed* of recognition, in order to provide insight into the processing of emotional stimuli and the nature of emotional instability over time.

Another study did *not* find evidence to support emotionally biased memory, but rather a general failure to remember complex material (O'Leary et al, 1991).   Apart from those already mentioned, there appear to be no other published studies which investigate possible emotional response bias in BPD memory functioning (O'Leary, 2000).   Any studies undertaken would clearly help to increase the understanding of emotional processing in

BPD, in addition to possible aetiological factors in the development and maintenance of BPD (Lumsden, 1993).

Other research studies have not provided *specific* information with regard to the pattern and nature of emotional responding in BPD individuals. Cowdry, Gardner, O'Leary, Leibenluft and Rubinow (1991) examined differences amongst self-rated patterns of mood on a visual analogue scale. Four participant groups were employed: 1) major depression, 2) BPD, 3) pre-menstrual syndrome (PMS), and 4) a non-clinical control group. Measures of affect were recorded twice daily over a two-week period, and general support was found for the hypothesis that BPD individuals experience more mood variability than other clinical and non-clinical samples. However, as visual analogue scales are often considered a crude measurement of mood due to possible limit effects and the tendency for some people to mark extreme points on the scale, the reliability of the ratings may be questioned. However, to some degree, methodological issues remain a consideration, and may be unavoidable, for all self-rating scales. The elucidated group differences, regarding the degree of random variability of mood-states, were also suggestive of different *patterns* of variability amongst the groups. However, the authors did not further investigate the nature of the mood fluctuations within the groups. For example, the participants 'general mood' was only rated on the visual analogue scale, thus the results did not specifically identify the variability of positive and negative mood states. This study therefore highlights the need for further investigation regarding the *nature* of affect fluctuations.

A further study by Herpertz, Gretzer, Steinmeyer, Muehlbauer, Schuerkens & Sass (1997) examined the relationship between affective instability and impulsivity in various personality disorders, including BPD. An experimental approach, in the form of an affect-

inducing short story, was employed. This approach aimed to induce a wide range of different affects of positive and negative emotional valence, which could be subsequently analysed with regard to quality, intensity, and alterations over time. Results tended to indicate that the participants with personality disorders, which featured impulsive behaviours (including BPD), experienced affect of higher intensities following either unpleasant or pleasant stimulation. This result of affective over-reactivity to stimuli of either positive or negative valence appears to favour theories of dysfunctional emotional regulation (Siever & Davis, 1991; Coccaro & Siever, 1995), although further research would be necessary to strengthen such findings. Additionally, as the short story presented in this study primarily induced negative affects, future affect stimulation designs should equally provide stimuli of both positive and negative valence.

Herpertz, Kunert, Schwenger & Sass (1999) recently investigated affective responses to emotional stimuli, in female participants with BPD, compared to a female control group. Emotional responses were recorded in response to a set of standardised photographic slides, taken from the International Affective Picture System (IAPS; Centre for the Study of Emotion & Attention, 1995). Such responses were both verbal-cognitive and physiological, which were elicited from self-report measures, in addition to measures of heart rate, skin conductance, and startle response. They hypothesised that the BPD group would show more intense affective reactions toward slides of varying emotional valence, in comparison with the control group. The results however, did not agree with this hypothesis, with the authors concluding that neither self-report nor physiological data provided evidence of affective hyperarousal in BPD. The physiological findings were largely comparable across both groups, although the participants with BPD showed less pleasant reactions toward the positive pictures, as indicated by self-ratings and long startle

responses. The authors suggested that this effect might be explained by the pervasive dysphoric emotions in BPD. Overall, the BPD group showed low electrodermal responses to all physiological measures, this being suggestive of physiological *underarousal*, and contrary to current theories of affect dysregulation in BPD. However, due to weak statistical support for this finding, replication would be required to add strength to such a hypothesis.

A study by Levine, Marziali and Hood (1997), compared a BPD group with a non-clinical control group, on various measures of emotion processing and affect regulation. Results indicated the presence of significant group differences, with the BPD group showing lower levels of emotional awareness, less capacity to process conflicting and ambiguous emotional states, lower accuracy at recognising emotional facial expressions (this being contrary to Wagner and Linehan's (1999) findings), and more intense responses to negative emotions. The authors could not be certain however, that such findings were directly attributable to BPD *per se*. They may have also been related to comorbid Axis I disorders, as only a diagnosis of schizophrenia was specifically excluded. Thus it may be advisable for future studies to screen research participants for particular Axis I disorders (e.g., anxiety and mood disorders) in order to reduce influences from possible confounding variables.

Finally, a study that specifically examined affect instability in adults with BPD was conducted by Farchaus-Stein (1996). Three groups were employed: 1) a BPD group, 2) an anorexia nervosa clinical control group without BPD and 3) an asymptomatic group. This study used an 'experience sampling procedure' method (Hormuth, 1986; Larsen & Csikszentmihalyi, 1983), which allowed multiple measures of affect to be obtained during

the course of the participants everyday activities. This resulted in obtaining fifty measures of affect over ten days. Findings indicated that the BPD subjects experienced higher levels of, and more short-term fluctuations in, unpleasant affects than the control group. However, despite experiencing similar levels of instability regarding positive affects, such instability did not differ in comparison to the control group. This study came to the conclusion that frequent changes in positive affect appeared to be 'a part of the normal affective experience' at least within Western culture. However, further research would be necessary in order to strengthen such a conclusion. The average level of unpleasant affects reported by the BPD group was also found to be significantly lower than expected. This appeared to contradict findings that suggest that BPD individuals possess high sensitivity and intense reactions toward emotional stimuli. Questions were also raised regarding the hypothesis that individuals with BPD have difficulty restoring affect to baseline levels, as the BPD group and control group were both similar in their persistence of unpleasant affects across time. Such a finding was also evident in the Cowdry et al (1991) study, which also challenges theoretical perspectives. Despite the interesting results from this study, possible environmental influences on emotion, during the time sampling procedure, could not be ascertained. Such environmental effects were not controlled for, with some clinical subjects being inpatients during the experimental period, whilst others were discharged. It was therefore difficult to reach any conclusion regarding the nature of affect instability, as different events during the time of experimentation may have caused such instability, rather than BPD *per se.*

6. Conclusions & recommendations for future research

Although certain studies have demonstrated various degrees of support for the hypothesis of affective instability in BPD, others have not been able to confirm such findings. Thus

further investigation is necessary to clarify both the presence of affective instability in BPD, in addition to its specific pattern and nature. A study designed to elicit emotional reactions within a *controlled* environment would perhaps provide more reliable and valid results, as any resultant fluctuations in affect could be attributed to BPD over environmental effects. Baseline measures of affect would also require tighter control prior to experimentation, in addition to the investigation of *both* positive and negative affective reactions resulting from various affect-inducing situations. Controlled investigations into the processing of emotions in BPD are also required. Further investigations are clearly important as there may be resultant implications regarding the theoretical base of information processing in BPD, in addition to the diagnosis and treatment of BPD. The current DSM IV definition of affect instability has been found to be lacking specificity and so may require refinement (Gunderson, Zanarini & Kisiel, 1991) thus further research may improve the usefulness of the symptom in establishing differential diagnosis. Further research may also provide a critical step toward the development of empirically based intervention strategies, which may then strengthen adaptive functioning in adults with BPD.

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Figure 1: Model of Emotion (Gross, 1998)
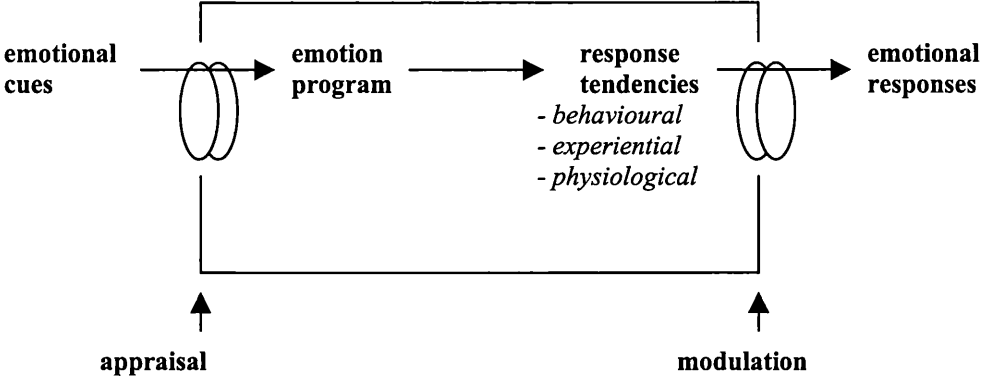
Chapter 3

Major Research Proposal

'A Preliminary Investigation of Affect Dysregulation in Borderline Personality Disorder'

Major Research Proposal submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology

Prepared in accordance with guidelines in the D.Clin.Psy handbook based on the application for a mini-grant in Health Services Research
(see Appendix 3.1)

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Summary

Affective (or emotional) dysregulation is a feature of borderline personality disorder (BPD), characterised by extreme shifts in mood from baseline emotional state to dysphoria, irritability or anxiety. Individuals with BPD appear to have a limited ability to control the impact of environmental stressors, thus they react with marked shifts in emotion when a stressor is encountered. Despite the knowledge of affective dysregulation in BPD, little is known about the influences on, and the nature of, such affect fluctuations that characterise this population. Lack of detailed knowledge may have important consequences in the diagnosis and treatment of BPD.

The current study aims to investigate the nature of affective experiences within the BPD population, in terms of nature, instability, and recall and recognition functions. This will be possible by investigating possible changes in affective states in response to the presentation of emotionally valenced photographs, derived from the International Affective Picture System (Centre for the Study of Emotion & Attention, 1995). Following the presentation of photographs, measures of affect will be completed via a self-report measure. Recall, recognition, and reaction times toward the presented stimuli will also be measured.

All participants will be tested within settings free from distractions. Data collation and analysis will take place at the Department of Psychological Medicine, Gartnavel Royal Hospital, Glasgow.

Introduction

Affective, or emotional, dysregulation is a core feature of borderline personality disorder (BPD) (DSM IV, American Psychiatric Association, 1994), characterised by rapidly changing and extreme shifts in mood from baseline emotional state to dysphoria, irritability and anxiety. (The words 'affect' and 'emotion' are used synonymously). Linehan (1987; 1993) hypothesises that, as a result of 'affective hyperarousal', individuals with BPD are highly sensitive to emotional stimuli. This sensitivity (or 'heightened responsiveness') includes a tendency to be very aware of emotional (especially negative) cues in the environment, a low threshold for emotional reactivity (therefore a quicker and more intense reaction to such cues), and a slow return to baseline emotional state.

Various studies have examined and found some support for the theory that BPD individuals have a heightened sensitivity to emotional stimuli (e.g., Frank & Hoffman (1986); Ladisich & Feil (1988); Wagner & Linehan (1999)). Such affective hyperarousal is suggestive of an inability of many borderline individuals to effectively regulate their emotional responses. Difficulties may subsequently occur should this inability lead to maladaptive behaviours (e.g., parasuicide, aggression, impulsive acts) aimed at relieving intense affect. Thus the theory of affect dysregulation is not only important from a research perspective, but is of great clinical significance.

Research regarding the regulation of *different* affect states is unclear. The theory and definition of affective dysregulation in BPD mainly points toward regulation difficulties in *negative* affect (Linehan, 1987; DSM IV (APA, 1994)). However, affect dysregulation and sensitivity toward *positive* affects remains unclear (Farchaus-Stein, 1996; Herpertz, Gretzer, Steinmeyer, Muehlbauer, Schuerkens & Sass, 1997). Investigations into

emotional reactions toward both positive and negative emotional stimuli may therefore aid understanding regarding the nature of the emotional cues that contribute toward affective hyperarousal and affective dysregulation.

There have been few systematic studies of emotional responsiveness and processing in the BPD population. Studies have provided inadequate knowledge regarding the processes involved in emotional dysregulation, in addition to its specific nature. For example, Cowdry, Gardner, O'Leary, Leibenluft & Rubinow (1991) recorded twice daily self-ratings of mood for two weeks in four groups of participants within a naturalistic framework. General support was provided for the hypothesis that BPD individuals experience more short-term variability in affect than other clinical and nonclinical samples. However, little information was provided regarding how this affect varied according to particular positive or negative emotional cues from the environment.

Conflicting evidence also exists regarding the hypotheses that BPD individuals are highly sensitive, and react intensely, to emotional stimuli, and are slow to return to baseline emotional state (Linehan, 1987; Snyder & Pitt, 1985). For example, Farchaus-Stein (1996) used an experience sampling procedure (Hormuth, 1986) to obtain fifty measures of affect over ten days, for BPD individuals, an anorexia nervosa clinical control group, and an asymptomatic control group. The average level of unpleasant affects reported by the BPD group was lower than expected, and both the BPD and asymptomatic control group were similar in their lack of unpleasant affect persistence.

Studies regarding emotional processing in BPD may additionally provide further insight into affective responsiveness and dysregulation. For example, studies investigating the

recall and recognition of presented emotional stimuli may provide insight into the hypothesised 'high sensitivity' of BPD individuals toward emotional stimuli, in addition to the persistence of induced affect over time. Research on major depressive disorder (MDD) has suggested that such individuals show a 'mood congruence effect', where memory performance is enhanced for material that matches the learners' mood (Ashcraft, 1994). To the authors' knowledge, only one study has examined this effect in BPD (Kurtz & Morey, 1999), which looked at recall and recognition differences between MDD individuals with and without BPD. Results indicated that BPD individuals without MDD showed similar recall and recognition patterns to a control group. However, further research is required to clarify whether such memory processes are affected by affective hyperarousal in BPD.

The investigation of affect dysregulation patterns are clearly important within personality disorder research as there may be resultant implications relating to the diagnosis and treatment of BPD. For example, the current DSM IV definition of affect instability has been found to need refinement and clearer definition (Gunderson, Zanarini & Kisiel, 1991), thus further research may improve the usefulness of the symptom in establishing differential diagnosis. Research into affect instability in BPD may additionally impact on the development of effective affect-stabilising interventions, as well as furthering knowledge of affective patterns within this population.

This study aims to assess the responses of persons with BPD to standardised emotional stimuli, via self-report measures of affect, and on subsequent recall and recognition measures. This will investigate the nature of induced emotional states in BPD, in addition to the proposed affective hyperarousal and subsequent affective dysregulation across time.

Aims & Hypotheses

This study aims to investigate the nature of affective responsiveness and affective dysregulation in BPD individuals. More specifically, possible differences in induced affective states, recall, and recognition functions, will be investigated between BPD participants and control participants. Such differences will be investigated following the presentation of pleasant, unpleasant, and neutral emotional stimuli, within an experimental setting.

The hypothesis is that, in comparison with control participants, persons with BPD will show a difference in measures of positive and negative affect following exposure to standardised emotional stimuli of varying valence, as indicated by self-report measures. Furthermore it is hypothesised that BPD individuals will differ in both the number and emotional type of pictures freely recalled, when compared to a control group. BPD individuals will also differ in their recognition of readministered emotional stimuli, as measured by reaction times and possible errors made.

Plan of Investigation

Participants

Two groups of participants will be included in the study. The first group will consist of 22 women meeting five or more criteria from the nine DSM IV (APA, 1994) criteria for BPD (Appendix 3.2). In order to ensure a homogeneous group of affectively unstable participants, all BPD participants will have to meet the criteria of affective instability (item 6). Primary diagnosis of BPD will be confirmed by administration of the BPD section of the Structured Clinical Interview for DSM IV Axis II Personality Disorders-SCID II (First, Gibbon, Spitzer, Williams & Benjamin, 1997). Participants with BPD will be recruited by

referrals from various local psychiatric units and CMHT resource centres. The second group will consist of 22 women from the general population who volunteer to participate in the study (designated 'control group'). This group will primarily be recruited from clerical offices and local educational institutions.

Participants will be restricted to women under the age of 45 years. The reason for this being evidence of improved overall functioning in middle age in those diagnosed with BPD (APA, 1987), the greater frequency of BPD diagnoses among women (4:1, women: men) (APA, 1994; Links, Steiner, Offord & Eppel, 1988) and the difference between men and women in processing emotional stimuli (e.g., Mufson & Nowicki, 1991).

Inclusion and exclusion criteria for the entire sample will be chosen to decrease sample heterogeneity and to minimise possible confounding variables. All participants will have to satisfy the following criteria for inclusion: (i) native speakers of English, (ii) have sufficient vision to view photographs in detail, (iii) aged 16-45, and (iv) female gender. Participants will be excluded if they report (i) a current diagnosis of schizophrenia or other psychotic disorder, and (ii) a primary diagnosis of substance abuse. The Psychotic and Associated Symptoms (Part II) section of the SCID I (First, Spitzer, Gibbon & Williams, 1997) will be used to screen for current psychotic disorder. Levels of anxiety and depression, as measured by the Hospital Anxiety and Depression Scale (HADS) (Snaith & Zigmond, 1983), will be controlled for between groups.

Prior to participation, control participants will be screened for a lifetime history of psychiatric treatment, current psychotropic medication use, and the absence of particular BPD features (Appendix 3.3). Both groups will be matched for age, years of education,

and intellectual functioning, with this latter factor being determined by the National Adult Reading Test (NART) (Nelson & Willison, 1991). All participants will be provided with an information sheet regarding the study (Appendix 3.4) and will be given the opportunity to ask any questions. All participants who volunteer to take part in the study will be assured anonymity and confidentiality, and will be asked to sign a consent form (Appendix 3.5).

Sample Size

Data from a similar study by Wagner & Linehan (1999) was used to predict sample size. This study explored differences in the recognition of emotional facial expressions between women with BPD, women with a history of child sexual abuse without BPD, and an asymptomatic control group. Recognition responses were assessed and coded via use of the 'Human Interaction Laboratory Emotion Lexicon' computer program (HELEX; Ekman & Irwin, unpublished manuscript). The HELEX places responses given freely by participants into 22 categories of emotion, which can then be combined according to emotional valence. Using data from MANCOVA statistical analysis (Wagner & Linehan, 1999), sample size was calculated via Javastat, using means and standard deviations from a control group (mean = 5.3, SD = 1.7) and a borderline personality group (mean = 3.7, SD = 2.1), for the target emotion (fear) for the slide task. It was estimated that 22 participants in each group would be required to enable main effects and interaction effects between positive and negative affect toward different emotional stimuli to be detected, at a 0.05 level of significance with at least 80% power, using Analysis of Variance (ANOVA). There was no data available to estimate sample size with an interaction effect of group, valence, and photograph presentation (previously seen or unseen).

Design, procedures & measures

Experiments will be designed to investigate affective responses toward emotional stimuli, in addition to recall and recognition functions in BPD individuals, compared to those of a control group.

Experiment 1

The Positive Affect & Negative Affect Schedule (PANAS) (Watson, Clark & Tellegen, 1988) will measure affective reactions toward photographs. A subset of photographs of varying emotional valence will be selected form the International Affective Picture System (IAPS) (Centre for the Study of Emotion and Attention, 1999).

PANAS Scale

The PANAS (Appendix 3.6) is a self-report scale consisting of 10 positive affects (interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active) and 10 negative affects (distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery and afraid). Answers are recorded on a scale from 1 to 5, ranging from 'very slightly or not at all' to 'extremely', based on the intensity of emotion at a particular point in time. The possible ranges for measures are 10-50 for either positive or negative affect. This scale was shown to be a valid and reliable method of measuring mood in a college based population, in addition to demonstrating sensitivity to short-term fluctuations in mood (Watson et al, 1988).

IAPS photographs

The IAPS is a set of 700 'normative emotional stimuli used for experimental investigations of emotion and attention' (Lang, Bradley & Cuthbert, 1997). Stimuli comprise of colour

photographic images on slide or CD-ROM format. For the purpose of the current study, a subset of 30 IAPS photographs will be selected for Experiment 1 (Appendix 3.7). These will be chosen by mean valence ratings, between 1.45 and 8.28 (Lang, Bradley & Cuthbert, 1999). Lower valence means indicate negative emotional valence (e.g., starving child = 1.67), intermediate valence means indicate neutral emotional valence (e.g., clock = 5.55) while higher valence means are indicative of positive emotional valence (e.g., bunnies = 8.28). Ten IAPS photographs for each valence category (pleasant, unpleasant, neutral) will be selected in terms of similar mean valence ratings. A laptop computer will be used to convey the photographs (CD-ROM format) via the computer program 'Microsoft PowerPoint', on a 9 x 7 inch screen, presented approximately 20 inches from each participant. All photographs will be presented individually for a duration of ten seconds each.

Positive and negative affect, as a consequence of viewing IAPS pictures, will be measured throughout Experiment 1 by the PANAS. Prior to any experimental manipulation, the PANAS will be administered to gain a baseline measure of each participant's mood states. Subsequent to this initial PANAS administration, a set of five neutral photographs will be presented. Participants will be requested to study and describe each photograph in detail. Following administration of the first five photographs, the PANAS will be completed a second time. Each participant will then view a set of ten pleasant (or unpleasant) IAPS photographs, with these photographs being counterbalanced according to valence to control for order effects. The PANAS will then be completed for a third time. A set of ten unpleasant (or pleasant) photographs will then be viewed, and the PANAS completed for the fourth time. A final set of five neutral pictures will then be viewed, and a fifth PANAS

completed. A distraction task, comprising of the NART, will be given prior to the next experimental stages.

Experiment 2

Free recall of the pictures presented in Experiment 1 will be requested. Each subject will have a time limit of two minutes for this task. If necessary, participants will be encouraged to continue attempting free recall for all of the available time. Subject responses will be accurately recorded by the main researcher, and coded in terms of emotional valence.

Experiment 3

Using the computer program 'Superlab', the 30 photographs viewed in Experiment 1 will be presented, but randomly embedded within 30 previously unseen photographs of similar emotional mean valence (Appendix 3.8). In total, 20 pleasant, 20 unpleasant, and 20 neutral photographs will be presented. Within this recognition task, the participant will view each photograph separately, indicating quickly and accurately whether they have, or have not, previously seen the picture by pressing designated computer keys for a 'YES' or 'NO' response. Contingent on each key press, the next photograph will appear on the screen after a 3 second interval. All reaction times, plus possible errors made, will be automatically stored within the computer program 'Microsoft Excel'.

Settings and Equipment

All participants will be tested within settings free from distractions. Equipment will consist of the aforementioned measures for each participant, and a laptop computer used to convey IAPS photographs.

Data Analysis

The statistics employed will be determined by examining the nature of the data. The following descriptions consider that the assumptions for parametric tests will be met. If such assumptions cannot be satisfied, nonparametric tests will be employed to investigate the main experimental effects.

Experiment 1

Analysis will consist of two 2x3 mixed factorial ANOVA's. The experiment is a mixed design consisting of two independent variables (group (BPD and control participants) and photograph valence (neutral, pleasant, unpleasant)) and one dependent variable (positive affect or negative affect PANAS scores). The between subject factor is the group, and the within subject factor is the photograph valence.

Experiment 2

Analysis will consist of a 2x3 mixed factorial ANOVA in order to examine the free recall of each subject. The independent variables are the group (BPD and control participants) and photograph valence (neutral, pleasant, unpleasant) and the dependent variable is the resultant free recall, in terms of the number of photographs correctly recalled.

Experiment 3

This experiment consists of a mixed factorial design that addresses three independent variables (group (BPD individuals and controls), photograph valence (neutral, pleasant, unpleasant) and photograph presentation (previously seen or unseen pictures)) and one dependent variable (reaction time). Thus a 2x3x2 mixed factorial ANOVA is proposed to analyse the resulting data.

ANCOVA will alternatively be used should any significant differences be found regarding anxiety and depression scores between the groups. Possible differences will be detected by independent t-tests.

Collation and analysis of data will take place at the Department of Psychological Medicine, Gartnavel Royal Hospital, Glasgow.

Practical Application

Further understanding about the nature of affective responsiveness and affective dysregulation, within BPD individuals, is a critical step toward developing empirically based interventions that may strengthen the promotion of adaptive functioning in such adults. Increased knowledge, regarding the nature affective dysregulation in BPD, may aid the design of interventions which identify stimuli that trigger such emotional reactions, and may also play an important role in stabilising affect and improving feelings of well-being.

Time Scale

July – September 2000   Ethical clearance sought. Pilot study conducted.

September – May 2001   Testing conducted. Literature review submitted.

May – July 2001   Data analysis and write up.

Ethical Approval

Ethical approval aims to be sought from Glasgow Primary Care NHS Trust Ethics Committee and Ayrshire and Arran Primary Care NHS Trust Ethics Committee. (Please refer to Appendix 3.9 for letters of ethical approval).

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Chapter 4

Major Research Paper

'A Preliminary Investigation of Affective Responsiveness in Borderline Personality Disorder: A Test of the Affect Dysregulation Hypothesis'

Major Research Paper submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology

Prepared in accordance with requirements for submission to
Behaviour Research and Therapy
(See Appendix 4.1 for contributor's notes)

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Abstract

Affect dysregulation is a core feature of borderline personality disorder (BPD), whereby it is proposed that individuals, as a result of 'affective hyperarousal', are highly sensitive to emotional stimuli and experience rapidly changing and extreme shifts in mood (Linehan 1987; 1993). The aim of this study was to investigate such affective responsiveness, in terms of its nature and instability, as a result of viewing standardised photographic stimuli with pleasant, unpleasant and neutral emotional valence. Twenty-two female participants with BPD and twenty-two female comparison controls were examined. Responses to photographs were investigated via self-report, free recall, and recognition. None of these measures provided evidence that the BPD participants showed more intense, quicker or lasting affective responses than did the control participants. Positive and negative affect changes were largely comparable between both groups, in addition to the lack of persisting affect over the experimental duration. No group differences were apparent regarding recognition, and no evidence of affective hyperarousal was indicated from reaction time data. Free recall results were hypothesised to agree with mood congruence theory, rather than theories of affective dysregulation.

Keywords: Affective responsiveness; Affect regulation; Affect-induction; Borderline Personality Disorder; Recall; Recognition.

1. Introduction

Affect dysregulation, which is characterised by rapidly changing and extreme shifts in mood from baseline emotional state into dysphoria, irritability and anxiety, is one of the core criteria for the diagnosis of borderline personality disorder (BPD) (DSM IV, American Psychiatric Association, 1994). (The words 'affect' and 'emotion' are used synonymously). Individuals with BPD are highly sensitive to emotional stimuli, as a result of 'affective hyperarousal' (Linehan 1987; 1993). This sensitivity encompasses a heightened awareness of emotional (especially negative) cues in the environment, a low threshold for emotional reactivity (therefore a quicker and more intense reaction toward such cues), and a slow return to baseline emotional state. Such emotional appraisal, involving both attention to and interpretation of emotional cues, may be viewed as an important precursor to emotional responding (Dodge, 1991) and may relate to emotional dysregulation in BPD individuals. The dysregulation of emotional responses, in addition to affective hyperarousal, has significance both from a theoretical and a clinical standpoint. Following on from the experience of marked and rapidly changing mood states, self-destructive and maladaptive behaviours such as parasuicide, aggression, and impulsive acts may occur, in an attempt to relieve experiences of intense affect (Linehan, 1993).

Current research is unclear regarding the borderline individuals' experience of affective hyperarousal, and subsequent regulation difficulties, in relation to stimuli of different emotional valence. The theory and definition of affective dysregulation in BPD points mainly to regulation difficulties of *negative* affect (Linehan, 1987; DSM IV (APA, 1994)). Affect dysregulation and sensitivity toward *positive* affect remains unclear (Farchaus-Stein, 1996; Herpertz, A.Gretzer, Steinmeyer, Muehlbauer, Schuerkens & Sass, 1997). Investigations into emotional reactions, regarding both positive and negative emotional

stimuli, would therefore aid the current understanding of the nature of emotional cues contributing to intense affect, and subsequent dysregulation.

There have been few systematic studies of emotional responsiveness and processing in the BPD population. In addition to their specific nature, studies of the emotional and information processes involved in affective dysregulation have been inadequate. For example, Cowdry, Gardner, O'Leary, Leibenluft and Rubinow (1991) recorded twice daily self-ratings of mood for two weeks in four groups of participants within a naturalistic framework. General support was provided for the hypothesis that BPD individuals experience more short-term variability in affect than other clinical and nonclinical samples. However, little information was obtained regarding how this affect varied according to particular positive or negative emotional cues.

Conflicting evidence also exists regarding hypotheses that BPD individuals are highly sensitive, and therefore react intensely, to emotional stimuli, and are slow to return to baseline emotional state (Linehan, 1987; Snyder & Pitt, 1985). For example, Farchaus-Stein (1996) used an experience sampling procedure (Hormuth, 1986) to obtain fifty measures of affect over ten days, for BPD individuals, an anorexia nervosa clinical control group, and an asymptomatic control group. The average level of unpleasant affect reported by the BPD group was found to be lower than expected, and both the BPD and asymptomatic control group were similar in their lack of unpleasant affect persistence. Similarly, in a study investigating affective responses to standardised photographic slides, Herpertz, Kunert, Schwenger and Sass (1999) found that neither self-report nor physiological measures of affect provided evidence of affective hyperarousal in BPD. In

fact, physiological measures were indicative of affective *underarousal* in the BPD group, contrary to the theories of affect dysregulation in BPD.

Studies regarding emotional processing in BPD may also provide further insight into affective responsiveness and dysregulation. For example, the investigation of the recall and recognition of presented emotional stimuli may provide insight into the hypothesised 'high sensitivity' of BPD individuals to emotional stimuli, in addition to the persistence of induced affect. It appears that only one study has examined such processes in BPD, between individuals with BPD, with or without depressive features (Kurtz & Morey, 1999). Results indicated that BPD individuals without depression showed similar recall and recognition patterns to a control group. However, further research is needed to clarify whether such processes are affected by affective hyperarousal in BPD.

The hypothesis of affective hyperarousal and dysregulation in BPD therefore remains ambiguous. Particular questions arising from the research literature are as follows: 1) Do BPD individuals demonstrate greater emotional reactions to emotional stimuli in general? 2) If so, are these reactions directed toward either, or both, pleasant and unpleasant stimuli? 3) Are these reactions to emotional stimuli short-lived or do they persist or change over the longer term?

It was therefore the aim of this study to assess the affective responsiveness, and affective dysregulation, of participants with BPD to standardised emotional stimuli on various measures. Self-report ratings were completed to indicate initial affective responses, and the recall and recognition of emotional stimuli were investigated to examine the nature and persistence of responses over time. The hypothesis was, that in comparison with control

participants, participants with BPD would differ in their affective reactions to standardised photographs with pleasant and unpleasant valence, as indicated by self-report measures. Furthermore, it was hypothesised that BPD individuals would differ in the number and emotional type of photographs freely recalled, in addition to their recognition of readministered emotional stimuli (as measured by reaction time and possible errors made) when compared with a control group.

2. Method

2.1 Participants

The study participants were 22 females, meeting five or more criteria from the nine DSM IV criteria for BPD (APA, 1994), and a group of 22 comparison females (designated 'control group'). The BPD participants were recruited from local psychiatric unit and CMHT resource centre referrals. Diagnoses of BPD were confirmed by administration of the BPD section of the Structured Clinical Interview for DSM IV Personality Disorders (SCID II; First, Gibbon, Spitzer, Williams & Benjamin, 1997). In order to ensure a homogeneous group of affectively unstable participants, all BPD participants had to meet the criteria of affective instability (item 6). Individuals diagnosed with schizophrenia, psychotic disorder, or current drug or alcohol abuse were excluded from the study. The Psychotic and Associated Symptoms (Part B) section of the SCID I (First, Spitzer, Gibbon & Williams, 1997) was used to screen for current psychotic disorder. Female participants under the age of 45 years were chosen, due to evidence of improved overall functioning in middle age in those diagnosed with BPD (APA, 1987), the greater frequency of BPD diagnoses among women (4:1, women: men) (APA, 1994; Links, Steiner, Offord & Eppel, 1988) and the difference between men and women in processing emotional stimuli (e.g., Mufson & Nowicki, 1991).

The control group was recruited from local educational institutions and clerical offices. They had no lifetime history of psychiatric treatment, were not currently taking psychotropic medication, and did not show features of affective instability, as indicated by a control-screening questionnaire.

In addition to the group-specific exclusion criteria stated above, inclusion criteria specified *all* participants to be native speakers of English, have sufficient vision to view photographs in detail, aged 16 – 45 years, of female gender, and at least average level of intellectual functioning as determined by the National Adult Reading Test (NART; Nelson & Willison, 1991). The Hospital Anxiety and Depression Scale (HADS; Snaith & Zigmond, 1983) measured current levels of anxiety and depression within each group.

All demographic variables were normally distributed, and are outlined in Table 1. Independent samples t-tests demonstrated no significant differences between the groups regarding age, years of education and estimated levels of intellectual functioning. Significant differences were found between the groups regarding anxiety and depression levels. All participants provided written informed consent after receiving an information sheet regarding the study, and following an opportunity to ask questions. Two participants with BPD were excluded from the study due to NART scores indicative of below average levels of intellectual functioning.

[Insert Table 1 here]

2.2 Materials

2.2.1 PANAS scale

The Positive Affect and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988) was used to rate affective reactions toward photographic stimuli. The PANAS is a self-report scale consisting of 10 positive affects (interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active) and 10 negative affects (distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery and afraid). Answers are recorded on a scale from 1 to 5, ranging from 'very slightly or not at all' to 'extremely', based on the intensity of emotion at a particular point in time. The possible ranges are 10-50 for either positive or negative affect. This scale was shown to be a valid and reliable method of measuring mood in a college based population, in addition to demonstrating sensitivity to short-term fluctuations in mood (Watson et al, 1988).

2.2.2   Photograph stimuli & presentation

To provide a set of standardised stimuli, sixty colour photographs were selected from the International Affective Picture System (IAPS; Centre for the Study of Emotion and Attention, 1995), which was developed to provide a set of normative emotional stimuli for experimental investigations of emotion and attention (Lang, Bradley & Cuthbert, 1997). Photographs were selected according to mean valence ratings (Lang, Bradley & Cuthbert, 1999). Twenty unpleasant scenes with negative emotional valence were selected (e.g., starving child = mean valence rating 1.67), in addition to twenty neutral scenes with neutral emotional valence (e.g., clock = mean valence rating 5.55), and twenty pleasant scenes with positive emotional valence (e.g., bunnies = mean valence rating 8.28). Lower valence means are indicative of negative emotional valence, while higher valence means indicate positive emotional valence. Overall, the mean valence ratings for the selected IAPS photographs ranged from 1.45 to 8.28. A laptop computer was used to convey the

photographic stimuli (CD-ROM format) via the computer programs 'Microsoft PowerPoint' and 'Superlab', on a 9 x 7 inch screen, presented approximately 20 inches from each participant.

2.3 Procedure

2.3.1 Experiment 1: Affect Induction

Each participant viewed sets of IAPS photographs, which depicted pleasant, unpleasant, and neutral scenes. In total, 30 photographs were used in Experiment 1: 10 pleasant, 10 unpleasant, and 10 neutral. Each photograph was presented for ten seconds. Positive and negative affect, as a consequence of viewing each set of photographs, was measured throughout Experiment 1 by the PANAS. Prior to any experimental manipulation, the PANAS was administered to gain a baseline measure of positive and negative affect levels. Each participant then read aloud standardised instructions for the experimental procedure from the computer screen (Appendix 4.2). These requested each participant to study and describe each photograph in detail.

Five neutral photographs were then individually presented. Following this presentation, the PANAS was completed for a second time. A set of ten pleasant (or ten unpleasant) photographs was then viewed, with these photograph sets being counterbalanced according to valence to control for order effects. The PANAS was then completed for a third time. A set of ten unpleasant (or ten pleasant) photographs was then viewed, and the PANAS completed for the fourth time. Finally, a set of five neutral photographs was viewed, and a fifth PANAS completed. As a distraction task, the NART was then administered prior to the next experimental stages.

2.3.2 Experiment 2: Free Recall

Each participant was requested to freely recall any of the photographs viewed in Experiment 1. A time limit of two minutes was provided. If necessary, participants were encouraged to continue attempting free recall for all of the available time.

2.3.3 Experiment 3: Recognition Task

Each participant viewed a total of 60 separately presented photographs, 30 of which had been previously viewed in Experiment 1, and 30 of which were previously unseen photographs of similar mean valence. Each participant was provided with written instructions (Appendix 4.3), which were read aloud to ensure understanding. Two short breaks were provided in order to minimise fatigue effects: these occurring after each presentation of twenty photographs. Each participant was requested to quickly and accurately indicate whether they had, or had not, previously seen the photograph by pressing designated computer keys for a 'YES' or 'NO' response. Contingent on each key press, the next photograph appeared on the screen following a 3 second interval. All reaction times, plus possible errors made, were automatically stored within the computer program 'Microsoft Excel'.

3. Results

All statistical analyses were conducted using the Statistical Package for Social Sciences (SPSS), Version 9.0.

3.1 Experiment 1: Affect Induction

Non-parametric statistical tests were used due to the ordinal nature of the PANAS scores, in addition to the violation of the normal distribution assumption. A Mann-Whitney test

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(two-tailed) was used to determine whether levels of positive and negative affect were different between BPD participants and control participants, across the five administrations of the PANAS. Results indicated highly significant differences between the groups, as shown in Table 2 and Figure 1. Participant mean and median affect scores across each PANAS administration, in addition to the difference scores between the BPD and control participants' affect, are highlighted in Table 2.

[Insert Table 2 here]

As noted in the methods section, the presentation of pleasant and unpleasant photographs was counterbalanced to control for possible order effects. A Mann-Whitney test demonstrated that no significant differences in affect levels were found between the participant groups who received different presentation orders, thus the order of photograph presentation did not have differential effects on subsequent levels of affect.

Within each group, a Wilcoxon signed-ranks test was used to investigate changes in affect levels (as measured by the PANAS), between adjacent photograph set presentations. All hypotheses were two-tailed. Results are shown in Table 3 and Figure 1.

[Insert Table 3 here]

[Insert Figure 1 here]

3.1 Experiment 2: Free Recall

Normality of distribution and homogeneity of variance was met for all variables, thus a 2 x 3 mixed analysis of covariance (ANCOVA) was used, with group (BPD participants and

control participants) as a between subjects variable and photograph valence (pleasant, unpleasant and neutral) as a within subjects variable. Due to anxiety and depression scores being significantly different between the groups, such scores were used as covariates in order to decrease their influence on the dependant variable, this being the number of photographs freely recalled.

With the level of significance set at p = 0.05, ANCOVA did not reveal a significant main effect for group (F (1, 40) = 1.381, p = 0.247). However, a significant interaction effect was found between the valence of the photographs recalled, and the group (F (2,80) = 4.497, p = 0.014). Within subjects contrasts demonstrated that this effect was *only* found for the recall of pleasant versus unpleasant photographs (F (1, 40) = 7.293, p = 0.010) using Bonferroni corrected values. Figure 2 depicts this interaction, and indicates that the BPD participants recalled significantly more unpleasant photographs (compared to pleasant photographs) than the control participants, whilst control participants recalled significantly more pleasant photographs (compared to unpleasant photographs) than the BPD participants. No significant contrasts were found regarding the recall of neutral photographs.

[Insert Figure 2 here]

3.3 Experiment 3: Recognition Task

Normality of distribution and homogeneity of variance were met following inverse transformations for all reaction times in order to minimise the impact of outliers. Outlying reaction times were identified using box-and-whisker plots, and were specified as reaction times which were 1.5 times the interquartile range of the reaction time scores. In total,

10.9% of all reaction times were outliers: 5.45% for the control participants, and 5.45% for the BPD participants. Outlying values are common in reaction time data, and often result from participant inattention or guesses based on the participants failure to reach a decision (Ratcliff, 1993).

2.5% and 3.4% of the reaction times were incorrect responses, for the control group and the BPD group respectively. A Mann-Whitney test revealed no significant differences between the groups, regarding the emotional valence of these errors. All reaction times, including incorrect responses, were included in the statistical analysis. A 2 x 3 x 2 mixed ANCOVA was used, with group as a between subjects variable, and photograph valence (pleasant, unpleasant, neutral) and photograph presentation (previously seen or unseen) as within subjects variables. Anxiety and depression scores were again used as covariates. Median values of reaction times were used as measures of central tendency in order to de-emphasise the outlying reaction times.

With the level of significance set at $p = 0.05$, ANCOVA results revealed a significant main effect for group ($F_{(1, 40)} = 4.075$, $p = 0.050$). The two-way interaction between group and valence was significant ($F_{(1.68, 67.27)} = 5.048$, $p = 0.013$). Within subject contrasts, using Bonferroni corrected values, indicated a significant contrast ($F_{(1,40)} = 7.194$, $p = 0.011$) between reaction times to unpleasant and neutral photographs, when comparing the two participant groups. Figure 3 indicates that the reaction time difference between unpleasant and neutral photographs was greater for the control group, in comparison with BPD participants.

[Insert Figure 3 here]

The two-way interaction between group and photograph presentation was not significant (F (1, 40) = 2.189, p = 0.147), in addition to the three-way interaction between group, photograph presentation, and valence (F (2, 80) = 2.568, p = 0.083).

4. Discussion

Contrary to the initial hypothesis, this study did not provide evidence of affective hyperarousal and affective dysregulation in BPD. Throughout the experiment of affect induction, the BPD participants demonstrated consistently lower levels of positive affect and consistently higher levels of negative affect, in comparison with the control group. This supports various research findings that borderline individuals characteristically and predominantly experience negative affect, in comparison to control groups (e.g., Gunderson & Kolb, 1978; Zanarini, Frankenburg, DeLuca, Hennen, Khera & Gunderson, 1998). However, the magnitude and nature of the *within* group affect changes, following the presentation of photograph sets of different valence, were largely comparable between the groups. Within each group, no significant differences between baseline levels of affect and subsequent affect ratings following the presentation of neutral photographs were apparent, suggesting that the viewing task itself did not initially influence affect. However, both participant groups experienced decreased arousal and attention across the experimental duration, as indicated by steadily decreasing positive affect levels. Such decreases may be reflective of lowered arousal since, in addition to measuring 'positive emotionality', the positive affect items on the PANAS scale reflect the extent to which a person feels 'enthusiastic, active and alert' (Watson, Clark & Tellegen, 1988).

Positive affect levels in the control group significantly decreased subsequent to viewing unpleasant stimuli, but this effect was not shown for the BPD group. Unpleasant stimuli

therefore *maintained* previous levels of interest and arousal in the BPD group, whilst such stimuli continued to decrease the arousal of the control participants. Such arousal maintenance was confined to unpleasant stimuli only, as positive affect levels in the BPD group significantly decreased following the subsequent presentation of neutral photographs. However, as elicited positive affect levels from viewing unpleasant photographs were only maintained and not *heightened* in the BPD group, the results did not appear to support theories of affective hyperarousal.

Changes in negative affect were similar for both groups during the affect induction experiment. Negative affect was not influenced by pleasant stimuli, but a significant increase occurred following the presentation of unpleasant stimuli. This increase was of similar significance and magnitude for each group, contrary to the hypothesis that individuals with BPD are more sensitive to negative emotional cues (Linehan, 1987; 1993). Increases in negative affect, upon encountering negative cues, may therefore be a reaction which is not specific, nor heightened, in the BPD population. Furthermore, the finding that negative affect levels for both groups significantly decreased subsequent to viewing the next (neutral) photographic set, challenged the hypothesis that BPD individuals have difficulty restoring negative affect to baseline levels (Kernberg, 1980; Linehan, 1987). Similar findings of a lack of negative affect persistence in BPD individuals have been found in other studies (Cowdry et al, 1991; Farchaus-Stein, 1996), although replication and further research would be required to strengthen these findings, possibly by employing self-report *and* physiological measures in order to investigate the accuracy of self-ratings of affect. Additionally, as the results from the current study are limited to affective responsiveness toward photographic stimuli only, research within a greater variety of

experimental and naturalistic frameworks would be necessary to investigate their generalisation.

The results from the free recall experiment indicated that, overall, the two groups recalled a similar number of the photographs presented previously. However, the control group recalled a greater number of pleasant photographs compared to unpleasant photographs, a finding consistent with prior research (Burt, Zembar & Niederehe, 1995; Matt, Vazquez & Campbell, 1992; Kurtz & Morey, 1999). Additionally, BPD participants recalled significantly more unpleasant photographs in comparison with pleasant photographs. As the affect experienced by the BPD group was predominantly negative (as indicated in the affect induction experiment), this finding appeared to show a mood-congruent effect, whereby negative mood promotes the recall of negative stimuli (Williams, Watts, MacLeod & Mathews, 1988). This enhanced recall for unpleasant stimuli did not appear to be a result of affective hyperarousal, given the comparable reactions between the BPD and control participants to unpleasant emotional stimuli, as demonstrated in the affect induction experiment. It may more likely be a reflection of the dominant and pervasive negative emotions that are commonly seen in BPD individuals (Coid, 1993; Kruedelbach, McCormick, Schultz & Grueneich, 1993; Snyder & Pitt, 1985). However, as the verbal communication of affective responses may be vulnerable to internal distortion (Herpertz et al, 1999), the initial reported responses to the photographs in the affect induction experiment might have been underestimated, in which case the tendency for the BPD participants to remember unpleasant photographs may indeed be reflective of affect dysregulation. Clarification of this should be undertaken in future studies that include measures less vulnerable to distortion (e.g., physiological measures). Findings should also be compared with other clinical groups, particularly with individuals with major depressive

disorder due to evidence of mood congruent effects in this population (e.g., Kurtz & Morey, 1999).

Recognition data did not provide evidence of affective hyperarousal in the BPD participants, as no differences were found between their recognition accuracy and their reaction times to differently valenced photographs. However, the control group demonstrated significantly greater reaction times to unpleasant photographs, in comparison with the reaction times to neutral photographs, regardless of whether or not they had been seen previously. A similar trend in reaction times was demonstrated by the BPD group, indicating that their responses to unpleasant stimuli were not quicker than their responses to pleasant or neutral stimuli, disagreeing with theories of affective hyperarousal and dysregulation. However, this finding should be replicated with larger sample sizes to provide further support. Data also indicated that, for both groups, reaction times did not differ according to whether or not the stimuli had been previously presented (regardless of photograph valence). Additionally, no group differences were apparent according to the emotional valence of the photograph, combined with whether the stimuli had, or had not, been previously seen. Therefore photographs seen previously did not appear to have stronger representations in memory for either group, providing further support for the absence of affective hyperarousal and affective dysregulation.

Due to certain methodological considerations, one should generalise from the above results with caution. The sample size was rather small, although it was larger than those in similar studies (e.g., Cowdry et al, 1991; Farchaus-Stein, 1996; Wagner & Linehan, 1999). Additionally, it could not be made certain whether the particular emotional stimuli were related to the personal contexts of the participants, therefore stimuli that may have been

specific stressors might have elicited different reactions to those that were not stressors. Future studies should extend experimental stimuli to more naturalistic frameworks in order to increase the generalisation of the results, in addition to employing measures that may independently identify affect and arousal levels toward emotional stimuli. The specificity of the presented findings should be verified by investigating clinical populations other than BPD individuals, in addition to examining affective responsiveness in males compared with females. Finally, more detailed investigations of the information processes involved in affect dysregulation should be conducted.

In conclusion, the results did not appear to support the theory of affective dysregulation and affective hyperarousal (for either positive or negative affect), which claims that intense and lasting emotional responses are a central feature of BPD. This is in line with other studies that have also found limited support (Herpertz et al, 1999; Farchaus-Stein, 1996). Levels of positive and negative affect, induced from the presentation of emotionally valenced photographs, were largely comparable between both participant groups. Both groups demonstrated increased negative affect toward unpleasant stimuli, but affect was not heightened toward pleasant stimuli. Additional hypotheses regarding the persistence of induced affect over time, as a feature of affective dysregulation, were not supported by any of the experiments. The finding that the BPD participants recalled more unpleasant photographs appeared to be a mood congruent effect, and not due to affect dysregulation processes. Further research is required to advance understanding of the processing of emotional content in BPD, in addition to investigating the relevance of affective dysregulation as a diagnostic feature of BPD.

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Table 1: Demographic information for BPD and control participants

	Age		Years of Education		NART score		Anxiety score		Depression score	
	Mean (SD)	*Range*	*Mean (SD)*	*Range*	*Mean (SD)*	*Range*	*Mean (SD)*	*Range*	*Mean (SD)*	*Range*
Control group	29.0 (5.01)	21 - 39	13.73 (2.37)	11 - 17	113.77 (8.69)	91 - 124	6.36 (3.95)	0 - 14	1.77 (1.41)	0 – 4
BPD group	31.68 (4.85)	24 - 40	13.36 (1.49)	11 - 16	111.36 (8.56)	94 - 122	13.64 (4.32)	4 - 20	10.09 (3.99)	4 - 20
Independent samples t-test	$t(42) = -1.892, p = 0.79$		$t(35.43) = 0.608, p = 0.547$		$t(42) = 0.927, p = 0.359$		$t(42) = -5.833, p < 0.01*$		$t(26.16) = -9.2, p < 0.01*$	

* denotes significance at $p < 0.05$

Table 2 Experiment 1: BPD participant (B) & control participant (C) PANAS score differences (α), for positive & negative affect levels.

		PANAS administration				
		At baseline	*After presentation of 1st neutral Photographs*	*After presentation of pleasant photographs*	*After presentation of unpleasant photographs*	*After presentation of 2nd neutral photographs*
Positive affect levels	**Mann-Whitney U**	55.500	67.500	64.000	93.500	79.000
	Asymp. Sig (2-tailed)	.000	.000	.000	.000	.000
	Mean PANAS score	C = 33.09 B = 22.05 α = 11.04	C = 32.82 B = 21.91 α = 10.91	C = 30.82 B = 20.32 α = 10.5	C = 28.68 B = 19.95 α = 8.73	C = 27.36 B = 18.41 α = 8.95
	Median PANAS score	C = 35.5 B = 22.0 α = 13.5	C = 35.0 B = 22.5 α = 12.5	C = 32.0 B = 21.0 α = 11	C = 32.0 B = 18.0 α = 14	C = 28.5 B = 17.0 α = 11.5
		At baseline	*After presentation of 1st neutral photographs*	*After presentation of pleasant photographs*	*After presentation of unpleasant photographs*	*After presentation of 2nd neutral photographs*
Negative affect levels	**Mann-Whitney U**	51.500	79.500	78.500	94.000	95.500
	Asymp. Sig (2-tailed)	.000	.000	.000	.000	.000
	Mean PANAS score	C = 11.91 B = 23.27 α = 11.36	C = 12.0 B = 22.23 α = 10.23	C = 11.77 B = 21.5 α = 9.73	C = 16.18 B = 26.0 α = 9.82	C = 10.81 B = 20.91 α = 10.1
	Median PANAS score	C = 10.5 B = 24.5 α = 14	C = 11.0 B = 20.0 α = 9	C = 10.0 B = 20.5 α = 10.5	C = 14.0 B = 26.5 α = 12.5	C = 10.0 B = 20.0 α = 10

Table 3 Experiment 1: Changes in affect levels between differently valenced photograph presentations (Wilcoxon signed-ranks test)

		PHOTOGRAPH CATEGORIES				
		Baseline & Neutral 1	Neutral & Pleasant	Pleasant & Unpleasant	Unpleasant & Neutral 2	Neutral 2 & Baseline
Control Group	**Positive Affect**	Z = -0.304 P = 0.761 α = -0.27 β = -0.5	Z = -2.795 P = 0.005* α = -2 β = -3	Z = -2.043 P = 0.041* α = -2.14 β = 0	Z = -1.673 P = 0.094 α = -1.32 β = -3.5	Z = -4.027 P = 0.000* α = -5.73 β = -7
	Negative Affect	Z = -0.411 P = 0.681 α = 0.09 β = 0.5	Z = -0.837 P = 0.403 α = -0.23 β = -1.0	Z = -3.318 P = 0.001 α = 4.41 β = 4.0	Z = -3.524 P = 0.000 α = -5.36 β = -4.0	Z = -1.820 P = 0.069 α = -1.09 β = -0.5
BPD group	**Positive Affect**	Z = -0.081 P = 0.936 α = -0.14 β = 0.5	Z = -2.543 P = 0.011 α = -1.59 β = -1.5	Z = -0.140 P = 0.889 α = -0.36 β = -3	Z = -2.046 P = 0.041 α = -1.55 β = -1	Z = -3.174 P = 0.002 α = -3.64 β = -5
	Negative Affect	Z = -0.699 P = 0.485 α = -1.05 β = -4.5	Z = -1.273 P = 0.203 α = -0.73 β = 0.5	Z = -2.989 P = 0.003 α = 4.5 β = 6	Z = -3.331 P = 0.001 α = -5.09 β = -6.5	Z = -1.589 P = 0.112 α = -2.36 β = -4.5

α mean PANAS score difference
β median PANAS score difference

Figure 1 Experiment 1: Within & between group differences in Positive Affect & Negative Affect levels between adjacent and differently valenced photograph presentations
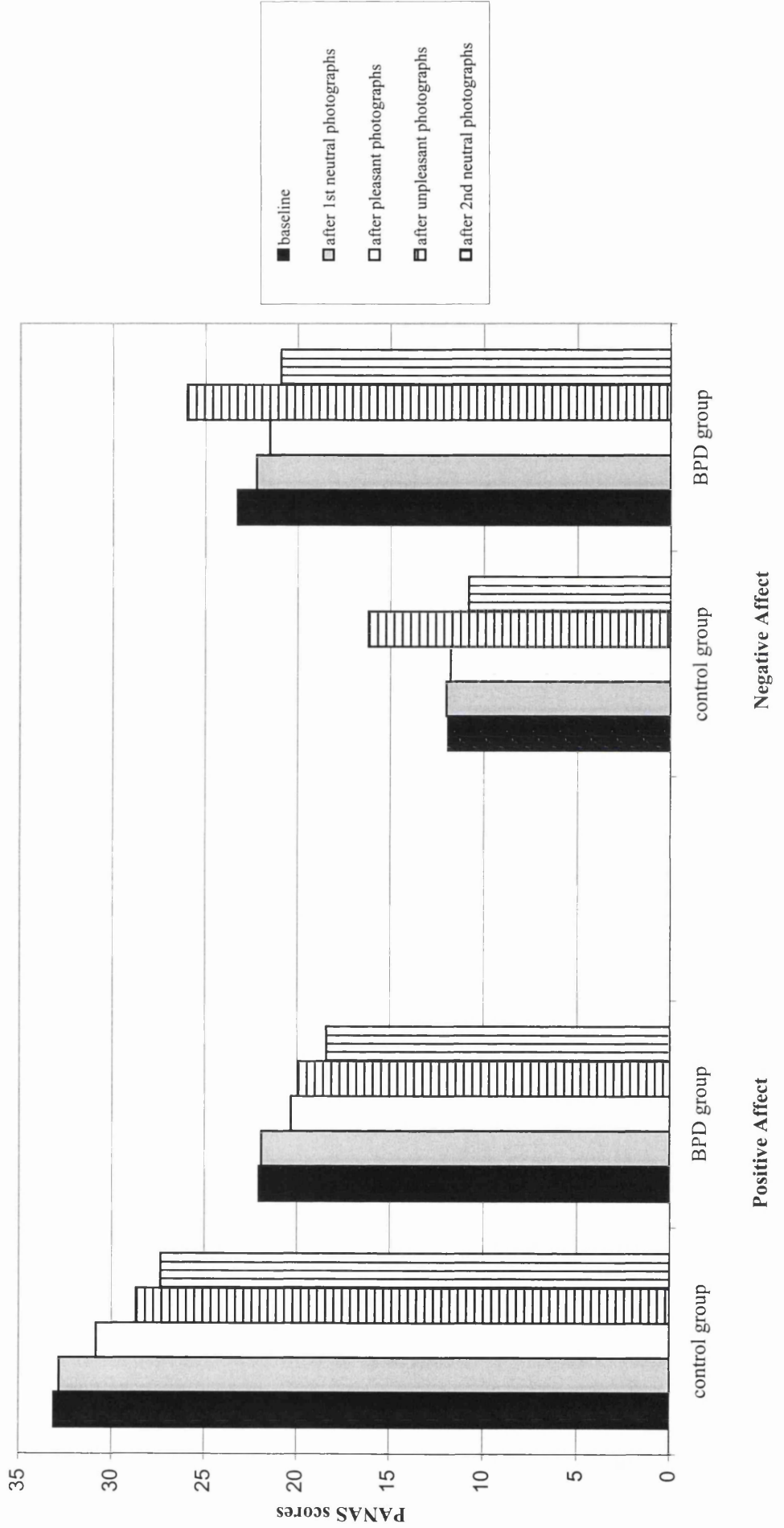
Figure 2 Experiment 2: Valence x Group interaction for free recall of emotionally valenced photographs, between BPD participants and control participants
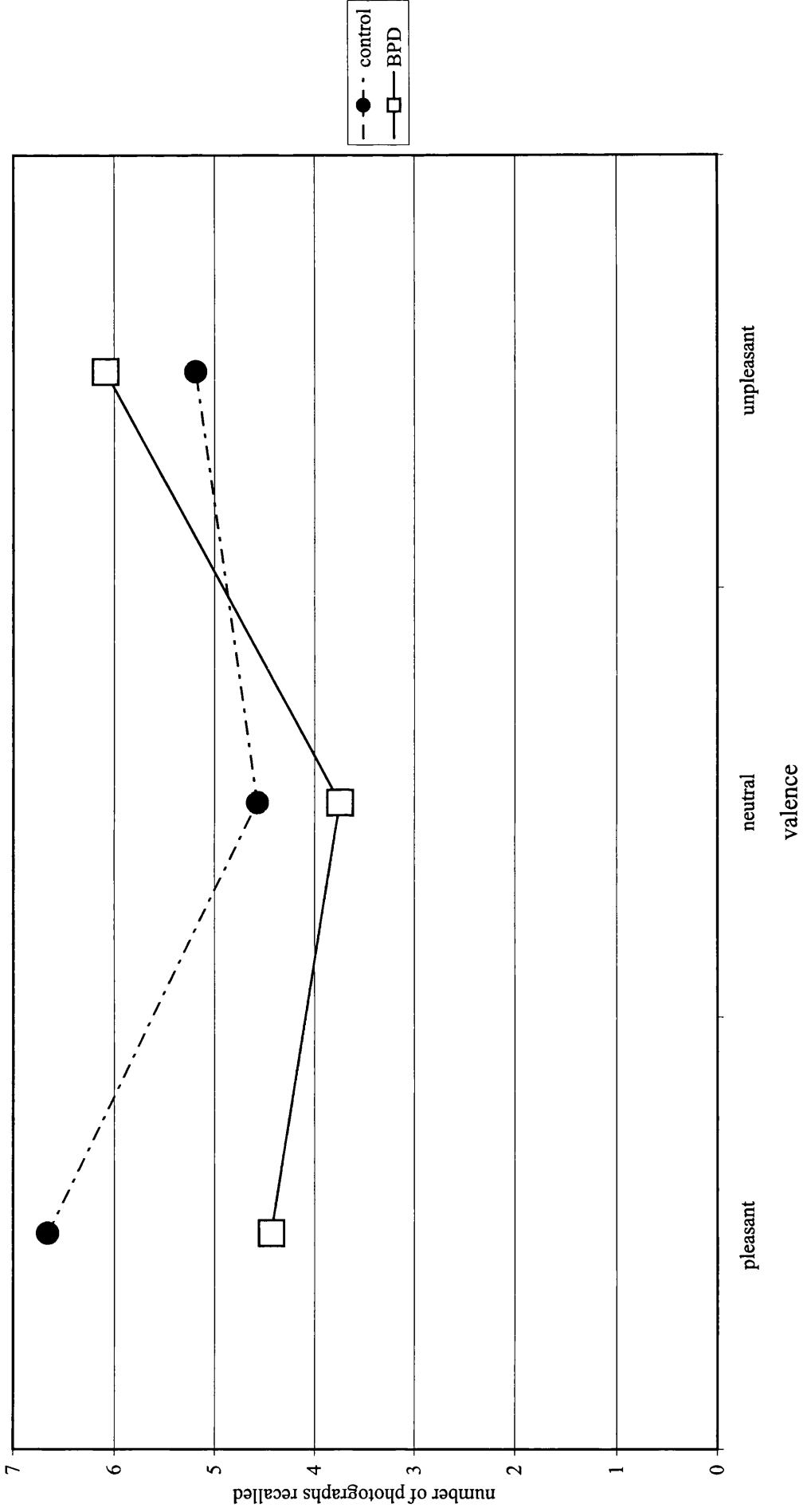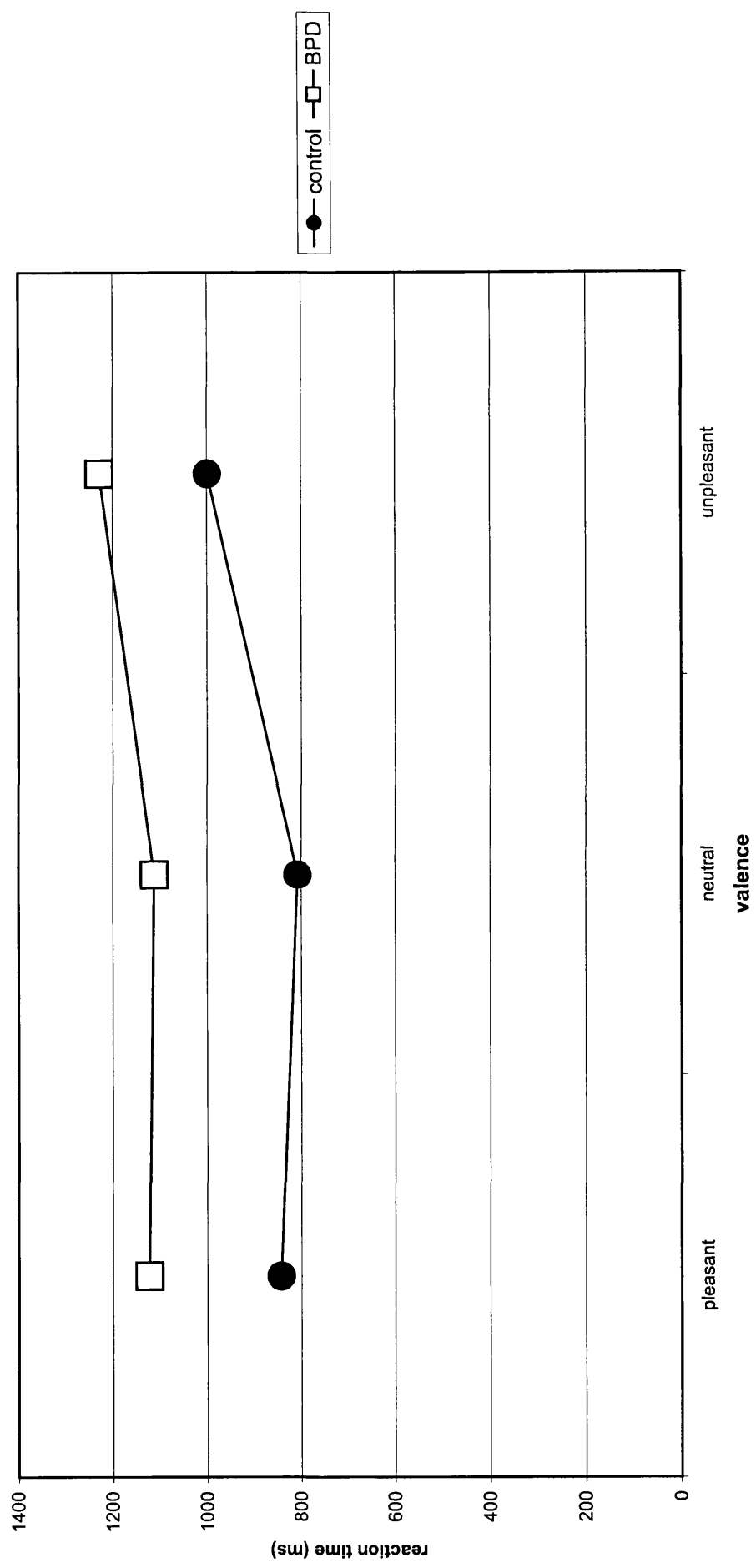
Figure 3 Experiment 3: Valence x group interaction for reaction times toward photographs of different emotional valence, between BPD participants and control participants

Chapter 5

Clinical Case Research Study

'An Evaluation of Habit Reversal Treatment
for Trichotillomania'

(Abstract only – full bound study bound separately in Part Two)

*Clinical Case Research Study submitted in partial fulfilment of the requirements for the
degree of Doctorate in Clinical Psychology*

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Abstract

The efficacy of the behavioural method of 'habit reversal', for the treatment of trichotillomania, has been indicated from research literature. However, further research is required regarding the efficacy of the individual components of this method, in addition to the identification of the particular aspects of hair pulling behaviour which are affected by each component. In this study, a 27 year old female with chronic trichotillomania was successfully treated by using a modified habit reversal procedure, which encompassed the habit reversal components of self-monitoring, awareness training and competing response. A multiple baseline experimental design was used, the results of which indicated that the sequential application of these three components were optimal in reducing overt aspects of hair pulling behaviour (*actual* hair pulling), while only self-monitoring plus the competing response were effective towards reducing covert aspects of behaviour (*urges* to hair pull). Explanations for results and recommendations for future research are discussed.

Keywords: trichotillomania, habit reversal, impulse control disorders, single-case design