Borderline personality disorder: An experimental investigation of the interpretation of ambiguous information

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Table of Contents

Part 1 (this bound copy)

Appendices **Pages**

Part 2 (separately bound, numbered from page 1)

Small Scale Service Evaluation Project

A review of a clinical psychology service for alcohol and drug problems in North Glasgow

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Prepared in accordance with guidelines for submission to

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Abstract

Following the Report on the Health Improvement Programme 1998-2003, services for drugs and alcohol have been identified as a priority area for multidisciplinary review in the NHS in Greater Glasgow. This has been followed by a report on the Mental Health and Illness in Greater Glasgow. The aim of the present review is to examine a clinical psychology service for alcohol and drug problems based in North Glasgow in order to establish a clear picture of its practice and patient population. The review will focus particularly on comparisons between male and female referrals and between referrals for drug and alcohol problems. Results on age, locality of referral, referral source, reason for referral, and attendance at first appointment are examined and compared with the report on the Mental Health and Illness in Greater Glasgow. The importance of local service audit is highlighted as particular results contrast those found in the Glasgow-wide report. The implications and the limitations of the study are noted.

Introduction

Services for drugs and alcohol have been identified as a priority area for multidisciplinary review following the Health Improvement Programme 1998-2003 for the NHS in Greater Glasgow. The report on Mental Health and Illness in Greater Glasgow (Gruer & Morrison, 1999) estimated that in Glasgow there are 33,000 people drinking in excess of the recommended upper limit (i.e. more than 21 units weekly) and there are 7-10,000 injecting drug users. The commonest illicit drug of use was found to be cannabis but more severe consequences were associated with opiates and benzodiazepine tranquillisers. A higher prevalence of heavy drinking and drug injecting was found in males, but greater pathology and maladjustment in females who are heavy users.

The co-morbidity of mental health problems and substance misuse was also highlighted in the report. This has been shown previously (e.g. Halikas, et al., 1981; Powell, Penick, & Othmer, 1982; Ross, Glasser, & Germanson, 1988). Research suggests the use of substances can precipitate psychological problems or exacerbate them. Studies of both clinical samples and the general population show high prevalence of co-occurring substance misuse with mental health problems including anxiety, PTSD, phobias and personality disorder (Kessler, Nelson, McGonagle, Edlund, Frank, & Leaf, 1996). Alcohol is often associated with depression and has been found to be a major factor in suicides (Chassin, & DeLucia, 1997). Long-term heavy drinking can lead to permanent brain damage including Korsakoff's syndrome, which results in debilitating memory problems. A link has been shown between illicit drug and psychotic disorders (Richard, Liskow & Perry, 1985). Substances can be seen as an effective way of altering

unpleasant emotional states. Marlatt & George (1984) identified "downers" as one of the main reasons for relapse.

The BPS have identified that clinical psychologists can offer specialised assessment and treatment for individuals who experience significant psychological problems as a result of substance misuse. They can also play a key role in interventions aimed at behaviour change in substance misusers and can offer consultation and training to other professionals (BPS, 1998). To enable clinical psychology to deliver a high quality and cost-effective service in substance misuse, detailed knowledge of services is essential, particularly in light of the poor attendance rates by substance users suggested by audits of general adult clinical psychology services (Sparr, Moffitt, & Ward, 1993). The aim of the present review is to examine a clinical psychology service for alcohol and drug problems based in North Glasgow in order to establish a clear picture of its practice and patient population.

Method

The service under review was provided by one female clinical psychologist working five sessions per week. The service covers three localities, each with socio-economic differences. The total population was 147,700. The psychologist works as a member of a Substance Misuse team providing direct patient contact predominantly at outpatient clinics and in relapse prevention groups. Data was available on 251 individuals referred over a time-sample of 32 months (approximately 10 referrals per month). Based on the

information given in referral letters all individuals were categorised as misusing either alcohol or drugs and were assigned a brief label describing the reason for referral. The following referral data were examined:

- age

- gender

- substance of misuse

- locality area of referral

- referral source (i.e. GP, psychiatrist etc)

- reason for referral

- attendance at first appointment

In addition two subgroups were studied in more detail:

- gender

- substance of misuse (drugs vs. alcohol)

Results

- ***Summary Statistics***

Table 1 shows summary statistics. The mean age for males and females was the same as the total sample mean of 40 years. However the mean age for the drug-using group was very significantly younger than the alcohol group (t=11.5, p <0.005). Almost twice as many men were referred as women.

- *Referral sources and referral locality*

On examination of referral sources, 63% came from the Alcohol and Drugs Team (37% psychiatrist, 26% nurses); 20% from General Practitioners; 6% from general Psychiatrists; 6% from drug counsellors; 4% from Clinical Psychologists and 1% from other sources. Approximately equal numbers of alcohol referrals came from the three catchment areas. However, more than half the drug referrals (54%) come from the catchment area recognised as having the highest socio-economic deprivation.

- *Attendance at first appointment*

Table 2 shows attendance rates. The attendance rate for those with alcohol problems was 69%. Attendance for those with drug problems was much lower (43%). Attendance for males and females at first appointment was equal.

- *Nature of substance*

In this sample alcohol appeared to be the commonest substance of misuse (63%, N=158); followed by opiates including heroin and methadone (22%, N=56); and then cannabis (3%, N=8). A small number of individuals were using other substances such as stimulants, solvents, cocaine, analgesics and benzodiazepines (3%, N=8). Eight percent (N=21) were referred with poly drug misuse (i.e. use of two or more substances).

Sixty–seven percent of the male sample was referred for alcohol misuse compared to only 55% of the female sample. However, a greater percentage of the female sample was referred for misusing opiates (30%) compared to 18% of the male sample.

- *Reason for Referral*

Figure 1 illustrates the reasons for drug and alcohol referrals. The most common reason for referral was for problems with anxiety and/or depression (43%). A greater percentage of drug users compared to alcohol users were referred with a history of childhood sexual abuse and eating disorders. Referrals for addiction specific issues (i.e. relapse prevention and motivational enhancement) tended to be associated with alcohol rather than drugs. Figure 2 shows reasons for male and female referrals. Males were referred for anxiety problems more than females. Females were more likely to be referred with a history of childhood sexual abuse.

Discussion

Comparisons with trends in the report on Mental Health and Illness in Greater Glasgow

In the current study, the following findings were consistent with the Greater Glasgow report:

- More males than females were referred to the Clinical Psychology service.

- Common substances mentioned in referral letters were alcohol and opiates.

- Drug referrals to clinical psychology were more likely to have come from the area recognised as having greater social deprivation.

- Poly-drug use (two or more substances) was indicated in referral letters to clinical psychology.

However in contrast to the report:

- Based on referral letter, few people were referred to clinical psychology with coexisting addictions and severe mental illness. These referrals may have been taken on by the Community Mental Health Team or have fallen between two services.

- Females were more likely to have been referred with opiate problems than alcohol problems

Gender and referrals

It has been suggested that women are less likely to attend for substance misuse treatment. Reasons for poor attendance include stigma, childcare concerns (Hodgins et al. 1997) and the male orientation of traditional treatment settings (Underhill, 1986). However, in this study there was no significant difference between rates of attendance for males and females, at first appointment. Women may have found it easier attending a female psychologist in an outpatient setting.

A comparison of referred problems between the genders showed that there were no significant differences in the rates of referral for depression, grief and anger problems. However, men were significantly more likely to be referred with anxiety or for help specifically with addiction issues i.e. help to prevent relapse or work on controlled drinking. It has been suggested that men will request treatment to be more substance focused whereas women prefer treatment to be more human orientated, addressing issues such as marital problems, parental roles and self-assertion (Plant, 1997). This is reflected

in the high number of the female sample (25%) referred for issues relating to childhood sexual abuse. Childhood trauma has been found to be an important issue in the treatment of substance misuse (Wilsnack et al, 1997) and, if not addressed, is seen as a significant contributor to relapse (Wadsworth et al., 1995). Although more men are referred to the service, women are more likely to be referred with opiate misuse and childhood trauma and therefore pose significant challenges for psychological treatment.

Alcohol and drug referrals

Alcohol and drug users are often grouped together under the rubric of substance misuse. However, this study revealed interesting differences between the two groups. The attendance rate at first appointment for those with alcohol problems (69%) was similar to attendance rate in the local Clinical Psychology Primary Care service (65%). This was estimated from a database covering the same area over a similar time period. The chaotic nature of those with alcohol and drug problems is often reflected in poor attendance rates but, in this sample, poor attendance was specific to drug users. Those referred for drug problems were also found to be significantly younger; this is likely to reflect the current trend in Greater Glasgow.

Comparison of referred problems for the drug and alcohol groups revealed that referrals for addiction specific issues (including relapse prevention treatment) were associated with alcohol referrals. This is a reflection of current service provision of relapse prevention groups being run for those with drinking problems. It is interesting that only 15% of

referrals were for interventions aimed specifically at substance misuse. The rest of the referrals (85%) were for interventions for coexisting psychological difficulties. This reflects the complexity clinical psychologists are faced with working in addiction; a large proportion of referrals are for clients with multiple needs relating to both addiction and mental health.

Implications

Strategies are needed to improve attendance rates of drug users as high DNA rates reflect wasted clinical time and preparation. It may be useful to adapt strategies from general adult services. For example, information leaflets to improve expectations of services (Skaife & Spall, 1995), preparation appointments with the GP to discuss the referral (Munro & Blakely, 1988), telephone or written reminders (Nicholson, 1984), or information about non-attendance rates and the importance of cancelling (Fox & Skinner, 1997). Initial information appointments with the psychologist may be less daunting and improve motivation to attend for psychology assessment, particularly in light of Prochaska & DiClemente's (1986) Stages of Change Model, which assists therapists in assessing and improving motivation.

Despite the equal attendance rate of men and women in this study, gender differences were implied. The service needs of women must be considered in the development of the psychology provision looking at ways to address their complex treatment needs with

opiate misuse and sexual abuse. A pilot clinic has been running in this area to address these issues.

The limitation of this study is reliance on information in the referral letter. It would be useful to collect data on diagnosis post assessment and information about engagement with treatment. Despite this, the review provides a clear picture of the nature of the patient population and offers preliminary comparisons with Greater Glasgow as a whole.

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Figure 1. Percentages of various accompanying problems for the subgroups referred for alcohol problems and for drug problems.
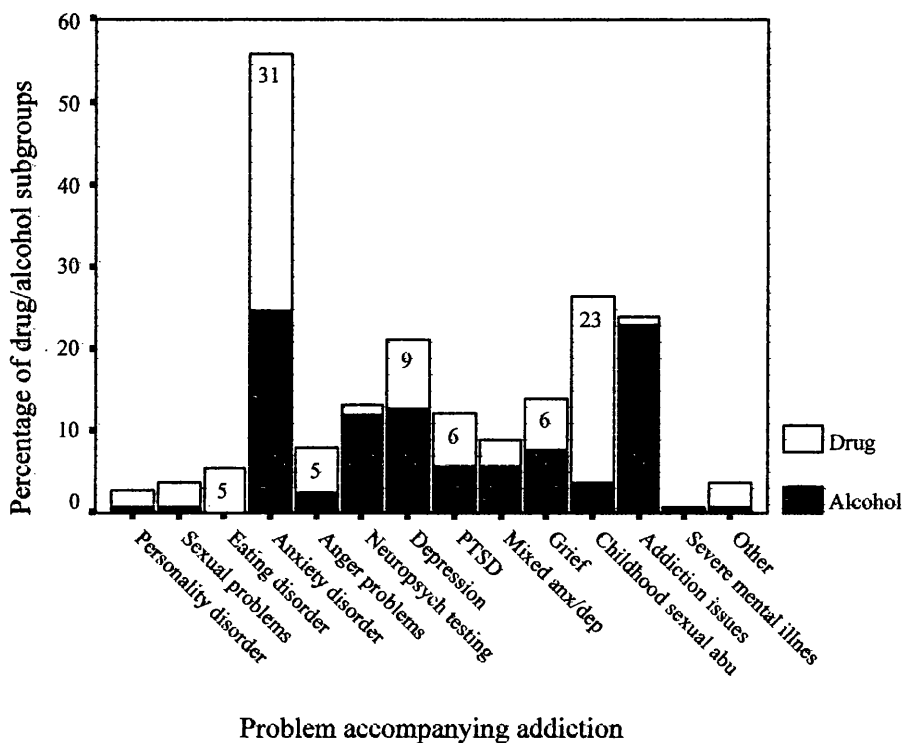
Figure 2. Graph to show the percentages of males with particular accompanying problems and the percentages of females with similar accompanying problems.
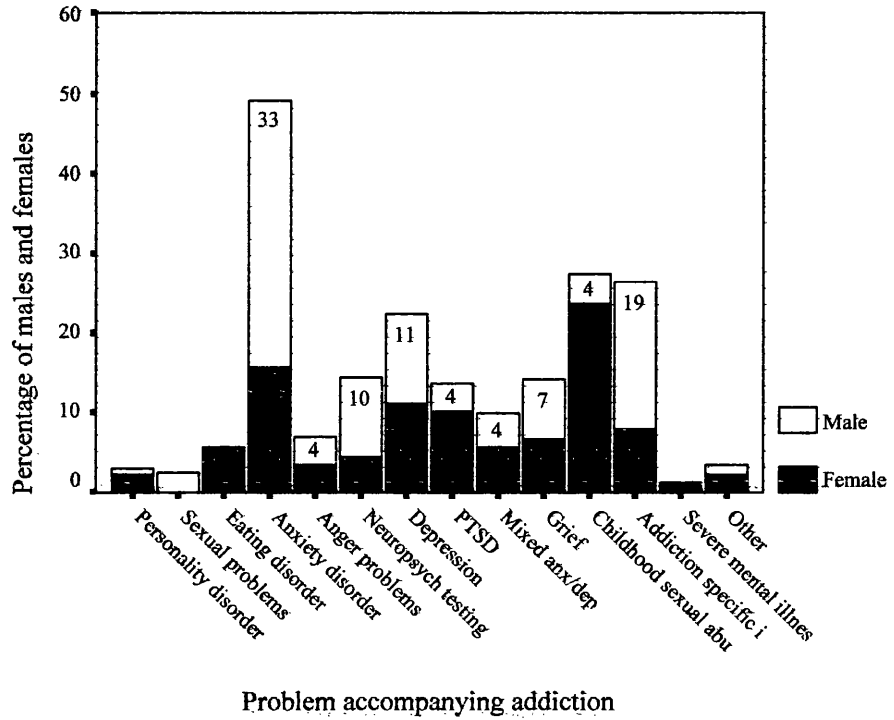
Table 1. Summary statistics of the total sample and the subgroups of males/females and drug/alcohol.

	Whole sample	Males	Females	Alcohol using group	Drug using group
Mean age (yrs)	40	40	40	45	31
Range (yrs)	18-75	20-75	18-68	20-75	18-62
Stan. dev.	12.06	11.54	13.02	11.16	7.79
N	251	162	89	158	93
% of sample	-	64.5	35.5	63	37

Table 2. Percentage attendance rates of the whole sample and the subgroups alcohol/drug, and male/female.

	Whole sample % (N)	Males % (N)	Females % (N)	Alcohol using group % (N)	Drug using group % (N)
% Attended	59 (149)	59 (96)	60 (53)	69 (109)	43 (40)
% Cancelled	20 (50)	19 (31)	21 (19)	15 (23)	29 (27)
% DNA	21 (52)	22 (35)	19 (17)	16 (26)	28 (26)

Major Research Project Literature Review

Borderline personality disorder and interpretation bias

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Abstract

Borderline personality disorder (BPD) is characterised by instability of affect, difficulties with self-identity, impulsivity, and intense and unpredictable interpersonal relationships. Clinical models emphasise the role of early environments in the formation of beliefs and schemas that are characteristic of BPD. Theoretical models of BPD have mainly focused on clinical descriptions and exploration of aetiological factors. In the emotional disorders, schema theory has been used to explain how disorder-related schemas select, and subsequently bias, the processing of information in a way that serves to maintain the emotional disorder. There is considerable empirical evidence for a bias in attention, expectations, memory and interpretation in the emotional disorders. Clinical descriptions and DSM-IV criteria suggest individuals with BPD may often misconstrue benign events and fear abandonment and abuse in the absence of genuine threat. Therefore, an interpretation bias is likely to be evident in BPD. The current review will aim to employ schema theory, and the considerable empirical research on interpretation bias in the emotional disorders, to understand the potential contribution to the, as yet, more clinically orientated descriptions of BPD. The review suggests experimental paradigms used in the emotional disorders are applicable to the personality disorders and it is of value both theoretically and therapeutically to explore interpretation bias in BPD.

Key words: Borderline personality disorder; schema theory; interpretation bias.

1. Introduction

Borderline personality disorder (BPD) is characterised by instability of affect, impulsivity, difficulties with self-identity, and intense and unpredictable interpersonal relationships (APA, 1994). Given the extreme effect BPD has on the individual, the therapeutic process, and the services that provide care, the disorder has received considerable theoretical interest (Arntz, Dietzel & Dreessen, 1999; Beck, Freeman and Associates, 1990; Millon, 1987; Linehan, 1993; Young, 1999). This interest has mainly focused on clinical descriptions and exploration of aetiological factors. Theoretical models have guided the recent application of cognitive behavioural therapy to the personality disorders (Davidson, 2000; Linehan, 1993; Young, 1999). Within the emotional disorders, the application of cognitive behaviour therapy is supported by considerable empirical demonstrations of bias in attention, expectations, interpretation and memory (Williams, Watts, MacLeod & Mathews, 1997). These cognitive biases are explained through schema theory and each emotional disorder is thought to be characterised by idiosyncratic schemas (e.g. Beck, Rush, Shaw, & Emery, 1979). Despite application of schema theory to clinical understanding in the personality disorders, there is limited empirical research to date. Given the clinical models of BPD describe fears of imagined abandonment (APA, 1994), and anecdotal reports suggest these individuals often misinterpret the reactions of others as negative evaluations or rejections, it seems likely that an interpretation bias towards threat may play a role in maintaining BPD. The current review will aim to employ the considerable amount of empirical research on interpretation bias in the emotional disorders to understand it's potential contribution to the, as yet, more clinically orientated descriptions of BPD.

2. Borderline Personality Disorder

2.1. Characteristics of BPD

The DSM-IV criteria, listed in Table 1, are the most often applied for a clinical diagnosis of BPD. There is controversy over DSM as a categorical model of personality disorder and a dimensional approach has been suggested as more appropriate (Widiger, 1992). However, research suggests that both approaches can coexist (Arntz, 1999). A categorical approach may be more appropriate for mental health services, in which diagnostic categories provide information and guide intervention. Debate also surrounds the unidimensionality of BPD, as to whether it can be sufficiently distinguished from other personality disorders (Livesley, & Schroeder, 1991; Clarkin, Hull, & Hurt, 1993). Research, however, has illustrated its efficiency for differential diagnosis (Fossati, Maffei, Bagnato, Donati, Namia & Novella, 1999; Arntz, 1999).

DSM modelling of BPD reflects elements of early clinical descriptions of BPD. Descriptions include hypersensitivity, poor stress intolerance, simultaneous idealization and devaluation of the therapist (Stern, 1938); difficulties with emotional contact (Schmideberg, 1947); and intensity of affect (Rado, 1956). The influence of early childhood experiences was recognised by Esser & Less (1965). Grinker, Werble, & Drye (1968) described difficulties with self-identity, alongside difficult relationships, with depression and anger as central and pervasive affects. The saliency of a range of emotional responses associated with BPD is common to all definitions. Current diagnostic interviews explore chronic depression, hopelessness, guilt, anger, anxiety, loneliness and emptiness (Zanarini, Gunderson, Frankenburg, & Chauncey, 1989).

Diverse affect is investigated alongside unusual cognitive experiences, impulsive behaviours including self-harm, and interpersonal factors such as intolerance of aloneness, and abandonment concerns. An important element of BPD is that concerns may be real or imagined (APA, 1994). The clinical picture is, therefore, complex and has attracted considerable theoretical interest.

2.2. Theoretical analyses of BPD

Theoretical analyses of BPD are based essentially on collective clinical descriptions. Early analyses centred on psychoanalytical conceptualisations. However, the application of cognitive behavioural principles to models of BPD has received research attention in the last two decades. There are a number of models, each taking a different emphasis (Beck et al., 1990; Young, 1999; Millon, 1981, 1987; Linehan, 1993).

Utilising early principles from research in depression, Beck et al. (1990) emphasises the role of basic assumptions in guiding the perception and interpretation of events, which subsequently shape behavioural and emotional responses. Beck suggested those with BPD view themselves as powerless, vulnerable, and inherently unacceptable, in a world they view as dangerous and malevolent (Beck et al., 1990). He hypothesised that this combination of beliefs would foster hypervigilance for danger and guardedness in interpersonal relationships, which would serve to maintain beliefs and hinder direct problem solving and access to assistance (Beck et al, 1990). Beck et al. (1990) did not, however, list a specific set of assumptions for BPD as for the other personality disorders. A recent study by Arntz, Dietzel & Dreessen (1999) derived BPD assumptions from the

work of Beck et al. (1990) and demonstrated stability and specificity of these assumptions to BPD.

Due to the rigid and pervasive nature of beliefs in BPD, Young (1990) hypothesised that intervention at the level of assumptions would be insufficient to effect change. According to Young (1999) personality disorders are hallmarked by pervasive, inflexible and enduring schemas, which affect cognition, affectivity, interpersonal functioning and impulse control. Early Maladaptive Schemas (EMS: Young & Lindemann, 1992) are assumed to form in early childhood and are employed across many personal and social situations, resulting in cumulative elaboration. The schemas are considered maladaptive as they result in problematic behavioural and emotional generalisations that restrict new learning. Individuals are hypothesised to hold a configuration of a possible 18 EMS, which form the core of an individual's self-concept and conception of the environment (Young, 1999). Schemas thought to be characteristic of BPD include abandonment, mistrust, dependence and subjugation. Despite detailed explanation of EMS, a thorough description of the formation of schemas relevant to BPD is not provided (Beck et al., 1990).

Through the application of a social learning perspective Millon considers the formation of BPD (Millon, 1981; 1987). He postulates the importance of background histories in shaping the acquisition of a system of expectancies that results in increasing alertness to similar elements. Early negative experiences are internalised and impact on current functioning when individuals encounter similar experiences (Millon, 1981). He

emphasises the capacity of rigid patterns to guide and distort current events in line with the past, reducing the opportunity for new learning (Millon, 1987).

Similar to Millon, the biosocial theory of Linehan (1993) emphasises the contribution of environmental conditions and biological vulnerability towards emotional dysregulation associated with BPD. Emotional dysregulation, defined by Linehan, is revealed in a low threshold for emotional reactions, a heightened sensitivity to negative stimuli and a slow return to baseline following arousal. Invalidating childhood environments are said to shape emotional vulnerability. Invalidating environments, as defined by Linehan, are those in which private experiences are inappropriately and/or negatively responded to. In this context, learning how to label private experiences may be hindered, which impacts on the ability to modulate arousal and use internal states to cue appropriate responses. This difficulty modulating arousal is thought to be mediated by a difficulty in reducing emotionally relevant stimuli that serve to reactivate or augment ongoing negative affect (Linehan, 1993).

Despite diverse central emphases and explanatory concepts, clinical models of BPD all imply that individuals with BPD view themselves negatively and feel threatened in relationships by fear of being abandoned or abused. Given the relationship between BPD and early abuse, these expectations have foundations in reality.

2.3. BPD and early abusive experiences

The prevalence of childhood abuse in the histories of individuals meeting criteria for

BPD is high. Although results are limited by their retrospective nature, sexual abuse and

violent abuse are reported to vary between 71% and 81% in the childhoods of individuals

with BPD, against 22% and 35% in other psychiatric populations (Bryer, Nelson, Miller

& Krol, 1987; Herman, Perry & Van der Kolk, 1989). This is not to say sexual abuse is

found in all individuals with BPD but some form of abuse is often present. Other forms

of abuse include witnessing violence between parents, emotionally unavailable parents

and early separation experiences (Coons, Bowman, Pellow, & Schneider, 1989; Zanarini,

Gunderson, Marino, Schwartz & Frankenburg, 1989). Families of those with BPD have

been reported as more conflictual and controlling, with little emotional expressiveness

(Weaver & Clum, 1993: Ogata, Silk, Goodrich et al., 1990). BPD has been shown to be

more related to childhood sexual and emotional abuse than others personality disorders

(Arntz, Dietzel & Dreessen, 1999).

Reports of the abuse experienced by those with BPD imply an extreme quality to the

experiences. BPD has been shown to be associated with multiple abusive experiences;

sexual abuse often includes penetration and involves multiple abusers (Weaver & Clum,

1993: Ogata, Silk, Goodrich et al., 1990); and abuse has often lasted for a number of

years (Weaver & Clum, 1993). Therefore chronic childhood trauma and negative family

climates appear to be characteristic of the learning experiences of those with BPD. In

line with theoretical models of BPD, these experiences are likely to shape the way new

relationships are viewed. Problems arise when, due to early experience, the interpretation

of current events by those with BPD does not reflect reality (Millon, 1981). Individuals with BPD may process new information through particular frameworks of understanding.

3. Schema theory

The information processing paradigm is useful for understanding the impact of early experiences and how they shape the way individuals view the environment. Information processing does not appear to be merely an input-output process but a complex reciprocal interaction between low and high level operations. In the information processing paradigm a distinction is drawn between top down and bottom up processing (Garrod & Sanford, 1982). Bottom up operations are concerned with the basic elements at the level of stimulus input. Top down operations are concerned with pre-existing memory representations of prior knowledge, which impose structure and guidance on stimulus input. These internal representations are hypothesised to store knowledge of conventional situations and regularities in the environment. The most frequently utilised construct to symbolise these frameworks is that of schema.

3.1. Schematic structures

Williams and colleagues (1997) reviewed the literature to summarise potential criteria for schema, which are:

- a stored body of knowledge that interacts with encoding, comprehension and retrieval of new information, through guiding attention, expectancies, interpretation and memory.

- a consistent internal structure which is imposed on the organization of novel information.

- containing knowledge that is generic in nature, comprising of abstract representations of regularities in the individuals environment.

- prototypes that typify classes provide additional information and resolve ambiguity.

- information is modular, in that activation of any one part will tend to produce activation of the whole.

(Williams et al., 1997, pp. 211-212).

Schema theory is based on the assumption that not all incoming information is processed as entirely novel. A selection process is thought to occur that is guided by the application of schemas that accommodate maximum information and organise inputs most efficiently. Comprehension of the overall situation often does not reflect the cumulative understanding of external stimuli, as schemas are assumed to contain default information that allows for the elaboration of inputs and the resolution of ambiguity (Sanford & Garrod, 1981).

3.2 Automatic versus controlled processing

Schemas are thought to be acquired through learning experience and elaborated and strengthened through repeated application. One study by Yonelinas & Jacoby (1995) suggested that when information is first processed, active attention is required and processing occurs in a controlled manner. With extensive exposure to regularities this

processing becomes automatic. This supports earlier work by Shiffrin & Schneider (1977) who demonstrated this operational distinction in learning by first establishing slow effortful learning of word lists that, with practise, increased in speed and accuracy and became independent of memory load. The introduction of a new set of items reduced performance to below pre-test levels due to interference from the initial automatised set. Although rapid, automatic processing is said to be less flexible than more controlled appraisal of detail, as advantages in processing speed would be lost if perpetual revisions were required (Yonelinas & Jacoby, 1995). Schemas are assumed to operate at this automatic level as they are constructed from regularities in the environment in order to promote efficiency. However, their application is not easily prevented. Therefore, elaboration and resolution of ambiguity is expected to have a consistent quality that reflects the idiosyncratic schemas of the individual (Yonelinas & Jacoby, 1995).

3.3. Explicit and implicit learning

The distinction between automatic and controlled processing, maps onto the distinction between explicit and implicit learning (Williams et al., 1997). Seger (1994) defines implicit learning as that which occurs independent of effort or even awareness, in contrast to explicit learning which involves the extraction of knowledge through the action of deliberate memory searches. Previously encoded information can exert an influence on performance outside the deliberate actions of the person (Seger, 1994). This distinction is evident when subjects, who cannot recall having been exposed to a word, later show a reduced speed in deciding whether a string of letters is that word (Calvo, Eysenck & Estevaz, 1994). Similarly, the distinction is demonstrated when individuals draw

inferences from ambiguous information automatically and are then tested on the nature of these inferences using a memory test, despite no recollection of making the interpretation and recalling the information (Eysenck, Mogg, May, Richards & Mathews, 1991). Methods such as these are increasingly being used to explore the idiosyncratic way information is processed by individuals. The hypothesis is that schemas, storing pre-existing knowledge, will be applied automatically and will be idiosyncratic to the person (Yonelinas & Jacoby, 1995). A match between features in the external environment and conventional features stored by the individual is assumed to activate the relevant schemas (Garrod & Sanford, 1982).

4. Emotional congruency in information processing

Schema theory has been applied to aid understanding of how mood and emotion guide the selection of information from the environment. Evidence suggests individuals preferentially process emotional information that is congruent in emotional tone to either current mood states or stable emotional traits (Rusting, 1998). Such experimental work has provided evidence for the operation of emotional schemas, characteristic of particular emotional disorders (Beck, Rush, Shaw, & Emery, 1979). This has contributed to the understanding and application of cognitive behavioural models to the emotional disorders (Beck et al., 1979 Beck, Emery & Greenberg, 1985). Empirical information processing factors have not as yet been the focus of studies on the personality disorders. However, the considerable evidence in the emotional disorders provides guidance on the application of this paradigm to these more enduring problems.

Schemas are hypothesised to store knowledge of conventional situations and activities, which interacts with encoding, comprehension and retrieval through biasing attention, expectations, interpretations and memory (Williams, et al., 1997). Rusting (1998) reviewed the evidence for congruency effects with transient mood states and with more stable traits, measured as proneness in the general population, and with longer standing emotional problems such as clinical depression or anxiety. A number of paradigms have been used to explore congruency effects at different stages of processing. Trait congruency effects have been shown in attention tasks (Martin, Williams & Clark, 1991; McNally, Rieman, & Kim, 1990; Gotlib & McCann, 1984), and with recall and recognition tasks (Bradley & Mogg, 1994; Breck & Smith, 1983). However, as clinical descriptions of those with BPD indicate that these individuals misconstrue essentially benign events (APA, 1994: Millon, 1981), the current review will focus on the interpretation of ambiguous information.

4.1. Interpretation bias in the emotional disorders

Congruency effects in interpretation and judgement tasks show relatively consistent findings. In particular, there is considerable experimental support for an interpretation bias in anxiety, with high anxious individuals showing a tendency to interpret ambiguous information in a threatening fashion (e.g. Eysenck, et al., 1991; Calvo, Eysenck & Estevaz, 1994; Mathews, Richards, & Eysenck, 1989). Similar results have been found with aggressive boys (Dodge, 1980; Dodge & Coie, 1989) and adult offenders (Copello & Tata, 1990) who show a tendency to interpret ambiguous information in a hostile fashion. Depression is associated with negative bias in interpretation and judgement

(Butler & Mathews, 1983; Alloy & Ahrens, 1987; Constans, Penn, Ihen, & Hope, 1999). Results are less conclusive with depression, which has led to the suggestion that depression and anxiety may exert effects via different processes, and so a unitary model for both disorders may be insufficient (Lawson & MacLeod, 1999). Lawson and MacLeod (1999) do note that results may be different with a clinical population rather than a student population. A study by Darvill & Johnson (1991) illustrated this biasing effect has also been shown with information being processed in a positive direction, congruent with induced positive mood state, and when samples are defined by broader personality traits dimensions such as extraversion (Darvill & Johnson, 1991).

4.2. Paradigms used to explore interpretation bias

Interpretation and judgement bias have been shown when individuals are required to spell ambiguous homophones such as "dye" or "die" (e.g. Mathews, et al, 1989), when required to interpret ambiguous sentences (e.g. Eysenck et al., 1991) and when asked to make lexical decisions as to whether strings of letters make meaningful words (e.g. Calvo et al., 1994). The effects can be shown when making predictions about the likely positive or negative outcome of future events (Alloy & Ahrens, 1987), and how ambiguous social scenarios are interpreted (Constans, et al., 1999). The use of sentences and scenarios is thought to be more ecologically valid than single words as a context is provided for the interpretations, which more closely resembles real life experiences.

4.3. Implications of an interpretation bias in the emotional disorders

The emotional disorders, or high negative trait emotions in normal populations, are associated with choosing threat/negative related spellings, recognising threat/negative interpretations, speeding up decisions, and judging future events as more likely to be negative. The more positive trait of extraversion is related to positive judgements of life events (Darvill & Johnson, 1991). Research supports the hypothesis that emotion has an organising quality in the processing of incoming information. In judgement and interpretation emotion appears to guide the nature of the inferences drawn when information is incomplete or uncertain.

With reference to schema theory, information processing biases reflect themes that are central to the emotional disorder, which are hypothesised as disorder-related schemas. For example, individuals with anxiety disorders are hypothesised to hold schemas related to threat and the cognitive biases demonstrated in these disorders lead to a biasing in processing in the direction of threat (e.g. MacLeod, Mathews & Tata, 1986). Anxiety is biologically involved in the avoidance of potential danger, and so with fear as the guiding emotion, it is adaptive to respond to even partial representations of threat (Calvo et al., 1997). In the anxiety disorders the subjective anticipation and detection of potential threat outweighs the objective evidence, leading to an accumulation of information that maintains the individual fears (Calvo et al., 1997). Through the biasing of information processing, schemas are key maintaining factors in the emotional disorders, making individuals susceptible to life experiences that impinge on their particular vulnerabilities.

4.4. Clinical applications of interpretation bias in the emotional disorders

Challenging cognitive biases is now a central element in cognitive behaviour therapy (CBT) for the emotional disorders (Blackburn & Davidson, 1995), and such treatments have been shown to be effective (e.g. Elkin, Shea, Watkins, Imber, Sotsky, Collins et al., 1989; Chambless & Gillis, 1993). The impact of CBT on interpretation bias has been explored by comparing pre-treatment groups with post-treatment groups in anxiety disorders (Eysenck et al., 1991: McNally & Foa, 1987) and in those with anger problems (Marshall, 1999). Although limited by a cross-sectional design, post treatment groups do appear to respond to ambiguous information in a direction similar to normal samples. This provides preliminary evidence that CBT can reduce interpretation bias, which in turn may expose individuals to evidence that is contradictory to their beliefs.

Given the clinical effectiveness of CBT in the emotional disorders, CBT is currently beginning to be applied to the personality disorders (Davidson 2000). Research shows success with a CBT approach to Axis I disorders, when there is also a concurrent personality disorders present, implying the suitability of a cognitive approach (Shea, Wigider & Klien, 1992; Dreessen & Arntz, 1998). However, individuals with personality disorders often continue to suffer other problems such as chronic low self-esteem or poor interpersonal relationships (Arntz, 1999). Individuals with BPD present particular challenges to services. Consequently, it appears productive to further develop cognitive approaches that address BPD directly. The application of the information processing paradigm to BPD provides a relatively unexplored area that will contribute to understanding of CBT for BPD.

5. Interpretation bias and borderline personality disorder

Clinical presentations of BPD are characterised by severe disturbances in affect (APA, 1994) and preceding evidence suggests affect is associated with biased information processing. Theoretical models emphasise an emotional sensitivity reflected in heightened sensitivity to negative stimuli (Linehan, 1993) and propose the action of strongly held beliefs and schemas that guide the way individuals view themselves and their relationships with others (Arntz et al., 1999; Beck et al., 1990; Young, 1999). It is likely that individuals with BPD will demonstrate a cognitive bias that reflects the schemas associated with this disorder.

As yet there is little empirical research applying the information processing paradigm to the personality disorders. Dreessen, Arntz, Hendriks, Keune & Van der Hout (1999) have explored attribution bias in avoidant personality disorder using a pragmatic inference task. The basic assumption is that idiosyncratic schemas will guide pragmatic inferences, which are conclusions drawn by individuals that consist of information not directly stated (Harris & Monaco, 1978). A memory test was used to explore recall of inferred and given information, in vignettes reflecting the central issues of avoidant personality disorder e.g., entering a room at a party and nobody speaking to you. Results suggest the presence of a bias in the attributions that was mediated by a set avoidant personality beliefs, defined by Beck et al. (1990). Avoidant personality pathology was, in turn, associated with avoidant beliefs. This study did not use a clinical sample but nonetheless provides preliminary support for a cognitive bias in the personality disorders. Preliminary work has shown some evidence for a memory bias associated with BPD

(Korfine & Hooley, 2000). Using a directed forgetting paradigm, individuals with BPD remembered words salient to their concerns (e.g. abandon, misunderstood), despite being instructed to forget them. Normal controls appeared to forget the words as instructed. This was explained as a difficulty of those with BPD to inhibit the rehearsal of BPD-related words. Results were consistent with enhanced encoding of information related to BPD and provide an example of biased information processing in BPD.

Interpretation bias has not as yet been explored in BPD. One of the DSM-IV criteria for BPD is fear of real or imagined abandonment, suggesting emotional reactions are not based on evidence at all times (APA, 1994). Given these clinical features and models of BPD, an interpretation bias is expected. In light of the abusive backgrounds of those with BPD and the expectations of abuse and abandonment (Young, 1999) this bias is likely to be directed towards threat as this is related to self- protection.

6. Conclusion

The combination of trauma and the absence of safe others are expected to have a fundamental effect on emotional development of those with BPD (Arntz, 1994). Schemas are assumed to reflect these learning environments and so demonstrate a high number of negative related themes and strong predictions of future similar experiences. Therefore, schemas contribute to the accumulation of evidence that confirms beliefs, through the biasing of information processing. Given the backgrounds of those with BPD this bias is expected to be in the direction of threat in order to foster self-protection. When information in the environment is ambiguous schemas are expected to act as

inferential systems and complete detail. However, problems arise when schemas idiosyncratic to the individual result in the over-representation of negative information and avoidance of disconfirmatory information. Empirical support of interpretation bias in the emotional disorders has provided support and elaboration of cognitive therapy. Despite clinical descriptions and theoretical analyses of BPD, empirical evidence is in its preliminary stages and the presence of an interpretation bias requires validation.

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Table 1

Diagnostic criteria for borderline personality disorder (APA, 1994)

DSM-IV

Beginning in early adult life, the patient has unstable impulse control, interpersonal relationships, moods, and self-image. These persistent or recurrent qualities are present in a variety of situations and shown by at least five of the following:

1. Frantic efforts to avoid real or imagined abandonment (not including suicidal or self-mutilating behaviour covered in criterion 5).

2. A pattern of unstable and intense interpersonal relationships characterised by alternating between extremes of idealization and devaluation.

3. Identity disturbance: persistent and markedly disturbed, distorted, or unstable self-image or sense of self

4. Impulsiveness in at least two areas that are potentially self damaging (e.g. spending, sex, substance abuse, shoplifting, reckless driving, binge eating (not including suicidal or self-mutilating behaviour covered in criterion 5).

5. Recurrent suicidal threats, gestures, or behaviours, or self-mutilating behaviour.

6. Affective instability: marked reactivity in mood (e.g. intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days).

7. Chronic feelings of emptiness.

8. Inappropriate, intense anger or lack of control of anger (e.g. frequent displays of temper, constant anger, recurrent physical fights).

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

Major Research Project Proposal

Borderline personality disorder: An experimental investigation of the interpretation of ambiguous information

Rachel Bullen

July 2001

Prepared in accordance with guidelines in the D.clin.Psy. handbook, based

on application for a mini project grant (SOHHD Chief Scientist Office)

(see Appendix 3.1)

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1.2 Title

Borderline personality disorder: An experimental investigation of the interpretation of ambiguous information.

1.3 Summary

Research into the emotional disorders (e.g. Beck, 1979, 1985) and the personality disorders (e.g. Beck and Associates., 1990) postulates the importance of maladaptive schemas characteristic of particular disorders. Such schema are thought to guide, and consequently bias, the processing of information in such a way as to maintain psychological problems and make individuals susceptible to life experiences that impinge on their particular vulnerabilities. Research has been carried out on a range of cognitive biases within the emotional disorders (e.g. work of Mathews, Richards & Eysenck, 1989 with depression; and Butler & Mathews', 1983 work with anxiety). As cognitive models of personality disorders develop it is necessary to experimentally explore the cognitive biases evident within this diverse range of psychopathology.

The present pilot study aims to explore the interpretation of ambiguous material in those with high levels of borderline personality traits. Individuals will be classified using the

SCID-II Axis II Interview for Borderline Personality Disorder (First, Gibbon, Spitzer, Williams, & Benjamin, 1997), and will also complete a number of questionnaires to measure the nature of their schema and levels of other psychological difficulties. By definition such schema are enduring, inflexible and manifest across a wide range of situations (Young, 1999). Research suggests that the processing biases are schema congruent; ambiguity is more likely to be processed negatively if it reflects the central concerns of the disorder (e.g. Stopa & Clark, 2000). To date there is a lack of published research on the cognitive biases evident in clinical samples of individuals with personality pathology. Therefore the current study will adapt a paradigm employed by Eysenck et al. (1991) on ambiguity and anxiety, using a recognition test for disambiguated forms of ambiguous sentences with either threatening or non-threatening meaning. Individuals with high borderline personality traits will be compared to non-psychiatric controls.

Exploration of the nature of cognitive biases associated with personality disorders is important in order to support or challenge current cognitive models of these disorders. In addition, clinical presentations of personality pathology, particularly borderline, is a persistent challenge to clinical services and results in significant distress for individuals, therefore any development in appropriate therapeutic focus will be welcomed.

1.4 Introduction

There is now considerable evidence for the relationship between cognition and emotion, reflected in research on the importance of cognitive processes in the emotional disorders (e.g. Mathews & Macleod, 1985; Fogarty & Hemsley, 1983). Evidence suggests that emotionally disturbed patients are characterised by the frameworks they use to understand the world. These frameworks, or schemas, are thought to be pre-existing memory representations that guide the selection, processing, retention and interpretation of information (Alba & Hasher, 1983). Schematic structures are thought to be generic prototypes containing the summary characteristics that typify classes; and modular in nature in that activation of one part automatically activates the whole (Garrod & Sanford, 1982). Consequently as novel stimuli are encountered they are processed relative to their associated prototypes and so additional information is provided and ambiguity can be resolved (Williams et al 1997).

Beck's theory of emotional disorders postulates idiosyncratic underlying maladaptive schema that play important roles in the vulnerability towards, and maintenance of particular disorders (Beck, Rush, Shaw & Emery, 1979: Beck, Emery & Greenberg, 1985). Such schema subsequently bias cognition, e.g. vulnerability to depression is associated with negative schema and negative cognitive biases (e.g. Beck, 1987). Research has explored a range of biases i.e. attention and memory. The nature of meanings drawn from ambiguous information is also thought to play a role in maintenance of psychological problems and bias the accumulation of evidence associated with particular events (e.g. Mathews, Richards & Eysenck, 1989: depression; Butler &

Mathews, 1983: anxiety). More specifically negative inferences are drawn from ambiguous material that reflects the central concerns, or schema associated with particular disorders. Socially anxious individuals, for example, show threatening interpretations of ambiguous social events (Stopa & Clark, 2000). Experimental evidence therefore provides support for the themes and processes important in cognitive models of psychopathology. In turn information processing biases can provide a focus for intervention in therapy.

Similar to Axis I problems, maladaptive cognitive schema have been hypothesised to characterise each personality disorder and guide the processing of information about the self, others and the world in such a way as to maintain psychopathology (Beck et al., 1990). Millon (1981) emphasises that those presenting with personality pathology demonstrate "protective constriction, cognitive distortion, and behaviour generalisations [which] are processes by which individuals restrict their opportunity for new learning [and] misconstrue essentially benign events". According to Young (1999) and consistent with DSM-IV (American Psychiatric Association, 1994) personality disorders are hallmarked by pervasive, inflexible and enduring patterns/schemas which affect cognition, affectivity, interpersonal functioning and impulse control. Consequently the intensity of the schema may result in significant schema congruent processing biases. As with Axis I problems, exploration of these cognitive processes is required to empirically support cognitive models of personality pathology. Dreessan and colleagues (1999) explored the biased interpretations associated with avoidant personality pathology. However there is a lack of published research that explores cognitive processes in the

personality disorders, particularly in clinical samples. As cognitive interventions with personality disorders are becoming more widely used empirical support is important.

The assumptions that appear to be characteristic of those with high levels of borderline traits include fears of abandonment and being alone, dependence on others to cope, fear of rejection, and feelings of vulnerability and guilt (e.g. Beck et al 1990; Arntz, Dietzel & Dreessan, 1999). Young (1999) has hypothesised a set of 'Early Maladaptive Schema' that are characteristic of borderline personality disorder such as abandonment, mistrust, dependence and subjugation. These are explored using the Young Schema Questionnaire (Young, 1999). Young believes these Early Maladaptive Schema often form the core of an individual's self-concept and conception of the environment (Young, 1999). This is consistent with Millon's (1981) suggestion that once particular expectancies are established individuals respond with increasing alertness to similar elements in their lives. However Young clearly states that the constructs proposed have not yet been tested empirically but provide the client and the clinician with a language for therapy (Young, 1999).

In current therapeutic practise cognitive theory is being applied to the conceptualisations of the personality disorders (Davidson 2000). Research shows successful cognitive behavioural treatment of Axis I disorders in those with personality disorders, implying the suitability of a cognitive approach (Shea, Wigider & Klien, 1992; Dreessen & Arntz, 1998). However individuals with personality disorders often continue to suffer other problems such as chronic low self-esteem or poor interpersonal relationships (Arntz,

1999). Consequently it appears productive to further develop cognitive approaches that address the personality disorders directly. This is of particular clinical value in light of the persistent challenges borderline personality presents to clinical services. The current study therefore aims to find some support for the cognitive approach.

DSM-IV explores the diagnostic features of borderline personality disorder and details panic at fear of rejection, inappropriate anger, unstable relationships, poor self-image, impulsivity and affective instability as characteristic (APA, 1994). Therefore, using the ambiguous sentences that have been utilised in studies on anger (Copello & Tata, 1990), depression, and anxiety (Mogg et al., 1994), the current study also aims to explore how people with high levels of borderline personality traits respond to ambiguity in the environment. The expectation is that they will read ambiguous information that permits a threatening and a non-threatening interpretation in its threatening direction.

1.5 Aims and hypotheses

Proposed aims are:

1. To utilise the ambiguous sentences methodology to examine, experimentally, the interpretation of ambiguity in those with high levels of borderline personality traits.

2. To explore the Early Maladaptive Schemas hypothesised by Young (1999) in those with high levels of borderline personality traits.

3. To explore the interpretation of ambiguity in those who show Early Maladaptive Schemas hypothesised by Young (1999).

Hypotheses are as follows

1. People allocated to the condition of high levels of borderline personality traits, will show an elevated tendency to interpret ambiguous information in its more threatening manner, relative to non-psychiatric controls.

2. There will be an association between high borderline traits and Early Maladaptive Schemas hypothesised by Young (1999).

3. Those who score highly on the Early Maladaptive Schemas hypothesised by Young (1999) will show an elevated tendency to interpret ambiguous information in its more threatening manner, relative to those who do not score highly.

4. There will be a relationship between Early Maladaptive Schema Score and the interpretation of ambiguous information as threatening.

1.6 Plan of Investigation

1.6.1 Subjects

Participants will be selected from volunteers from out patient clinical psychology services. All participants will be ensured confidentiality and will be asked to sign a consent form. All will be debriefed following participation.

Individuals will complete the SCID-II Personality Interview to confirm the psychiatric diagnosis of borderline personality disorder. A group of non-psychiatric controls will also complete the SCID-II Personality Interview screen for levels of borderline personality traits. In the present study, normal controls will be utilised rather than clinical controls due to the current absence of literature on interpretation bias and BPD. Only females will be asked to take part in the study as borderline personality disorder is diagnosed predominantly in females (APA, 1994). Efforts will be made to match the controls for age and estimated IQ. Those under 18 yrs will not be involved in an effort to control for identity problems seen in adolescence. See Appendix 3.2 for Participant Information Sheet and Appendix 3.3 for Consent form. Exclusion and inclusion criteria are as follow:

Inclusion criteria ⇒ aged between 18-65yrs

⇒ 5 out of 8 diagnostic traits using the SCID-II Interview for Borderline Personality Disorder

⇒ diagnosis by consultant psychiatrist involved in patients care

⇒ stable on current medication

⇒ given informed consent

Exclusion criteria ⇒ current diagnosis of alcohol and drug dependency

⇒ presence of a psychotic or bipolar disorder

⇒ presence of a general medical condition that may cause personality change

⇒ organic brain damage e.g. epilepsy, intracranial surgery, dementia, stroke

⇒ identified as having a learning disability

Estimate of sample size from power calculation

There is no previous research on information processing in individuals with high levels of borderline personality traits that utilises the ambiguous sentences paradigm. Therefore previous work with anger using the same paradigm will be employed to estimate sample sizes (Marshall, unpublished to date). Group sizes of approximately 12-15 will yield power of 0.8. These sample sizes are similar to work done on ambiguity and other emotional disorders (e.g. Lawson & Macleod, 1999), and in research in personality disorders and interpretation bias but using a different paradigm (Dreessan and colleagues, 1999)

1.6.2 Materials

i. SCID-II Interview for Borderline Personality Disorder

This is a subsection of the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (First, et al., 1997).

- **The SCID-II Interview is a standardised assessment procedure, developed to ensure more reliable and accurate diagnoses.**

iii. Young Schema Questionnaire (Long Form, Second Edition: Young, 1999)

This is a list of statements that a person may use to describe themselves. The individual must read the statements and state how well it describes them. This is a published inventory to explore Early Maladaptive Schemas (Young, 1999).

iv. BDI-II (Beck, 1998)) & Spielbergers Strait Trait Anxiety Inventory (Spielberger et al 1983)

Both these questionnaires demonstrate good reliability and validity. Research suggests individuals with significant Axis I emotional disorders (e.g. anxiety and depression) have an elevated tendency to interpret ambiguous information negatively (Butler & Mathews, 1983; Cane & Gotlib, 1985). Therefore it may be necessary to measure levels of anxiety and depression. In addition there is considerable research on the co-occurrence of Axis I disorders, particularly depression, and personality pathology (e.g. Docherty, Fiester & Shea, 1986). This will be covaried out in later analysis if necessary.

v. National Adult Reading Test (Nelson, 1991)

This provides an estimate of verbal IQ.

v. Textual stimuli

Two sets of textual stimuli will be constructed. A set of test stimuli consisting of ambiguous sentences (i.e. those that have two interpretations, one threatening and one non-threatening) and a set of filler stimuli of non ambiguous sentences to mask the ambiguous material. The study will utilise test stimuli already used in similar research in the emotional disorders, as there is no research published within the personality disorders.

vi. Experimental measure

A recognition test involving a list of disambiguated forms of the ambiguous sentences and the filler unambiguous sentences will be used. Individuals are required to answer "yes" or "no" as to whether the sentence is similar in meaning to the sentences previously presented. Two different lists will be constructed to control for material effects.

The following is an example of the experimental material:

Ambiguous sentence:

Your partner sits you down to discuss the quality of your relationship

Disambiguated forms of the sentence:

Your partner sits you down to discuss they are unhappy being with you (**threat**)

Your partner sits you down to discuss how happy they are being with you (**non-threat**)

1.6.3. Design and Procedure

The experimental design will consider one Between-subject factors and one Within-subject factor. The Between-subject factor in the first analysis will be Personality Condition (above 5 traits vs. below 2 traits). In the second analysis the Between-subject factors will be Personality Condition (Above vs. below median on EMS). Each initially ambiguous sentence will be tested for half of the sample with the threatening disambiguation and half with non-threatening disambiguation. The Within-subject factor will be Sentence interpretation (threatening vs. non-threatening). The hypotheses stated will be explored using a series of ANOVAs using the number of threatening and non-threatening disambiguated forms of sentences endorsed in the recognition test as the dependent variable. The influence of depression and anxiety may be explored using ANCOVAs.

The study will involve each subject completing questionnaires and tasks in the following order:

- semi-structured interview

- the experimental task

- the questionnaires (Young Schema Questionnaire, BDI, STAI).

This will be carried out in one session. The time taken for completion will be established with a pilot study.

Following the paradigm utilised by Eysenck, Mogg, May, Richards & Mathews (1991), the experimental task will involve the presentation of the list of test and filler sentences,

which individuals will rate for pleasantness. This will encourage self-reference and will ensure the sentences have been processed. A distraction task (e.g. the NART) will then be followed by a recognition test in which individuals will be presented with a list of disambiguated forms of the ambiguous sentences and the filler unambiguous sentences. Individuals will answer "yes" or "no" as to whether the sentences have a similar meaning to those previously presented. The expectation is that those in the condition of high borderline traits will endorse more of the threatening disambiguations in the recognition task than non-psychiatric controls.

1.6.4. Setting and equipment

All measures will be obtained from within the Department of Psychological Medicine at Glasgow University. Interviews and experiments will be carried out at various sites e.g. Clinical Psychology Clinics in Glasgow.

1.6.5 Data Analysis

Subjects will be allocated a code to maintain anonymity. Data will be analysed using SPSS. Both descriptive and inferential statistics will be utilised to explore the hypotheses stated. The subject groups are defined using the SCID-II Interview (high borderline traits and non-psychiatric controls) and using Young's Schema Questionnaire. Comparisons will be made using t-tests and ANOVAs on BDI scores, STAI scores and nature of interpretation of ambiguity. The analyses will deal exclusively with the positive endorsements of the sentences initially presented as ambiguous. ANCOVAs will also be carried out. Responses to the Young Schema Questionnaire will be explored.

1.7 Practical Application

Confirmation of a cognitive bias in the interpretation of ambiguous material will have implications for cognitive behavioural approaches to treating individuals with high levels of borderline personality traits. The evidence of a negative bias in the interpretation of ambiguous information may provide a suggestion as to why this client group are preoccupied with upsetting, schema-confirming experiences; a preoccupation that often exceeds their actual experience and the perceived risk of future repetition. Consequently this may provide a focus for therapy. This focus would be further enhanced with more knowledge about the schemas associated with this client group. This may also provide some evidence for the hypothesised central concerns of this group, particularly in light of the extreme effect these problems have on the individual, society and the therapeutic process.

1.8 Timescales

May 2000   Ethical Approval applied for, following which data collection can commence

January 2001   Testing completed and data analysis proceeding

July 2001   Study prepared for publication

1.9 Ethical Approval

This was obtained via the Greater Glasgow Primary Care NHS Trust Ethics Committee. See Appendix 3.4 for confirmation of Ethical Approval.

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Major Research Project Paper

Borderline personality disorder: An experimental investigation of the interpretation of ambiguous information

Rachel Bullen

July 2001

Prepared in accordance with guidelines for submission to

Behaviour Research and Therapy (see Appendix 2.1)

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Abstract

Borderline personality disorder (BPD) is characterised by extreme instability of affect and intense, unpredictable interpersonal relationships. Cognitive models of borderline personality emphasise the role of beliefs and schemas in guiding, and subsequently biasing, information processing. Individuals with BPD are thought to misconstrue essentially benign events and see negative evaluations in the responses of others. Given the clinical features, theoretical models, and aetiological factors of BPD, an interpretation bias towards threat is expected. This hypothesis was put to the test using the ambiguous sentences paradigm. Individuals meeting DSM-IV criteria for BPD were compared with non-psychiatric controls. Subjects were presented with a mixture of ambiguous and unambiguous sentences; the former could be interpreted as threatening or non-threatening. The nature of the inferences drawn was tested in an implicit recognition memory test. As predicted, those with BPD showed an elevated tendency to interpret ambiguous sentences in the threatening direction. This was related to high scores on a self-report Schema questionnaire measuring Early Maladaptive Schemas. In light of the abusive background of those with BPD, results are interpreted in the context of self-protection. Further study with the additional exploration of early environments would contribute to this interpretation. Results are discussed in light of their implications for more focused clinical interventions.

1. Introduction

Maladaptive schemas are hypothesised to play a central role in cognitive behavioural models of the emotional disorders (e.g. Beck, Emery & Greenberg, 1985; Beck, 1987) and the personality disorders (e.g. Beck, Freeman & Associates, 1990; Young & Lindemann, 1992). Schema theory is based on the assumption that not all information can be processed as entirely novel. Schemas are hypothesised to store knowledge of conventional situations and activities, which interacts with encoding, comprehension and retrieval through biasing attention, expectations, interpretations and memory (Williams, Watts, MacLeod & Mathews, 1997). A match between features in the external environment and conventional features stored by the individual can activate the relevant schemas (Garrod & Sanford, 1982). As schemas are assumed to be modular, activation of one part automatically activates default information that allows for the elaboration of inputs and the resolution of ambiguity (Sanford & Garrod, 1981). The automatic way schemas are applied to new information is said to develop through environmental regularities. Although rapid, automatic processing is said to be less flexible than more controlled appraisal of detail, as advantages in processing speed would be lost if perpetual revisions were required (Yonelinas & Jacoby, 1995). Therefore, elaboration and resolution of ambiguity is expected to have a consistent quality that reflects the idiosyncratic schemas of the individual.

Schema theory has been applied to clinical problems to propose that individuals with particular emotional disorders are applying disorder-related schemas that bias information processing towards features central to the disorder. For example, cognitive

biases demonstrated in the anxiety disorders centre around threat (e.g. MacLeod, Mathews & Tata, 1986) and cognitive biases in anger centre around hostility (e.g. Copello & Tata, 1990). Schema congruent cognitive biases have been shown in attention tasks (Martin, Williams & Clark, 1991; McNally, Rieman, & Kim, 1990; Gotlib & McCann, 1984), and with recall and recognition tasks (Bradley & Mogg, 1994; Breck & Smith, 1983). Interpretation bias has also shown relatively consistent findings and is assumed to reflect schemas operating to make inferences and so resolve ambiguity.

Support for the hypothesis of an interpretation bias, guided by schemas, has considerable experimental support in the emotional disorders. With anxiety, high anxious individuals showing a tendency to interpret ambiguous information in a threatening fashion (e.g. Eysenck, Mogg, May, Richards & Mathews, 1991; Calvo, Eysenck & Estevez, 1994; Mathews, Richards & Eysenck, 1989). Similar results have been found with aggressive boys (Dodge, 1980; Dodge & Coie, 1989) and adult offenders (Copello & Tata, 1990), who show a tendency to interpret ambiguous information in a hostile fashion. An elevated tendency to endorse more negative interpretations has also been shown in depression (Butler & Mathews, 1983), but is less conclusive (Lawson & MacLeod, 1999). Interpretation bias has been demonstrated using a number of paradigms. Examples include when individuals are required to spell acoustically presented ambiguous homophones such as "dye/die" (e.g. Mathews, et al., 1989); or when required to interpret ambiguous sentences, which have two alternative interpretations (e.g. Eysenck et al., 1991); and when asked to make lexical decisions as to whether strings of letters make meaningful words when preceded by a disorder related probe (e.g. Calvo et

al., 1994). Paradigms utilising sentences and scenarios are thought to be ecologically valid as they present a context for ambiguous words, which reflects real life more closely. The emotional disorder, or high trait emotion, is associated with choosing threat/hostile/negative related spellings and interpretations, and speeding up decisions. Therefore, evidence is consistent with the hypothesis that there are central themes to disorders that could reflect schemas. When information is partially presented these schemas are applied to resolve ambiguity. They, therefore, provide a key maintaining factor in the emotional disorders.

The clinical implications of schema theory in the emotional disorders are that as schemas are applied automatically and are resistant to change, disorder-related information is expected to become over-represented and conflicting evidence overlooked (Williams et al., 1997). Individuals are, therefore, exposed to environments that impinge on their particular vulnerabilities, while restricting new learning. Challenging cognitive biases is a central element in cognitive behavioural therapy (CBT) for the emotional disorders (e.g. Beck et al. 1979), and such interventions have been shown to be effective (e.g. Elkin, Shea, Watkins, Imber, Sotsky, Collins et al., 1989; Chambless & Gillis, 1993). More specifically, preliminary findings suggest CBT has the effect of shifting interpretation bias towards that shown in individuals without an emotional disorder (Eysenck, et al., 1991; Marshall, 1999; McNally & Foa, 1987). Evidence of an interpretation bias, therefore, provides a more focused direction for therapy.

Given the clinical effectiveness of CBT in the emotional disorders, CBT is currently beginning to be applied to the personality disorders (Davidson, 2000). Research shows successful CBT for emotional disorders in those with personality disorders, implying the suitability of a cognitive approach (Shea, Wigider & Klein, 1992; Dreessen & Arntz, 1998). However, individuals with personality disorders often continue to suffer other problems such as chronic low self-esteem or poor interpersonal relationships (Arntz, 1999). Borderline personality disorder (BPD), in particular, presents challenges to services, taking up considerable clinical time, and cognitive approaches to BPD are receiving considerable theoretical interest.

The clinical and aetiological features of BPD suggest the utility of applying schema theory. Individuals with BPD are characterised by extreme instability of affect, impulsivity, difficulties with self-identity, and intense, unpredictable interpersonal relationships (APA, 1994). The early experiences of those with BPD are associated with childhood sexual and physical abuse (Weaver & Clum, 1993), and by difficult family environments such domestic violence (Herman, Perry, Van der Kolk, 1989). BPD has been shown to be more related to childhood sexual and emotional abuse than other personality disorders (Arntz, Dietzel & Dreessen, 1999). Clinical models of BPD have proposed the role of early environments in shaping the schemas associated with BPD. Schemas reflecting particular themes, for example fears of abandonment, failure and abuse, are hypothesised to be central to BPD (Young, 1999). Young emphasises directing therapy at this schema level of understanding (Young, 1999). Alternative models propose a focus at the level of assumptions such as "If I trust someone, I run a

great risk of getting hurt or disappointed," which are described as verbal circumscriptions of fundamental schemas (Arntz et al., 1999; Beck et al., 1990). Linehan proposes early environments contribute to emotional modulation difficulties and so individuals have heightened sensitivity to negative interpersonal cues and difficulty reducing emotionally relevant stimuli that augment negative affect (Linehan, 1993). Therefore, early environments are hypothesised to foster features in BPD that strongly influence the way information will be selected and interpreted.

Despite the clinical models of BPD, there is, as yet, little empirical evidence supporting the application of schema theory to the personality disorders. Anecdotal descriptions from therapy suggest those with BPD often misinterpret the reactions of others as negative evaluations or rejections, when in reality this is not always the case. Given this, in the context of evidence in the emotional disorders, it may be important to explore interpretation bias in BPD. Preliminary research has shown some evidence for a memory bias associated with BPD (Korfine & Hooley, 2000). Using a directed forgetting paradigm, enhanced encoding of information related to BPD (i.e. words such as "abandon" and "reject") was demonstrated in those with BPD. BPD related words were remembered despite instructions to forget them, whereas normal controls forgot the words as instructed. This was explained as a difficulty of those with BPD to inhibit the rehearsal of BPD-related words and provides an example of biased information processing in BPD.

Interpretation bias has not been explored in BPD and so the current study aims to utilise the ambiguous sentences paradigm used in anxiety (Eysenck et al., 1991). The paradigm is based on the assumption that when information is presented as ambiguous, internal schemas will be applied to resolve the ambiguity. An implicit memory test will illustrate whether individuals have made threatening or non-threatening inferences from the initial sentences. The hypothesis is that those with BPD will show an elevated tendency to interpret ambiguous information in a more threatening direction. BPD will be associated with high numbers of Early Maladaptive Schemas, which in turn will be associated with increasing interpretation bias towards threat.

2. Method

2.1 Subjects

Twenty-six subjects were identified from Community Mental Health Teams in North Glasgow, from which seventeen experimental subjects with a psychiatric diagnosis of BPD were recruited. The experimental subjects were all contacted initially by a health professional involved in their care. All were outpatients currently on stable medication. All subjects were Scottish females. The age range was 18-61 years. Criteria for inclusion in the experimental group was the finding of 5 or more diagnostic traits for BPD on the SCID Interview for BPD (SCID-II: First, Gibbon, Spitzer, Williams & Benjamin, 1997) (see 2.2.1 Measures).

Seventeen control subjects were recruited through a number of sources (i.e. domestic staff, administration staff, professional staff). None had any history of psychiatric

treatment. Criteria for inclusion in the control group included the finding of no more than 2 diagnostic traits for BPD on the SCID Interview for BPD. The age range was 22-65.

Exclusion criteria for both groups were: a current diagnosis of alcohol or drug dependency, a psychotic or bipolar disorder, organic brain damage (e.g. epilepsy, dementia or stroke), learning disability or a general medical condition that might cause personality change. (See Section 3.1 for subject characteristics).

2.2. Materials

2.2.1. Structured Clinical Interview for DSM-IV Axis II (SCID-II: First et al., 1997).

The BPD section of the SCID-II was chosen as the measure to differentiate the experimental group from the control group as it fits most closely with a DSM-IV diagnostic model of BPD (APA, 1994). Endorsement of at least 5 out 9 traits constitutes a diagnosis of BPD. Joint-interview inter-rater reliability has been found to be as high as r = 0.91 for the Borderline diagnosis (Fossati, Maffei, Bagnato, Donati, Namia & Novella, 1999).

2.2.2. National Adult Reading Test (NART: Nelson, 1991)

Verbal IQ was estimated from the number of reading errors on the NART.

2.2.3. Self report questionnaires

Level of depression was assessed using the Beck Depression Inventory-II (Beck, 1998). Anxiety at the time of testing and the general level of anxiety proneness was assessed using the State Trait Anxiety Inventory (STAI: Spielberger, Gorsuch, & Lushene,, 1970).

Young's Schema Questionnaire was used to explore the Early Maladaptive Schemas hypothesised to be characteristic of individuals with personality disorders (Young, 1999). The person must decide how well a list of statements describe them, on a scale of 1 (completely untrue of me) to 6 (describes me perfectly). The total score can be subdivided into 16 subscales assessing the 16 schemas defined by Young (1999). (See Appendix 4.1.).

2.2.2. Experimental task stimuli

Textual stimuli

Fifty sentences were presented to the subjects initially (See Appendix 4.3). Twenty-four of these were ambiguous sentences that afford alternative interpretations, one threatening and one non-threatening. The ambiguous sentences had all previously been used to measure interpretation bias with anger, anxiety and depression (Eysenck et al., 1991; Copello & Tata, 1990). Twenty-six non-ambiguous sentences were interleaved as filler stimuli. All sentences were written in the first person to encourage self-reference. Only the results relating to ambiguous stimuli were analysed.

Test stimuli

Following a distractor task, a list of 40 sentences was presented to each subject prepared

for use in the subsequent implicit memory task. Two lists (List A & List B) were

constructed to control for the effects being merely a product of materials used (See

Appendix 4.2). Each list consisted of 12 of the initially presented sentences

disambiguated into the threatening form and 12 disambiguated into the non-threatening

form. Each initially ambiguous sentence was tested for half of the sample with the

threatening disambiguation and half with non-threatening disambiguation. The

remaining 16 consisted of filler sentences from the original list and new filler sentences.

See Table 1 for examples of ambiguous sentences and their disambiguations.

Insert Table 1

2.3. Procedure

Subjects were given information about the study prior to the session and were told the

study was exploring the way strongly held beliefs can shape the way events are seen.

The measures described in Section 2.2.1 were taken in a single session for each subject,

during which the experimental task was also performed. The experimental task followed

the paradigm utilised by Eysenck et al. (1991). Tests were administered according to the

following schedule.

The SCID-II Interview for BPD was carried out initially. All subjects were then presented

with the list of textual sentences and were told they described imaginary situations. To

encourage self-reference, and to ensure the sentences were processed, subjects were

asked to imagine themselves in the situations and rate how pleasant or unpleasant the

situations would be for them, ranging from definitely pleasant (1) to definitely unpleasant (5). The NART was then administered as a distractor task. Next the test stimuli were presented in the implicit recognition memory test. Subjects were asked to answer yes or no as to whether the sentences had a similar meaning to those previously presented. The number of sentences endorsed was the dependent variable. Individual scores were computed for test sentences operationalised as disambiguations of the threat sentences and for test sentences operationalised as disambiguations of the non-threat sentences.

3. Results

3.1. Subject characteristics

Demographic characteristics of the subjects are provided in Table 2. Verbal IQ estimated from the NART ranged from 82 - 119 for the experimental group and from 82 - 122 for the control group. The two groups did not differ on mean estimated verbal IQ (t (32) = 0.33, $p = 0.74$) or age (t (32) = 1.48, $p = 0.15$).

Insert Table 2

Using chi-square tests, there was no relationship between having BPD and living with a partner or being single (χ^2 (1) = 2.98, $p = 0.08$). The majority of the experimental subjects were unfit for work and majority of the control subjects were employed. There was no relationship between having BPD and drug use (χ^2 (2) = 2.50, $p = 0.29$). However, there was a relationship between having BPD and the amount of alcohol used. Within the BPD group a minority (12%) drank a lot of alcohol and a majority (65%) drank a little, whereas in the control group a majority (47%) drank a lot and a minority (24%) drank none.

The results of the self-report measures are in Table 3. Independent samples t-tests demonstrated that the BPD group scored as significantly more depressed on BDI-II (t (32) = 9.57, p < 0.001), and had higher State Anxiety (t (32) = 3.07, p = 0.004) and Trait Anxiety (t (32) = 11.00, p <0.001) on the STAI.

Insert Table 3

3.2. Implicit memory task performance

The main focus of the study was on the interpretation of ambiguity and the analysis was based on the number of positive endorsements of each sentence type on the implicit memory task. On independent samples t-tests there was no difference between results with List A and with List B on the threat sentence type (t (32) = 1.04, p = 0.30) or the non-threat sentence type (t (32) = 0.46, p = 0.65). Therefore, material effects are not considered further.

3.2.1. ANOVA

A 2*2 ANOVA was conducted with Group (BPD, control) as a between subject factor and Sentence type as a within-subject factor (threatening, non-threatening). The main effect of Sentence type was significant (F (1,32) = 14.34, p <0.01) but was modified by a significant interaction between Group and Sentence type (F (1, 32) = 29.05, p<0.01. Figure 1 clearly shows that the BPD group endorsed more of the threat type sentences than the control group.

Insert Figure 1

Planned comparisons confirmed that this difference was significant (t (32) = 4.24, p <0.01), whilst the groups did not differ in the number of endorsements of non-threatening sentences (t (32) = 0.75, p = 0.46).

3.2.2. ANCOVAs

The groups differed significantly on scores on the BDI-II and on the State and the Trait scales of the STAI. In order to examine whether these differences might be related to the findings obtained, a series of 2*2 ANCOVAs were conducted. When scores on the BDI-II were taken as the first covariate, the main effect of Sentence type became non-significant (F (1, 32) = 3.13, p = 0.09). However, the significant interaction remained (F (1,32) = 4.82, p = 0.04). Taking State anxiety instead as a covariate, the main effect of Sentence type was non-significant (F (1,32) = 1.36, p = 0.25) but the Group by Sentence type interaction remained significant (F (1, 32) = 20.63, p <0.01). When Trait anxiety was taken as a covariate the main effect was significant (F (1, 32) = 5.26, p = 0.029) but the Group by Sentence type interaction effect was not significant (F (1, 32) = 1.36, p = 0.25).

3.3. Young Schema Questionnaire

Independent sample t-tests illustrated the two groups differed significantly on the overall total score on the Schema questionnaire (t (28) = 14.58, p<0.01) and on all 16 individual schema subscales (See Appendix 4.4 for t-test statistics). Using a median split (median = 51.46) on the Schema questionnaire to redefine groups, only 1 of the BPD group changed to the control group. The BPD group scored high scores, reflecting more extremely held

beliefs. Figure 2 illustrates the strong correlation between Schema score and the number of sentences interpreted as threatening (r = 0.64, p<0.01).

Insert Figure 2

4. Discussion

The main finding in the present study is that those individuals who meet diagnostic criteria for borderline personality disorder (BPD) are more likely to endorse the threatening interpretations of ambiguous sentences than non-psychiatric controls. Those who meet criteria for BPD show no difference from controls on non-threatening sentences. These results may reflect elevated encoding of the initial sentences as threatening by the BPD group. Those meeting criteria for BPD scored high scores on the Schema questionnaire, reflecting more of the Early Maladaptive Schemas (EMS) as relevant to themselves and their relationship with others. Examples of EMS endorsed include abandonment, social isolation, and subjugation. As scores on the Schema questionnaire increase the number of sentences endorsed as threatening increases. Although causation is not demonstrated, interpretation bias in individuals with BPD may be mediated by the extreme maladaptive schemas they use to view the world.

Results are consistent with previous research on schema theory and interpretation bias in the emotional disorders (e.g. Eysenck et al., 1991; Calvo et al., 1994) and appear to support the hypothesis of an interpretation bias in BPD. An interpretation bias favouring the selection of threatening versions of ambiguous information may be an important factor contributing to the maintenance of BPD. Individuals with BPD may be more

likely to interpret cues in their environment as unpleasant. Therefore, potentially exposing themselves to evidence that confirms their vulnerabilities. It may have been adaptive in the past to actively process cues that indicated potential danger in order to promote protection. Through differential exposure to threat-related information, processing of threat-related information may have become automatic. The implicit memory test may have illustrated the threat-quality of the schematic models used to make inferences and therefore resolve ambiguity. The Schema questionnaire illustrated that schemas held indicated expectations of negative experiences, consistent with Young (1999).

Given clinical descriptions of BPD are characterised by chaotic and intense interpersonal relationships, the implication of an interpretation bias for everyday experiences is that individuals may be responding to relationship issues that do not reflect reality. An interpretation bias favoring the accumulation of threatening information lends support to Linehan's theory that emotional arousal in BPD may be mediated by a difficulty reducing emotionally relevant stimuli (Linehan, 1993). Such a bias will maintain contact with stimuli that augments negative arousal. Overall, therefore, individuals may be subjectively experiencing a more distressing environment than is objectively the case.

It is important to note that the interpretation bias remained significant when the effects of levels of depression and current anxiety were statistically controlled. In contrast, the effect was lost when general anxiety proneness was statistically controlled. The presence of the effect with state anxiety suggests this is not due to anxiety levels at the time. The

result is consistent with research on trait anxiety and the presence of an interpretation bias towards threat (e.g. Eysenck et al., 1991). The effect with BPD is confounded by trait anxiety. From the current study it is not possible to identify whether BPD or anxiety are independent causal factors of the interpretation bias. Overlap may reflect commonality in definitions and criteria, or anxiety may be the factor orientating the subjects towards threat. It is necessary to conduct a similar study using a trait anxiety control group to compare and contrast how the two groups respond to ambiguous sentences. It is likely that the interpretation bias in BPD may be specific to situations they find problematic such as issues regarding interpersonal relationships, whereas the bias in anxiety may relate to situations they find difficult depending on the nature of the anxiety disorder i.e. speaking in public for a person with social phobia.

An alternative possibility is that effects with both anxiety and BPD may be mediated by a common third factor, such as self-protection. Anxiety is thought to facilitate avoidance of potential danger and interpretation bias in anxiety disorders favours awareness of danger, even in the face of partial representations. Given the background histories of abuse and neglect associated with BPD, it seems likely they may favour a heightened awareness of danger that promotes self-protection. In a further study, more detailed exploration of the early environments of those with BPD would provide support for this hypothesis.

Although the present study has focused on interpretation bias it must be recognised that results may not reflect an actual interpretation bias but instead a bias in the output

mechanism of those with BPD to be orientated towards concern-related words, independent of initial interpretation. In a replication, a signal detection analysis, similar to that used by Eysenck et al (1991), would provide a more reliable demonstration of interpretation bias. In addition, there is no way of verifying that both meanings (threatening and non threatening) have not been activated at encoding and individuals are merely making a choice at testing that is explicit not implicit. Computerised methods are increasingly being used to minimise this possibility (e.g. Calvo, et al., 1994).

Despite the limitations discussed above, the findings of this study provide important preliminary evidence for the presence of an interpretation bias in those with borderline personality disorder that is directed towards threat. This may be related to particular schemas individuals use to process information about themselves and others, based on experience. In the emotional disorders, preliminary evidence suggests cognitive therapy is effective in removing these biases (e.g. Eysenck et al., 1991; Marshall, 1999). Given how the current fears of patients with BPD, and the concerns often raised within the therapeutic relationship, can misrepresent reality, the demonstration of an interpretation bias is of important therapeutic value. In light of the extreme effects these problems have on the individual, the therapeutic process, and the services providing care, a specific focus for intervention will be welcomed.

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Figure 1

Interaction of Group x Sentence type on the number of endorsements of previously ambiguous sentences (BPD group n=17; Control group n=17).
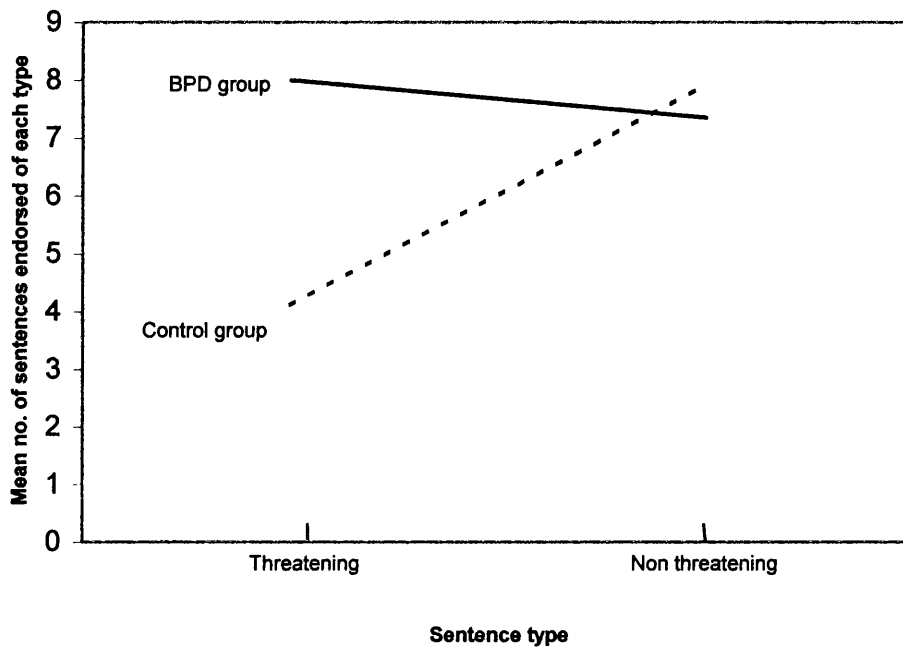
Figure 2

Positive correlation between scores on the Schema questionnaire and the number of threatening sentences endorsed by subjects (n = 34).
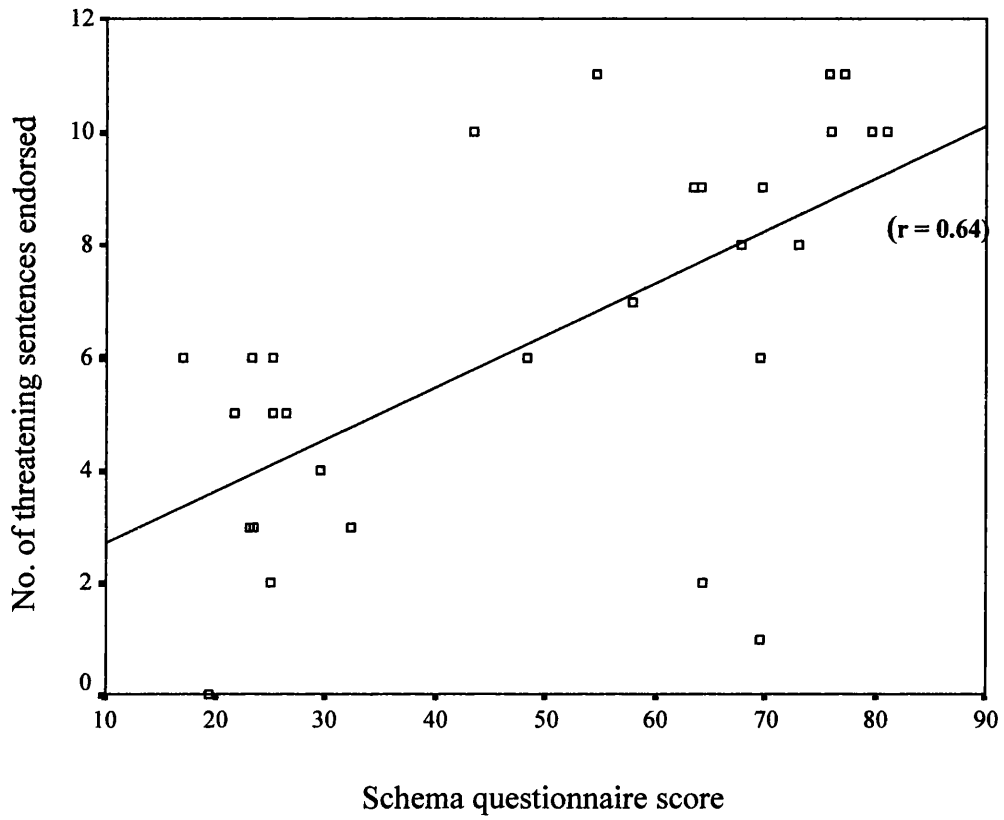
Table 1

Examples of ambiguous sentences and their disambiguated versions on the subsequent implicit recognition memory test

Ambiguous sentences	Threatening interpretations	Non-threatening interpretations
While talking to your best friend about one of your concerns, you notice they are looking away.	While talking to your best friend about one of your concerns, you notice they are tired of listening to you.	While talking to your best friend about one of your concerns, something distracts them.
Over a meal one evening your partner starts to talk about your relationship.	Over a meal one evening your partner tells you they are not happy being with you.	Over a meal one evening your partner tells you how happy they are being with you

Table 2

Demographic characteristics for the experimental group and the control group

Characteristic	BPD Group	Control Group
N	17	17
Age (years)		
M	32.4	39.2
SD	11.9	13.4
NART (error score)		
M	22.9	21.6
SD	9.6	11.0
Verbal IQ (converted from NART)		
M	101.1	102.8
SD	10.9	12.6
Marital status % (n)		
Single	59 (10)	18 (3)
Married	23.5 (4)	23.5 (4)
Separated	6 (1)	35 (6)
Living with someone	11.5 (2)	23.5 (4)
Occupational status % (n)		
Employed	6 (1)	88 (15)
Unemployed	12 (2)	-
Unfit to work	70 (12)	-
College	6 (1)	6 (1)
Retired	6 (1)	6 (1)

Table 3

Mean scores of the groups on Beck Depression Inventory-II (BDI-II), the State-Trait
Anxiety Inventory (STAI)

Self report measure	BPD group	Control group
BDI-II[a]		
M	37.9	4.7
SD	1.4	1.5
STAI		
State[b]		
M	45	27.6
SD	1.4	1.7
Trait		
M	64.6	32.5
SD	8.8	8.2

[a]The mean and standard deviation reported are the squares of the mean and sd of the sq rtBDI+0.5 taken due to heterogeneity of variance. A square root transformation was used to stabilise the variance (Howell, 1992).

[b]The mean and standard deviation reported are the antilogs of the mean and sd of the log transformation of the state anxiety scores taken due to the absence of a normal distribution. A log_{10} transformation was used to establish symmetry (Howell, 1992).

Clinical Case Research Study (Abstract)

Chronic Fatigue Syndrome and rest-activity patterns: a single case study using actigraphic assessment.

Rachel Bullen

July 2001

Prepared in accordance with guidelines for submission to

Behaviour Research and Therapy (see Appendix 5.1)

Address for correspondence: Rachel E. Bullen, Department of Psychological Medicine, Gartnavel Royal Hospital, 1055 Great Western Road, Glasgow, G12, OXH; Tel: 0141 211 2920.

Abstract

The case of a 59-year-old woman diagnosed with Chronic Fatigue Syndrome (CFS) is presented. The main symptoms were the subjective experience of fatigue and depressed mood. In addition to self-efficacy, these were the outcome variables for intervention. Key maintaining factors in the process were activity levels and cognitions regarding achievement and failure. Cognitive behavioural models of CFS emphasise the interplay between beliefs, activity, mood and fatigue. Formulation, and objective assessment using actigraphy, showed a rest-activity pattern that hindered respite, and so maintained fatigue and exacerbated low mood. Intervention was based on the hypotheses that mood would improve as activity increased and fatigue decreased. Prior to increasing activity through establishing a balance between rest and activity, key relevant cognitions were challenged. In addition to a baseline phase, there were two phases of treatment. These will be explained in detail. Process variables were monitored throughout. The main outcome variables were measured at baseline (T1), following the first phase (T2), and following the second phase (T3). Clinically significant improvements were shown in majority of outcome and process variables by the end of phase 2. Despite an increase in rest time, activity increased, along with mood.

Key words: Chronic fatigue syndrome; cognitive restructuring; rest-activity balance; actigraphy

Appendix 1.1

Clinical Psychology

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Appendix 2.1

BEHAVIOUR RESEARCH AND THERAPY
incorporating BEHAVIORAL ASSESSMENT

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Appendix 3.1

1.1   Applicants - names and addresses including the names of co-workers and supervisor(s) if known.

1.2   Title - no more than 15 words.

1.3   Summary - No more than 300 words, including a reference to where the study will be carried out.

1.4   Introduction - of less than 600 words summarising previous work in the field, drawing attention to gaps in present knowledge and stating how the project will add to knowledge and understanding.

1.5   Aims and hypothesis to be tested - these should wherever possible be stated as a list of questions to which answers will be sought.

1.6   Plan of investigation - consisting of a statement of the practical details of how it is proposed to obtain answers to the questions posed. The proposal should contain information on Research Methods and Design i.e.

         1.6.1   Subjects - a brief statement of inclusion and exclusion criteria and anticipated number of participants.

         1.6.2   Measures - a brief explanation of interviews/observations/ rating scales etc. to be employed, including references where appropriate.

         1.6.3   Design and Procedure - a brief explanation of the overall experimental design with reference to comparisons to be made, control populations, timing of measurements, etc. A summary chart may be helpful to explain the research process.

         1.6.4   Settings and equipment - a statement on the location(s) to be used and resources or equipment which will be employed (if any).

         1.6.5   Data analysis - a brief explanation of how data will be collated, stored and analysed.

1.7   Practical applications - the applicants should state the practical use to which the research findings could be put.

1.8   Timescales - the proposed starting date and duration of the project.

1.9   Ethical approval - stating whether this is necessary and, if so, whether it has been obtained.

Appendix 3.2

The role of experience and beliefs in shaping our view of the world*

Participant Information Sheet

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with friends, relatives and your GP if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Thank you for reading this.

What is the purpose of the study?

The present study will explore the way people look at the world. Through experiences in life people develop important beliefs about themselves and the environment. These beliefs are often held very strongly and shape the way events are seen. Scientific literature suggests that sometimes people can be troubled by these beliefs. The study aims to explore some of the ways these beliefs influence the way people view the world.

If you agree to take part in the study you will be asked to meet with the researcher, Rachel Bullen, on one occasion.

I, Rachel Bullen, am a Psychologist in Clinical Training. I have spent three years studying an undergraduate Psychology degree at the University of Leeds, followed by three years of work experience, and I am now in my third year of the postgraduate Doctorate in Clinical Psychology at the University of Glasgow. I am carrying out this current project under the close supervision of Dr Kate Davidson, Consultant Clinical Psychologist.

Why have I been chosen?

Those taking part are experiencing psychological difficulties, this may be in relationships or in coming to terms with difficult life events, particularly from childhood. There will be approximately 30 people involved in the study.

What do I have to do if I take part?

You will be asked to meet with Rachel Bullen on one occasion for approximately two hours. You will be asked to complete some questionnaires about how you have been feeling in the last week and take part in a short interview. You will then be asked a number of short questions about how you might describe yourself. Following this there will be a short task. The task will involve reading a list of 20 short sentences and then answering some Yes/No questions about the sentences. This task has been found to be a good way of exploring how people view the events around them. You will not be asked to complete any further assessments.

The researcher, Rachel Bullen will be happy to see you as an outpatient in the clinic or to visit you at home if that is easier for you. All travel costs to and from the clinic will be paid. There will be no other involvement required.

This study does not involve a treatment and you will not have to make any lifestyle changes when participating.

Do I have to take part?

If you do not wish to take part please feel free to decline. It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. This will not affect the standard of care you receive at present or in the future. The study is not likely to cause undue distress but if any discomfort is felt the researcher, Rachel Bullen will be happy to stop the procedure and talk anything through. You are free to decline from answering any question asked without giving a reason or affecting your care.

What are the possible benefits of taking part?

There is a growing interest in this area and it is hoped, that the information provided could be used in the development of treatment for the benefit of future clients. If you would like I can inform the mental health professional involved in your care of the results and this may assist therapy. I will make arrangements if you would like to know the outcome of the research or about any of the information relating to you directly.

Who will know what I have said?

All information, which is collected about you during the course of research, will be kept strictly confidential. Any information about you, which leaves the research department/clinic, will have your name and address removed so that you cannot be recognised from it. Following your agreement, if you decide to take part your family doctor will be told about your participation

Thank you for taking the time to read this information.

If you have any further questions about the study please contact me on 0141 201 3607 (Monday to Friday 9am-5pm). I am based at the Department of Psychological Medicine, Gartnavel Royal Hospital, Glasgow, G12 OXH.

If you decide to participate,
- please read and sign the attached consent form and give it straight back to the mental health professional that gave you the form
- or tell the mental health professional you are happy to be contacted by researcher
- or, if you would prefer the researcher to contact you please provide your telephone number in the space on the consent form and return in the envelope provided.
- or if you would prefer you can contact the researcher, Rachel Bullen, on 0141 201 3607

Appendix 3.3

Patient Id code for this study:

<u>The role of experience and beliefs in shaping our view of the world*</u>

Participant Consent Form

Name of Researcher: Rachel Bullen

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.
    I have received a copy to take home

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

3. I understand that my GP will be informed of my participation in the study. I give permission for him to be informed

4. I understand that I am free to withdraw from this study at any time, without having to give a reason

5. I understand that all information collected from the questionnaires, interview and the task will be treated confidentially and anonymised

6. I agree to take part in the above study.

_____   _____   _____
Name of Participant   Date   Signature

_____   _____   _____
Name of Person witnessing   Date   Signature
taking consent

_____   _____   _____
Researcher   Date   Signature

Telephone number_____*if you would prefer the psychologist to*
contact you)

SDS0210M

Appendix 3.4
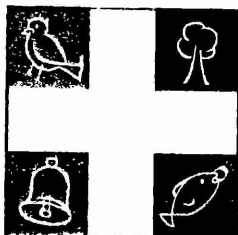
Ref: AmcM/0031

**GREATER GLASGOW
PRIMARY CARE
NHS TRUST**

29 September, 2000

Ms Rachel Bullen
Academic Department
Gartnavel Royal Hospital
1055 Gt Western Road
Glasgow
G12 0XH

Dear Ms Bullen

PROJECT: *Borderline personality: an experimental investigation of the interpretation of ambiguous information*

Many thanks for sending the required amendments to the above named submission to the Research Ethics Committee. I am pleased to be able to tell you that the Committee now has no objections from an ethical point of view, to this project proceeding and ethical approval is formally granted.

Before your project commences you will also require to obtain management approval via the Research & Development Directorate, Gartnavel Royal Hospital.

I would also like to take this opportunity to remind you that you should notify the Committee if there are any changes, or untoward developments, connected with the study – the Committee would then require to further reconsider your application for approval. The Committee expect to receive a brief regular update every 6 months, and then a brief final report on your project when the study reaches its conclusion. (Failure to keep the Committee abreast of the status of the project can eventually lead to ethical approval being withdrawn)

May I wish you every success with your study.

Yours sincerely

A W McMAHON
Administrator – Research Ethics Committee

cc   B Rae

Appendix 4.1

Developed by
Jeffrey Young, Ph.D.
& Gary Brown, M.Ed.

Name _____ Date_____

INSTRUCTIONS: Listed below are statements that a person might use to describe himself or herself. Please read each statement and decide how well it describes you. When there you are not sure, base your answer on what you emotionally feel, not on what you think to be true.

If you desire, reword the statement so that the statement would be even more true of you. Then choose the highest rating from 1 to 6 that describes you (including your revisions), and write the number in the space before the statement.

RATING SCALE:

Completely untrue of me = 1
Mostly untrue of me = 2
Slightly more true than untrue = 3
Moderately true of me = 4
Mostly true of me = 5
Describes me perfectly = 6

EXAMPLE:

I care about
A. __4__ I worry that people ^ will not like me.

1. _____ People have not been there to meet my emotional needs.

2. _____ I haven't gotten love and attention.

3. _____ For the most part, I haven't had someone to depend on for advice and emotional support.

4. _____ Most of the time, I haven't had someone to nurture me, share him/herself with me, or care deeply about everything that happens to me.

5. _____ For much of my life, I haven't had someone who wanted to get close to me and spend a lot of time with me.

6. _____ In general, people have not been there to give me warmth, holding, and affection.

7. _____ For much of my life, I haven't felt that I am special to someone.

8. _____ For the most part, I have not had someone who really listens to me, understands me, or is tuned into my true needs and feelings.

9. _____ I have rarely had a strong person to give me sound advice or direction when I'm not sure what to do.
*ed
10. _____ I worry that the people I love will die soon, even though there is little medical reason to support my concern.

11. _____ I find myself clinging to people I'm close to because I'm afraid they'll leave me.

12. _____ I worry that people I feel close to will leave me or abandon me.

13. _____ I feel that I lack a stable base of emotional support.

14. _____ I don't feel that important relationships will last; I expect them to end.

15. _____ I feel addicted to partners who can't be there for me in a committed way.

16. _____ In the end, I will be alone.

17. _____ When I feel someone I care for pulling away from me, I get desperate.

18. _____ Sometimes I am so worried about people leaving me that I drive them away.

19. _____ I become upset when someone leaves me alone, even for a short period of time.

20. _____ I can't count on people who support me to be there on a regular basis.

21. _____ I can't let myself get really close to other people because I can't be sure they'll always b

22. _____ It seems that the important people in my life are always coming and going.

23. _____ I worry a lot that the people I love will find someone else they prefer and leave me.

24. _____ The people close to me have been very unpredictable; one moment they're availabl
they're angry, upset, self-absorbed, fighting, etc.

25. _____ I need other people so much that I worry about losing them.

26. _____ I feel so defenseless if I don't have people to protect me that I worry a lot abou'

27. _____ I can't be myself or express what I really feel, or people will leave me.

28. _____ I feel that people will take advantage of me.

29. _____ I often feel that I have to protect myself from other people.

30. _____ I feel that I cannot let my guard down in the presence of other people, or else they will intentionally hurt

31. _____ If someone acts nicely towards me, I assume that he/she must be after something.

32. _____ It is only a matter of time before someone betrays me.

33. _____ Most people only think about themselves.

34. _____ I have a great deal of difficulty trusting people.

35. _____ I am quite suspicious of other people's motives.

36. _____ Other people are rarely honest; they are usually not what they appear.

37. _____ I'm usually on the lookout for people's ulterior motives.

38. _____ If I think someone is out to hurt me, I try to hurt them first.

39. _____ People usually have to prove themselves to me before I can trust them.

40. _____ I set up "tests" for other people to see if they are telling me the truth and are well-intentioned.

41. _____ I subscribe to the belief: "Control or be controlled."

42. _____ I get angry when I think about the ways I have been mistreated by other people throughout my life.

43. _____ Throughout my life, those close to me have taken advantage of me or used me for their own purposes.

44. _____ I have been physically, emotionally, or sexually abused by important people in my life.

45. _____ I don't fit in.

46. _____ I'm fundamentally different from other people.

47. _____ I don't belong; I'm a loner.

48. _____ I feel alienated from other people.

49. _____ I feel isolated and alone.

50. _____ I always feel on the outside of groups.

51. _____ No one really understands me.

52. _____ My family was always different from the families around us.

53. _____ I sometimes feel as if I'm an alien.

54. _____ If I disappeared tomorrow, no one would notice.

55. _____ No man/woman I desire could love me one he/she saw my defects.

56. _____ No one I desire would want to stay close to me if he/she knew the real me.

57. _____ I am inherently flawed and defective.

58. _____ No matter how hard I try, I feel that I won't be able to get a significant man/woman to respect me or feel that I am worthwhile.

59. _____ I'm unworthy of the love, attention, and respect of others.

60. _____ I feel that I'm not lovable

61. _____ I am too unacceptable in very basic ways to reveal myself to other people.

62. _____ If others found out about my basic defects, I could not face them.

63. _____ When people like me, I feel I am fooling them.

64. _____ I often find myself drawn to people who are very critical or reject me.

65. _____ I have inner secrets that I don't want people close to me to find out.

66. _____ It is my fault that my parent(s) could not love me enough.

67. _____ I don't let people know the real me.

68. _____ One of my greatest fears is that my defects will be exposed.

4

69. _____ I cannot understand how anyone could love me.
*ds

70. _____ I'm not sexually attractive.

71. _____ I'm too fat.

72. _____ I'm ugly.

73. _____ I can't carry on a decent conversation.

74. _____ I'm dull and boring in social situations.

75. _____ People I value wouldn't associate with me because of my social status (e.g., income, educational level, career).

76. _____ I never know what to say socially.

77. _____ People don't want to include me in their groups.

78. _____ I am very self-conscious around other people.
*su

79. _____ Almost nothing I do at work (or school) is as good as other people can do.

80. _____ I'm incompetent when it comes to achievement.

81. _____ Most other people are more capable than I am in areas of work and achievement.

82. _____ I'm a failure.

83. _____ I'm not as talented as most people are at their work.

84. _____ I'm not as intelligent as most people when it comes to work (or school).

85. _____ I am humiliated by my failures and inadequacies in the work sphere.

86. _____ I often feel embarrassed around other people because I don't measure up to them in terms of my accomplishments.

87. _____ I often compare my accomplishments with others and feel that they are much more successful.
*fa

88. _____ I do not feel capable of getting by on my own in everyday life.

89. _____ I need other people to help me get by.

90. _____ I do not feel I can cope well by myself.

91. _____ I believe that other people can take of me better than I can take care of myself.

92. _____ I have trouble tackling new tasks outside of work unless I have someone to guide me.

93. _____ I think of myself as a dependent person, when it comes to everyday functioning.

94. _____ I screw up everything I try, even outside of work (or school).

95. _____ I'm inept in most areas of life.

96. _____ If I trust my own judgment in everyday situations ___

97. _____ I lack common sense.

98. _____ My judgment cannot be relied upon in everyday situations.

99. _____ I don't feel confident about my ability to solve everyday problems that come up.

100. _____ I feel I need someone I can rely on to give me advice about practical issues.

101. _____ I feel more like a child than an adult when it comes to handling everyday responsibilities.

102. _____ I find the responsibilities of everyday life overwhelming.

*di

103. _____ I can't seem to escape the feeling that something bad is about to happen.

104. _____ I feel that a disaster (natural, criminal, financial, or medical) could strike at any moment.

105. _____ I worry about becoming a street person or vagrant.

106. _____ I worry about being attacked.

107. _____ I feel that I must be very careful about money or else I might end up with nothing.

108. _____ I take great precautions to avoid getting sick or hurt.

109. _____ I worry that I'll lose all my money and become destitute.

110. _____ I worry that I'm developing a serious illness, even though nothing serious has been diagnosed by a physician.

111. _____ I am a fearful person.

112. _____ I worry a lot about the bad things happening in the world: crime, pollution, etc.

113. _____ I often feel that I might go crazy.

114. _____ I often feel that I'm going to have an anxiety attack.

115. _____ I often worry that I might have a heart attack, even though there is little medical reason to be concerned.

116. _____ I feel that the world is a dangerous place.

*vh

117. _____ I have not been able to separate myself from my parent(s), the way other people my age seem to.

118. _____ My parent(s) and I tend to be overinvolved in each other's lives and problems.

119. _____ It is very difficult for my parent(s) and me to keep intimate details from each other, without feeling betrayed or guilty.

120. _____ My parent(s) and I have to speak to each other almost every day or else one of us feels guilty, hurt, disappointed, or alone.

121. _____ I often feel that I do not have a separate identity from my parents or partner.

122. _____ I often feel as if my parent(s) are living through me--I don't have a life of my own.

123. _____ It is very difficult for me to maintain any distance from the people I am intimate with; I have trouble keeping any separate sense of myself.

124. _____ I am so involved with my partner or parents that I do not really know who I am or what I want 115

125. _____ I have trouble separating my point of view or opinion from that of my parents or partner.

126. _____ I often feel that I have no privacy when it comes to my parents or partner.

127. _____ I feel that my parents are, or would be, very hurt about my living on my own, away from them.

*em
128. _____ I let other people have their way because I fear the consequences.

129. _____ I think if I do what I want, I'm only asking for trouble.

130. _____ I feel that I have no choice but to give in to other peoples' wishes, or else they will retaliate or reject me in some way.

131. _____ In relationships, I let the other person have the upper hand.

132. _____ I've always let others make choices for me, so I really don't know what I want for myself.

133. _____ I feel the major decisions in my life were not really my own.

134. _____ I worry a lot about pleasing other people so they won't reject me.

135. _____ I have a lot of trouble demanding that my rights be respected and that my feelings be taken into account.

136. _____ I get back at people in little ways instead of showing my anger.

137. _____ I will go to much greater lengths than most people to avoid confrontations.

*sb
138. _____ I put others' needs before my own or else I feel guilty.

139. _____ I feel guilty when I let other people down or disappoint them.

140. _____ I give more to other people than I get back in return.

141. _____ I'm the one who usually ends up taking care of the people I'm close to.

142. _____ There is almost nothing I couldn't put up with if I loved someone.

143. _____ I am a good person because I think of others more than of myself.

144. _____ At work, I'm usually the one to volunteer to do extra tasks or to put in extra time.

145. _____ No matter how busy I am, I can always find time for others.

146. _____ I can get by on very little because my needs are minimal.

147. _____ I'm only happy when those around me are happy.

148. _____ I'm so busy doing for the people that I care about that I have little time for myself.

149. _____ I've always been the one who listens to everyone else's problems.

150. _____ I'm more comfortable giving a present than receiving one.

151. _____ Other people see me as doing too much for others and not enough for myself.

152. _____ No matter how much I give, it is never enough.

153. _____ If I do what I want, I feel very uncomfortable.

154. _____ It's very difficult for me to ask others to take care of my needs.

*ss

155. _____ I worry about losing control of my actions.

156. _____ I worry that I might seriously harm someone physically or emotionally if my anger gets out of control.

157. _____ I feel that I must control my emotions and impulses or something bad is likely to happen.

158. _____ A lot of anger and resentment build up inside of me that I don't express.

159. _____ I am too self-conscious to show positive feelings to others (e.g., affection, showing I care).

160. _____ I find it embarrassing to express my feelings to others.

161. _____ I find it hard to be warm and spontaneous.

162. _____ I control myself so much that people think I am unemotional.

163. _____ People see me as uptight emotionally.

*ei

164. _____ I must be the best at most of what I do; I can't accept second best.

165. _____ I strive to keep almost everything in perfect order.

166. _____ I must look my best most of the time.

167. _____ I try to do my best; I can't settle for "good enough."

168. _____ I have so much to accomplish that there is almost no time to really relax.

169. _____ Almost nothing I do is quite good enough; I can always do better.

170. _____ I must meet all my responsibilities.

171. _____ I feel there is constant pressure for me to achieve and get things done.

172. _____ My relationships suffer because I push myself so hard.

173. _____ My health is suffering because I put myself under so much pressure to do well.

174. _____ I often sacrifice pleasure and happiness to meet my own standards.

175. _____ When I make a mistake, I deserve strong criticism.

176. _____ I can't let myself off the hook easily or make excuses for my mistakes.

177. _____ I'm a very competitive person.

178. _____ I put a good deal of emphasis on money or status.

179. _____ I always have to be Number One, in terms of my performance.

*us

180. _____ I have a lot of trouble accepting "no" for an answer when I want something from other people.

181. _____ I often get angry or irritable if I can't get what I want.

182. _____ I'm special and shouldn't have to accept many of the restrictions placed on other people.   117

183. _____ I hate to be constrained or kept from doing what I want.

184. _____ I feel that I shouldn't have to follow the normal rules and conventions other people do.

185. _____ I feel that what I have to offer is of greater value than the contributions of others.

186. _____ I usually put my needs ahead of the needs of others.

187. _____ I often find that I am so involved in my own priorities that I don't have time to give to friends or family.

188. _____ People often tell me I am very controlling about the ways things are done.

189. _____ I get very irritated when people won't do what I ask of them.

190. _____ I can't tolerate other people telling me what to do.

*et
191. _____ I have great difficulty getting myself to stop drinking, smoking, overeating, or other problem behaviors.

192. _____ I can't seem to discipline myself to complete routine or boring tasks.

193. _____ Often I allow myself to carry through on impulses and express emotions that get me into trouble or hurt other people.

194. _____ If I can't reach a goal, I become easily frustrated and give up.

195. _____ I have a very difficult time sacrificing immediate gratification to achieve a long-range goal.

196. _____ It often happens that, once I start to feel angry, I just can't control it.

197. _____ I tend to overdo things, even though I know they are bad for me.

198. _____ I get bored very easily.

199. _____ When tasks become difficult, I usually cannot persevere and complete them.

200. _____ I can't concentrate on anything for too long.

201. _____ I can't force myself to do things I don't enjoy, even when I know it's for my own good.

202. _____ I lose my temper at the slightest offense.

203. _____ I have rarely been able to stick to my resolutions.

204. _____ I can almost never hold back from showing people how I really feel, no matter what the cost may be.

205. _____ I often do things impulsively that I later regret.

*is

Appendix 4.2

Definitely pleasant	Slightly pleasant	Neutral	Slightly unpleasant	Definitely unpleasant

1. You come out of the house and find that it is a beautiful sunny day

   ☐   ☐   ☐   ☐   ☐

2. You switch the television on to discover that you have missed your favourite programme

   ☐   ☐   ☐   ☐   ☐

3. You get into the bath at the end of a long day and reach for the bar of soap.

   ☐   ☐   ☐   ☐   ☐

4. The day before starting a new job you go to bed an hour before your normal bedtime, but you can't sleep.

   ☐   ☐   ☐   ☐   ☐

5. While you were on the way to an appointment you looked at the display in a shop window.

   ☐   ☐   ☐   ☐   ☐

6. On the way to buy a gift for a friend in a large shop, you ask someone for directions but get no help

☐   ☐   ☐   ☐   ☐

7. You meet a long distant relative who you haven't seen for years and have a long talk about your family.

☐   ☐   ☐   ☐   ☐

8. You are telling a friend a joke when they start to giggle uncontrollably

☐   ☐   ☐   ☐   ☐

9. You looked up and saw the men starting to load the barrels

☐   ☐   ☐   ☐   ☐

10. You pay a surprise call on some friends and notice how neat and tidy their garden is.

☐   ☐   ☐   ☐   ☐

11. A policeman comes to your house and asks for the person who lived there before you.

☐   ☐   ☐   ☐   ☐

12. The doctor prescribed medicine for your neighbour

☐   ☐   ☐   ☐   ☐

13. Some of your friends have been talking together, and you realise that they don't want you to overhear them

☐   ☐   ☐   ☐   ☐

14. As you step off the bus you throw your ticket in the waste bin provided.

☐   ☐   ☐   ☐   ☐

15. Your boss calls you into their office to discuss the quality of your recent work

☐   ☐   ☐   ☐   ☐

16. You went to the garage so that the oil filter could be changed.

☐   ☐   ☐   ☐   ☐

17. Your friend has offered to drive you to the cinema, but they are late and you wonder what has delayed them

. ☐   ☐   ☐   ☐   ☐

18. You saw the woman grab the old lady before she crossed the street

. ☐   ☐   ☐   ☐   ☐

19. When you look in the mirror you notice that it is hanging crooked on the wall so you straighten it.

. ☐   ☐   ☐   ☐   ☐

20. It is your birthday, but no cards have arrived when you leave for work

☐   ☐   ☐   ☐   ☐

21. You reach out to turn on the kettle but decide to have a glass of fruit juice instead.

☐   ☐   ☐   ☐   ☐

22. Out shopping one day you see a neighbour across the road, but when you call to them they walk straight past

☐   ☐   ☐   ☐   ☐

23. After applying for a job you really want, you receive a letter which contains the answer you had expected

☐   ☐   ☐   ☐   ☐

24. You feel quite emotional when you look at your old school photograph.

☐   ☐   ☐   ☐   ☐

25. At the disco you knew what that look meant and got ready for action

☐   ☐   ☐   ☐   ☐

26. Your dog was barking when the postman arrived at the door.

☐　　　☐　　　☐　　　☐　　　☐

27. In the restaurant you look through the menu at the list of dishes.

☐　　　☐　　　☐　　　☐　　　☐

28. You have recently decorated your front room and your visitors comment on your work

☐　　　☐　　　☐　　　☐　　　☐

29. You have recently bought a new jacket and several people comment on it

☐　　　☐　　　☐　　　☐　　　☐

30. The pub you're in is crowded and noisy, and has old oak beams in the roof.

☐　　　☐　　　☐　　　☐　　　☐

31. A group of friends are organising a trip to the country on bicycles.

☐　　　☐　　　☐　　　☐　　　☐

32. At dinner you start to tell your neighbour a story about your holiday, when you notice that everyone is looking at you

.　☐　　　☐　　　☐　　　☐　　　☐

33.At the sport's centre your friend was beaten by the young man

☐   ☐   ☐   ☐   ☐

34.Queuing in the post office you sort through your loose change.

☐   ☐   ☐   ☐   ☐

35.As you approach the club room you can hear music and noisy
conversation, but as you walk through the door it suddenly goes quiet

☐   ☐   ☐   ☐   ☐

36. Your two friends played darts until the pub closed.

☐   ☐   ☐   ☐   ☐

37.While talking to your best friend about one of your concerns, you notice
they are looking away

☐   ☐   ☐   ☐   ☐

38. You knew the couple who had acquired the house at the end of the road

☐   ☐   ☐   ☐   ☐

39.You looked through the window at the men who were ready to strike

.   ☐   ☐   ☐   ☐   ☐

40. The tailor took your measurements for the suit.

. ☐   ☐   ☐   ☐   ☐

41. In a large excited crowd on New Year's Eve, you feel as if you could lose control and really go crazy

☐   ☐   ☐   ☐   ☐

42. Your lesson was started by a teacher from your old school.

☐   ☐   ☐   ☐   ☐

43. You were amazed when you received the birthday card.

☐   ☐   ☐   ☐   ☐

44. Over a meal one evening your partner starts to talk about your relationship

. ☐   ☐   ☐   ☐   ☐

45. You borrowed the book from the local library

. ☐   ☐   ☐   ☐   ☐

46. You are travelling in a bus which is quite crowded, although no one sits in the seat next to you

☐   ☐   ☐   ☐   ☐

47.Having arranged to meet a friend in the pub, you arrive to find they are not there

☐ ☐ ☐ ☐ ☐

48. In the morning, as usual you started exercising.

☐ ☐ ☐ ☐ ☐

49. At the party the strength of the punch took you by surprise

☐ ☐ ☐ ☐ ☐

50. You spent all day painting the kitchen

☐ ☐ ☐ ☐ ☐

Appendix 4.3

<u>List A</u>

1. The bank manager agreed to give the loan
   to your two friends   Yes   No

2. You are travelling in a bus which is quite
   crowded, but everyone avoids sitting next to you.   Yes   No

3. While you were on the way to an appointment you
   looked at the display in a shop window.   Yes   No

4. The day before starting a new job you go to bed an hour
   before your normal bedtime, but are too nervous to sleep.   Yes   No

5. At dinner you start to tell your neighbour a story about
   your holidays, when you notice that everyone seems
   interested in your tale.   Yes   No

6. You meet a long distant relative who you haven't seen for
   years and have a long talk about your family.   Yes   No

7. Having arranged to meet a friend in the pub, you arrive
   to find that you have got there before them.   Yes   No

8. You get into the bath at the end of a long day and reach
   for the bar of soap.   Yes   No

9. Buying a gift for a friend in a large shop in a large
   shop you ask someone for directions but find they
   don't know the way.   Yes   No

10. You are telling your friends a joke when they start
    to laugh at your weak attempt.   Yes   No

11. Your friend knew it was his turn to buy the drinks   Yes   No

12. You looked up and saw the men starting to put
    bullets into the gun   Yes   No

13. You pay a surprise call on some friends and notice how   Yes   No
    neat and tidy their garden is.

14. Some of your friends have been talking together,
    and they might be planning a pleasant surprise for you.   Yes   No

15. Your boss calls you to their office to say that
    your work is not up to standard   Yes   No

16. Every evening you take the dog for a walk   Yes   No

17. You saw the young woman help the old lady

    trying to cross the road   Yes   No

18. In a large excited crowd on New Year's Eve, you feel

    as if you could lose control of your mind and go insane.   Yes   No

19. As you step off the bus you throw your ticket

    in the waste bin provided.   Yes   No

20. At the sports centre your friend was defeated

    by the young man   Yes   No

21. A policeman comes to your house and asks for the

    person who lived there before you.   Yes   No

22. It is your birthday, but no one has remembered

    to send you any cards.   Yes   No

23. Out shopping one day you see a neighbour across

    the road, but when you call to them they don't hear.   Yes   No

24. You decided to meet outside the station   Yes   No

25. Over a meal one evening your partner tells you

    how happy they are being with you   Yes   No

26. Your friend has offered to drive you to the cinema, but they are late and you wonder if their car is working   Yes   No

27. You reach out to turn on the kettle but decide to have a glass of fruit juice instead.   Yes   No

28. As you approach the club room you can hear music and noisy conversation, but as you walk through the door everyone stops talking and stares.   Yes   No

29. You bought her some flowers   Yes   No

30. After applying for a job you really want, you receive a letter which contains the expected rejection.   Yes   No

31. At the disco you exchanged glances and got ready to fight   Yes   No

32. You feel quite emotional when you look at your old school photograph.   Yes   No

33. At the party, you were shocked by the strength of the punch   Yes   No

34. You have recently decorated your front room and your visitors praise the quality of your work   Yes   No

35. In the restaurant you look through the menu at
   the list of dishes.   Yes   No

36. Someone knocked at your door early in the evening   Yes   No

37. You have recently bought a new jacket and
   several people criticise the style.   Yes   No

38. The pub you're in is crowded and noisy, and has old
   oak beams in the roof.   Yes   No

39. While talking to your best friend about one of your
   concerns, something distracts them.   Yes   No

40. You looked through the window at the men who
   were ready to attack   Yes   No

List B

1. The bank manager agreed to give the loan
   to your two friends   Yes   No

2. You are travelling in a bus which is quite crowded,
   but you have plenty of room as the seat next
   to you is vacant.   Yes   No

3. While you were on the way to an appointment you
   looked at the display in a shop window.   Yes   No

4. The day before starting a new job you go to bed an hour
   before your normal bedtime, but are not tired
   enough to sleep.   Yes   No

5. At dinner you start to tell your neighbour a story about
   your holidays, when you notice everyone is staring
   critically at you.   Yes   No

6. You meet a long distant relative who you haven't seen
   for years and have a long talk about your family.   Yes   No

7. Having arranged to meet a friend in the pub, you
   arrive to find they have stood you up   Yes   No

8. You get into the bath at the end of a long day and reach
   for the bar of soap.   Yes   No

9. Buying a gift for a friend in a large shop in a large
   shop you ask someone for directions but find they
   ignore you..   Yes   No

10. You are telling your friends a joke when they start
    to laugh because it is so funny.   Yes   No

11. Your friend knew it was his turn to buy the drinks   Yes   No

12. You looked up and saw the men starting to put
    barrels into the truck   Yes   No

13. You pay a surprise call on some friends and notice how
    neat and tidy their garden is.   Yes   No

14. Some of your friends have been talking together,
    and seem to have been saying unpleasant
    things about you.   Yes   No

15. Your boss calls you to their office to congratulate
    you on your work   Yes   No

16. Every evening you take the dog for a walk   Yes   No

17. You saw the young woman attack the old lady
trying to cross the road   Yes   No

18. In a large excited crowd on New Year's Eve, you feel

as if you could lose all inhibitions and really

enjoy yourself   Yes   No

19. As you step off the bus you throw your ticket

in the waste bin provided.   Yes   No

20. At the sports centre your friend was hit

by the young man   Yes   No

21. A policeman comes to your house and asks for the

person who lived there before you.   Yes   No

22. It is your birthday, but you have to leave for work

before the cards arrive in the post.   Yes   No

23. Out shopping one day you see a neighbour across

the road, but when you call to them they ignore

you completely   Yes   No

24. You decided to meet outside the station   Yes   No

25. Over a meal one evening your partner tells you
    they are not happy being with you.   Yes   No

26. Your friend has offered to drive you to the cinema,
    but they are late and you wonder if they have
    had an accident   Yes   No

27. You reach out to turn on the kettle but decide to have a
    glass of fruit juice instead.   Yes   No

28. As you approach the club room you can hear music
    and noisy conversation, but as you walk through
    the door the music comes to an end.   .   Yes   No

29. You bought her some flowers   Yes   No

30. After applying for a job you really want, you receive
    a letter which contains the offer you had hoped for   Yes   No

31. At the disco you exchanged glances and
    got ready to dance   Yes   No

32. You feel quite emotional when you look at your
    old school photograph.   Yes   No

33. At the party, you were shocked by the

power of the thump   Yes   No

34. You have recently decorated your front room

and your visitors criticise the standard of your work.   Yes   No

35. In the restaurant you look through the menu at

the list of dishes.   Yes   No

36. Someone knocked at your door early in the evening   Yes   No

37. You have recently bought a new jacket and

several people say it looks good   Yes   No

38. The pub you're in is crowded and noisy, and has old

oak beams in the roof.   Yes   No

39. While talking to your best friend about one of your

concerns, you notice they are tired of listening to you.   Yes   No

40. You looked through the window at the men who

were ready to stop work   Yes   No

Appendix 4.4

Table of t-test statistics comparing the BPD group and the control group on scores for each of the 16 subscales on Young's Schema Questionnaire

Early Maladaptive Schema	T-test statistic[a]
Emotional deprivation	7.75
Abandonment	9.05
Mistrust/Abuse	9.15
Social isolation/Alienation	9.1
Defectiveness/Shame	10.26
Social Undesirability	7.18
Failure	9.57
Dependence/Incompetence	8.88
Vulnerability to harm and illness	9.69
Enmeshment	7.34
Subjugation	7.52
Self-sacrifice	5.64
Emotional inhibition	12.57
Unrelenting standards	4.10
Entitlement	3.83
Insufficient self-control	8.05

[a] $p < 0.01$