

**The Role Of Self-Focused Attention In
Panic Disorder And Depression**

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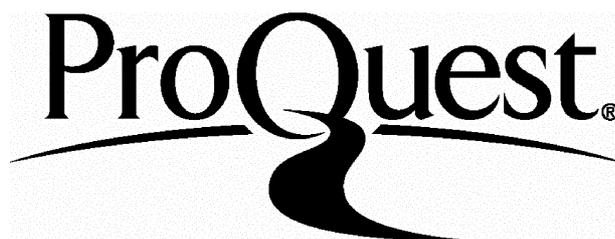
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Abstract

Several current cognitive models of panic suggest that hypervigilance for somatic sensations may contribute to the onset and maintenance of panic disorder. This study uses constructs and methods drawn from the literature on self-focused attention to assess levels of somatic attention in panic disorder. Patients with concurrent panic disorder and depression ($n = 20$) were compared with three other groups (patients with depression, high anxiety controls, low anxiety controls, $n = 20$ per group) on three measures of somatic self-focused attention. Panickers were found to report significantly more thoughts indicative of somatic attention than any other group of participants. The design allowed the elimination of depression (which is known to enhance self-focus) as an explanation for the observed effects and enabled us to test whether any cognitive bias was present as a possible risk factor for psychopathology in high anxiety controls as suggested by Eysenck (1992). Implications of the findings both for theories of panic and for treatment strategies based on attentional retraining are discussed.

Introduction

1.1 Overview Of The Study

Background

During the past twenty years there has been an increasing interest in cognitive models of psychological dysfunction. This type of approach has been applied to panic disorder and a number of models which focus on fear of the symptoms of anxiety as a central feature of panic have been developed. (Beck, 1988; Belfer & Glass, 1992; Clark, 1986; 1988; Goldstein & Chambless, 1978). It is plausible that in addition to anxiety about somatic sensations, panic may be characterised by an attentional bias towards physical threat.

There have now been a significant number of studies which have attempted to address this issue and these have tended to find evidence of such a bias. However, whilst this work is of interest, the experimental paradigms which have been used seem inadequate in two respects.

First, in the context both of clinical reports and of the research literature, it is reasonable to suggest that individuals with panic are hyperalert for physical threat in the form of their own somatic sensations. This hypothesis in fact forms one component of several of the cognitive models of panic (e.g., Beck, 1988; Belfer & Glass, 1992; Goldstein & Chambless, 1978). Most studies of attention in panic to date have not been able to test this suggestion in that they have measured processing of linguistic cues related to physical threat (eg. words such as 'faint') rather than processing of the sensations themselves.

Second, these studies have tended to measure selective processing via tasks such as Stroop procedures or dot probe tasks in which both stimulus and response are relatively simple. As such, external validity in this kind of approach may be lacking. That is, individuals with panic tend to report that it is rather complex interplays of their internal, external and social environments which tend to trigger panic and their responses are similarly complex. Thus, tests of selective attention may need to mirror this complexity in both type of information and type of response.

In this thesis, the issue of somatic attention in panic will be investigated in the context of the psychological literature on self-focused attention. Self-focus can be briefly defined as “attention directed inward, the content of which is self-referent” (Wells & Matthews, 1994, p. 203) and selective attention for physical sensations as described above can therefore be seen as a subtype of the self-focus construct. Borden, Lowenbraun, Wolff & Jones (1993) suggested the term ‘somatic self-focus’ to describe this selective processing of physical sensations and contrasted it with cognitive self-focus which consists of attention to inner thoughts and emotions. Thus, somatic self-focus constitutes one component of the cognitive models of panic.

Cognitive self-focus also is known to have a range of psychological sequelae (including effects on mood, cognition and behaviour) and has been linked with a number of psychological disorders particularly depression and alcohol abuse. Many of these effects are potentially important in panic and cognitive self-focus is therefore of theoretical interest in addition to somatic self-focus. A further advantage of considering panic within

the framework of the self-focus literature is that the methods of measurement (such as thought-sampling techniques) which have been developed for self-focused attention have tended to be less simplistic than the experimental tasks mentioned above. There have been two studies of somatic self-focus in panic disorder to date (Brown & Cash, 1990; Borden et al., 1993). These reported positive results but both were methodologically flawed in that they did not control for depression which is known to produce enhanced self-focus.

This study therefore attempts to utilise the concepts and methods of the self-focus literature to investigate the attentional component of current cognitive conceptualisations of panic and to do so with greater methodological rigour than has been achieved in other studies. For the sake of clarity in the discussion which follows a brief summary of the design and methods of the study is presented at this point.

Description of the study

Measures of both somatic and cognitive self-focus were administered to four groups of participants:

1. Patients with both panic disorder and depression
2. Patients with depression only.
3. Healthy volunteers with high trait anxiety
4. Healthy volunteers with low trait anxiety.

These groups were chosen to allow an assessment of the level and content of self-focus in panickers and to judge whether any effects were specific to panic. Using panickers with concurrent depression was advantageous in that it was possible both to test whether the

positive results of previous studies may have been attributable to depression and to eliminate the possibility that any effects were due to patient status. A group of healthy controls with low trait anxiety was included in order to allow comparison of the performance of the patient groups with normal function on measures of self-focus. The controls with high trait anxiety were included to assess whether any cognitive bias was present which might constitute a vulnerability factor for the development of clinical anxiety as proposed by Eysenck (1992).

1.2 Background On Panic Disorder

1.2.1 Phenomenology And Epidemiology Of Panic Disorder

Definition of panic disorder

Panic anxiety has been recognised in the psychological literature for many years - Freud's (1895) description closely parallels the current description of panic. Individuals with panic repeatedly experience brief episodes of intense anxiety which include a variety of unpleasant somatic symptoms in addition to fears of dying, going mad and so on .

Although such attacks tend to occur more frequently in some environments (e.g., supermarkets, crowds, trains etc.) the panicker is frequently unable to identify any specific trigger for the anxiety. Thus, in contrast to phobic anxiety states, the panic attack is often experienced as 'coming out of the blue'. The experience of repeatedly panicking in certain contexts tends to give rise both to a degree of secondary anticipatory anxiety and to a pattern of agoraphobic avoidance behaviour.

The Diagnostic and Statistical Manual of Mental Disorders IV (DSM IV, American Psychiatric Association, 1994) definition of panic disorder incorporates the features mentioned above and will be used for the purposes of this study (see Table 1.1 overleaf). For a diagnosis of panic disorder an individual must repeatedly experience discrete episodes of intense anxiety which are not attributable to another psychological disorder. During these episodes, somatic symptoms and anticipation of some physical or psychological disaster are particularly prominent. In addition, these attacks must result in significant emotional and/or behavioural impact. This definition been chosen because it is widely used in both research and clinical settings and so facilitates comparison with other studies and the application of the findings to clinical practice.

Table 1.1 Diagnostic Criteria from DSM IV (American Psychiatric Association, 1994)**Panic attacks:**

A discrete period of intense fear or discomfort, in which four or more of the following symptoms developed abruptly and reached a peak within 10 minutes:

- (1) palpitations, pounding heart, or accelerated heart rate
- (2) sweating
- (3) trembling or shaking
- (4) sensations of shortness of breath or smothering
- (5) feeling of choking
- (6) chest pain or discomfort
- (7) nausea or abdominal distress
- (8) feeling dizzy, unsteady, lightheaded, or faint
- (9) derealization (feelings of unreality) or depersonalization (being detached from oneself)
- (10) fear of losing control or going crazy
- (11) fear of dying
- (12) parasthesias (numbness or tingling sensations)
- (13) chills or hot flushes

p. 395

Panic disorder:**A. Both (1) and (2)**

- (1) recurrent unexpected Panic Attacks
- (2) at least one of the attacks has been followed by 1 month (or more) of one (or more) of the following:
 - (a) persistent concern about having additional attacks.
 - (b) worry about the implications of the attacks or its consequences (e.g., losing control, having a heart attack, "going crazy").
 - (c) a significant change in behaviour related to the attacks.

B. The Panic Attacks are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hyperthyroidism).

C. The Panic Attacks are not better accounted for by another mental disorder, such as Social Phobia (e.g., occurring on exposure to feared social situations), Obsessive-Compulsive Disorder (e.g., on exposure to dirt in someone with an obsession about contamination), Posttraumatic Stress Disorder (e.g., in response to stimuli associated with a severe stressor), or Separation Anxiety Disorder (e.g., in response to being away from home or close relatives).

pp. 402-3

Epidemiology of panic

Occasional panic attacks are relatively common in the general population but studies report varying rates according to the diagnostic criteria and reporting methods used. In a review of 23 studies, Norton, Cox & Malan (1992) noted that in community samples, the average proportion of subjects reporting one or more panic attacks was 27.6%.

Panic disorder in which episodes of panic recur frequently and cause significant impairment of function is less common - estimates of lifetime prevalence vary from from 2.1% to 4.1% for women and from 1.0% to 1.5% for men (e.g., Karno, Hough, Burnam, Escobar, Timbers, Santana, & Boyd, 1987; Katerndahl and Realini, 1993). Thus, a small but significant proportion of the population can expect to suffer from repeated panic attacks associated with distress and disruption of activities at some time during their life.

Panic disorder and agoraphobia

Whilst not directly relevant to the focus of the present study some comment on the relationship between panic disorder and agoraphobia is necessary. This has been a source of disagreement in the literature. Clinically, agoraphobic avoidance is seldom seen without accompanying panic attacks. For example, no case of agoraphobia without panic occurred in five studies which involved a total of 223 agoraphobic patients (Breier, Charney & Heninger, 1986; Di Nardo, O'Brien, Barlow, Waddell & Blanchard, 1983; Kleiner & Marshall, 1987; Noyes, Crowe, Harris, Hamra, McChesney, & Chaudhry, 1986; Thyer & Himle, 1985) However, the Epidemiological Catchment Area study found that in community samples, agoraphobia without panic was more common than agoraphobia

with panic (Eaton, Dryman, Weissman, 1991). There have been differing views as to the significance of these findings (e.g., Horwath, Lish, Johnson, Hornig & Weissman, 1993) and the issue is not of crucial importance with regard to this study. However, in reviewing both theoretical models and the empirical literature it needs to be borne in mind that some investigators focus on agoraphobia (and therefore on panic by implication) whereas others focus explicitly on panic.

Panic disorder and depression

In the present study a choice has been made to focus on panic disorder in the context of concurrent depression. One reason for this was that depression is known to affect self-focused attention and previous research on panic and self-focus has not adequately taken account of this. One way to remedy this would have been to compare patients with pure panic disorder with a group of non-panickers. However, this would have the disadvantage that any differences could be explicable in terms of differences in patient status rather than the presence of panic per se. That is, the disruption and distress of having a psychological disorder meriting treatment may produce differences in cognitive function irrespective of type of diagnosis. The present study compares a patient group with panic disorder and depression with a patient group with pure depression thus allowing a more rigorous test of any selective effects of panic disorder than has been achieved in other studies to date.

A further reason for this choice of design lay in the high comorbidity of panic and depression. Estimates of comorbidity vary from 31 per cent to 70 per cent according to

the diagnostic criteria used and the population studied (Breier, Charney & Heninger, 1984; Lesser, Rubin, Pecknold, Rifkin, Swinson, Lydiard, Burrows, Noyes & DuPont, 1988). However, what is clear from these studies is that a substantial proportion of individuals with panic also suffer from concurrent depression and this is certainly supported by the clinical experience of the researcher. Thus, whilst the issues become somewhat more complex, it is at least as useful to pursue an understanding of patients with dual diagnosis as to investigate panic disorder in its pure form.

Why study panic?

There has been a tendency in the past to view panic disorder as part of the less severe end of the spectrum of psychiatric difficulties. However, it can and often does lead to extensive restrictions in the activities which can be undertaken by the individual in addition to the quite severe emotional distress experienced. Panickers frequently deal with their panic attacks by avoiding trigger situations and eventually this can develop into a pattern of agoraphobic avoidance which commonly involves difficulties with leaving home, travelling, coping with social situations, and entering environments such as shops, pubs, restaurants and so on. Ormel, Vonkorff, Ustan, Pini, Korten, & Oldehinkel (1994) reported that 58 per cent of patients with panic disorder showed moderate or severe levels of occupational role dysfunction. This proportion was higher than that shown by individuals with a range of other psychiatric problems including depression, alcohol dependence generalised anxiety and hypochondriasis. Thus, from this perspective, individuals with panic disorder can in no way be regarded as the worried well.

In addition, the treatment of panic disorder forms a substantial part of the work of most out-patient adult clinical psychology services. Some medications (e.g.; antidepressants such as Imipramine) can be beneficial for panic attacks but many patients do not find these fully effective and some form of psychological treatment is required. From this point of view then, a thorough understanding of panic is desirable in order to guide the development of effective psychological therapies.

1.2.2 Theories Of Panic

This study approaches panic from a cognitive rather than a biological perspective. Consequently, the theoretical review of panic presented below will focus primarily on current cognitive formulations. However, biological models also have some relevance to the experimental design and will therefore be commented on briefly.

Cognitive Models of Panic

Recent developments in academic cognitive psychology and an increasing clinical interest in cognition have contributed to the development of cognitive models of panic. The aim of this study is to extend what is known in this domain. Most researchers in this field have focused either on some version of fear of anxiety as an explanation for panic or on information-processing biases which may undergird cognitive reactions to the symptoms of anxiety. The purpose of the following sections will be to review previous theoretical and empirical work on panic before linking in the literature on self-focus in

order to place this study in context and to elucidate the rationale for the research hypotheses.

Most panic patients report that it is the experience of panic itself which is feared rather than the trigger situation per se and for this reason theorists have developed conceptualisations of panic based on the idea of 'fear of fear'. There have been a number of versions of this idea as discussed below.

(a) Interoceptive Conditioning (Goldstein & Chambless, 1978)

Goldstein & Chambless in 1978 proposed a model in which fear of fear is the central element, such that the individual with panic attacks comes to fear the experience of anxiety itself, as well as the catastrophic social, physical and psychological consequences of anxiety. They contend that fear of fear occurs as a result of interoceptive conditioning in which the conditioned stimulus is the internal physiological arousal of the individual. The individual, having suffered one or more panic attacks becomes "hyperalert for their sensations" (p.55) and begins to interpret physiological arousal as a sign of an oncoming panic. Since the feared stimulus (arousal) is carried around with the individual, it generalises widely and different external situations then become anxiety-provoking. Thus, this model postulates a role for bodily self-focus in maintaining recurrent panic attacks.

(b) Catastrophic Misinterpretation (Clark, 1986, 1988)

Clark (1988) suggests that "individuals who experience panic attacks do so because they have a relatively enduring tendency to interpret certain bodily sensations in a catastrophic

fashion. The sensations that are misinterpreted are mainly those involved in normal anxiety responses (e.g., palpitations, breathlessness, dizziness, paresthesias) but also include some other sensations. The catastrophic misinterpretation involves perceiving these sensations as much more dangerous than they really are and, in particular, interpreting the sensations as indicative of an immediately impending physical or mental disaster - for example, perceiving a slight feeling of breathlessness as evidence of impending cessation of breathing and consequent death, perceiving palpitations as evidence of an impending heart attack, perceiving a pulsing sensation in the forehead as evidence of a brain haemorrhage, or perceiving a shaky feeling as evidence of impending loss of control and insanity” (p.149). Thus, this model focuses primarily on the interpretation of physical sensations. The model assumes that during a panic attack attention narrows to focus on somatic sensations but it is not explicitly stated whether this somatic attention is state-specific or whether it constitutes a relatively enduring trait in individuals who panic repeatedly.

(c) Beck’s Cognitive Model (1988)

According to Beck (1988) ‘Panic prone patients tend to fix their attention on any bodily or mental experiences that are not explicable as normal’ (p.91). Furthermore, he suggests that panic patients are hypervigilant for the experience of such sensations and that their fixation of attention is involuntary. Once panic attacks are established, the problem is maintained in part by selective attention to internal events such as bodily sensations. This model echoes the idea of catastrophic misinterpretation suggested by Clark (1988) but is

more explicit in postulating a role for hypervigilance for somatic sensations as a maintaining factor.

(d) Anxiety Sensitivity (Reiss, 1987)

The central suggestion of this conceptualisation of panic is that individuals vary in their proneness to regard the symptoms of anxiety with alarm. Thus, panickers are postulated to possess an enduring set of beliefs and attitudes regarding the harmfulness of symptoms of anxiety - for example that rapid heartbeats signify an impending heart attack, or that experiencing severe anxiety may damage the heart. This construct is similar to Clark's (1988) idea of the catastrophic interpretation of bodily sensations. However, unlike Clark's model it does not assume that individuals with high anxiety sensitivity misconstrue their symptoms as something else (e.g., palpitations are symptoms of a heart attack). The suggestion is that such individuals may know perfectly well that such sensations are caused by anxiety but may still become frightened because they believe that such arousal can lead to heart attacks, insanity and so on.

(e) Cognitive-Attentional Model (Belfer & Glass, 1992)

A more recent model of panic is the cognitive-attentional model of agoraphobia suggested by Belfer & Glass (1992) which extends the Goldstein & Chambless (1978) fear of fear model. It incorporates the idea of the misinterpretation of somatic symptoms but in addition makes specific predictions about attentional patterns in panic disorder. This cognitive-attentional model would propose that agoraphobic individuals in addition, to

catastrophising sensations are also overattentive to their internal body sensations, including autonomic arousal, and underattentive to external cues that might be utilized to aid in correctly identifying uncomfortable internal physical feelings. Belfer & Glass propose that:

“Within this cognitive-attentional conceptualization, the agoraphobic individual is seen to excessively scan her or his internal physical environment for any signs of arousal. As the agoraphobic becomes aware of even relatively low levels of such arousal it is labeled anxiety, in the absence of a more differentiated labeling repertoire for internal experience. In addition, other emotional and physical states (such as anger, grief, sexual arousal, indigestions or physical-exertion related arousal) may be labeled as anxiety.” (p.134-5).

(f) Hypervigilance Theory (Eysenck, 1992)

Eysenck proposed a general model of anxiety based on hypervigilance which can also be applied to panic disorder. He suggests the major function of anxiety is to facilitate the early detection of signs of threat in potentially dangerous environments. Thus, a crucial cognitive vulnerability factor for clinical anxiety states consists in an attentional bias favouring threat information, resulting in general hypervigilance, environmental scanning and specific hypervigilance for particular types of threat-related information. In panic disorder, relevant threat-related information would presumably include the physical symptoms of anxiety. So far, this is somewhat similar to aspects of the models reviewed above. However, Eysenck also suggests that this type of attentional bias is characteristic

of individuals with high trait anxiety and that the bias constitutes a cognitive vulnerability factor which predisposes the individual to developing clinical anxiety. Although this suggestion is supported by evidence that individuals with high premorbid anxiety require fewer stressful life events to precipitate the onset of disorder than those with less anxious premorbid personalities (McKeon, Roa & Mann, 1984) it has not yet been adequately validated empirically.

Summary of Cognitive Models of Panic

As discussed above, these conceptualisations vary in some details and in the psychological mechanisms (conditioning or attributions) which are suggested to account for the persistence of panic attacks. However they all agree that an excessive concern with somatic sensations is characteristic of individuals with panic disorder. In this context then it is reasonable to suggest that an attentional bias towards physical sensations is likely to be a fruitful avenue of investigation in panic disorder. The models vary in how explicitly attentional function is addressed - Beck (1988), Belfer & Glass (1992), Eysenck, (1992) and Goldstein & Chambless (1978) incorporate attentional bias as an integral part of their models, whilst Clark (1986) scarcely mentions attention. One of the aims of this study then is to investigate whether panickers do in fact show excessive attention to somatic sensations.

Biological Approaches

Although there is a good empirical foundation for the cognitive models described above, there is other evidence which might suggest a physiological underpinning for panic. Such evidence includes the results of genetic studies, panic induction research and the effects of medication.

The results of studies investigating the prevalence of panic in relatives of panic patients have suggested that there may be some genetic linkage, although the evidence is confusing and contradictory. For instance, (Torgersen, 1983) found much higher concordance for monozygotic than for dizygotic twins in a clinical sample (31% vs 0 % respectively) whereas Kendler, Neale, Kessler, Heath & Eaves (1993) found no significant difference in concordance (14.5% and 14.6%) in a population-based study. As with genetic research in many fields, most studies suffer from methodological problems which make it difficult to disentangle genetic and environmental components.

A number of substances have been shown to induce panic attacks in panic patients to a far greater extent than in healthy volunteers. It has been argued (e.g., Klein, 1981) that this suggests some kind of biological vulnerability as the basis for panic. Such substances include lactate infusion, yohimbine, caffeine and carbon dioxide inhalation (reviewed by McNally, 1994, Chapter 3.). However, the literature in this area is fraught with methodological problems including poor control of variables such as demand characteristics, expectancy effects and baseline anxiety/arousal. In addition, in many studies, raters have not been blind to diagnostic status and/or the content of the biological challenge. The effects found in these studies can in general be just as parsimoniously

explained in terms of cognitive variables such as misinterpretation of bodily sensations and this is supported by other studies showing that non-pharmacological challenges such as false heart rate feedback can also induce panic attacks (e.g., Margraf, Ehlers & Roth, 1987).

Finally, several forms of medication (particularly antidepressants such as imipramine, clomipramine and fluvoxamine) have been found to be effective in reducing panic attacks (reviewed in McNally, 1994, Chapter 3.) and this is taken as evidence of some form of physiological dysfunction. It is not clear however whether panic is blocked directly by these medications or whether they act via effects on mood and cognition. The most widely researched biological theories which aim to account for these findings include those which focus on the dysregulation of various neurotransmitter functions in the brain (particularly those involving noradrenaline, serotonin and GABA), hypersensitivity to carbon dioxide and mitral valve prolapse.

Because antidepressants can be used to treat panic attacks, some researchers have suggested that panic is not a separate disorder but rather is a symptom of an underlying depressive illness. This point has some bearing on the design of the present study, which assumes (in line with both the theoretical and the treatment literature based on cognitive models) that panic and depression are etiologically separate.

The arguments in favour of regarding panic as part of the depressive spectrum are not strong - antidepressants affect a number of systems in the brain and response to medication does not necessarily confirm etiological links. Thus, imipramine can also be used to treat nocturnal enuresis but the latter is not regarded as a symptom of depression.

Some studies have investigated the relationship of panic and depression by assessing rates of depression in first degree relatives of panickers, but the results have been conflicting (e.g., Munjack & Moss, 1981; Noyes, Crowe, Harris, Hamra, McChesney & Chaudhry, 1986). Finally, some panic patients fail to show any depressive symptomatology (and the rates may be higher for non-clinical panickers) and many depressed patients never experience panic attacks, suggesting that a distinction between the two disorders is valid.

To summarise, it has not so far proved possible to isolate a single system or dysfunction which gives rise to panic attacks and as stated above, much of the evidence can be explained in terms of cognitive effects or faulty methodology. Whilst biological evidence has given rise to the suggestion that panic forms part of the depressive spectrum the evidence for this is not strong. Whilst acknowledging that there may be a physiological component in panic attacks, this study will investigate panic from a cognitive perspective

1.2.3 Information Processing Biases In Panic

As these cognitive models of panic have become more influential, so there has been an increasing interest in assessing the role of cognition in panic empirically. Research has focused on four main aspects of cognition: misinterpretation of symptoms, memory bias, interoceptive acuity and attentional biases. The present study focuses on a possible attentional component of panic but the other aspects will be mentioned briefly in order to set the present study in context.

Misinterpretation of Symptoms

Any tendency to interpret ambiguous events as threatening ought to increase the likelihood that anxiety will be experienced. Thus, there has been interest in the interpretations made by panickers of ambiguous scenarios. For example, McNally & Foa (1987) asked agoraphobics and controls to write down the first explanation which came to mind for a number of ambiguous scenarios involving either external events or internal sensations. The agoraphobics interpreted more scenarios as threatening than did the controls. These findings were replicated in two similar studies (Clark, Salkovskis, Koehler & Gelder, cited in Clark, 1988, p.88; Harvey, Richards, Dziadosz & Swindell, 1993). Comparable results have also been found by Stoler & McNally (1991) using a sentence stem completion task.

Memory Bias

Panic patients report that anxious thoughts come readily to mind, suggesting that cognitive representations of threat may reside in a primed state in memory. If threat-related material does have enhanced accessibility, then panic patients should show memory biases favouring threat-related information. Most studies have used free recall paradigms and these have tended to report a memory bias for threat related words (e.g., Becker, Rinck, & Margraf, 1994; Cloitre & Liebowitz, 1991; McNally, Foa & Donnell, 1989; Nunn, Stevenson & Whalan, 1984). The evidence for other types of memory is not as strong. For example two studies found no bias on tasks of recognition memory.(Beck, Stanley, Averill, Baldwin & Deagle, 1992; Ehlers, Margraf, Davies & Roth, 1988).

Similarly, studies of implicit memory using word-stem completion tasks have reported contradictory findings (e.g., Cloitre, Shear, Cancienne & Zeitlin, 1994).

To summarise, it seems that whilst there is fairly robust evidence for a bias in free recall of threat related information, it is less clear whether other types of memory are similarly affected and further work is needed to clarify this.

Interoceptive Acuity

A further suggestion has been that in addition to being fearful of bodily sensations, panickers are also more adept at detecting subtle physiological cues. This would increase the likelihood of them detecting feared sensations and so increase the chance that a panic attack would develop. Most studies have focused on cardiac interoception since palpitations are one of the commonest symptoms of panic, but again the evidence has been contradictory. Ehlers & Breuer (1992) used a mental tracking task in which subjects were asked to silently count their heartbeats during signalled intervals. Panic patients showed significantly better heart rate perception than non-clinical panickers, simple phobics and normal controls. Similar results were found in a second study which compared panickers with depressed patients (Ehlers & Breuer, 1992).

However, other studies using different experimental paradigms have found no differences in interoceptive acuity between panickers and controls. For example, Ehlers, Margraf & Roth, 1988, cited Ehlers, 1993, p.10) found that panic patients were not more accurate than controls when asked to match a series of tones to their heart rate, although they were less influenced in their judgements by external cues. Similarly, Asmundson,

Sandler, Wilson & Norton (1993) reported negative results using a task in which subjects had to discriminate signals which pulsed either synchronously or asynchronously with their heart beat. These conflicting findings may arise because accurate cardiac awareness is difficult to achieve under the high levels of external stimulation generated by these experimental methods.

In a review of interoception in panic disorder Ehlers (1993) discusses alternative interpretations of the results of the mental tracking studies and comments in passing that “it is also possible that the group differences within the mental tracking paradigm do not reflect differences in the subjects’ general ability to perceive their heart beats, but differences in the habit of attending to bodily cues.” (p.11). That is, Ehlers points to the possibility that panickers do not necessarily perceive their sensations more accurately than others but rather that they more frequently direct their attention to internal physiological sensations. This would make sense of the finding of Ehlers, Margraf, Davies, & Roth (1988) that panickers were less influenced by external cues in making judgements about their heartbeat. One of the aims of this study is to investigate whether this kind of attention-based interpretation has any empirical validity.

Attentional biases

Various strands of evidence suggest that anxiety disorders including panic disorder are characterised by an attentional bias for processing threat cues. There is now a growing body of evidence pointing to the existence of attentional biases in individuals with panic. Most studies assessing attentional biases have used interference paradigms which require

the subject to ignore extraneous stimuli while performing a task unrelated to threat.

Selective processing of threat material is inferred from performance decrements associated with threat distractors.

Commonly used tasks are variants of the Stroop task or versions of the dot-probe task developed by MacLeod, Mathews & Tata (1986). The rationale for Stroop procedures is that if panic patients have a bias towards processing threat cues, they ought to show greater interference in naming the colours of threat words than those of non-threat words. The evidence for Stroop interference is strong. For example, Ehlers, Margraf, Davies & Roth (1988) reported that panic patients and non-clinical panickers but not controls showed Stroop interference for words related to physical threat, embarrassment and separation. Similar findings have been reported by a number of other studies (e.g., McNally, Amir, Louro, Lukach, Riemann & Calamari, 1994, McNally, Riemann & Kim, 1990; McNally Riemann, Louro, Lukach & Kim, 1992). However, the significance of these studies is not clear. As discussed by MacLeod (1991) there is evidence that it is the specific personal relevance of words which contributes to the observed interference effects. That is, Stroop effects may not be specific to threat, rather interference on physical threat words occurs because these have immediate personal relevance for panickers.

A different way of measuring selective attention is the dot probe task developed by MacLeod, Mathews & Tata (1986) in which subjects perform a neutral response (button press) to a neutral visual stimulus (dot) which replaces either of a pair of words appearing on a computer screen (thus problems with response bias are eliminated). Subjects are

instructed to read the top word of each pair and to press the button when they perceive a dot. On some trials one of the words has a threatening meaning. Selective attention is inferred if the subject responds faster to dots which replace threat words. Although this paradigm is superior to the Stroop in that it eliminates response bias it has not been widely used to assess attention in panic. Asmundson, Sandler, Wilson & Walker (1992) using this paradigm found that panic patients responded faster to dots which replaced words related to physical threat. This effect was selective for physical threat and did not occur with social threat words. Also Beck, Stanley, Averill, Baldwin & Deagle (1992) used a modification of the dot probe and found that panic patients selectively attended to positive as well as physically threatening whereas healthy volunteers did not.

Whilst the results of these studies of attention in panic disorder are clearly of significance, they suffer from three important limitations. One serious problem is that they measure processing of words related to physical threat rather than processing of physical sensations themselves. This selective attention to verbal threat cues is certainly of interest, but hypervigilance for physical sensations is possibly of greater significance. This view is supported both clinically - panic patients often report that a physical sensation (rather than a linguistic cue) is the first thing they notice about an oncoming panic, and theoretically - as discussed earlier several of the cognitive models of panic explicitly postulate enhanced attention for somatic cues in panic disorder.

Second, the direction of attention in the experimental tasks used in the studies discussed above is not the same as that postulated by the theoretical models. In these studies, the subject is required to direct attention outwards to the external world (i.e., the

experimental apparatus). However, the hypervigilance for physical sensations suggested by the cognitive models of panic necessarily involves a predominantly internal direction of attention in which attention is directed towards the self. As will be discussed later, directing attention inwards towards the self can have significant cognitive, affective and behavioural sequelae and this distinction is therefore of importance.

Finally, these previous studies have tended to use rather simple linguistic probes (words) and simple responses (button press) to measure attention. This may limit their external validity, given that the situations which tend to trigger panic tend to be rather complex, involving a variety of types of information, including perceptions of arousal and awareness of the social environment, in addition to catastrophic cognitions. A more complex and less focused experimental task would therefore provide a more valid context for measuring attentional bias.

Summary Of Evidence For Cognitive Models Of Panic

There have thus been a number of cognitive models of panic proposed during the past ten to fifteen years and there is mounting evidence for the validity of many aspects of these. The cognitive models vary in the degree to which they address attention. All the models postulate narrowing of attention to internal sensation cues during a panic attack so that other cues are not salient. However, what is not clear is whether this phenomenon is limited to the duration of the panic attack or whether as Belfer & Glass (1992) propose, it is an enduring characteristic of panickers outside of panic episodes which increases the probability of a further attack occurring.

One of the primary purposes of the present study then is to test the attentional component of the models of panic proposed by Beck (1988), Belfer & Glass (1992), Goldstein & Chambless (1978) and Eysenck (1992). That is, it aims to verify whether panickers do in fact selectively attend to somatic sensations. There is some evidence that panickers display enhanced attention for linguistic physical threat cues but there has been very little work on processing of somatic sensations themselves and this forms the central theme of this study. It should be noted also, that this point is not synchronous with the work discussed above on interoceptive acuity. The suggestion is not that panickers are necessarily more accurate in perceiving their sensations, rather that they tend to direct their attention towards bodily sensations with greater frequency than non-panickers, scanning their bodies for any untoward signals which might herald a heart attack, a faint or a panic attack itself.

The attentional components of the models of panic reviewed above link in with a body of research on self-focused attention which has grown over the past twenty years. I shall first discuss this literature before showing how this construct may be linked with panic disorder.

1.3 Self-Focused Attention

1.3.1 What Is Self-Focused Attention?

Definitions of self-focused attention

The kind of hypervigilance for physical sensation cues discussed above can be seen as forming a subset of the construct of self-focused attention which has been linked with various forms of psychopathology. I shall first discuss how self-focused attention has been defined, showing how a distinction can be made within this construct between cognitive and somatic self-focus. As will be demonstrated this distinction is relevant to panic disorder and forms the basis of the current study.

There has been some confusion regarding the use of the term 'self-focused attention'. A number of investigators have pointed to the confusion in their fields resulting from ambiguous conceptualisations of self-focus (Carlson & Miller, 1987; Ingram, 1990). Part of the reason for these difficulties is that the links between the construct of self-focused attention and phenomena such as conscious experience, allocation of processing resources and the content of the self have not been explicitly specified. Ingram (1990) notes that 'self-focused attention has been used interchangeably with self-awareness, self-focused, self-directed, excessive self-focus, increased self-focus, heightened self-focus, self-preoccupation, chronic self-focus...' (p.548). It should be noted also that the term 'self-focused attention' has usually been used to describe a state phenomenon. Where investigators refer to the enduring tendency to direct attention to the self (i.e., trait self-

focused attention), this is generally called 'self-consciousness'. The terminology used in this study follows this convention

However, despite these difficulties with definition, conceptualisations of self-focused attention can be said to differ with respect to three dimensions and most theories define self-focus in terms of these:

- (a). Source of information
- (b). Content of 'the self'
- (c). Attentional processes.

These dimensions are useful for describing both the theoretical constructs and their corresponding empirical manifestations, although as will be discussed, the operationalisations of these constructs are not always precise.

(a) Source of Information

Common to all theories of self-focus is some attempt to distinguish between internal and external sources of information. External information is taken to mean any material that is gathered from environmental sources, which corresponds to objective events, such as the scent of a rose or the sound of a symphony. Internal information, by contrast, is subjectively generated and is not directly derived from perception of the environment (although it may include memories and mental images which were previously derived from external sources). The internal category includes thoughts, feelings, beliefs and mental images.

There is some difficulty in maintaining this distinction in that even events that would clearly be classified as external such as looking at a sunset are influenced by the perceiver's internal cognitive schemata. Nevertheless, as Carver & Scheier (1981, p.36) have pointed out, although processing can involve both internal and external elements, "the function of this sequence is quite obviously the recognition of a stimulus input whose point of origin is outside the self". The question then is what criteria should be used to determine whether a given stimulus originates from an internal or an external source. Sometimes the correct decision is obvious, but at times it will be ambiguous and this can be taken into account in thought-sampling measures of self-focus by including a category for unclear responses.

(b) The 'self' of self-focused attention

The self has been used in a variety of ways in the psychological literature, making it difficult to specify exactly what constitutes 'self-relevant' or 'self-referent' content. One way of understanding these different conceptions of self-relevant content is in terms of the degree to which the 'self' is considered an object versus a subject of attentional processes. Duval & Wicklund's (1972) description of self-focus (objective self-awareness) represents the object end of the continuum whereby the self as a category of information includes any content that conveys the sense of the self as an object separate from the perceiver. Thus, this focuses on reflection and analysis which involve stepping outside of one's immediate experience and considering the self as an object with specific properties such as attitudes and emotions.

In contrast, Hull & Levy (1979) present the self predominantly as subject. Thus, information is self-relevant insofar as it specifies contingencies related to the individual's present activities or projects. Self-relevance is determined by the applicability of the information to the individual's hierarchically arranged goal states.

Most conceptualisations of the self fall around the middle of this object/subject continuum incorporating a wide variety of information that is located within the individual but which need not include experience of the self as an object. For example, Carver & Scheier (1981) consider that self-relevant content can include conceptual knowledge about the self (e.g., one's attitudes and beliefs), internal stimuli (e.g., emotions and physical symptoms), self-relevant judgements about external stimuli (e.g., does the external event make me happy?). Duval & Wicklund viewed the self as synonymous with the internal source: attention may be directed either toward the self or toward the environment. However, Carver & Scheier (1981) suggested that this dichotomy was not comprehensive regarding internal stimuli. Although the 'self' dimension incorporates much of the material available in the subject's private experience, it is a subclass of the internal dimension rather than a synonym for it. In addition to sensations, feelings and thoughts about the self, there is internally generated material which is not considered part of the self (e.g., a mental image of a bus). Thus, while attention directed to an external source necessarily consists of non-self content, information from the internal source may be self-related or not. In addition, distinctions have been made concerning various aspects of the self (e.g., the Self-Consciousness Scale (Fenigstein, Scheier & Buss, 1975) distinguishes between public and private aspects of the self).

Somatic vs Cognitive Aspects of the Self

For the purposes of this study, a crucial distinction needs to be made between cognitive and somatic aspects of the self. Within the general category of self-focus, attention may be directed towards cognitive information (thoughts, feelings, beliefs, attitudes) or towards somatic information (bodily sensations). This distinction formed the rationale for the development of the Body Consciousness Questionnaire (Miller, Murphy & Buss, 1981) as a measure of physiological awareness comparable to the Self-Consciousness Scale (Fenigstein, Scheier & Buss, 1975) which measures cognitive self-focus. This distinction has also been used by Borden, et al. (1993) in a study on panic. On the basis both of clinical experience and the theoretical models of panic discussed above, it is plausible that somatic self-focus may be of particular importance in individuals with panic disorder.

(c) Attentional Processes

As there are different theories of the structure of general attentional processes, so there have been different notions about the nature of self-focused attention and its experiential correlates. Some investigators have adopted the view of attention as a fixed, capacity limited mechanism that is directed to stimulus events in a rapidly switching serial manner (Carver & Scheier, 1981; Duval & Wicklund, 1972). Others have made awareness the defining feature of self-focused attention.

In contrast, Ingram (1990) suggests that attention consists of a flexible resource capacity that can be directed to a variety of internal and external events simultaneously.

Focus of attention on this view is determined by the proportion of resources directed to a given source and thus self-focus can be considered on a continuum. One advantage of this position is that it enables self-focus to be considered both in terms of the frequency and intensity of attention to internally generated, self-relevant material.

Clearly, there is no definitive or correct way to define self-focused attention - the definition adopted depends on the domains of interest of the investigator, (and it is important to bear this in mind when cross-study comparisons are being made). For the purposes of this study, a definition was chosen with regard to the dimensions discussed above which best fitted the research questions. This operational definition of self-focus is discussed in further detail in Section 1.4.1.

1.3.2 Theories Of Self-Focused Attention

Having introduced the nature of panic disorder and clarified what is meant by self-focused attention, the following sections will attempt to draw these two themes together to demonstrate why it should be of interest to investigate self-focus in relation to panic. The relevance of self-focus to panic disorder can be approached from both a theoretical and an empirical perspective. Thus, I will first consider how a theoretical understanding of self-focus may be useful, before reviewing the empirical literature on the effects of self-focus and attempting to suggest how these effects may be implicated in panic (Section 1.3.3).

There are a number of theoretical formulations which vary slightly but share several features in common (Duval & Wicklund, 1972; Carver & Scheier, 1991; Hull & Levy, 1979; Ingram, 1990; Pyszczynski & Greenberg, 1987; Wells & Matthews, 1994). A self-

regulatory role for self-focus was first proposed by Duval & Wicklund (1972) who suggested that self-focus initiates a comparison of the actual state of the organism with an ideal standard. Any discrepancy between these will motivate behaviour which attempts to reduce the discrepancy. With the exception of Hull & Levy (1979), other theorists have followed Duval & Wicklund in positing a self-regulatory or self-evaluative role as an integral part of their theories of self-focus.

Other commonalities include the assumption that self-focus increases the accessibility of self-referent information and the idea that inflexibility of attentional focus is a key dimension in distinguishing normal from dysfunctional attentional patterns. Although attempts have been made to link self-focus with specific psychological disorders, notably depression (Pyszczynski & Greenberg, 1987) and alcohol abuse (Hull & Levy, 1979) it is not usually suggested that self-focus is directly responsible for these difficulties. Rather, self-focus is seen as a non-specific vulnerability factor which interacts with other characteristics of the individual (e.g., content of schemas, expectancies of success etc.) to produce a particular dysfunction. Differences between theories include the emphasis placed on the assessment of expectancies of success in the self-regulatory cycle, the role of affect in motivating discrepancy reducing behaviour and the general theoretical framework used (e.g. drive-reduction, schematic activation, cybernetic, information-processing).

Probably the best model to date is that of Wells & Matthews (1994, Ch.12) which echoes many of the ideas of previous theories whilst also attempting to integrate self-focus within a detailed information-processing model of emotion. They suggest that self-focus moderates the appraisal of internal responses and initiates a self-regulatory response

in response to perceived discrepancies between the self-state and the ideal self-state. This is normally useful in motivating the individual to act to reduce the discrepancy. However, if the self-focus becomes too intense or too inflexible it limits the amount of processing resources which are available for other cognitive functions and so hinders active coping. As the individual high in dispositional self-focus then repeatedly perceives that there are not enough resources to allow successful coping, avoidance behaviour becomes more likely. This in itself, it is suggested, increases negative self-beliefs, maintains the perceived discrepancy and so maintains heightened self-focus. Thus, the individual becomes caught in a vicious cycle from which is difficult to escape unless a particularly effective external source of information is found to divert attention away from the self. In this model the nature of the emotion accompanying the self-focus is determined by the content of the thoughts and beliefs activated during the self-appraisal process.

In view of these theoretical views of the unhelpful effects of self-focus, it is plausible that attentional training designed to reduced high levels of self-focused attention may be a useful adjunct to therapy. It is important therefore to clarify whether elevated self-focus is present in all forms of psychopathology and whether different disorder vary in the content or nature of self-focus, in order to allow the development of suitable attentional training programmes. Although this kind of approach has not been widely used, Wells (1990) devised an attentional training procedure involving tasks requiring selective attention, attention switching and divided attention and has reported positive results in a series of single case studies of patients with anxiety attacks (Wells, 1990; Wells, White & Carter, cited Wells & Matthews, 1994, p.241).

The majority of work to date has been directed towards cognitive self-focus. However it is also possible to apply Wells & Matthews' model to somatic self-focus. With regard to panic then, it is suggested that panickers engage in somatic self-focus with greater frequency than non-panickers and that each time this happens a self-regulatory response is initiated. If an unusual sensation is detected whilst attention is focused on the body, the panicker would become aware of a discrepancy between actual bodily sensations and those which are believed to be 'normal' and would become motivated to reduce this discrepancy (by seeking medical help, escaping from the situation, taking medication and so on). Thus, the attentional bias would interact with the individual's beliefs about the nature of certain physical sensations. Because the physiological reactions involved in anxiety are not easy to switch off rapidly, attention would be likely to remain intensely focused on somatic sensations for some time. This would have two effects. First, because attentional resources would be depleted, efficient coping would be impaired, leading to progressive feelings of being out of control and so enhancing escape and avoidance behaviours. Second, the interaction of the attentional bias with beliefs about physical symptoms would cause anxiety to spiral as postulated by the cognitive models (this would include both catastrophic interpretations and physical symptoms of anxiety). Since anxiety itself tends to induce self-focus, the panicker would find it difficult to cease attending to bodily sensations and would tend to become more and more somatically self-focused. This intense self-focus would continue to exert a negative influence until the cycle is switched off. The latter could be achieved in one of three ways - the physical sensations may cease (e.g., after taking medication) or reassurance may

become available (e.g., via the presence of a doctor) or a sufficiently powerful distraction may occur.

Cognitive self-focus is also of interest with regard to panic disorder. Ingram (1990) suggests that self-focus is a non-specific vulnerability factor for all forms of psychopathology. On this view, the content of self-schema focused on during self-focus will determine the nature of the resulting pathology. However, elevated self-focus has only been demonstrated with regard to a few disorders (depression, alcohol abuse, social anxiety, test anxiety). From this point of view therefore it is of interest to investigate self-focus in other forms of psychopathology. Panic disorder is a suitable candidate for this area of investigation, given that cognitive self-focus has been shown to have a number of effects which could plausibly contribute to the maintenance of panic. The design of this study will not allow the investigation of pure panic (since the panic group was also depressed for reasons which will be discussed later). However, what it will clarify is whether the somatic elements of panic divert attention away from the cognitive self-focus which is characteristic of depression or whether there is a cumulative effect with somatic self-focus adding to cognitive self-focus. This is of therapeutic as well as theoretical interest since both aspects may need to be targeted in therapy if both are elevated. If however the presence of panic produces a shift in the balance of attention towards the somatic domain, therapeutic interventions may need to focus on this rather than on cognitive self-focus for maximum benefit.

1.3.3 Effects Of Self-Focused Attention

There is now a significant body of literature demonstrating a relationship between enhanced self-focused attention and a number of psychological disorders, including depression, alcohol abuse and social anxiety (reviewed by Pyszczynski, Hamilton, Greenberg & Becker, 1991 pp.139-142). There is some debate as to the nature of the theoretical basis for this link and it is not yet clear whether elevated self-focus is a factor in all forms of psychopathology. However, what is evident is that self-focus has a number of effects which could plausibly exert negative effects on mood and behaviour. These effects go beyond the rather simple mechanism proposed by the cognitive models of panic. These models suggest that a tendency to engage in somatic self-focused attention would give rise to many opportunities for the catastrophic misinterpretation of sensations in individuals who are prone to panic. The self-focus literature demonstrates that the effects of self-focus are in fact far more complex and wide reaching than this and it is plausible to suggest that enhanced self-focus (both cognitive and somatic) may contribute to the cycle of panic in a variety of ways. It should be noted that it is beyond the scope of this study to investigate causal mechanisms in the link between self-focus and panic disorder. Nevertheless this sections aims to elucidate the rationale for thinking self-focus to be potentially of significance in understanding panic disorder.

1. Intensification of Sensations and Affect

One of the most robust effects of focusing attention internally appears to be the enhancement of any salient emotion. When awareness is focused on the self, we would

expect that the individual would become more aware of any internal states, including emotions and such states would therefore be experienced with greater intensity.

This effect was first demonstrated by Scheier (1976) in relation to angry aggression. The intensification of affect found in Scheier's study has been replicated with regard to a number of other emotions, including liking, aversion, elation, amusement, anxiety and depression (e.g., Carver, Blaney & Scheier, 1979; Gibbons, Smith, Ingram, Pearce, Brehm & Schroeder, 1985; Porterfield, Mayer, Dougherty, Kredich, Kronberg, Marsee, & Okazaki, 1988; Scheier & Carver, 1977). For the present study, the effects of self-focus on both anxious and depressive affect are likely to be of importance.

The intensification of anxious affect produced by self-focus obviously has implications when thinking about how panic attacks may come to develop and be maintained. If, in persons who are chronically self-focused (or who become self-focused in response to anxiety) any anxious emotion (together with the associated physiological arousal) is intensified and magnified to a greater degree than for persons who tend to focus externally then we would expect that self-focus could contribute to panic in two ways. Firstly, chronically self-focused individuals would more frequently reach the threshold for finding their sensations worrying because those sensations would be experienced with alarming intensity. Also, they would be more likely to interpret their experience particularly catastrophically in virtue of being aware of a rather extreme affective/physiological experience. Self-focus would therefore contribute to an explanation of why some individuals tend to misinterpret their bodily sensations rather frequently.

Several studies have documented the intensification of anxiety under conditions of high self-focus (Carver, Blaney & Scheier, 1979; Epstein, Rosenthal & Szpiller, 1978; Gibbons, Smith, Ingram, Pearce, Brehm & Schroeder, 1985; Wells, 1985; Wells, 1991). It therefore seems reasonable to propose that elevated levels of self-focus may indeed play an important part in predisposing some individuals to the development of panic. This argument would apply to both the somatic sensations involved in panic anxiety and the associated cognitions. One of the aims of the present study is to demonstrate elevated levels of somatic self-focus amongst individuals with panic disorder, although it is outside the scope of this study to demonstrate a causal link between elevated self-focus and the postulated mechanisms of action (i.e., lowered threshold for finding sensations alarming and enhancement of catastrophic interpretation because of intense experience).

The second type of affect which may be relevant to panic is negative or depressed affect. It is now well-established that depressive mood increases the accessibility of negative information of various kinds (reviewed in Williams, Watts, MacLeod & Matthews, 1988). For panickers with concurrent dysphoria/depression, a disposition to self-focus leading to enhanced negative affect would therefore increase the accessibility of negative information pertaining to their panic symptoms. Such information might include catastrophic interpretations of physical symptoms, frightening health-related information seen on television, negative memories of past episodes of panic, predictions of not being able to cope and so on. Thus, chronic self-awareness could feed into the cycle of catastrophic thoughts and physiological arousal via the enhancement of depressive affect. This may be of particular importance in the clinical population used in this study who were

experiencing significant depression in addition to panic. A number of studies have shown that self-focus tends to enhance depressed affect both in non-clinical populations (e.g., Ingram, Johnson, Bernet, Dornbeck & Rowe, 1992; Scheier & Carver, 1977) and in groups of patients (Gibbons, Smith, Ingram, Pearce, Brehm & Schroeder, 1985).

2. Accessibility of Self-Referent Information

Hull & Levy (1979) argued that one effect of self-awareness is an increase in the accessibility of self-referent information or an activation of the self-schema. If, as is likely in the case of an anxious individual, the self-schema incorporates a view of the self as helpless, non-coping, vulnerable and so on, then anything which activates the schema will contribute to the onset and maintenance of anxiety. Thus, self-focus may initiate or exacerbate panic via schematic activation.

A broad range of findings support the suggestion that self-focus activates the self-schema. For example, Hull & Levy (1979) showed that private self-consciousness was associated with enhanced recall of words previously rated for self-descriptiveness but not for words for which other types of judgments had been made. Similarly, Geller & Shaver (1976) reported that self-focused increased interference on a Stroop-colour-word task for self-relevant but not self-irrelevant words (also Franzoi, 1983; Gibbons, Carver, Scheier & Hormuth, 1979; Pryor, Gibbons, & Wicklund, 1977; Turner 1978).

3. Accuracy of Self-Report

Also consistent with the increased-self-access hypothesis is a series of studies demonstrating that heightened self-awareness increases self-report accuracy regarding

attitudes and behaviour (Franzoi, 1983; Gibbons, Carver, Scheier & Hormuth, 1979; Gibbons, Smith, Ingram, Pearce, Brehm, & Schroeder, 1985; Pryor, Gibbons, & Wicklund 1977; Scheier, Carver, & Gibbons, 1979; Stephenson & Wicklund, 1983).

Gibbons (1990, p.157) notes that originally, psychologists thought that accurate self-knowledge is a prerequisite of mental health. However, later research began to reveal that accurate information about the self may in fact be aversive and avoided by mentally healthy people. Taylor & Brown (1988) reviewed the evidence and concluded that accuracy is actually associated with some types of pathology. Particular themes include illusions of control, illusions of the likelihood of positive/negative future events and illusions about characteristics of the self. Self-focus makes people more aware of salient dimensions of the self and they are more likely to report accurately on those dimensions if they are self-focused whilst responding. This is relevant to panic in that if self-focus removes protective cognitive biases (e.g., the illusion of control, likelihood of negative events), then habitual self-focus is likely to enhance the activity and accessibility of anxiogenic cognitions. Also, physical sensations are likely to be perceived with greater accuracy when the focus of attention is internal - Pennebaker & Lightner (1980) showed that individuals who focused internally during exercise reported greater fatigue and more physical symptoms than those focusing externally. Similarly, Gibbons & Gaeddart (1984) demonstrated enhanced accuracy in perceptions of arousal in self-focused subjects.

4. Attributions

Tversky & Kahneman (1973) showed that increasing the salience of an object increases the extent to which it influences inferential processes. Thus, where the self is salient, perceptions of the importance of the self in a given situation are likely to be exaggerated. In the context of panic, this makes sense of the frequency with which panickers perceive themselves as being the centre of attention and that their anxiety symptoms are noticeable to others. It also makes sense of the difficulty panickers seem to experience in dismissing the importance of their physical sensations when interpreting their reaction to a situation.

Research has supported this suggestion, showing that self-focus tends to increase the tendency to make internal or dispositional attributions both for one's behaviour and for the outcome of situations. (e.g., Buss & Scheier, 1976; Fenigstein & Levine, 1984; Franzoi & Sweeney, 1986; Greenberg, Pyszczynski, Burling & Tibbs, 1992; Smith & Miller, 1979, Stephenson & Wicklund, 1983; Tversky & Kahneman, 1973). Studies which have not found effects tend to be ones in which self-esteem or self-presentational concerns predominate (e.g., Federoff & Harvey, 1976; Gibbons & Gaeddert, 1984; Gibbons, Smith, Ingram, Brehm & Schroeder, 1985).

5. Avoidance Behaviour

Two studies (Carver & Blaney, 1977; Scheier, Carver & Gibbons, 1981) have demonstrated enhanced avoidance behaviour in self-focused fearful individuals. For example Scheier et al. (1981) showed that self-focused snake phobics tended to retreat earlier from approaching a snake. It is not difficult to see how these consequences of self-

focus might contribute to the cycle of panic given that cognitive models of panic emphasize cycles of avoidance and spiralling affect.

6. Decrements in Task Performance

Gibbons (1990, p155) notes that “Within a performance context, performance anxiety and self-awareness are virtually identical. We all engage in self-awareness and self-evaluation to some extent. However, those with outcome expectancies of success will not perseverate in self-assessment but will direct their attention to the task. Those with low expectations are likely to become anxious about the outcome and enter into a self-focus/self-evaluative cycle from which it is difficult to exit”. Thus, self-focus combined with low expectations of success is likely to produce performance deficits because attentional resources are diverted away from the task (Wine, 1971). The detrimental effects of self-focus have been demonstrated in a number of studies (e.g., Baumeister, 1984; Strack, Blaney, Ganelen & Coyne, 1985).

The individual with panic then, when confronted with a trigger situation, such as a supermarket checkout queue, is likely to become caught in a cycle of anxiety and self-focus. This may divert attentional resources away from active coping, produce impairments in function (e.g., giving the wrong change to the cashier), and increase anticipatory anxiety leading to avoidance the next time such a situation is encountered.

1.3.4 Studies Of Self-Focus And Panic

To summarise the argument so far, both somatic and cognitive self-focus are of theoretical and therapeutic interest in relation to the onset and maintenance of panic. There have been only three studies which have explicitly addressed self-focus in panic disorder and all of these are subject to methodological criticisms. The following section will review the previous relevant work before showing how the present study extends and develops what is already known.

There have been only two studies explicitly investigating level and content of self-focus in panic disorder to date (Brown & Cash, 1990; Borden et al. 1993). Brown & Cash (1990) showed elevated somatic self-focus in a group of non-clinical panickers using a questionnaire measure of dispositional self-focus (Body Consciousness Questionnaire, Miller, Murphy & Buss, 1981). No difference was found in cognitive self-focus as measured by the Self-Consciousness Scale. The results of this study are encouraging, but only limited conclusions can be drawn for a number of reasons. These include the failure to control for depression (which is known to affect self-focus), the use of a non-patient population and the brevity of the questionnaire measures of self-focus which were used.

The most thorough study of panic and self-focus is that by Borden et al. (1993) which used a thought-sampling paradigm to measure direction and content of attention in both a group of panickers and a group without panic. Measures were taken under three conditions - baseline, during a relaxation exercise (listening to peaceful music) and during a mildly stressful task (a bogus intelligence test). Responses were coded for self/task focus

and self-focused responses were further divided into cognitive and somatic categories. As would be predicted on the basis of previous research the patient group, showed higher levels of cognitive focus in all three conditions. However, in addition, during the baseline and relaxation phases, the panickers exhibited much higher levels of physiological self-focus than non-panickers. The stressful task appeared to induce a shift towards cognitive self-focus in both groups and the content of responses was predominantly related to performance concerns. This effect was sufficiently potent to override the baseline tendency to physiological self-focus in the panickers. Thus, this study provides preliminary evidence of selective attention to physiological cues in individuals with panic.

However, there were a number of methodological problems which make a definitive interpretation of the findings impossible. Probably the most serious flaw in the Borden et al. (1993) study was the failure to control for depression. Although subjects were excluded if they met criteria for another DSM III-R Axis I disorder other than Generalised Anxiety Disorder, no screening measure was used to assess levels of sub-clinical depression.. There have been a number of studies demonstrating effects of sub-clinical depression on self-focus (Ingram & Smith, 1984; Larsen & Cowan, 1988; Smith & Greenberg, 1981; Smith, Ingram & Roth, 1985), thus, level of depression needs to be taken into account if a clear picture of the selective effect of other disorders such as panic is to be clarified. The DSM III-R diagnostic criteria are fairly stringent and it is possible to experience a significant amount of depressive symptomatology without reaching the level required for diagnosis. Panic patients frequently describe symptoms typical of depression such as low mood, fatigue, poor concentration and so on even when they do not show a

full-blown depressive illness and the failure of the Borden et al. study to recognise this casts doubt on their interpretation of the results. That is, although differences were found between panic patients and normal controls, it is impossible to be certain whether these differences should be attributed to depression (which is known to affect self-focus) or to a selective effect of panic.

In addition to these three studies which have used the self-focus construct, there have also been other studies on somatic attention in panic. For example, Pauli, Marquardt, Hartl, Detlev, Nutzinger, Holzl & Strian (1991) investigated cardiac perception in panickers. In this study, a 24 hour ambulatory ECG was recorded in panickers and controls. Participants were asked to report any cardiac perceptions during this period. The incidence of such perceptions was found to be greater in the panickers but the difference was not statistically significant. Thus, these findings do not fully support the positive results reported by the two studies of self-focus described above. However, again no attempt was made to control for depression.

Fisher & Wilson (1985) used two more unusual experimental paradigms to assess whether agoraphobics are characterised by enhanced utilisation of internal cues. First, a procedure was used which induced subjects to form a facial expression without being aware that they were doing so. They then completed a self-report measure of mood. Since previous research had shown that subject who use internal rather than external cues are more strongly influenced in their mood by facial expression, it was predicted that agoraphobics would report stronger moods. However, no differences between the experimental groups were found. Similarly, negative findings were reported on a rod and

frame task which determines to what extent internal cues are being utilised. It does not seem surprising that agoraphobics did not show differing performance on these tasks, since the type of internal cues used were not of the type thought to be particularly associated with panic (e.g., cardiac sensations, breathlessness etc.).

Thus, the literature on attention to somatic cues in panic is by no means extensive and the results of the few existent studies present a somewhat contradictory picture.

1.4. Design Of The Study And Research Questions

In the context of the research discussed above, the present study will aim to extend the literature with regard to both cognitive and somatic self-focus in Panic Disorder and Depression. This chapter aims first to outline an operational definition of self-focused attention, and comment on the choice of measures of self-focus. The research questions and hypotheses will then be presented together with discussion of the methodological issues involved in answering these questions adequately.

1.4.1 Operational Definition Of Self-Focused Attention

For the purposes of this study, self-focused attention will be defined with reference to the dimensions discussed earlier in the following way:

1. The standard distinction between internal and external sources of information will be used. That is, information which is subjectively generated within the individual is taken to

be internal and that which is directly derived from the environment is taken to be external.

Self-focus necessarily involves an internal focus but the converse is not so. That is, not all internally generated information will be classed as self-focused. If the referent of information from an internal source is clearly located in the external world (e.g., a thought of a bus) this will be classed as externally focused.

2. Following Carver & Scheier's (1981) view, the 'self' will be defined rather broadly to include conceptual knowledge about the self (e.g., one's attitudes and beliefs), internal stimuli (e.g., emotions and symptoms), self-relevant judgements about external stimuli (e.g., does the external event make me happy?). Somatic sensations are also considered to be part of the self. Again, following Carver & Scheier, not all internally generated information is regarded as self-relevant - mental images which have clear external referents are not regarded as evidence of self-focus.

As discussed above, an important distinction which will be made within this category is the separation of cognitive and somatic aspects of the self.

3. Attention is viewed as a pool of resources and focus of attention is therefore defined by the proportion of attention which is directed to a particular piece of information.

Inevitably, this will at times be ambiguous and this will be reflected in the inclusion of a category for unclear responses when coding samples of thoughts. However, this dimension is not of crucial importance with regard to the research questions and a fixed capacity model could equally well be used.

It should be noted that most previous studies have not specified the definition of self-focus in detail, with regard to these three dimensions. It has not therefore been possible

to follow a well-established definition and the criteria for self-focus for this study have been chosen to provide the best framework for answering the research questions which are primarily concerned with attention for somatic sensations in relation to panic.

1.4.2 Measuring Self-Focused Attention

Measures for use in the study (both for screening and for assessing self-focus) were chosen with regard to the following criteria:

1. Reliability and validity of the measure.
2. Ease of administration/scoring in terms of time and expense.
3. Ethical acceptability with regard to intrusiveness and level of distress likely to be caused.

Because the distinction between cognitive and somatic self-focus has not been widely used it was not easy to find measures which would allow this differentiation and some adaptation of existing measures was necessary. The discussion which follows reviews the range of measures of both state and trait self-focused attention in order to justify the choice of measures for this study.

State self-focus

A number of measures of state self-focused attention have been constructed which fall into two main categories:

1. Those measures which infer self-focus on the basis of a structured task.
2. Those which measure frequency of self-relevant content in the stream of consciousness.

1. Self-focus as measured by task performance

There are three widely used measures of this type - the Linguistic Implications Form (Wegner & Giuliano, 1980), Linville's self-complexity task (Linville, 1987) and the Exner Sentence Completion Task (Exner, 1973). The Linguistic Implications Form requires respondents to fill in a blank within a sentence with one of three pronouns. The choice of pronoun includes first person singular, first person plural or third person singular and subjects are asked to use whichever seems to fit the sentence best.

However, whilst this task has been frequently used, it was not suitable for the purposes of testing the hypotheses of the present study since the response categories do not allow a distinction between cognitive and somatic self-focus to be made.

A different type of task has also been developed by Linville (1987). In this task, subjects are required to sort traits into piles that go together in terms of self-description with the rationale that enhanced inward attentional focus should be reflected in the number of aspects of the self that are available to the individual. However, like the Linguistic Implications Form this task does not allow the comparison of cognitive and somatic self-focus and was therefore not appropriate for use in this study.

The Exner Sentence Completion Task is similar to the Linguistic Implications Form in that it requires respondents to complete an incomplete sentence stem. However, it was more suitable for use in the present study in that the scoring criteria for the task could easily be extended to include a cognitive/somatic distinction - a crucial consideration in the present study. In addition, there is greater freedom of choice in how to complete the

stems than in the Linguistic Implications Form and the task therefore has greater face validity as a measure of spontaneous attentional patterns. However, one point of concern is that studies with this measure with depressed subjects have produced somewhat mixed results. In the original study, Exner (1973) found that depressed subjects showed more external than self-responses but Smith, Ingram & Roth (1985) and Greenberg & Pyszczynski (1986) reported significantly more self-focused responses in depressed subjects. The reasons for the unexpected results of Exner's study are not clear. Nevertheless, despite these concerns, the results of the latter two studies together with considerations of validity and the ease of including the somatic/cognitive distinction justified the choice of the Exner Sentence Completion for inclusion in the study.

2. Self-focus as measured by the occurrence of self-relevant thoughts

Another class of measures that have been used to investigate attentional focus consists of tasks which provide indications of the conscious content of attention through thought-sampling. The focus of attention is determined by the source of the object of consciousness. Experience sampling techniques have been used in a number of areas of psychological research and include a variety of structured and unstructured tasks which ask the subject to report on the thoughts, feelings and sensations experienced during a specified time period. These tasks range from retrospective analyses of events in the day to random thought sampling in naturalistic settings to carefully controlled samplings of irrelevant thoughts during a laboratory task. Of the few studies of self-focus in panic, the most comprehensive (Borden et al., 1993) used this kind of measure. In this study,

participants were required to report their cognitions verbally to the experimenter during tasks. However, this method was considered to be unsatisfactory in that verbal reporting might be threatening to some participants and social desirability effects would be large. For these reasons, the task used in this study was based on procedures developed by Horowitz & Becker (1971) which were considered to be a less intrusive means of eliciting cognitions.

Trait self-focus (Self-consciousness)

There is only one widely used measure of trait cognitive self-focus - the Self-Consciousness Scale developed by Fenigstein, Scheier & Buss (1975) and this will therefore be used in this study. This is a twenty three item questionnaire which consists of three subscales. The Private Self-Consciousness subscale measures trait cognitive self-focus and is the primary subscale of interest in this study.

Similarly, trait somatic self-focus will be measured using the Body Consciousness Questionnaire which was developed by Miller, Murphy & Buss (1981) to parallel the Self-Consciousness Scale for the somatic domain. Again there are three subscales and the Private Body Consciousness subscale is the focus of interest. This subscale is not ideal as it is rather short (only five items), however again this is the only available measure.

1.4.3 Research Questions And Hypotheses

The first three research questions are concerned with the main focus of the study - somatic self-focused attention in concurrent panic and depression. However, two additional issues (cognitive self-focus in panic and attentional bias in high trait anxiety controls) are addressed as subsidiary hypotheses.

1. Do panickers selectively direct attention to their own somatic sensations?

That is, do panickers more frequently focus on their physical sensations compared with non-panickers. This is an explicit part of the models proposed by Beck (1988), Belfer & Glass (1992), Goldstein & Chambless (1978) and but could also form an extension to other cognitive models.

Hypothesis 1. Patients with panic will show greater somatic self-focus than other participants.

2. Is elevated somatic self-focus specific to panic?

The study will use a group of depressed patient controls in order to answer two related questions regarding specificity. First, it may be that the elevated somatic self-focus reported by Borden et al. (1993) was a depressive phenomenon and this study will aim to separate the effects of depression from those of panic. It would be possible to address this issue by comparing non-depressed panickers with controls. However, in practice most panic patients present with some degree of depressive symptomatology hence the panic

group will be matched for depression with a group of patients with depression only. If enhanced somatic self-focus is found in the depressed panic group but not the depressed group, it will strengthen the evidence that somatic attention is a cognitive variable specific to panic and therefore likely to be of theoretical significance.

This approach has the additional advantage of controlling for patient status. When comparing clinical populations with non-patient groups there is always a question as to whether any differences are non-specific effects which are due merely to the level of distress and disturbance which prompt referral to mental health services. The use of a clinical control group enables us to say with greater confidence that any observed differences are specifically due to the disorder in question (in this case panic) rather than the general impact of experiencing significant psychological difficulties of whatever kind.

Hypothesis 2. Patients with panic and depression will show more frequent somatic self-focus compared with patients with depression only.

3. Do alterations in the salience of physical sensations selectively affect levels of somatic self-focus in individuals with panic?

This study also aims to extend the theoretical understanding of panic by attempting to identify the precise conditions under which panickers may be prone to somatically self-focus. It may be that panickers tend to allocate excessive amounts of attention to their bodily sensations in all circumstances. The results of Borden et al. (1993) suggest that physiological self-focus in panickers is disrupted by a structured cognitive stressor but it is also conceivable that the pattern of attention may selectively shift towards physiological

self-focus for panickers when physical cues become more salient than usual. There is some evidence the physiological arousal has the capacity to induce self-focus. For example, Wegner & Giuliano (1983) found that subjects who were physiologically aroused after ascending a flight of stairs were more self-focused than those who had just descended the same stairs (i.e., not aroused). This suggestion that arousal may induce heightened self-focus is plausible also from a clinical point of view, since panic patients frequently report that environments or activities which affect physical well-being tend to trigger panic attacks. Thus, exercise, hot environments, and being hungry, tired or unwell are frequently cited by patients as triggers for panic.

A tendency to focus internally when physiologically aroused might increase the probability of anxiety being initiated since perceptions of physical symptoms would become more accurate (Hansen, Hansen & Crano, 1988; Pennebaker & Lightner, 1980). Thus, it is reasonable to suggest that a predisposition to self-focus and catastrophic cognitions about physical sensations combined with exercise may have detrimental effects in panickers. One element of the present study therefore, will be to manipulate the salience of physical cues via mild physical exercise in order to assess whether this has any differential effect on panic patients.

Hypothesis 3. Enhancing the salience of somatic sensations via physical exercise will selectively enhance somatic self-focus in patients with panic compared with all other groups.

4. What is the nature of cognitive self-focus in individuals with panic and depression?

There are three possibilities with regard to cognitive self-focus in patients with concurrent panic disorder and depression. Panic itself is not postulated to selectively affect cognitive self-focus but the presence of depression would lead us to expect elevated cognitive self-focus in these patients. However it is possible that any tendency to focus on somatic sensations would divert attention away from focus on thoughts and emotions leading to lower cognitive self-focus. Alternatively there may be a cumulative effect with somatic focus adding to the depression related cognitive self-focus to produce greater total self-focus in panickers. Finally, it may be that the distress and disruption of having two diagnosable disorders contributes to higher cognitive self-focus than would be expected from the level of depression alone.

This question is of interest in two ways. First, it has therapeutic implications. Given that cognitive self-focus as discussed above has a number of effects which could contribute to the cycle of panic this tendency may need to be addressed in treatment in addition to somatic self-focus for maximum benefit. Second, it is of theoretical interest to investigate self-focus in a variety of different disorders in order to clarify whether self-focus is, as Ingram (1990) suggests a feature of all forms of psychopathology - panic disorder has not been extensively studied in this regard. Although it will not be possible to comment on pure panic because of the design of the study, if cognitive self-focus is found to be higher or lower than would be expected from the level of depression this will need to be integrated into theoretical formulations. In the absence of any previous evidence, it is

most parsimonious to assume that panic does not exert effects on cognitive self-focus beyond those expected from the level of depression, and the hypothesis is framed on this assumption.

Hypothesis 4(a) Depressed panickers will show similar levels of cognitive self-focus to depressed non-panickers.

Hypothesis 4(b). Depressed patient participants will show elevated cognitive self-focus compared to controls.

5. Do non-patient individuals with high trait anxiety show self-focusing attentional biases compared with individuals with low trait anxiety?

This question arises from Eysenck's (1992) model of anxiety discussed above. His suggestion is that individuals with high trait anxiety display cognitive biases (particularly in terms of attention) which predispose them to the development of anxiety disorders. The cross-sectional design of the present study does not allow an assessment of the suggestion that cognitive bias associated with high trait anxiety constitutes a vulnerability factor for clinical anxiety states. However, the design does allow the comparison of self-focus in non-clinical populations with high and low trait anxiety. Thus, it will be possible to identify whether the kind of self-focusing attentional bias hypothesized to be associated with panic disorder is also associated with high trait anxiety. If so, this will confirm one aspect of Eysenck's model.

Hypothesis 5. Healthy individuals with high trait anxiety will show a self-focusing attentional bias compared with those with low trait anxiety.

Method

2.1 Design

The study used a parallel groups design, comparing four groups on three types of measure.

2.2 Participants

A total of 80 subjects took part in the study (64 women and 16 men). There were four groups consisting of 20 subjects each. Two of the groups consisted of clinical psychology outpatients, the other two groups were non-clinical controls, as shown below:

1. Panic Disorder/Depression Group (PDD) (n = 20)

Patients with DSM IV diagnosis of Panic Disorder and Major Depressive Disorder

2. Depression Group (D) (n = 20)

Patients with DSM IV diagnosis of Major Depressive Disorder only.

3. High Trait Anxiety Group (HTA) (n = 20)

Healthy volunteers with high trait anxiety and no DSM IV diagnosis.

4. Low Trait Anxiety Group (LTA) (n = 20)

Healthy volunteers with normal trait anxiety and no DSM IV diagnosis.

2.3 Selection And Recruitment Of Participants

General Inclusion and Exclusion Criteria for all Participants

All participants fell in the age range 18-65 years. Any potential participants who had significant medical problems were excluded from the study, since this would be likely to increase levels of somatic self-focus. Also, because the tasks required verbal ability, potential participants were excluded if their command of English was judged by the researcher to be insufficiently good.

Selection of Patient Participants

Two groups of clinical psychology outpatients were recruited:

1. Those fulfilling DSM IV diagnostic criteria for Panic Disorder (with or without Agoraphobia) and Major Depressive Disorder (PDD)
2. Those fulfilling DSM IV criteria for Major Depressive Disorder alone (D).

The diagnostic criteria are presented in Appendix 1. Subjects were excluded if they met the DSM IV criteria for any other Axis 1 or Axis 2 disorder. Fulfilment of diagnostic criteria was assessed at the beginning of the testing session by means of a semi-structured interview (see Appendix 2.).

Recruitment of Patient Participants

Patient participants were drawn from four outpatient Clinical Psychology services.

Details of the selection criteria described above were sent to clinicians working in these

services and any patients who were thought to fulfil the criteria were invited to participate in the study by the clinician who was treating them. Patients who agreed to participate were then contacted via letter by the researchers and invited to attend a single testing session at the relevant hospital. Testing took place either during the assessment period or early in treatment.

Selection of Healthy Controls

Control were allocated to either a High Trait Anxiety group (HTA) or Low Trait Anxiety group (LTA) on the basis of their trait anxiety score on the Spielberger State-Trait Anxiety Inventory Form Y (Spielberger, Gorsuch, Lushene, Vagag, & Jacobs, 1983). Participants who scored within one standard deviation (i.e., a score of 45 or less) of the Spielberger norms were considered to have low trait anxiety. Those whose score exceeded one standard deviation from the norm (i.e., 46 or above) were allocated to the high trait anxiety group. Participants who had consulted their GP for any psychological problem during the previous year were excluded.

Recruitment of Controls

Controls were volunteers drawn from the volunteer panel of a teaching hospital. Potential participants were contacted by telephone and invited to attend a single testing session at the hospital if they were willing to participate. As the hospital operated a fixed system of recompense to research participants recruited from the volunteer panel, the controls were paid the standard fee of £6 for their participation in the study.

Matching of Groups

In order to reduce error variance it was planned to match all four groups on three potentially confounding variables. These were average age, ratio of females to males within the group and educational level. For the latter, participants were assigned to one of three categories (no qualification, qualifications up to 'A' level and graduate). Although the matching was not exact, statistically significant differences between the groups on these variables were not present - further information on this point is presented in the Results section.

2.4 Statistical Power

Whereas the methods of inferential statistics provide safeguards against Type I errors (i.e. false positives), it is also necessary to consider Type II errors (false negatives) by building adequate statistical power into the experimental design. Statistical power refers to the probability that the study will detect an effect that is actually present. Careful choice of measures and control of error variables enhance the power of a study, but a further important aspect is the use of a sufficiently large sample. The required sample size can be calculated with reference to the expected effect size and the level of confidence required (Cohen,1992).

There has been only one previous study Borden et al. (1993) comparable to the present research and insufficient information was presented for a precise estimation of the effect size to be made. However, Cohen defines a large effect as being one 'likely to be visible to the naked eye of a careful observer' (Cohen,1992, p.156). The results of Borden et al.

(1993) fulfil this criterion and a large effect size has therefore been assumed for the present study. In order to achieve a power of .80 (for $\alpha = .05$), a sample of 18 participants per group is required (Cohen, 1992). Thus, the statistical power of the present study was considered to be adequate.

2.5 Ethical Procedures

Permission to carry out the study was obtained from the research ethics committees for each institution from which participants (both patients and controls) were recruited (copies of relevant documentation appear in Appendix 3.). In order to ensure that participants could give informed consent, a participant information sheet outlining the nature of the tasks (see Appendix 4.) was sent to individuals prior to the testing session. All participants were given an opportunity to raise any concerns at the beginning of the testing session before being asked to sign a consent form (see Appendix 5.). In addition, a thorough debriefing was given after the tasks and any further action which was thought necessary (eg. liaison with the referring clinician) was undertaken at the request of the participant after written consent had been obtained. In accordance with the requirements of the ethics procedures, the GPs of all patient participants were informed that the individual had taken part in the study.

2.6 Measures

The following section describes the measures used in the study, both for selection/screening and for testing the experimental hypotheses. In order to retain clarity of presentation, information concerning the reliability and validity of the measures is detailed separately in Appendix 6.

A. Selection And Screening Measures

Although participants were allocated to a group on the basis of the semi-structured interview, the Beck Depression Inventory (Beck, Rush, Shaw & Emery, 1979) and the Beck Anxiety Inventory (Beck, Epstein, Brown & Steer, 1988) were also administered as screening measures. This procedure provided a validation of the results of the diagnostic interview - that is, it verified that the healthy controls were not significantly anxious or depressed and that the patient participants were experiencing significant symptom levels. In addition, it enabled a comparison of the two clinical groups on the severity of both anxiety and depression. The latter was important in that the clinical groups needed to be similar in the severity of depression but to differ in anxiety levels in order to show clearly any selective effect of panic.

The STAI was used to allocate controls to either a high or low anxiety group as described above. However, this measure was also given to patient participants in order to allow comparison of all four groups on this variable.

B. Measures Of Self-Focused Attention

This study aimed to test the hypotheses first of all using two state measures of self-focus (i.e., assessing the the focus of attention in a given task). These measures were then backed up with self-report questionnaire measures of trait self-focus.

1. Thought-Sampling Task (based on procedures developed by Horowitz, Becker, Moskowitz, & Rashid, 1972)

Samples of thoughts were elicited in the following way. Participants were asked to carry out a simple auditory monitoring task interspersed with two minute intervals during which they were required to record their spontaneous thoughts during the preceding two minute task phase. Participants performed the task twice, each presentation of the task being preceded by either a manipulation of the salience of physical sensations or a manipulation involving induction of awareness of thoughts and emotions. The purpose of these inductions was to induce awareness of mild physical sensations and of cognitions which could then be attended to or ignored. The auditory monitoring task functions as a mildly stressful stimulus, simulating the kind of attentional demands commonly encountered in everyday tasks.

The physical sensation manipulation was designed to mimic the kind of sensations encountered in climbing a flight of stairs. Participants were asked to step up and down on a 22 cm block 'at a pace which feels moderate' during a two minute period. This was a shorter version of a task used successfully by McNally, Foa & Donnell (1989). The shortened task was piloted on five individuals and was found to be effective in raising

heart rate by 10-20 beats per minute and in inducing cardiac sensations and breathlessness.

For the cognitive awareness manipulation participants were asked to close their eyes and focus on their thoughts for two minutes. To control for order effects the manipulations were presented in counter-balanced order within groups. It was not anticipated that there would be carry over effects from one manipulation to the next since they were purposely designed to be mild and not to evoke strong emotions (since this would affect self-focus).

The auditory monitoring task itself required participants to listen to 25 randomly generated tones and for each tone to judge whether it was higher, lower or the same in pitch as the preceding tone. Participants were then given two minutes to write down all the thoughts, sensations, feelings and mental images they had experienced during the task. This sequence of 25 tones followed by two minutes of thought recording was then repeated. Thus, over the two manipulations, participants completed the tone/record sequence four times. Before beginning the task, the entire procedure was explained to the participant and two sets of five practice tones were presented (task instructions are presented in Appendix 7.).

The cognitions recorded by participants were then blind rated for attentional focus (somatic self-focus, cognitive self-focus, external, unclear). The coding guidelines were based on those used by Greenberg & Pyszczynski (1986) but the self-focus category was additionally divided into cognitive and somatic subcategories (see Appendix 8. for coding criteria).

In order to assess the reliability of the ratings, five sets of data from each group (i.e., 20 in total) were rated by a second rater.

2. Exner Sentence Completion Task (Exner, 1973)

For the reasons discussed in the Introduction, the Exner Sentence Completion Task (see Appendix 9.) was chosen as one of the measures for this study. Subjects are asked to complete 30 sentence stems with whatever comes to mind first (e.g., I'm at my best....). Most of the sentence stems refer to the self, thereby priming a personal response. Completions are coded in terms of reference to self versus the external world. Exner's coding categories include self/external/ambivalent/unclear and positive/negative (see Appendix 10. for scoring criteria). Responses were blind rated and reliability was checked for five sets of data from each group (i.e., 20 in total) using a second rater.

3. Self-Consciousness Scale (Fenigstein, Scheier & Buss, 1975)

The Private Self-Consciousness scale from the Self-Consciousness Scale (SCS) was used to assess trait cognitive self-focus (See Appendix 11.). The SCS consists of 23 items which give a total score and three subscales scores. The subscales are as follows:

1. Private self-consciousness - measures the tendency to attend to inner thoughts and feelings particularly those concerning the self.
2. Public self-consciousness - measures the tendency to attend to the self as a social stimulus.

3. Social anxiety - measures the awareness of the reactions of others to the self .

10 items form the Private Self-Consciousness subscale which assesses awareness of internal reactions and includes items such as 'I reflect about myself alot' and 'I'm generally attentive to my inner feelings'. The rating scale consists of a 5-point anchored Likert scale and each item is rated from 'extremely uncharacteristic' to 'extremely characteristic'.

4. Body Consciousness Questionnaire (Miller, Murphy & Buss, 1981)

Trait Somatic self-focus was measured using the Private Body Consciousness scale of the Body Consciousness Questionnaire (BCQ) (see Appendix 12.). The BCQ consists of 15 items of which five are relevant to somatic self-focus.

The BCQ rating scale consists of a 5-point anchored Likert scale and each item is rated from 'extremely uncharacteristic' to 'extremely characteristic'. The BCQ gives a total score as well as three subscale scores. The other two subscales measure public body consciousness (awareness of the social aspects of one's appearance) and body competence (awareness of the skill and strength of the body)

2.7 Procedure

Participants were asked to attend a hospital Clinical Psychology Department for a single testing session, lasting around 75 minutes. A copy of the patient information sheet was provided before the testing session in order to allow participants time to consider whether they wished to participate. All testing was carried out by the researcher.

Before commencing testing, the nature of the tasks was explained and an opportunity to ask questions was given. Participants were then asked to sign a consent form. Following this, the tester administered the semi-structured diagnostic interview. Participants were then asked to perform the thought-sampling task, followed by the Exner Sentence Completion Task. The questionnaires measures were then administered in the following order:

Self-Consciousness Scales

Body Consciousness Questionnaire

Spielberger Trait Anxiety Inventory (Y)

Beck Anxiety Inventory

Beck Depression Inventory.

At the end of testing, all participants were thanked and asked whether any of the tasks had caused them distress and an opportunity to discuss this was given as necessary. All participants then received a thorough debriefing as to the nature of the study. Where appropriate, further liaison with mental health professionals was undertaken with the consent of the participant. Control subjects received a fee of £6 for their participation. The GPs of all patient participants were informed that the patient had taken part in the study.

Results

3.1 Introduction

Information on various relevant characteristics of the sample and the results of screening measures which validate the allocation of subjects to different groups is presented in Section 3.2. The descriptive and inferential statistics for each of the measures of self-focus (thought-sampling, sentence completion and questionnaires) will then be reported in turn followed by a summary of the main findings. Analyses were carried out using SPSS and SAS statistical computer packages.

For the sake of clarity, the following abbreviations will be used to refer to the groups in figures and tables:

PDD	Patients with panic disorder and depression
D	Patients with depression only
HTA	Healthy controls with high trait anxiety
LTA	Healthy controls with low trait anxiety

3.2 Participant Characteristics

In order to reduce error variance between the groups, an attempt was made to match the groups for age, sex ratio and educational level and the first section details information regarding these variables

3.2.1 Demographic Characteristics

Age

Different age cohorts have been shown to respond differently on a wide variety of psychological measures. Because age differences could therefore potentially disrupt the results, the groups were matched for age as shown below.

Table 3.1 Mean age (standard deviation) of each group

Group	Mean Age (SD)
PDD	39.1 (13.3)
D	37.4 (11.7)
HTA	33.9 (10.9)
LTA	33.2 (12.1)

A 1-way Analysis of Variance (ANOVA) was carried out, showing that the groups did not differ in terms of average age ($F(3,76) = 1.09, n.s.$).

Sex Ratio

In order to control for possible gender biases between groups, an attempt was made to include a similar ratio of female to male participants in each group as shown in Table 2.

Table 3.2 Number of male and female participants in each group

Group	Male	Female	Total
PDD	3	17	20
D	6	14	20
HTA	3	17	20
LTA	4	16	20
Total	16	64	80

There were more female than male participants in the total sample (79% and 21% respectively). A Chi-Square analysis showed that there was no association between group and sex ratio (Chi-Square (6) = 2.47, n.s.).

Educational Level

It is possible that educational level may affect self-consciousness. Conceivably, individuals who have been trained to think analytically may tend to apply this skill to their own thoughts and behaviours and so score more highly on measures of self-focus. For this reason, an attempt was made to match the groups for educational level. Three categories were used as follows:

1. No qualifications
2. Qualifications up to 'A' level
3. Qualified to degree level or above.

Table 3. shows the number of participants at each educational level for each of the four groups.

Table 3.3 Educational level of participants in each group

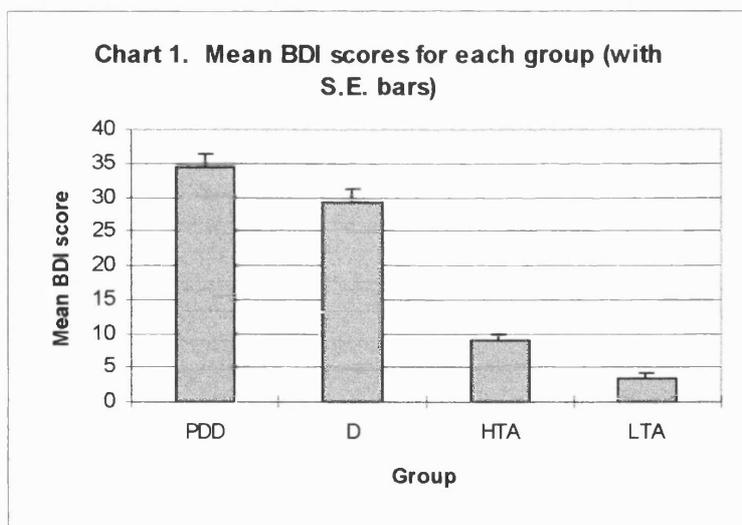
Group	No Qualifications	Qualified to 'A' Level	Graduate	Total
PDD	5	8	7	20
D	3	7	10	20
HTA	4	8	8	20
LTA	4	5	11	20
Total	16	28	36	80

Chi-Square analysis showed that there was no association between group and number of subjects at each educational level (Chi-Square (3) = 1.88, n.s.).

3.2.2 Results of Screening Measures

Although participants were allocated to groups on the basis of a semi-structured diagnostic interview (see Appendix Y), screening questionnaires were also administered in order to verify that subjects showed the characteristics expected for each group on three key variables - depression, anxiety symptoms and trait anxiety. The measures used for this purpose were the Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI) and the Spielberger Trait Anxiety Inventory (STAI - Form Y). The characteristics of the groups on these measures are given below.

Beck Depression Inventory

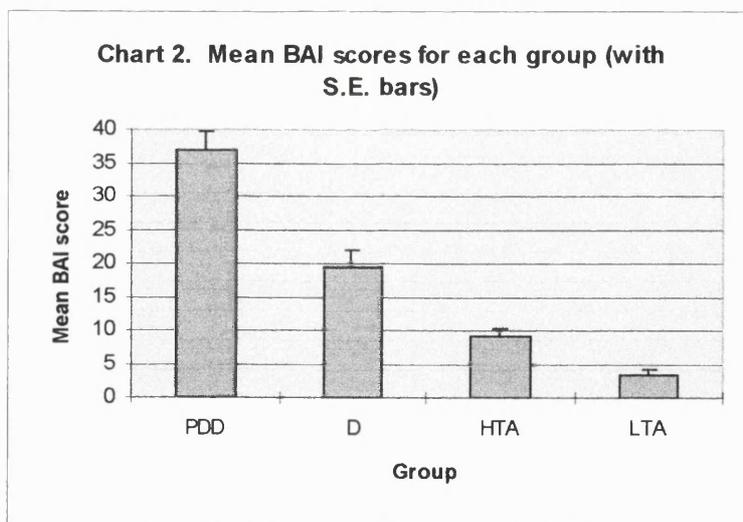


BDI scores for the four groups were consistent with diagnostic judgements made on the basis of an interview. As shown in Chart X, both patient groups had mean BDI scores within the range expected for individuals with moderate to severe clinical depression

(Beck & Steer, 1993 recommend lower cut-off scores of 17 and 30 for moderate and severe depression respectively) whereas the healthy volunteers scored within the non-depressed range (i.e. less than 10).

A 1-way ANOVA comparing BDI scores across the groups showed that the differences between groups were statistically significant ($F(3,76) = 95.0, p < .001$). Post hoc analyses (Tukey tests with significance level $p = .05$) showed that, as required by the design, the panic/depression and depression groups were matched for severity of depression as measured by BDI score. Similarly, the high trait anxiety and low trait anxiety groups also showed no significant differences. All other pairs of groups were significantly different and the differences were in the expected direction - that is the clinical groups had much higher BDI scores than the controls.

Beck Anxiety Inventory

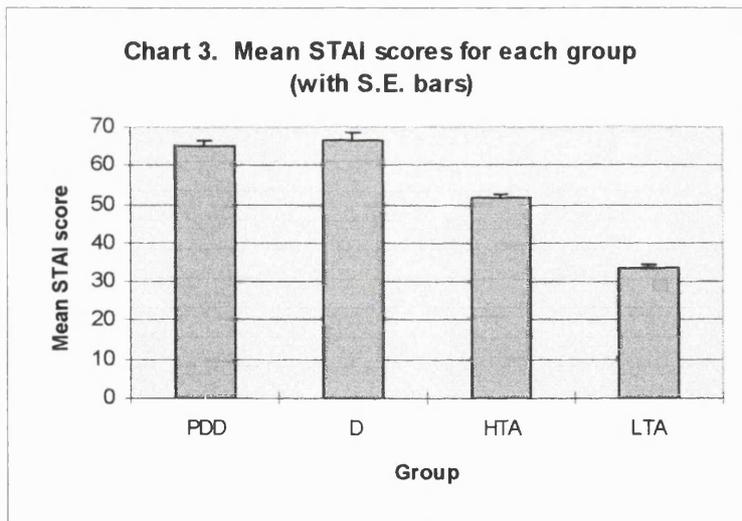


BAI scores also, were consistent with expectation. As would be predicted, the panic/depression group tended to score most highly with a mean score exceeding the cut-off score of 30 for severe anxiety (Beck & Steer, 1990). The depressed group were

somewhat less anxious (moderate anxiety) and the healthy volunteers scored lowest (normal anxiety range).

A 1-way Analysis of Variance performed on BAI scores showed a strong group effect ($F(3,76) = 53.3, p < .001$). Tukey tests (significance level $p = .05$) showed that as expected the panic/depression group had significantly higher scores on the BAI than the other three groups. The scores of the depression group whilst lower than those of the panic/depression group were still significantly higher than the two control groups. The healthy controls did not differ on BAI score.

Spielberger State-Trait Anxiety Inventory



Finally, a further 1-way ANOVA on the STAI scores for the groups, again showed a large group effect ($F(3,76) = 120.7, p < 0.001$). Consistent with norms for clinical samples (Spielberger et al., 1983), both of the patient groups showed high trait anxiety (around 3 standard deviations above the norm) and a Tukey test ($p = .05$) demonstrated that they were matched on this variable. All other pairs of groups were significantly different

(Tukey test, $p = .05$) in the direction anticipated. That is, the patient groups had higher scores than the controls, and the High Trait Anxiety controls scored significantly higher than those in the Low Trait Anxiety control group.

3.2.3 Summary

The groups were shown to be matched for age, sex ratio and educational level. Also, scores on measures of depression, anxiety symptoms and trait anxiety were consistent with diagnostic status for each group.

3.3 Analysis Of Thought-Sampling Task

3.3.1 Method of analysis

As described in section 2.6, data from the thought-sampling task was drawn from spontaneous thoughts recorded by participants. Each response segment was coded into one of four categories (somatic self-focus, cognitive self-focus, external, unclear). Thus, the attentional patterns of the groups could be compared in terms of the frequency of each type of response.

In order to assess the reliability of the coding procedures, the responses of 20 participants (5 drawn randomly from each group) were rated by a second rater. Inter-rater reliability calculated using Cohen's kappa (Cohen, 1960) was 0.89. Thus, reliability of scoring was good.

A thorough analysis of the data was achieved using a two-step approach, incorporating analysis of variance procedures and planned comparisons (as described by

Kirk, 1995, Chapter 4). First an analysis of all the data was carried out using a mixed design 3-way multi-variate analysis of covariance (MANCOVA) with repeated measures. Because the total number of responses varied between subjects, direct comparison of raw scores was not possible and for this reason the total number of responses was used as a covariate. Consequently, all means presented have been adjusted for the covariate. The MANCOVA involved one between subjects factor (group) and two within subjects factors (manipulation and modality). As described above, there were two levels of the manipulation factor - cognitive awareness induction and exercise induction. Modality refers to the type of self-focus (somatic or cognitive) and there were thus two levels of this factor also. The results of this analysis are presented in a logical sequence discussing first main effects and then interaction effects.

Whilst the MANCOVA was useful in gaining an overview of the whole data set, the second stage of the analysis required tests which would clarify the nature of any effects. Thus, a number of planned comparisons were carried out (see below) which focused on those parts of the data which were most relevant to the hypotheses. The advantage of this second approach was the increase in statistical power gained when comparisons irrelevant to the hypotheses were excluded from the analysis.

Planned comparisons

1. Comparison of panic/depression group with all other participants on levels of somatic self-focus.

This formed a test of Hypothesis 1.

2. Test of group by modality interaction for panic/depression and depression groups only

A further planned contrast was carried out, testing whether there was a group by modality interaction when comparing the two patient groups only. This was a particularly important test in that it assessed the selectivity of any effects of panic over and above those of depression for both cognitive and somatic self-focus and formed a test of Hypotheses 2. and 4(a).

3. Comparison of patients with controls for cognitive self-focus

This tested Hypothesis 4(b) which predicted higher cognitive self-focus in patients than in healthy controls.

4. Test of group by modality interaction comparing high trait anxiety and low trait anxiety groups

This comparison provided a test of Hypothesis 5. which concerned the possible presence of attentional bias in healthy controls with high trait anxiety.

5. Test of group by modality by manipulation interaction

This formed a test of Hypothesis 3, which predicted that somatic self-focus would be selectively enhanced in panickers following the exercise manipulation.

Comments on planned comparisons

1. Type I error rates

Because there is an inflation of Type I errors as the number of comparisons increases, most commentators recommend using some form of Bonferroni-type correction if more comparisons than there are degrees of freedom are performed (i.e.3 in the present

analysis). Using procedures described by Keppel (1982, p148) the family wise error rate for 5 comparisons (alpha .05) was found to be .23, producing an appropriate alpha level of .046 after correction. However, as will be seen, none of the results fall on the borderline and this point does not therefore hold important implications for the present analysis.

2. Orthogonality of Comparisons

It is desirable for comparisons to be orthogonal (i.e. independent in terms of variance) in order for the nature of any effects to be easily interpreted. However, this is not always possible - as Keppel (1982) points out 'the *meaningfulness* of a comparison is of critical importance in the analysis of an experiment and not its inclusion in an orthogonal set of comparisons' (p.123). The comparisons in the present analysis were not fully orthogonal but since they were necessary for an adequate assessment of the research hypotheses this was considered to be acceptable.

3.3.2 Results of the MANCOVA

A. Main effects

Group

Table 3.4 Mean number of self-focus responses
(standard deviations) by group

Group	Self-Focus Responses Adjusted Means (SD)	
PDD	17.0	(7.9)
D	12.6	(8.1)
HTA	10.6	(6.1)
LTA	8.5	(4.0)

The MANCOVA revealed a main effect of group ($F(3,75) = 13.65, p < .001$).

Modality

There was also a main effect for modality ($F(3,76) = 62.15, p < .001$), whereby participants showed nearly three times the level of focus on thoughts and emotions than on bodily sensations. The mean number of cognitive self-focus responses was 9.04 (SD 5.61), whereas the mean number of somatic self-focus responses was 3.30 (SD 3.74).

Manipulation

There was a slightly higher frequency of self-focus following the exercise manipulation (Mean = 6.45, SD = 3.77) than following the cognitive awareness manipulation (Mean = 5.94, SD = 3.79) which emerged as a non-significant trend for manipulation ($F(1,76) = 3.48, p = .06$). Thus, overall, the manipulations did not exert a large effect on self-focus.

Summary of main effects

To summarise, a MANCOVA showed that there were significant between-group differences in total self-focus and significant differences in levels of cognitive and somatic self-focus. The evidence for an effect of manipulation was not strong.

B. Interaction effects

Interaction of group and modality

Group differences in modality of responses (i.e. cognitive or somatic self-focus) formed the interaction most relevant to the research hypotheses. Total levels of cognitive and somatic self-focus for each group across both manipulations are shown in Charts 4. and 5. (see page 80).

Inspection of the means suggested that the pattern of results for cognitive self-focus was very different to that for somatic self-focus. For cognitive self-focus, the results appeared to fall into two groupings: the depressed patients (irrespective of whether they

Chart 4. Somatic self-focus responses: Adjusted means and standard errors

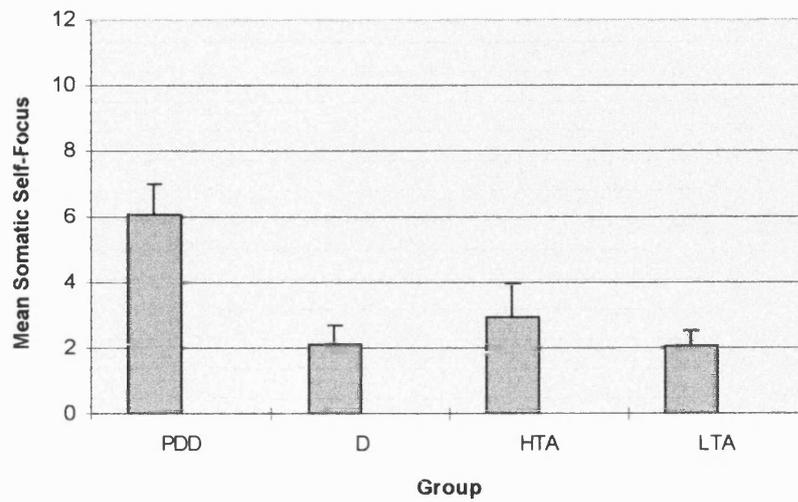
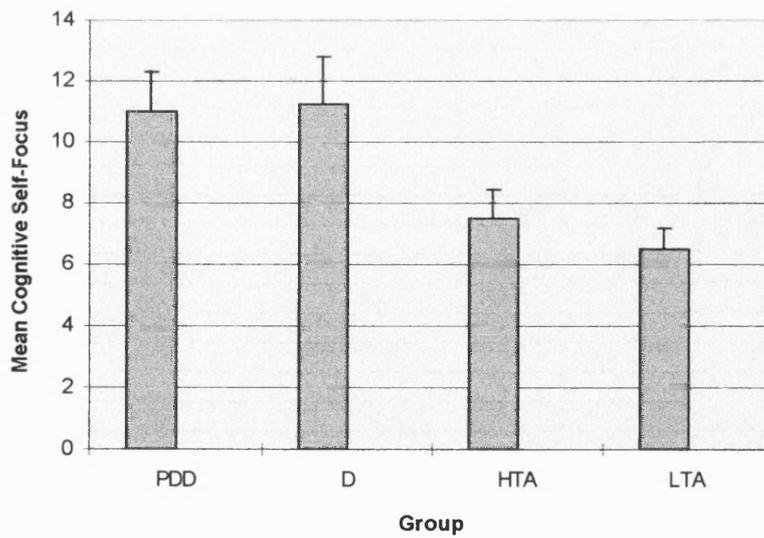


Chart 5. Cognitive self-focus responses: Adjusted means and standard errors



had panic disorder) showed high levels of self-focus and controls much lower levels. In contrast, for somatic self-focus, the panic/depression group showed much higher levels than any of the other three groups. However, the MANCOVA produced a non-significant result for the group by modality interaction ($F(3,76) = 1.72, n.s.$).

Interaction of group and manipulation

There was no interaction between group and type of manipulation ($F(3,76) = 1.16, n.s.$). That is, no group was selectively affected by either manipulation in terms of total self-focus (see Table 5).

Table 3.5 Self-Focus Following Each Manipulation - Adjusted Means (SD)

Group	Awareness Manipulation		Exercise Manipulation	
	Mean	SD	Mean	SD
PDD	8.0	(4.5)	9.2	(3.8)
D	6.9	(4.0)	6.5	(4.0)
HTA	5.0	(3.1)	5.6	(3.5)
LTA	3.9	(2.5)	4.6	(2.4)

Interaction of group, modality and manipulation

Table 3.6. Adjusted means (SD) for each type of self-focus following awareness and exercise manipulations.

Group	Cognitive Self-focus		Somatic self-focus	
	Awareness	Exercise	Awareness	Exercise
Panic/Depression	5.17 (3.70)	5.78 (3.27)	2.72 (2.39)	3.36 (2.50)
Depression	5.78 (3.92)	5.47 (3.45)	1.15 (1.37)	0.99 (1.47)
High Trait Anxiety	3.35 (2.01)	4.06 (3.10)	1.40 (2.72)	1.56 (1.96)
Low Trait Anxiety	3.23 (2.18)	3.24 (2.06)	0.68 (1.25)	1.38 (1.73)

The 3-way MANCOVA showed that there was no interaction between group, modality and manipulation ($F(3, 76) = 0.38, n.s.$). That is, there appears to have been no selective effect of modality together with manipulation for any specific group. In other words, contrary to Hypothesis 3., the exercise manipulation did not differentially affect somatic self-focus for the panickers.

3.3.3 Planned Comparisons

1. Test of somatic self-focus comparing panickers with all other participants

An a priori ANCOVA revealed that the mean frequency of somatic self-focus responses was significantly higher in the panic/depression group than in a group composed of all other participants ($F(1,78) = 20.40, p < .001$).

2. Test of group by modality interaction for panic/depression and depression groups only

A further planned contrast was carried out, testing whether there was a group by modality interaction when comparing the two patient groups only. This was a particularly important test in that it assessed the selectivity of any effects of panic over and above those of depression for both cognitive and somatic self-focus and formed a test of Hypotheses 2. and 4.

A repeated measures ANCOVA revealed a significant interaction ($F(1,75) = 4.49, p < .05$). Post hoc t-tests were therefore carried out to clarify the nature of the interaction.

These confirmed that there was significantly higher somatic self-focus in the panic/depression group ($t(1,38) = 3.91, p < .001$). That is, the panickers produced more somatic self-focus responses than the depressed group and Hypothesis 2. was therefore

confirmed. By contrast, there were no significant differences between these groups for cognitive self-focus ($t(1,38) = 0.19, n.s.$) and Hypothesis 4 was confirmed.

3. Comparison of patients and controls on cognitive self-focus

Although the panickers were found to exhibit similar levels of cognitive self-focus to the depressed group, it was also necessary to test whether these scores were significantly higher than those of the controls (Hypothesis 4(b)). A 1 way ANCOVA comparing the patients with the controls confirmed that the patients reported significantly more cognitive self-focus thoughts ($F(1,76) = 17.12, p < .001$).

4. Test of group by modality interaction comparing high trait anxiety and low trait anxiety groups

A repeated measures ANCOVA showed no significant group by modality interaction for the two control groups ($F(1,75) = 0.00, n.s.$). Thus, contrary to Hypothesis 5, individuals with high trait anxiety did not show differences in self-focus when compared with non-anxious individuals.

5. Test of group by modality by manipulation interaction

A repeated measures ANCOVA showed that there was no significant interaction of manipulation and modality when the panic/depression group was compared with the combined other three groups ($F(1,78) = 1.13, n.s.$).

3.3.4 Summary Of Results Of Thought-Sampling Task

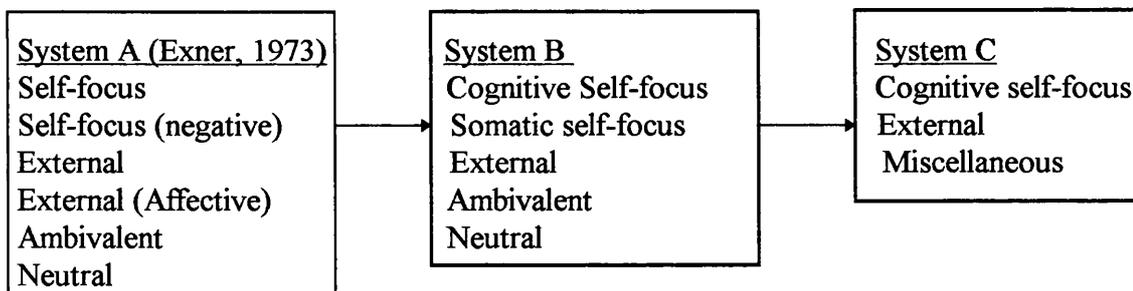
The hypothesis that panickers are characterised by enhanced somatic self-focus was confirmed - panickers showed around three times as many somatic self-focus responses as other participants and this difference was highly statistically significant ($p < .001$). This

effect was shown to be selective for panic and was not attributable to depression.

Consistent with previous research, both depressed groups showed elevated cognitive self-focus (compared with healthy volunteers) and the presence of panic disorder did not affect this. Somatic self-focus was not selectively enhanced in the panic/depression group by the exercise manipulation. Contrary to the prediction based on Eysenck's (1992) theory of anxiety, healthy participants with high trait anxiety did not show attentional bias as compared with those with low trait anxiety.

3.4 Analysis Of Sentence Completion Task

Figure 1. Diagram of scoring adaptations used in the analysis.



For the purposes of answering the research questions, it was necessary to adapt Exner's (1973) scoring system (an outline of the adaptations used is shown in Figure 1.). Exner's original categories (see System A in Figure 1.) were initially adapted in order to allow a between group comparison on somatic self-focus. This was achieved by combining the two self-focus categories into a new total Self-focus category which was then divided into Cognitive and Somatic components to allow testing of the hypotheses.

Similarly, the two External categories were collapsed into one. (see System B in Figure 1.). Reliability of scoring was checked using a second rater for 20 sets of data (five randomly drawn from each group). Inter-rater reliability was found to be good (Cohen's Kappa = 0.88, Cohen, 1960). Scoring criteria can be found in Appendix 10.

Table 3.7 Means and SDs of each category of response

Group	Cognitive self-focus	Somatic self-focus	External	Ambivalent	Neutral	Total
PDD	16.3 (3.4)	1.0 (1.1)	9.1 (3.3)	1.2 (1.1)	2.4 (2.0)	30
D	16.3 (2.9)	0.6 (1.1)	8.3 (3.7)	0.5 (0.8)	4.3 (2.8)	30
HTA	14.5 (2.9)	0.7 (1.0)	11.1 (3.3)	1.1 (1.4)	2.6 (2.2)	30
LTA	12.5 (3.1)	0.6 (1.0)	13.3 (2.4)	0.5 (0.8)	3.1 (1.8)	30

As can be seen in Table 6., self-focused responses accounted for around half of the total responses overall. However, the vast majority of these were cognitive self-focus responses. The level of somatic self-focus for the sentence-completion measure was very low (less than 3% of all responses) across all the groups. That is, contrary to expectation, the measure did not appear to tap attention for bodily sensations in any of the groups. For this reason, although the panic/depression group did produce slightly more somatic responses than the other groups, it was not considered appropriate to conduct between group comparisons on this variable. Thus, for those hypotheses concerned with somatic self-focus, no conclusions could be drawn from this measure.

However, one of the research questions concerned the effects of panic on cognitive self-focus. In order to assess whether panic affects cognitive self-focus, the data was regrouped again (see System C in Figure 1.) The Cognitive Self-focus and External categories were retained and the three smallest categories (Somatic Self-focus, Ambivalent, Neutral) were regrouped as a Miscellaneous category. Results are shown in Table 7.

Table 3.8 Means and SDs of each category of response

Group	Cognitive self-focus	External	Miscellaneous
PDD	16.3 (3.4)	9.1 (3.3)	4.6 (2.6)
D	16.3 (2.9)	8.3 (3.7)	5.4 (2.9)
HTA	14.5 (2.9)	11.1 (3.3)	4.4 (2.6)
LTA	12.5 (3.1)	13.3 (2.4)	4.2 (2.2)

As can be seen in Table 7, the Miscellaneous category was small. As this variable was not relevant to the hypothesis being tested and a 1-way ANOVA showed there were no significant between group differences for the Miscellaneous category ($F(3,76) = 1.98$, n.s.) it was not included in further analyses. Also, because the total number of responses was fixed, the External and Cognitive self-focus categories were not independent ($r = -.73$). It was therefore not appropriate to include both variables in an analysis of variance since this would violate one of the assumptions of ANOVA procedures (Kirk, 1995, p.98).

Consequently, the analysis consisted of a 1-way ANOVA comparing cognitive self-focus for the four groups. This revealed a significant group effect ($F(3,76) = 6.48$, $p < .001$). A Tukey Honestly Significant Difference test with significance level $p = .05$ showed that both of the patient groups produced significantly higher levels of cognitive self-focus compared with the low trait anxiety controls. No other pair of groups was significantly different.

Summary of results of sentence-completion task

Although the panic group did produce more somatic self-focus sentence completions than any of the other group overall levels of somatic self-focus were not sufficiently high to allow a valid between group comparison on this task. The panic/depression and

depression groups showed virtually identical levels of both cognitive self-focus and external focus indicating that the presence of panic did not affect cognitive self-focus. Group differences lay in the higher levels of self-focus and lower external focus of the patient groups as compared with the low anxiety controls. The high anxiety controls had intermediate scores which did not differ significantly from either the patient groups or the low anxiety controls.

3.5 Analysis Of Self-Focus Questionnaires

In addition to the measures of state self-focus reported above, two questionnaire measures of trait self-focus were also administered. These were the Body Consciousness Questionnaire (BCQ) and the Self-Consciousness Scales (SCS) both of which comprise three sub-scales. The Private Body Consciousness and Private Self-Consciousness subscales are of greatest relevance to the hypotheses, but analyses for all the subscales are presented.

3.5.1 Body Consciousness Questionnaire (Miller et al. 1981)

Table 3.9 Mean (SD) BCQ Scores by Group

Group	BCQ Private	BCQ Public	BCQ Body Competence	BCQ Total
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
PDD	14.6 (4.4)	15.0 (5.3)	8.1 (2.9)	37.6 (9.0)
D	14.0 (3.9)	14.4 (3.3)	8.0 (2.5)	36.3 (6.2)
HTA	14.1 (4.3)	15.8 (4.8)	8.9 (3.2)	38.5 (10.7)
LTA	10.5 (3.6)	11.7 (4.5)	9.4 (2.5)	31.5 (8.0)

Private body consciousness

Hypothesis 1. predicted differences in Private body consciousness between the panic/depression group and all other participants. The first analysis therefore was an unrelated t-test comparing these two groupings (i.e. PDD vs D+HTA+LTA). This revealed no significant difference between panickers and other participants ($t(1,78) = 0.87, n.s.$).

However, inspection of the means suggested that scores for the low trait anxiety group were lower than the other three groups. A 1-Way ANOVA comparing the four individual groups was therefore carried out and revealed a significant between group effect for Private Body Consciousness ($F(3,76) = 4.32, p < .01$). Post hoc analysis (Tukey Honestly Significant Difference Test $p = .05$) confirmed that the low trait anxiety group showed significantly less body consciousness than the other three groups. No other pair of groups scored significantly differently. That is, on this measure, the panic group scores were higher than those of non-anxious controls but this effect was not specific to panic and Hypotheses 1. And 2 were therefore disconfirmed.

Public body-consciousness

A 1-way ANOVA showed that the groups differed significantly on Public Body Consciousness ($F(3,76) = 3.01, p < .05$). This effect was accounted for by the higher scores of the high trait anxiety group as compared with those of the low trait anxiety group (Tukey Honestly Significant Difference Test, $p = .05$). No other pair of groups differed significantly.

Body competence

A 1-way ANOVA showed that there was no group effect on this variable ($F(3,76) = 1.11$, n.s.).

Total body-consciousness

For Total Body-Consciousness a 1-way ANOVA revealed only a non-significant trend ($F(3,76) = 2.59$, $p = .06$). Inspection of the means shows that the low trait anxiety group reported less body-consciousness than the other three groups who all scored at a similar level.

3.5.2 Self-Consciousness Scale (Fenigstein et al., 1975)

Table 3.10 Mean (SD) SCS Scores by Group

Group	SCS Private Mean (SD)	SCS Public Mean (SD)	SCS Social Anxiety Mean (SD)	SCS Total Mean (SD)
PDD	25.9 (5.6)	19.5 (6.1)	14.2 (5.3)	59.5 (12.9)
D	28.5 (5.5)	20.5 (5.1)	19.7 (3.8)	68.5 (10.7)
HTA	24.5 (4.8)	19.4 (5.6)	14.6 (4.2)	58.3 (13.1)
LTA	21.3 (5.9)	15.4 (3.7)	13.0 (3.8)	49.7 (9.9)

Private subscale

A 1-way ANOVA revealed significant group differences on this subscale ($F(3,76) = 5.98$, $p < .001$). Post hoc analyses (Tukey Honestly Significant Difference Test, $p = .05$) showed that as would be expected from the literature, both of the patient groups had significantly higher scores than the low trait anxiety controls. Although the means suggest that the high trait anxiety controls occupied an intermediate position between the low trait anxiety controls and the patient groups, no other pair of groups differed significantly

Public subscale

A 1-way ANOVA showed a significant group effect for the Public subscale ($F(3,76) = 3.63, p < .05$). A Tukey Honestly Significant Difference Test ($p = .05$) showed that this effect was accounted for by the difference between the depressed group and the low trait anxiety controls. This finding was consistent with other studies which have shown elevated Public Self-focus in depressed populations. No other pair of groups differed significantly. The scores for both the panic group and the high trait anxiety controls were clearly similar to those of the depressed group but were not significantly higher than those of the low trait anxiety controls.

Social anxiety subscale

A 1-way ANOVA showed a highly significant group effect for Social Anxiety ($F(3,76) = 9.3, p < .001$). A Tukey Honestly Significant Difference Test ($p = .05$) revealed that the depression only group scored significantly higher on this subscale than any other group.

Total self-consciousness

A 1-way ANOVA showed a strong group effect for Total Self-Consciousness ($F(3,76) = 8.62, p < .001$). A post hoc Tukey Honestly Significant Difference Test ($p = .05$) showed that both of the patient groups reported significantly higher self-consciousness than the low trait anxiety controls. The Panic group and the high trait anxiety controls performed in a similar fashion. The depression group scored highest of all the groups on each subscale and thus had the highest total mean score. The depressed group differed significantly from the high trait anxiety group, although not from the panic group.

3.5.3 Summary

To summarise, the hypotheses were not fully substantiated by the results of the questionnaire measures. The panic group did show enhanced private body-consciousness compared to the low trait anxiety controls, but this effect was not specific to panic - both the depressed group and the high trait anxiety group had similar scores on this subscale. As expected, the panic group did show similar levels of private self-consciousness to the depression group and higher levels than the low trait anxiety controls. In addition, the high trait anxiety group reported intermediate levels of private self-consciousness - scores on this subscale were lower than the patient groups but higher than the low trait anxiety group.

3.6 Individual Differences

In addition to analyses of between group differences, a series of correlations was also performed. These used individual differences in scores on the measures of depression and anxiety rather than allocation to groups to test the hypotheses.

Thought-sampling task

First the three screening measures (BDI, BAI, STAI) were correlated with total somatic self-focus and with total cognitive self-focus scores from the thought-sampling task.

Consistent with the between group analyses, there was a significant positive correlation between BAI score and somatic self-focus ($r = .35, p < .01$) but neither BDI or STAI score correlated significantly with this variable ($r = .19, p > .05, r = .09, p > .05$)

respectively). That is, somatic self-focus was associated only with clinical anxiety and *not* with either depression or trait anxiety.

Similarly, the between group results were confirmed with regard to cognitive self-focus which correlated significantly with BDI score ($r = .41, p < .000$) but *not* with BAI score ($r = .19, p > .05$).

Whereas no difference was found between low and high trait anxiety groups on cognitive self-focus, the correlation using STAI score ($r = .34, p < .01$) suggested that trait anxiety was associated with levels of cognitive self-focus. However, when the effects of mood state (i.e., BDI and BAI score) were statistically partialled out, this correlation was no longer significant ($r = .01, n.s.$).

Sentence Completion Task

As stated in Section 3.4, levels of somatic self-focus on this measure were very low and it was therefore not appropriate to perform correlations with this variable. As expected, there was a significant positive correlation of cognitive self-focus with BDI score ($r = .49, p < .001$). The correlation with BAI score was also significant ($r = .31, p < .01$).

However, this proved to be an artefact of depression - when the analysis was repeated, partialling out the effects of depression, this effect was no longer present ($r = -.12, p > .05$). STAI score also correlated positively with cognitive self-focus, even after the effects of clinical anxiety and depression had been partialled out ($r = .29, p < .01$).

Self-Focus Questionnaires

Table 3.11. Correlations of questionnaire scores with measures of anxiety/depression.

Measure	BDI	BAI	STAI
BCQ Private	$r = .27^*$	$r = .44^{***}$	$r = .34^{**}$
BCQ Public	$r = .14$	$r = .26^*$	$r = .24^*$
BCQ Body Competence	$r = -.13$	$r = -.09$	$r = -.18$
BCQ Total	$r = .16$	$r = .32^{**}$	$r = .23^*$
SCS Private	$r = .33^{**}$	$r = .33^{**}$	$r = .48^{***}$
SCS Public	$r = .20$	$r = .28^*$	$r = .37^{**}$
SCS Social Anxiety	$r = .28^*$	$r = .20$	$r = .36^{**}$
SCS Total	$r = .34^{**}$	$r = .34^{**}$	$r = .50^{***}$

* $p < .05$

** $p < .01$

*** $p < .001$

Correlations of the screening measures with the questionnaire subscales are presented in Table 3.11. It is worth noting that although the between group analyses did not confirm Hypotheses 1. And 2., for the Private Body Consciousness subscale(i.e., enhanced private body consciousness was not specific to the panic group), the correlations show that the results are in the predicted direction - clinical anxiety (BAI score) correlated with private body consciousness more strongly than depression or trait anxiety.

Correlations of STAI score with Private Body Consciousness and Private Consciousness (the two subscales of greatest relevance to the hypotheses) revealed

significant positive correlations even when the effects of anxiety and depression had been partialled out ($r = .22, p = .05$, and $r = .38, p < .001$ respectively).

3.7 Summary Of Main Findings

Hypotheses 1. and 2. predicted that patients with panic would show greater somatic self-focus than other participants and that this effect would be independent of any effects of depression. The various measures produced conflicting findings with regard to these predictions. In the thought sampling task, the panic/depression group showed elevated somatic self-focus compared with all other groups, but this result was not found in the questionnaire measure. As stated above, the sentence completion task failed to elicit sufficiently high levels of somatic attention to allow a valid between group comparison. Hypothesis 3. predicted that alterations in the salience of physical sensations would selectively increase somatic self-focus in panickers. This was tested only in the thought sampling task and evidence of such an effect was not found. The three types of measure were consistent in finding comparably high levels of cognitive self-focus in both patient groups as compared with healthy controls.

The evidence for Hypothesis 5. which predicted an attentional bias in the high trait anxiety controls was equivocal. Differences between high and low trait anxiety groups emerged only for the BCQ Private Body Consciousness subscale. However, correlational analyses (controlling for depression and anxiety) revealed significant correlations of STAI score with cognitive self-focus on the sentence completion and SCS measures and for somatic

self-focus on the BCQ, giving some support to Eysenck's (1992) cognitive vulnerability hypothesis.

Discussion

The primary focus of this study concerns attention for somatic sensations in concurrent panic and depression (Hypotheses 1-3, see pages 53-4). I will therefore discuss the results pertinent to this issue and explore the theoretical and therapeutic implications of the findings in some depth, before moving on to a brief discussion of the subsidiary hypotheses (Nos. 4. and 5.). Methodological issues arising from the study will then be outlined, followed by suggestions for further research. Finally, the main conclusions of the study will be summarised.

4.1 Discussion Of Results

4.1.1 Somatic Self-Focus In Panic Disorder

It was predicted that panickers would demonstrate enhanced attention for somatic sensations when compared with all other participants (irrespective of patient status). This was an important preliminary prediction, however, the evidence concerning the selectivity of any effects was theoretically more interesting in that it enabled more precise theoretical conclusions to be drawn. Individuals with a psychological disorder severe enough to warrant referral to mental health services are likely to differ from non-patients on a variety of psychological parameters. What is important in refining etiological models of a

particular disorder is to separate out any characteristics which are specific to that disorder from those which are the result of non-specific factors such as general levels of distress.

Whilst a comparison of the panic group with all other participants was a necessary first step, it was crucial also to make a direct comparison with a relevant non-panicking clinical group (i.e., non-panickers with equivalent levels of depression) in order to clarify whether somatic hypervigilance should be included as a disorder-specific factor as suggested by several of the cognitive models of panic. Hence, it was predicted that individuals with panic would show elevated awareness of bodily sensations and that this would not be attributable to any effects of depression. The results for each of the three types of measure with respect to these two hypotheses will be discussed in turn. In order to aid clarity, the results relevant to whether the salience of somatic sensations exerts a differential effect in panickers (Hypothesis 3.) will be discussed separately in Section 4.1.2. The implications of the findings concerning somatic self-focus both for psychological theory and for treatment will then be considered.

Thought-sampling task

The thought sampling task, which required participants to report the contents of consciousness produced a striking pattern of results with regard to somatic self-focus. Panickers reported around three times as many thoughts related to their own somatic sensations as did other participants (irrespective of diagnostic status) and this confirms the results of the study by Borden et al. (1993). These positive results were confirmed by correlational analyses which revealed a significant positive correlation of somatic self-

focus with clinical anxiety but not depression or trait anxiety. Furthermore, enhanced somatic self-focus effect was specific to panic - the depressed group produced levels of somatic self-focus similar to healthy controls. Both of these group comparisons revealed highly statistically significant differences. Thus, panickers, even in a situation in which they were not experiencing a panic attack were much more likely than the depressed patient group to report that they had been aware of physical sensations although these were not always panic-related sensations (typical responses included 'I felt my muscles were tense', 'My head felt heavy', 'I felt hungry'). This difference between the two patient groups in self-reported awareness of sensations is all the more remarkable in that a variety of physical symptoms are frequently experienced as part of depression (e.g., tension, fatigue, aches and pains). We might therefore expect depressed participants to report as many thoughts concerned with somatic awareness as panickers and certainly more than non-patients. Interestingly, this was not found to be the case. The depressed group reported significantly fewer somatic thoughts than the panickers and (nonsignificantly) fewer than the controls.

It could be argued however, that these results should be interpreted not as evidence of an attentional bias, but rather as evidence of enhanced physiological reactivity in panickers. On this view, panickers report more sensations not because they excessively scan their bodies for unusual sensations but because they have either chronically high levels of arousal or large fluctuations in arousal. This would mean that their somatic sensations would be particularly strong and/or variable and would capture attention by virtue of these factors.

Ehlers and her associates have carried out a range of studies assessing the physiological reactivity of panickers in response to a variety of stressors including treadmill exercise tests, and panic induction techniques such as lactate infusion, carbon dioxide inhalation and hyperventilation. Ehlers (1993) reviewed these studies and concluded that 'Overall, our results do not support the hypothesis that enhanced physiological reactivity or fluctuations play a decisive role in panic symptoms.' (p.7). In view of this body of research findings, an explanation of the results of this study in terms of high physiological activity in panickers is not satisfactory.

Alternatively, it may be that the thought-sampling results can be accounted for in terms of a response bias rather than an attentional bias. It may be that panickers are not more aware of physical sensations but are merely more likely to report them because they are more anxious about them. It is plausible that this may be so in a clinical context where patients may be inclined to over-report physical symptoms in an attempt to elicit reassurance or sympathy. However this argument could apply equally to the depressed group who produced fewest somatic responses of all the groups. Furthermore, it seems an unlikely explanation with regard to the task used in this study since participants were aware that no therapeutic intervention would be offered within the research context. In addition, the task instructions explicitly requested that physical sensations of any kind should be recorded so non-panic participants were encouraged to report sensations they might usually ignore.

To summarise then, the thought-sampling task provided clear evidence of an attentional bias towards somatic sensations in individuals with panic and this was not present either in depressed patients or in healthy controls with high or low trait anxiety.

Sentence-completion task

The sentence-completion measure (Exner, 1973) was unsatisfactory in that it elicited very low levels of somatic self-focus (2.9% of total response). These levels were insufficiently high to allow a valid between group comparison on this measure and no comment could be made concerning Hypotheses 1. and 2.

There are two possible explanations for this failure to elicit somatic self-focus responses. The first possibility is that somatic sensations do not occur very often. This is unlikely given that in the thought-sampling task, somatic responses constituted 14.7% of the total response. The second possibility is that the items were sufficiently emotionally laden as to override any tendency towards somatic attention. Most of the items are quite emotionally demanding (e.g., 'It upsets me when...'), and it may be that the items focused attention on thoughts and feelings so strongly that few attentional resources remained for physical sensations. Consequently, if this is a correct interpretation of the results, in order to compare levels of somatic self-focus using this type of sentence-completion task, the sentence stems would need to be rather more neutral in content. Such a measure is not currently available.

This understanding of the results would also explain the contrast with the results of the thought sampling task, in which self-focus was measured during a repetitive task in

which thoughts and emotions were not especially salient. Thus, it may be that attention to somatic sensations tends to occur most strongly in contexts where attention is not strongly drawn towards either the external environment or towards thoughts and feelings. In other words, these findings may indicate that somatic self-focus is characteristic of panickers and contributes to the cycle of panic particularly in situations where attentional demands are fairly low. This is in fact supported by clinical evidence that panics are especially likely to occur in environments which fulfil this description such as queues, trains, buses and so on. These findings also echo those of Borden et al. (1993) who reported that somatic self-focus was elevated in panickers during baseline and relaxation phases of testing but not during a stressful cognitive task.

Body Consciousness Questionnaire

The thought-sampling task measured state somatic self-focus - it elicited evidence concerning awareness of sensations in a particular situation. The questionnaire measure of somatic self-focus (i.e., the Private Body Consciousness subscale of the BCQ) by contrast was a trait measure - it required participants to report to what extent they were habitually aware of attending to physical feelings. The results for this measure were somewhat different to those of the thought-sampling task. The mean private body-consciousness score of the panic/depression group was 14.6 (SD 4.4) out of a possible 16 and this was similar to the findings of Brown & Cash (1990) who reported a mean score of 14.0 (SD 3.9) in a group of non-clinical panickers. In the present study, the panickers scored significantly higher than non-anxious controls (mean 10.5, SD 3.6) but not

significantly higher than all other participants. That is, the panic/depression, depression and high trait anxiety groups all showed similar high levels of private body consciousness compared with the low trait anxiety group. Thus, panickers did report enhanced awareness of sensations compared to low anxiety individuals but this elevated somatic self-focus was not specific to the panic group. Both the depressed and high trait anxiety groups also reported high levels of somatic awareness (scores 14.0 and 14.1 respectively). Hypotheses 1. and 2. were therefore disconfirmed on this measure, in contrast to the results of the thought-sampling task. However, correlations of the BCQ score with BAI, BDI and STAI scores revealed that the results were in the predicted direction. That is, clinical anxiety correlated more strongly with private body consciousness than did depression or trait anxiety.

Summary of findings related to Hypotheses 1. and 2.

The results of the thought-sampling task strongly confirmed the predictions that panickers would be characterised by enhanced attention for physical sensations and that this would be specific to panic. The questionnaire measure showed elevated somatic self-focus in panickers compared with low anxiety controls, but not compared with all other participants or with the depressed group. As stated above, no conclusions relevant to these hypotheses could be drawn from the sentence-completion task. Thus, the prediction that elevated somatic self-focus would be characteristic of panickers but not other groups received partial confirmation. Given these mixed results, some comment is

necessary as to which measure may more accurately reflect whether panickers do in fact tend to display an attentional bias for somatic sensations.

There are several reasons for considering the thought-sampling task to be a more accurate measure than the Private body consciousness subscale of the BCQ. First, the Private subscale of the BCQ is very short (only five items) and as such its ability to discriminate is likely to be limited. It is plausible that the failure of the BDQ to differentiate the panickers may have been due to ceiling effects - the panic group, depressed group and high trait anxiety group all scored near the upper limit for this subscale of the BCQ (14 out of a possible total of 16). Because of the brevity of the subscale its content validity is also limited (i.e., it does not sample a wide range of the kinds of behaviours associated with the construct of private body consciousness). It is possible that if further items were added and/or finer gradations of response were included that the panickers would report enhanced bodily awareness compared to the other two groups. Second, the BCQ is a self-report measure. This kind of instrument may not produce an altogether accurate picture for cognitive processes which are semi-automatic, since respondents may not be fully aware of their own attentional processes. Finally, the difference in levels of somatic self-focus between panickers and other participants on the thought-sampling task (which used samples of actual thoughts) was highly statistically significant (panickers produced around three times as many somatic responses as the others). This seems such a robust finding that in view of the limitations of the BCQ Private subscale it is reasonable to assume that an attentional bias for somatic sensations is in fact characteristic of panickers but not healthy controls or depressed patients. As

discussed with reference to the sentence-completion task, this bias may only be manifest in contexts where other attentional demands are low.

4.1.2 Salience Of Physical Sensations - Effects On Somatic Self-Focus

One of the aims of the thought sampling task was to extend the theoretical understanding of panic by attempting to identify the precise conditions under which enhanced bodily awareness in panickers may occur. The intention was to manipulate the salience of sensations, increasing salience via physical exercise and decreasing it by means of a cognitive awareness induction. However, contrary to prediction no evidence of a differential effect on somatic self-focus was found for the panic group.

There are several possible interpretations of these negative findings. It may be that panickers tend to allocate excessive amounts of attention to their bodily sensations in all circumstances. That is, the tendency to direct attention inwards may be a relatively enduring characteristic of panickers which is not situation specific. There is some evidence for this view in the form of the results of two studies (McNally, Foa and Donnell, 1989; McNally, Riemann, Louro, Lukach & Kim, 1992) which found that an exercise manipulation did not affect performance on either a memory task or a Stroop task.

Alternatively, it may be that the exercise manipulation was not sufficiently demanding to induce strong sensations and that a more intense form of exercise would have produced different results. This interpretation is supported by the results of Pennebaker & Lightner (1980) who found that physical symptoms and fatigue during exercise were reported to be

greater when attentional focus was direct internally. Also, panic patients frequently report that environments or activities which affect physical well-being tend to trigger panic attacks. It is not unreasonable therefore, to suggest that the absence of an effect of the manipulation is likely to be due to an insufficiently powerful induction of sensations.

The task instructions required participants to step up and down on a 22 cm block for a two minute period 'at a pace which feels moderate'. McNally, Foa & Donnell (1989) used a similar task although the duration of the exercise was longer (five minutes). However, for the current study the shortened task was piloted on five individuals and was found to induce heart rate increases of 10-20 beats per minute, together with cardiac sensations and breathlessness. Problems with the efficacy of the manipulation were therefore not anticipated.

Participants were not encouraged to exercise more strenuously than this for two reasons. First, it was considered desirable to match the strength of the two inductions (cognitive awareness and exercise), since if one were to be more powerful than the other, any effects might be attributable to this, rather than to the nature of the induction. The second reason was that clinical experience would indicate that strenuous exercise would be likely to induce a panic attack in a significant proportion of the panic patients. Because no measure of physiological arousal was incorporated into the design it is not possible to be certain of the efficacy of the exercise induction in increasing physiological sensations in the participants tested. This would have involved some form of physiological monitoring such as measures of heart rate and skin conductance but even these would not have

produced unequivocal results because of differential reactivity of individual participants to the experience of being attached to monitoring equipment.

Finally, the experimental task may itself have been sufficiently anxiety provoking to induce significant physiological arousal even in the cognitive awareness induction. Thus, there may have been a ceiling effect with the exercise induction adding little to the baseline arousal induced by the experimental context. Again, some form of physiological monitoring may have been useful in eliminating this possibility.

Thus, there are several possibilities as to the reason for the lack of a robust effect of the exercise manipulation with regard to somatic self-focus. Without further research in which levels of arousal are more carefully controlled for and monitored, a definitive conclusion on this issue is not possible.

4.1.3 Theoretical Implications Relevant To Somatic Self-Focus

The results of this study demonstrate that there is some empirical support for the attentional component of those models of panic which postulate a role for enhanced somatic attention (Beck, 1988; Belfer & Glass, 1992; Eysenck, 1992, Goldstein & Chambless, 1978). Despite the equivocal findings from the BCQ, for the reasons discussed earlier it seems appropriate to conclude that panickers are characterised by an attentional bias for somatic sensations at least in some contexts.

All of the models discussed in Section 1.2.2 suggest that the panic-prone individual is hyperalert for any signs of arousal which may herald a physical or mental catastrophe (panic attack, heart attack, loss of control etc.). This hypervigilance, it is suggested,

increases the likelihood that a panic will occur because the individual in noticing minor physical sensations has many opportunities to catastrophise and is ill-equipped (because of erroneous beliefs) to dismiss catastrophic cognitions once attention is directed towards elevated arousal .

Thus far, the account offered by the cognitive models of panic is rather similar to Wells & Matthews' (1994) self-regulatory theory of self-focus. This would suggest that if an unusual sensation is detected whilst attention is focused on the body, the panicker would become aware of a discrepancy between actual bodily sensations and those which are believed to be 'normal' and would become motivated to reduce this discrepancy (by seeking medical help, escaping from the situation, taking medication and so on). Thus, the attentional bias would interact with the individual's beliefs about the nature of certain physical sensations to produce anxiety. This would then exacerbate physiological symptoms via activation of the parasympathetic nervous system, resulting in even greater self-focus and further activation of catastrophic cognitions. In this way, a spiralling cycle of anxiety would be initiated. The findings of the present study indicate that panickers are characterised by excessive somatic attention even outside panic episodes and such a cycle of anxiety would therefore be initiated frequently. These accounts of the role of self-focus in panic certainly have clinical face validity. However, the literature on the effects of self-focus allows us to suggest a rather more comprehensive and detailed model of the role of somatic attention. Six empirically documented phenomena related to self-focus (as described in Section 1.3.3) could plausibly be important in initiating and/or exacerbating anxiety attacks.

1. Intensification of sensations and affect

The intensification of anxious affect produced by self-focus clearly has implications when thinking about how panic attacks may come to develop and be maintained. If, in persons who are chronically self-focused (or who become self-focused in response to anxiety) any anxious emotion (together with the associated physiological arousal) is intensified and magnified to a greater degree than for persons who tend to focus externally then we would expect that self-focus could contribute to panic in two ways. Firstly, chronically self-focused individuals would more frequently reach the threshold for finding their sensations worrying because those sensations would be experienced with alarming intensity.

Secondly, the intensifying effects of somatic self-focus may influence cognitive factors - panickers would be more likely to interpret their experience particularly catastrophically in virtue of being aware of a subjectively extreme affective/physiological experience. Self-focus would therefore contribute to an explanation of why some individuals tend to misinterpret their bodily sensations rather frequently - a pivotal feature of both Beck's (1988) and Clark's (1986, 1988) models of panic. This suggestion is supported by two studies by Wells (1991) who found that self-focus produced increases in state anxiety and that these increments in anxiety were mediated by enhanced perceptions of somatic arousal. In the second study, it was reported that participants who were required to focus attention on bodily sensations experienced greater increases in state anxiety before exposure to a stressful film than participants who were asked to focus externally

2. Decrements in task performance

Excessive self-focus would be likely to produce performance deficits because attentional resources are diverted away from the task and efficient coping would be impaired (Wine, 1971). There are some studies which suggest that self-focus is only detrimental in the context of low expectancies of success (e.g., Strack, Blaney, Ganelen & Coyne, 1985) but in any case, panickers are likely to have low expectancies of success when confronted with a feared situation. The individual with panic then, when confronted with a trigger situation (e.g., a supermarket checkout queue), is likely to become caught up in a cycle of anxiety and self-focus. This may in turn produce impairments in performance (e.g., giving the wrong change to the cashier) leading to progressive feelings of being out of control and so enhancing escape and avoidance behaviours.

3. Enhancement of avoidance behaviour

The intensification of experience induced by self-focus also makes sense of Scheier et al.'s (1981) finding that self-focused phobics were more likely to show avoidance behaviour. It is plausible that the intensifying effects of self-focus on anxiety may contribute to enhanced avoidance behaviour which will further exacerbate anxiety. It is not difficult to see how this aspect of self-focus might contribute to a cycle of panic given that the cognitive models of panic discussed in Section 1.2.2 emphasize cycles of avoidance and spiralling affect.

4. Attributions

Excessive somatic attention may have deleterious effects on the nature of attributions made by panickers. Tversky & Kahneman (1973) showed that increasing the salience of an object increases the extent to which it influences inferential processes. Thus, where somatic aspects of the self (i.e., physical sensations) are salient, perceptions of the importance of these aspects in interpreting a given situation are likely to be exaggerated. For example, sensations of breathlessness are likely to excessively influence attributions made by the panicker regarding the safety of entering a situation where medical help would be unavailable.

Beck (1988) reports evidence that panickers do appear to experience great difficulty in dismissing the importance of their physical sensations when interpreting their reaction to a situation and offers an attention-based explanation of this phenomenon:

“In addition to regarding their fears as completely plausible, the panic patients in our study...seemed to be incapable of accessing relevant information that could be utilised to neutralize their catastrophic ideation, and thereby modify a panic attack....When they shift focus from their symptoms and refocus on statements from another person, the corrective information becomes more salient or perhaps, the ‘closed system’ characteristic of panicky thinking becomes more permeable to external information.”
(p.99).

The suggestion is that the panicker focuses excessive amounts of attention on belief-congruent information from internal sources, (e.g., palpitations) and processing of belief-

incongruent information from external sources is consequently impaired, unless external information is made particularly salient.

5. Accuracy of Self-report

Self-focus tends to make people more aware of salient dimensions of the self and they are more likely to report accurately on those dimensions if they are self-focused whilst responding. Hence, physical sensations are likely to be perceived with greater accuracy when the focus of attention is internal - Pennebaker & Lightner (1980) showed that individuals who focused internally during exercise reported greater fatigue and more physical symptoms than those focusing externally. Similarly, Gibbons & Gaeddart (1984) demonstrated enhanced accuracy in perceptions of arousal in self-focused subjects.

The self-focus literature suggests then that somatic self-focus could contribute to increased accuracy in perceptions of arousal and so activate catastrophic cognitions. However, some caution is necessary on this point in view of the mixed results of studies on interoceptive acuity in panickers (Ehlers, 1993).

6. Self-Focusing Effects Of Anxiety

In addition to the above effects of self-focus, we can postulate a positive feedback loop in which anxiety and self-focus mutually reinforce one another. Thus far, the theoretical discussion has explored the anxiogenic effects of self-focus. However, there is also evidence that arousal tends to induce self-focus (Wegner & Giuliano, 1983) and we can therefore assume that anxiety (which involves physiological arousal) will create enhanced

self-focus. Panickers may therefore become caught in a vicious cycle whereby self-focus initiates anxiety which in turn exacerbates self-focus. As anxiety rises, physical sensations would become stronger and the panicker would tend to become more and more somatically self-focused. This intense self-focus would continue to exert an anxiogenic influence until the cycle is interrupted. The latter could be achieved in one of three ways - the physical sensations may cease (e.g., after taking medication) or reassurance may become available (e.g., via the presence of a doctor) or a sufficiently powerful distraction may occur (e.g., the newspaper contains an interesting story).

Summary

The results of the present study in demonstrating enhanced somatic self-focus in patients with panic disorder (as compared with both depressed patients and healthy controls) are an encouraging first step in validating the suggestion that self-focus may contribute to panic in various ways, including effects on task performance, attributions, affect and avoidance. However, whilst these proposed roles of somatic self-focused attention are firmly rooted in the empirical literature on self-focus, the causal pathways posited have yet to be demonstrated with regard to panic disorder.

4.1.4 Therapeutic Implications Relevant To Somatic Self-Focus

The results of this study provide some evidence that individuals with comorbid panic disorder and depression exhibit elevated levels of self-focus at least in some contexts. Elevated cognitive self-focus would be expected in view of the presence of depression.

What is new in this study is the evidence of enhanced somatic self-focus in addition to the cognitive self-focus. One limitation of many studies of cognitive biases in psychological disorder is that although differences are found between patient groups and others, these differences are statistically but not clinically significant. This was not so in the present study - the results of the thought-sampling task are particularly important in that they show that (at least in some situations) over a quarter of the thoughts reported by panickers concern their own sensations and this is around three times the level shown by other individuals. This constitutes a very large effect and these exceptionally high levels of somatic self-focus (in addition to elevated cognitive self-focus) may play a particularly powerful role in the difficulties of these patients, in view of the numerous deleterious effects of self-focus discussed in Section 1.3.3.

It is worthwhile therefore to consider what implications these findings may have for the treatment of this kind of patient. The usual package of cognitive-behavioural treatment for such patients tends to include relaxation training, distraction, cognitive challenging techniques and exposure to interoceptive cues and feared environments (e.g., Beck, 1988, Hawton, Salkovskis, Kirk & Clark, 1989, Chapter 3.). It may be that the efficacy of such approaches would be enhanced by the inclusion of some form of attentional retraining. On the basis of the literature on the effects of self-focus, the potential benefits of learning to redirect attention outwards could include the following:

- reduction in the intensity of anxious affect
- reduction in perceived intensity of somatic symptoms of anxiety
- increase in coping ability

- freeing up of attentional resources to allow belief-incongruent information to be processed
- increase in coping appraisals due to reduction in emotional intensity
- reduction in avoidance behaviour due to lower levels of affect/increase in coping appraisals

This is precisely the kind of rationale employed by Wells (1990) who devised an attentional training procedure designed to reduce levels of self-focused attention.

Distraction is often presented as one component of anxiety management packages but the procedures used by Wells were more sophisticated than the somewhat crude techniques often suggested (e.g., counting backwards in threes). Wells used auditory-based external attention tasks intended to teach skills related to selective attention, attentional switching and divided attention. The rationale for the inclusion of these elements was that problems may arise in terms either of the degree of attention focused on the self, or the rigidity of the direction/content of attention, or the selectivity of attention. It should be noted that the aim of this kind of attentional retraining is not that the patient should completely refrain from self-focus but rather, that the degree of self-focus should be moderated and flexibility of attention should be increased. The effects of this procedure were evaluated in a single case study of a patient with panic disorder (Wells, 1990). It was found that the attentional training reduced self-report anxiety and eliminated panic attacks. By contrast, when the treatment was changed to a relaxation training, anxiety and panic attacks increased. The attentional training was then reinstated and the patient's symptoms again improved and she remained panic-free over a 12-month follow-up period.

A further series of three single case studies using this procedure with two panic patients and one social phobic have also yielded promising results and were particularly interesting in that clinically significant reductions in the degree of belief in catastrophic misinterpretations were noted (Wells, White & Carter, in preparation, cited Wells & Matthews, 1994 p. 241). Whilst it would clearly be premature to form definite conclusions on the basis of these single case findings, it seems that there is certainly some justification for this kind of approach to be developed and evaluated further. Such an approach could be applied equally well to biases in both cognitive and somatic self-focus (since the essence of the attentional retraining consists in learning to direct attention outwards).

It may seem paradoxical that teaching patients to direct attention away from the self is proposed as having therapeutic value, given that many of the commonly used cognitive-behavioural techniques (e.g., thought diaries, repeatedly rating anxiety during graded exposure) rely on patients becoming more rather than less self-aware. However, one element common to these traditional techniques and the attentional training devised by Wells is that the patient is encouraged to develop skills which enable him/her to exit the cycle of unhelpful thoughts and behaviours as soon as possible. That is, Wells's procedures aim to modify excessive self-focus, whereas other therapeutic techniques aim to adjust the discrepancy-reduction activities prompted by self-focus (by modifying inappropriate cognitions, teaching alternative coping skills etc.) The latter approach seems to be the rationale behind the Attentional Control Training described by Teasdale, Segal & Williams (1995) which is based on techniques of mindfulness meditation. The

patient is encouraged to maintain attention on a particular focus to 'anchor' him/herself in the present moment. This focus can be external or internal but the patient's own breathing (an internal focus) is often used. Patients are encouraged to be highly aware of the reality of the present moment and the nature of their own subjective experience but without evaluating it or engaging in any kind of elaborative processing (worrying, problem solving etc.). Thus, self-focus is actually encouraged, but the patient is taught to deliberately refrain from engaging in the discrepancy-reduction part of the cycle. Although Teasdale et al. (1995) recommend the addition of therapeutic techniques focused on modifying catastrophic beliefs, a meditation-based anxiety management programme alone was found to produce therapeutic gains in one study (Kabat-Zinn, Massion, Kristeller, Peterson, Fletcher, Pbert, Lenderking & Santorelli, 1992). It remains as an empirical question whether modification of the frequency and rigidity of self-focus or this kind of meditation-based approach (either with or without techniques aimed at anxiogenic beliefs and behaviours) holds the greatest therapeutic benefit for patients with panic disorder.

4.1.5 Cognitive Self-Focus In Panic Disorder

As discussed in Section 1.4.3., there are three possibilities as to the effects of panic on levels of cognitive self-focus in depressed individuals:

1. Cognitive self-focus is not affected
2. Elevated somatic self-focus diverts attention away from cognitive self-focus
3. The increased distress associated with comorbidity may produce elevated cognitive self-focus

If cognitive self-focus were found to be higher or lower than would be expected from the level of depression this would need to be integrated into theoretical formulations of the interaction between depression and panic. However, in the present study, comparison of the panic/depression group with the depression only group revealed that cognitive self-focus was very similar in both groups for the thought-sampling task, the sentence-completion task and the questionnaire (SCS). As would be expected from previous studies, both patient groups exhibited significantly higher levels of cognitive self-focus than both high and low trait anxiety controls. Thus, the evidence from all three measures consistently indicated that cognitive self-focus was enhanced for groups with equivalent high levels of depression, but the presence of panic disorder did not either decrease or increase levels of cognitive self-focus. Thus, elevated somatic self-focus did not appear to divert attention away from thoughts and emotions but neither did comorbidity of panic and depression produce an additive effect on this variable.

Because a group of patients with pure panic disorder was not included in this study, it is not possible to comment on how panic disorder alone might affect cognitive self-focus. It would be reasonable to expect that panic even without depression would produce elevated cognitive self-focus since previous research has shown enhanced levels in individuals with disorders other than depression (e.g., social phobia, Hope & Heimberg, 1988). The results of the correlational analyses are pertinent to this issue. These presented mixed results - the thought-sampling and sentence completion measures indicated that clinical anxiety (BAI score) was not associated with level of cognitive self-focus, whilst on the SCS quite a strong correlation was found ($r = .33, p < .01$).

While the design of the present study limits the theoretical implications of the findings on cognitive self-focus to patients with concurrent depression and panic disorder, the results are nonetheless potentially therapeutically useful, since previous research indicates that there is a high rate of comorbidity between the two disorders (as discussed in Section 1.2.1). The author's clinical experience also indicates that a high proportion of the panic patients referred to NHS clinical psychology departments in the UK suffer from some degree of depressive symptomatology.

Cognitive self-focus has a number of effects which could contribute to the cycle of panic including intensification of affect, increased accessibility of self-schemes, attributional bias, enhancement of avoidance, impaired coping and so on (see section 1.3.3.) and this observed tendency to focus on thoughts and emotions may therefore need to be addressed in treatment for maximum benefit. There is some evidence to suggest that attentional refocusing may attenuate cognitive biases resulting from self-focus. For example, Pyszczynski, Holt & Greenberg (1987) manipulated focus of attention manipulated using two tasks. It was found that depressed participants who performed the self-focusing task rated negative events as more likely to happen to themselves than did a non-depressed group, whereas depressives who performed a task designed to induce external focus were no more pessimistic than non-depressed individuals.

4.1.6 Eysenck's Cognitive Vulnerability Theory

As described in Section 1.2.2., Eysenck (1992) suggested that healthy individuals with high trait anxiety display cognitive biases (particularly in terms of attention) which

predispose them to the development of anxiety disorders. That is, even before the onset of psychological disorder, individuals with high trait anxiety are hypervigilant for relevant types of threat information. In the case of panic disorder, one form of relevant threat information is likely to consist of somatic sensations.

The cross-sectional design of the present study does not allow an assessment of the suggestion that cognitive bias associated with high trait anxiety constitutes a vulnerability factor for clinical anxiety states. However, the design does allow the comparison of self-focus in non-clinical populations with high and low trait anxiety. Thus, one aim was to identify whether the kind of self-focusing attentional bias hypothesized to be associated with panic disorder is also associated with high trait anxiety. If so, this would confirm one aspect of Eysenck's model.

The evidence for a significant attentional bias in the high trait anxiety group as compared with the low trait anxiety group was equivocal. The mean self-focus scores (both somatic and cognitive) for the high anxiety controls were higher than those of the low anxiety group on all measures but, with the exception of the Private Body Consciousness Subscale, these differences were nonsignificant. That is, the high anxiety group seemed to be performing in a somewhat similar fashion to the low anxiety group. However, the scores of the high trait anxiety group (with the exception of somatic self-focus in the thought-sampling task) were also not significantly different from those of the patient groups. It appears therefore, that the high trait anxiety group showed intermediate levels of self-focus (both cognitive and somatic). Partial correlations (controlling for depression and anxiety) however revealed significant correlations of STAI score with

cognitive self-focus on the sentence completion and SCS and for somatic self-focus on the BCQ, giving some support to Eysenck's (1992) cognitive vulnerability hypothesis.

These equivocal results with regard to attentional bias in high trait anxiety mirror the rather inconsistent results of previous studies, some of which report such a bias (e.g., MacLeod & Mathews, 1988; Mogg, Bradley, & Hallowell, 1994; Mogg & Marden, 1990) whilst others report negative findings in this regard (e.g., Mogg, Mathews, Bird & MacGregor-Morris, 1990; Mogg, Mathews, May, Grove, Eysenck & Weinman, 1991). Two studies suggest that attentional biases may only be present in high trait anxiety individuals in the context of prolonged life stress. Mathews & MacLeod (1988) reported an attentional bias for threat stimuli in high trait anxiety participants in the context of examination stress. Mogg et al. (1994) replicated these results and additionally found that the bias was not present under conditions of laboratory-induced stress. Eysenck (1992) suggests that cognitive biases may exist as latent vulnerability factors which become operative only in response to stressors. In the present study, ongoing life stressors were not assessed and it is possible therefore that potential attentional bias in the high trait anxiety group remained latent because they were not experiencing a sufficiently high level of stress.

4.2 Methodological Critique

Design

The design of this study incorporated two features which formed significant improvements on previous studies. These included:

1. The use of a depressed control group. This was a major improvement on previous studies of self-focus in panic in that it allowed the exclusion of depression as an explanation for any positive results.
2. Use of several measures of self-focus in the same study. As is evident from the present study, results do not necessarily generalise over different types of measure. The few previous studies have not compared performance on different measures of self-focus in the same sample, therefore making it difficult to compare studies using differing measures on different populations.

One possible drawback of the design of the present study was the use of a group of panickers with concurrent depression. Because the panickers used in this study were also depressed, it could be argued that comorbidity or an interaction of depression with panic may have been at least partly responsible for the nature of the results. However, there were clear advantages to using depressed panickers and the substitution of a pure panic group would not have been satisfactory for the reasons discussed in Section 1.2.1. However, if time and resources had allowed, the addition of a pure panic group would have been useful in clarifying these issues further.

Measures

Thought-Sampling Task

Overall, the thought-sampling task worked well - respondents were able to report enough thoughts for a satisfactory sample to be obtained and levels of each type of response were

sufficiently high to allow valid between group comparisons. However, there were two areas in which the task was not wholly satisfactory.

First, as discussed above, it was not clear that the induction of physical sensations was sufficiently powerful for the hypotheses to be adequately tested and some form of physiological monitoring would have been desirable to eliminate this lack of clarity. Second, the task required participants to write down their thoughts and some participants found this difficult or disturbing because of low confidence with literacy (despite reassurances from the experimenter). This type of task has been used with success in other studies (reviewed by Singer & Kolligian, 1987) and significant difficulties were therefore not anticipated. An alternative method would have been to record participants' verbal accounts of their thinking. This method was used by Borden et al. (1993) with an American sample and was considered for the present study. It was felt however, that a British sample may find giving a verbal report of their thoughts rather embarrassing and intrusive and the choice was therefore made to use a written task. On balance, this was probably the right choice - ninety per cent of participants produced 14 or more responses and no participant produced fewer than five responses, indicating that even the least confident were able to give some indication of their thinking. Also, although some participants expressed worries about writing their thoughts, none appeared seriously distressed.

Sentence-completion

The sentence-completion measure was unsatisfactory for the purposes of this study in that it elicited very low levels of somatic self-focus. Possible reasons for this have been

discussed above. It was also noted as a matter of some concern that Exner's (1973) sentence-completion task produced distress in some participants. This problem was not anticipated as previous studies using this measure have not reported any adverse effects and the items do not require in-depth responses. Nevertheless, around seven per cent of participants (three patients and two controls) commented that they had found the sentence-stems emotionally distressing to complete and the measure precipitated crying in three individuals.

BCQ

The Body Consciousness Questionnaire was used to assess trait somatic self-focus as this is the only available measure. However, as discussed above, the subscale most relevant to the hypotheses (Private Body Consciousness) is not ideal. It is very short and this may mean that it is relatively insensitive to gradations of somatic self-focus. A more comprehensive instrument would certainly have been preferable.

SCS

This is a well-used measure with good psychometric properties. Scheier & Carver (1985) developed a simplified version of the SCS on the grounds that that some previous studies had reported difficulties with the administration of the SCS - specifically that respondents had been unable to understand the wording of some items and that this had caused distress. However, the decision was made to use the original version both because the psychometric properties of the revised version have not been well-documented and because potential participants with serious language or literacy problems would have been

excluded (because the thought-sampling task required a minimum standard of linguistic competence). In fact, no significant difficulties with administration were noted.

Sample

The nature of the samples accessed for each group was considered to be satisfactory. The groups performed as expected on the screening measures and were adequately matched for age, sex ratio and educational level. The sample size of eighty participants was also considered to be satisfactory on the basis of the power calculations, although obviously, a larger sample might have allowed smaller effect sizes to be demonstrated.

4.3 Directions For Further Research

In the light of the previous discussion, the following suggestions for further research can be made:-

1. The findings of the thought-sampling measure that panickers are characterised by excessively high levels of somatic self-focus confirms the results of the study by Borden et al. (1993) and eliminate depression as a possible explanation. Given that this result is pertinent to both theory and clinical practice, it would be useful to explore in more detail the precise nature of this attentional bias. In particular, it would be interesting to investigate whether such a bias is relatively context independent or whether the salience of somatic versus other types of information exerts a significant moderating influence. In the present study, it was not possible to be certain of the reasons for the weak influence of the exercise manipulation on reported somatic awareness. Similarly, it was not altogether

clear why somatic responses were so infrequent in the sentence-completion task. Future work would need to clarify which types of contexts tend to either elevate or lower somatic self-focus.

The present study assessed only the frequency of self-focused attention. No task was included which aimed to measure the flexibility of attention. It is conceivable that this may also be an important parameter of attention. That is, in addition to frequently scanning the body for unusual somatic sensations, panickers may have rather rigid attentional patterns, finding it difficult to shift attention away from the body.

2. As stated earlier the conclusions of the present study relate primarily to concurrent panic and depression. It would be helpful to replicate the findings regarding both somatic and cognitive self-focus for pure panic disorder as this would enable much more precise theoretical conclusions to be drawn.

3. The present study demonstrated elevated levels of somatic self-focus. However, the causal roles of somatic awareness suggested in the discussion of theoretical implications whilst plausible, have yet to be demonstrated empirically.

4. The therapeutic applications of the findings merit further research, particularly in the light of the positive results of the single case studies of attentional retraining in panickers reported by Wells (1990, 1994).

4.4 Summary

The results of this study provide some empirical validation of the attentional component of current cognitive models of panic. That is, when asked to record spontaneous thoughts, patients with panic disorder were found to report significantly more thoughts indicative of

attention to physiological sensations compared with other participants. Unlike previous studies, depression was controlled for using a non-panicking depressed patient group and this allowed the elimination of depression as a potential explanation for the observed enhanced somatic self-focus in the panickers. It is plausible that this somatic hypervigilance contributes to the maintenance of panic attacks in virtue of giving many opportunities for catastrophic misinterpretation of sensations to occur. However, in addition, somatic self-focus may exacerbate the symptoms of panic disorder via effects on the intensity of emotion, attributions, decrements in task performance, avoidance behaviour and processing of belief-incongruent information. Panic disorder did not appear to affect the frequency of cognitive self-focus when level of depression was controlled for. There is some evidence from single case studies that modification of excessive self-focus can produce significant therapeutic gains in patients with panic and the results of the present study suggest that it would be worthwhile to pursue the development of this type of treatment approach.

In addition, the study tested Eysenck's (1992) theory that individuals with high trait anxiety display cognitive biases which may render them vulnerable to the development of psychological disorder in conjunction with negative life events. In the current study, evidence for an attentional bias associated with high trait anxiety was equivocal - high anxiety participants did tend to show higher self-focus (both cognitive and somatic) than a low anxiety group but these differences did not reach significance, possibly because levels of life stress were not taken into account.

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Appendix 1.

DSM IV Diagnostic Criteria

DSM IV (American Psychiatric Association, 1994)

Panic Disorder

A. Both (1) and (2)

1. Recurrent unexpected Panic Attacks (using DSM IV criteria for Panic Attack)

2. At least one of the attacks has been followed by one month (or more) of one of the following:

(a) persistent concern about having additional attacks

(b) worry about the implications or consequences of the attack

(c) a significant change in behaviour related to the attacks.

B. Presence/ Absence of Agoraphobia (either was acceptable for the present study)

C. The Panic Attacks are not due to the physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hyperthyroidism).

D. The Panic Attacks are not better accounted for by another mental disorder such as Social Phobia (e.g., occurring on exposure to feared social situations), Specific Phobia (e.g., on exposure to a specific phobic situation), Obsessive-Compulsive Disorder (e.g., on exposure to dirt in someone with an obsession about contamination), Posttraumatic Stress

Disorder (e.g., in response to stimuli associated with a severe stressor), or Separation Anxiety Disorder (e.g., in response to being away from home or close relatives).

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Major Depressive Disorder

At least five of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure:

- (1) depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful).
- (2) markedly diminished interest or pleasure in all or almost all activities most of the day, nearly every day (as indicated by either subjective account or observation made by others).
- (3) significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day.
appetite
- (4) insomnia or hypersomnia nearly every day.
- (5) psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
- (6) fatigue or loss of energy nearly every day.
- (7) feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).

(8) diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).

(9) recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt, or a specific plan for committing suicide.

B. The symptoms do not meet criteria for a Mixed Episode

C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).

E. The symptoms are not better accounted for by Bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than 2 months or are characterised by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms or psychomotor retardation.

Appendix 2.

Outline Of Semi-Structured Diagnostic Interview

Participants were asked whether they had been experiencing each of the key diagnostic symptoms for Panic Disorder and for Major Depressive Disorder. Where answers were insufficiently clear, the interviewer followed up with a probe such as 'Can you tell me a little more about that?' .

After asking about each of the criteria for each disorder the interviewer re-stated the participant's responses with regard to the key criteria in order to check that an accurate picture had been obtained (e.g., So if I've understood you correctly, you have been having these panic attacks about twice a week for the last year and you've stopped going on buses and tubes because you worry about having another attack. Is that right?).

The interviewer then checked for the presence of other disorders using the following probe 'Have you been experiencing any other difficulties?'. This was followed up with further questioning if the participant acknowledged other symptoms.

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89 WAVERLEY ROAD, ST. ALBANS
HERTFORDSHIRE, AL3 5TL

Telephone 0181 864 3232
Fax 0181 864 3233



0181 359 2688

WEST HERTS COMMUNITY
HEALTH NHS TRUST
LOCAL RESEARCH ETHICS
COMMITTEE

8 July 1996

H Kirby
Dept of Clinical Psychology
Philips House (UCL)
Torrington Place WC1E 4BTR

Dear Helen

Ethical Submission No 2206: Role of self-focussed attention in panic and depression

The above project has been considered and approved by the Harrow Research Ethics Committee. It would be appreciated if, in any future correspondence relating to this project or in any entry made in case-notes about procedures undertaken in the course of this study, you would refer to it as **EC 2037**.

The Committee wishes to remind all investigators of the importance of keeping General Practitioners informed of research work affecting their patients particularly when the patient's involvement continues after discharge from hospital.

Yours sincerely,

Brian Saperia
SECRETARY - HARROW RESEARCH ETHICS COMMITTEE

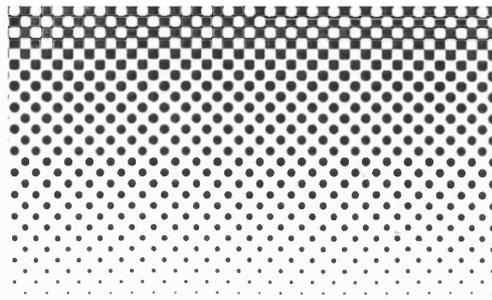
The Committee would appreciate being informed of the conclusion and outcome of the study. Enclosed for your information is a list of LREC members.

Yours sincerely

Pauline Southworth (Mrs)
Chairman

HEAD OFFICE
99 WAVERLEY ROAD, ST. ALBANS
HERTFORDSHIRE, AL3 5TL

Telephone: 01727 811888 ext 4811
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WEST HERTS COMMUNITY
HEALTH NHS TRUST
LOCAL RESEARCH ETHICS
COMMITTEE

27 June 1996

Please quote ref:WH012/96 in all correspondence

Ms Helen Kirby
13 Park Crescent
HARROW WEALD
Middx HA3 6ER

Dear Ms Kirby

WH012/96: The Role of Self-Focused Attention in Panic Disorder and Depression

Thank you for your application requesting Ethics Committee approval for your research project. I feel able to grant Chairman's approval for this study. This decision will be ratified by the full Committee at its next meeting on 8 July 1996. However, one point of concern was whether adequate measures would be taken to ensure confidentiality and security of patient information and I would be grateful to receive reassurance on this point.

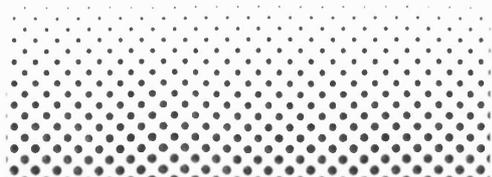
I wish you every success with your study but would be grateful if you could take note of the following:

- (i) It is the responsibility of the investigator to notify the LREC immediately of any information received or of which you become aware which would cast doubt upon, or alter, any information contained in the original application, or a later amendment application, submitted to the LREC and/or which would raise questions about the safety and/or continued conduct of the research.
- (ii) The need to comply with the Data Protection Act 1984.
- (iii) The need to comply, throughout the conduct of the study, with good clinical research practice standards.
- (iv) The need to refer proposed amendments to the protocol to the LREC for further review and to obtain LREC approval thereto prior to implementation (except only in cases of emergency where the welfare of the subject is paramount).
- (v) The requirement to inform the LREC should the research be discontinued or any subject withdrawn.

The Committee would appreciate being informed of the conclusion and outcome of the study. Enclosed for your information is a list of LREC members.

Yours sincerely

Pauline Southworth (Mrs)
Chairman



Our Ref: KS/jlr

28 June 1996

Ms Helen Kirby
13 Park Crescent
Harrow Weald
Middlesex HA3 6ER

Dear Ms Kirby,

Re: Self-focused attention in panic disorder and depression

Thank you for sending the Committee copies of the consent form and volunteer information sheet for the above proposed research study. I can see no problems with this, and am now happy to take Chair's action for you to proceed with the study.

Yours sincerely



Mrs Kay Sonneborn
Chairman
Local Research Ethics Committee

KENSTINGTON, CHELSEA & WESTMINSTER
HEALTH AUTHORITY

ST MARY'S LOCAL RESEARCH ETHICS COMMITTEE

St Mary's Hospital

Acrow East, South Wharf Road, London W2

tel: 0171 725 6514 fax: 0171 725 1860

30 April 1996

Helen Kirby
13 Park Crescent
Harrow Weald
Middlesex
HA3 6ER.

Dear Miss Kirby

3345 The role of self focused attention in panic disorder and depression
ETHICS COMMITTEE NUMBER MUST BE USED IN ALL COMMUNICATION

I am pleased to say that the above project has now been approved by the St Mary's Local Research Ethics Committee. This approval is given on the understanding that the researcher(s) will observe strict confidentiality over the medical and personal records of these patients. It is suggested that this be achieved by avoidance of the subject's name or initials in the communication data. In the case of hospital patients, this can be done by using the hospital record number and in general practice, the National Insurance number or a code agreed with the relevant GP.

It should be noted :

1. The Ethics Committee's decision does not cover any resource implications which may be involved in your project.
2. The Ethics Committee should be informed of any untoward development, amendments or changes in protocol that may occur during the course of your investigations.
Please quote the above EC number in any correspondence.
3. Where research involves computer data, this may be subject to the Data Protection Act.

KENSINGTON, CHELSEA & WESTMINSTER HEALTH AUTHORITY

4. The GPs of any volunteers taking part in research projects should be aware of their patients' participation.
5. Every care should be taken to obtain the volunteer's informed consent to participate in the research project with the necessary help being provided for volunteers with language difficulties.

May I take this opportunity of informing you that, in accordance with guidelines set down by the Department of Health and the Royal College of Physicians, we will require details of the progress of your project in twelve months' time and every year thereafter for the life of the project, and I will send you the appropriate form for completion.

If you have need to contact us further regarding your project, please quote the EC number as specified in the heading.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Dr Rodney Rivers', written over a large, faint, stylized watermark or background mark.

Dr Rodney Rivers
CHAIRMAN TO ST MARY'S LOCAL RESEARCH ETHICS COMMITTEE



North Herts NHS Trust

Extension:

Our Ref:

Date:

Ms. H. Kirby,
Clinical Psychologist in
Training,
13 Park Crescent,
Harrow Weald,
Middlesex. HA3 6ER

RO/JC/31/96

29th July, 1996

Dear Ms. Kirby,

**Re: The role of self-focused attention in panic and depression
Protocol No. 31/96**

Thank you very much for re-submitting your protocol which was considered at a recent meeting of the North Hertfordshire Ethical Review Committee.

The Committee is happy to give approval for this work to be undertaken.

Kind regards.

Yours sincerely,

Mr. R. O'Connor,
Convener,
North Herts Ethical Review Committee.

Please quote protocol number on all correspondence

Appendix 4.

Participant Information Sheet

RESEARCH ON THOUGHT PATTERNS IN PANIC DISORDER

You have been asked to take part in a study on Panic Disorder. This sheet aims to give the information you need to help you decide whether you wish to do so. Please ask if you would like more information.

Who is doing the research?

Dr. Philip Tata, Paterson Centre, St. Mary's Hospital

Helen Kirby, University College, London

The researchers are both NHS psychologists, working in cooperation with the Department of Clinical Psychology at Northwick Park Hospital. An ethical review has been carried out by the Northwick Park research committee to safeguard the interests of patients.

What are the aims of the research?

Panic disorder is a relatively common psychological problem. Sufferers experience frequent distressing panic attacks and these can place severe limits on a person's ability to lead a normal life. The aim of this study is to gain a clearer understanding of the characteristics of people who have panic attacks. This will help in designing more effective psychological treatments for panic.

We are particularly interested in patterns of thinking, since these are known to play a large part in a number of psychological disorders. This study will compare people who have panic attacks with those who do not and we expect to find characteristic patterns of thinking in people who panic. These patterns will help us understand why some people panic repeatedly and this will guide the development of new treatments.

We hope that you will consider helping us to develop this new understanding of panic by taking part in the study.

What will taking part in the study involve?

When you come to the Clinical Psychology Department (we can pay your travel expenses if necessary) the researcher will first find out about your symptoms by means of a brief interview and several short questionnaires. We will then ask you to perform two tasks which involve giving samples of your thinking. One of these tasks involves completing half-finished sentences with your own thoughts. The second task aims to take samples of your thoughts in different conditions. Various parts of this task will involve listening to some music, focusing on your own thoughts, doing some very gentle exercise (lasting 2 minutes only) and writing down your thoughts. The questionnaires and tasks will take around an hour to complete.

Because we do not want to bias your thinking we have not given detailed information about the particular types of thinking we are interested in. However, after you have done the tasks the

researchers will be available to explain the research in more detail and to answer any other questions you may have. You may indicate on the consent form if you wish to receive a summary of the results of the study.

Any information you may give will be strictly confidential.

Are there any possible risks?

It is possible (though unlikely) that you may experience some troubling thoughts during the tasks. You are free to stop the tasks at any time if you feel uncomfortable. We may interrupt the tasks if we feel you are becoming upset. There will be an opportunity after the tasks to discuss any negative thoughts or feelings with the researcher.

The researchers would be happy to answer any further questions you may have if you are unsure whether you wish to take part in the study (see address below).

We very much hope you will agree to take part but we must emphasize that this is entirely voluntary and you may withdraw from the study at any stage without giving a reason. Refusal to take part or withdrawal from the study will in no way affect your treatment. The Secretary of the Ethical Committee can be approached in confidence on any issue (Tel. 0181 869 2688).

For further information please contact:

HELEN KIRBY
DEPARTMENT OF CLINICAL PSYCHOLOGY
NORTHWICK PARK HOSPITAL
WATFORD ROAD
HARROW
Tel. 0181 869 2325

Appendix 5.

Consent Form

CONSENT FORM FOR RESEARCH ON PANIC DISORDER (HELEN KIRBY)

AGREEMENT TO PARTICIPATE IN RESEARCH PROJECT

I, (name of participant).....

of (address)

agree to take part in the research project:

THOUGHT PATTERNS IN PANIC DISORDER

I confirm that the nature and demands of the research have been explained to me and I understand and accept them. I understand that my consent is entirely voluntary, and that I may withdraw from the research project if I find that I am unable to continue for any reason and this will not affect my medical care.

Signed:

(Print name):

Witness:

(Print name):

Date:

Investigator's Statement:

I have explained the nature, demands and foreseeable risks of the above research to the participant:

Signature..... Date.....

Appendix 6.

Reliability And Validity Of Measures Used In The Study

1. Beck Depression Inventory (Beck, Rush, Shaw & Emery, 1979)

This 21 item scale is one of the most widely used measures of depression both in clinical settings and in the psychological literature. Beck, Steer & Garbin (1988) in an extensive review of relevant studies reported the following conclusions regarding the psychometric properties of the BDI:

Reliability

The internal consistency of the BDI is good - the mean coefficient alpha for psychiatric samples was 0.86 and for non-psychiatric samples, 0.81. The test-retest reliability of the BDI is also adequate (Pearson product moment correlations 0.48 - 0.86 for psychiatric populations and 0.60-0.83 for non-psychiatric groups).

Validity

The BDI has good content, concurrent, discriminant and construct validity.

2. Beck Anxiety Inventory (Beck, Epstein, Brown & Steer, 1988)

This is a widely used 21-item scale covering somatic, affective and cognitive aspects of anxiety. The scale is particularly suitable for use in this study in that the items include many typical symptoms of panic. Beck et al. (1988) report high internal consistency ($\alpha = .92$) and test-retest reliability over 1 week ($r(81) = .75$). It also showed good discriminant validity.

3. State-Trait Anxiety Inventory (STAI) Form Y (Spielberger, Gorsuch, Lushene, Vagag, & Jacobs, 1983).

Reliability

Test-retest reliability is adequate ($r = 0.76$, Spielberger et al.). Similarly, high levels of internal consistency have been shown (alpha coefficient = 0.90, Spielberger et al., 1983; alpha = 0.87, Knight, Hendrika, Wall-Manning & Spears, 1983).

Validity

Spielberger et al. (1983) provide evidence for the construct validity of the STAI, reporting that anxious patients scored more highly than either normals or individuals with character disorders. The STAI shows high correlation with other measures of trait anxiety, medium correlations with subscales of the MMPI and low correlations with measures of intelligence, indicating that its concurrent, convergent and discriminant validity are all good (Spielberger et al. 1983).

4. Self-Consciousness Scale (Fenigstein, Scheier & Buss, 1975)

The Self-Consciousness Scale is a 23 item self-report questionnaire made up of three subscales. The SCS has frequently been used in studies of self-focus and its psychometric properties have received some attention in the literature. Since the Private Self-Consciousness subscale is most relevant to the hypotheses, the comments below focus on this subscale.

Reliability

Three studies (Fenigstein et al., 1975; Heinemann, 1979; Scheier & Carver revised scale, 1985) reported fairly good test-retest reliability for the Private subscale with coefficients ranging from 0.76 to 0.79. With regard to internal consistency, Scheier & Carver (1985) and Burnkrant & Page (1984, cited in Abrams, 1988, p.16) found adequate internal consistency for the Private subscale, reporting alphas of 0.75 and 0.71 respectively. Similarly, alphas obtained from four of the undergraduate samples used by Abrams (1988) were 0.72 or above, although the fifth sample and the study by Bernstein, Teng & Garbin (1986) produced somewhat lower alphas (0.61 and 0.63 respectively). Overall, however the reliability of the SCS can be regarded as reasonably good.

Validity

The SCS is also adequate in terms of the different types of validity. Content validity and face validity are both good - the definition of SFA includes both the direction of attention (inwards) and the content of attention (self-referent) and the Private subscale taps both of these aspects in a fairly straightforward way. Criterion validity is often difficult to achieve in psychological measures since the phenomena measured are internal and covert. This difficulty applies to the SCS, however Scheier & Carver (1977) argued that awareness of affect could be used as a criterion of private self-consciousness, since individuals high in self-consciousness should, by definition be especially cued in to feelings. They found that subjects high in private self-consciousness rated positive slides as being more pleasant and negative slides as more unpleasant than subjects low self-

consciousness subjects and this can be taken as evidence for the criterion validity of the SCS.

Studies of construct validity have also yielded positive results: Turner, Scheier, Carver & Ickes (1978) give evidence of convergent validity for the Private subscale of the SCS, reporting positive correlations of private self-consciousness with measures of thoughtfulness, imagery and self-monitoring. Correlations were not high enough however, to undermine the distinctiveness of the Private subscale. Carver & Glass (1976) carried out a study of the discriminant validity of the SCS and found that consistent with theoretical expectations, scores were not correlated or only weakly correlated with seven other variables including IQ, emotionality, sociability, activity level, need for achievement, impulsivity and test anxiety.

To summarise, the SCS is a well-used measure of self-focus which has adequate reliability and validity.

5. Body Consciousness Questionnaire (Miller, Murphy & Buss, 1981)

This is a 15 item self-report questionnaire comprising three subscale: Private Body Consciousness, Public Body Consciousness and Body Competence. It has been less extensively used than the Self-Consciousness Scales and there is therefore less information on its reliability and validity.

Reliability

Miller et al. report adequate test-retest reliability for the Private Body Consciousness, Public Body Consciousness and Body Competence subscales ($r = .69, .73, .83$ respectively).

Validity

The Body Consciousness Questionnaire has good face validity but little information is available on other forms of validity. The Private Body Consciousness subscale which is of greatest relevance to the hypotheses of this study is very short (five items) and as such its content validity is not particularly good. However, the BCQ is the only currently available self-report measure of this construct and it has therefore been included in the absence of a more adequate instrument.

6. Exner Sentence Completion Task (Exner, 1973)**Reliability**

Reliability of scoring is a key issue in measures which require the scorer to make a judgement about responses. This can be assessed by comparing the ratings of independent scorers and Exner (1973) reports that inter-rater reliability between a group of clinical psychologists was high for all scoring categories ($r = <.88$). Inter-rater reliability was also assessed for a sample of the data in the current study (see Section 3.4).

Validity

Evidence for the criterion validity of the measure is reported by Exner (1973) who found that recovered psychiatric patients showed less self-focus than those who remained hospitalised (a variety of measures show self-focus to be elevated in patient populations).

Thought Sampling Task

A variety of experience-sampling techniques have been developed which include verbal or written reports of spontaneous thoughts either in the laboratory or in naturalistic environments (reviewed by Singer & Kolligian, 1987). By definition, samples of experience are expected to change from moment to moment and the usual estimates of reliability therefore do not apply. However, reliability in categorising the data is essential and was measured in the current study by means of a second rater (for inter-rater correlations, see Section 3.3.1).

Validity with this kind of technique can be threatened by social desirability effects, however, this was not felt to be a major problem in the current study, since somatic thoughts of the type likely to occur in the experimental context (e.g., tiredness, hunger, tension) do not generally evoke strong value judgements. Further, there was no reason to assume any social desirability factors would differ between the four groups and so affect the validity of between group comparisons. A major advantage of thought-sampling methods is that they record thoughts as they occur (or very soon afterwards), so data is much more likely to be accurate than is the case with self-report questionnaires. The validity of this approach also depends heavily on the validity of the coding criteria. In the

present study, the categories of interest were external focus, cognitive self-focus, somatic self-focus. The first two of these were based on criteria used successfully by Greenberg & Pyszczynski (1986) and a somatic category was added by the present researcher. The latter included any reference to physical sensations, or bodily states as described in Appendix 8.

Appendix 7.

Thought-Sampling Task Instructions

I'll explain the first task to you before you start it so you can have a chance to ask about anything which isn't clear. You may not see the point of some of the things I'll ask you to do - I'll explain what it's all about at the end but do say if you have any worries about the instructions.

In a few moments I'm going to ask you to close your eyes for a couple of minutes and just to focus on whatever passes through your mind. I'll tell you when to open your eyes again and then I'll switch on the tape. You get an answer booklet like this (show booklet) and what you'll hear is a series of tones. So, you hear the first tone and you don't do anything - you just listen to it. Then, when you hear the second tone, I'd like you to compare it with the first one and decide whether it's higher, lower or the same in pitch as the first. Then, circle which answer you think is right on the answer booklet. Does that make sense so far?

OK. , when you hear the third tone, again you compare it with the one before - not to the first tone, but just to the previous one. And so on, compare each tone with the one before. You get two practice sets of five bleeps each because it takes most people a little while to get used to the task - so don't worry if you don't get it right first time. Is that OK?

After the practices, the tape will tell you to turn the page and you go on to the main task. This is just the same, only it's a longer series of tones as you can see. If you lose

your place, don't worry, just do your best. After the last tone, the tape will ask you to turn the page and to write on this blank sheet all the thoughts you've had during the task. It might be thoughts in words, or it might be a mental picture you've had. You may have noticed a physical sensation or an emotion or feeling. Please write down anything you've been aware of during the task.. Don't worry about spelling and grammar.

You get two minutes to do that and then the tape will tell you when to stop. Then you turn the page again and you get another series of tones, followed by another time for writing down what you were aware of during the task. Is there anything you feel unclear about?

Task is then presented again preceded this time by exercise manipulation:

OK., that was the first half of the task. The second half is very similar, except this time, instead of closing your eyes before starting, I'm going to ask you to do some exercise. , What I'd like you to do is to step up and down on this block at a pace which feels moderate to you, as if you were climbing a flight of stairs. I'd like you to continue for two minutes and I'll let you know when the time is up. Then I'll start the tape for the rest of the tone task. Do you have any questions about that?

Appendix 8.

Coding Criteria For Thought Sampling Task

Cognitive Self-Focus

Any response which clearly focuses on the self with little or no regard for the external world but which is not somatic in content (i.e., There should be no reference to the body or to physical sensations). The response may simply exclude the external world as in 'I am: 'very bright', or may include the external world as a reference for the self as in 'I am: ' the handsomest person in my family'.

Examples of cognitive self-focus include self-evaluations, references to the subject's own personality traits or emotions, references to the subject's own performance in tests or social situations.

Somatic Self-Focus

Any response which clearly focuses on the self and has reference to the body or to physical sensations or experiences. Examples include reference to bodily states (e.g., hunger, tiredness, tension) or physical sensations (e.g., feeling hot, headache, breathlessness).

External Focus

Any responses which clearly manifests concern with real things or people other than the self (e.g., references to family, colleagues, work).

Unclear Responses

Any response which does not meet the criteria for any other category.

Appendix 9.

Sentence Completion Task

(Exner, 1973)

Please complete the following sentences:

1. I think.....

.....

2. I was happiest when

.....

3. It's fun to daydream about

.....

4. My father

.....

5. If only I could

.....

6. It's hardest for me

.....

7. I wish

.....

8. As a child I

.....

9. I am

.....

10. I'm at my best

.....

11. Others

.....

12. When I look in the mirror

.....

13. If only I would

14. At least I'm not

15. My sex life

16. It upsets me when

17 The thing I like best about myself

18. Friends

19. I would like most to be photographed.....

20. I guess I'm

21. My mother

22. I wonder

23. The worst thing about me

24. I always wanted

25. I try hardest to please

26. Someday I

27. My appearance

.....

28. My parents

.....

29. If I had my way

.....

30. I like

.....

Appendix 10.

Adapted Coding Criteria For Sentence Completion Task

Cognitive Self-Focus Responses (CS)

Any response which clearly focuses on the self with little or no regard for the external world but which is not somatic in content (i.e. there should be no reference to the body or to physical sensations). This response may simply exclude the external world as in, I am: 'Very bright', or may include the external world as a reference for the self as in, I am: 'the handsomest person in my family'. Examples of cognitive self-focus include self-evaluations, references to the subject's own personality traits or emotions, references to the subject's own performance in tests or social situations.

Somatic Self-Focus (SS)

Any response which clearly focuses on the self and has reference to the body or to physical sensations or experiences. Examples include reference to bodily states (e.g., hunger, tiredness, tension) or physical sensations (e.g., feeling hot, headache, breathlessness).

External World Focus Responses (E)

The E score represents the response which clearly manifests concern with real things or people. Ordinarily, the external world objects used in the completion will be specific rather than vague such as I am: 'in love with my wife'. The key element which distinguishes E answers from S or O categories is the distinct implication of involvement with others or with socially expected behaviours which do not have primary gain to the self.

Ambivalent Responses (A)

The A score represents the response which clearly contains both S and E statements, either of which could be scored separately. The A response is usually easy to identify, partly because they occur infrequently and partly because of their obvious complexity. Usually they are combined with a conjunction as in I am: 'very bright but my parents don't seem to understand anything'. In fewer instances they occur without the conjunction such as My father: 'was a great man who lives in me'. Caution should be exercised in scoring A in completions not marked by a conjunction as many will at first glance appear to be A answers but in fact are not. For example, I am: 'happiest when my wife enjoys doing things for me' is an S answer even though an external object is mentioned.

Neutral Responses (O)

The O score represents any response which does not meet the criteria to be score S, E or A. The neutral category is quite important in that it includes any responses where doubt exists about the scoring of S or E. In most instances, O answers are easily identified as in I am: 'answering these questions', My father: 'is a man' or it's fun to daydream about: 'life'. In other instances the scorer must rely on the specificity of the completion in terms of the general class of person or object. For instance, It's fun to daydream about: 'marriage' would be scored O as the object (marriage) has no obvious specificity. Conversely It's fun to daydream about: 'success' would be scored S because it is sufficiently self-oriented to warrant that scoring. The best rule of thumb for the scorer is when in doubt score O.

Appendix 11.

Self-Consciousness Scale

(Fenigstein, Scheier & Buss, 1975)

Please read each statement carefully and rate how characteristic it is of yourself by circling one number.

	0	1	2	3	4
	Extremely uncharacteristic			Extremely characteristic	
1. I'm always trying to figure myself out.....	0	1	2	3	4
2. I'm concerned about my style of doing things.	0	1	2	3	4
3. Generally, I'm not very aware of myself.	0	1	2	3	4
4. It takes me time to overcome my shyness in new situations.	0	1	2	3	4
5. I reflect about myself alot.	0	1	2	3	4
6. I'm concerned about the way I present myself.....	0	1	2	3	4
7. I'm often the subject of my own fantasies.....	0	1	2	3	4
8. I have trouble working when somebody is watching me.....	0	1	2	3	4
9. I never scrutinise myself.....	0	1	2	3	4
10. I get embarrassed very easily.....	0	1	2	3	4
11. I'm self-conscious about the way I look.....	0	1	2	3	4
12. I don't find it hard to talk to strangers.....	0	1	2	3	4
13. I'm generally attentive to my inner feelings.....	0	1	2	3	4
14. I usually worry about making a good impression.....	0	1	2	3	4
15. I'm constantly examining my motives.....	0	1	2	3	4
16. I feel anxious when I speak in front of a group.....	0	1	2	3	4
17. One of the last things I do before I leave my house is to look in the mirror.....	0	1	2	3	4
18. I sometimes have the feeling that I'm off somewhere watching myself.....	0	1	2	3	4
19. I'm concerned about what other people think of me.....	0	1	2	3	4
20. I'm alert to changes in my mood.....	0	1	2	3	4
21. I'm usually aware of my appearance.....	0	1	2	3	4
22. I'm aware of the way my mind works when I work through a problem.....	0	1	2	3	4
23. Large groups make me nervous.....	0	1	2	3	4

Appendix 12

Body Consciousness Questionnaires

(Miller, Murphy & Buss, 1981)

Please read each item carefully and rate how characteristic it is of yourself by circling one number.

- | | 0 | 1 | 2 | 3 | 4 |
|--|---|---|---|---|-----------------------------|
| Extremely
uncharacteristic | | | | | Extremely
characteristic |
| 1. I am sensitive to internal bodily tensions | 0 | 1 | 2 | 3 | 4 |
| 2. When with others, I want my hands to be clean and look nice..... | 0 | 1 | 2 | 3 | 4 |
| 3. For my size I'm pretty strong..... | 0 | 1 | 2 | 3 | 4 |
| 4. I know immediately when my mouth or throat gets dry..... | 0 | 1 | 2 | 3 | 4 |
| 5. It's important for me that my skin looks nice... for example
has no blemishes..... | 0 | 1 | 2 | 3 | 4 |
| 6. I can often feel my heart beating..... | 0 | 1 | 2 | 3 | 4 |
| 7. I am very aware of my best and worst facial features..... | 0 | 1 | 2 | 3 | 4 |
| 8. I'm better coordinated than most people..... | 0 | 1 | 2 | 3 | 4 |
| 9. I'm quick to sense the hunger contractions of my stomach..... | 0 | 1 | 2 | 3 | 4 |
| 10. I like to make sure that my hair looks right..... | 0 | 1 | 2 | 3 | 4 |
| 11. I'm light on my feet compared to most people..... | 0 | 1 | 2 | 3 | 4 |
| 12. I'm very aware of changes in my body temperature..... | 0 | 1 | 2 | 3 | 4 |
| 13. I think alot about my body build..... | 0 | 1 | 2 | 3 | 4 |
| 14. I'm capable of moving quickly..... | 0 | 1 | 2 | 3 | 4 |
| 15. I'm concerned about my posture..... | 0 | 1 | 2 | 3 | 4 |