Self-Consciousness, Psychological Distress, Coping and Negative Cognitions in Irritable Bowel Syndrome.

A thesis submitted to the Faculty of Medicine, of the University of Leicester, for the degree of Doctor of Clinical Psychology

By

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Objectives. To investigate differences between Irritable Bowel Syndrome (IBS), Inflammatory Bowel Disorder (IBD) patients and controls on measures of self-consciousness, psychological distress, coping in stressful situations and negative bowel cognitions. Relationships between these measures in the IBS group were also examined.

Design. Cross-sectional between-groups design.

Method. IBS and IBD patients were recruited from a gastroenterology clinic. Thirty-three IBS patients, and 35 IBD patients and 35 controls completed the Self-Consciousness Scale (SCS), Hospital Anxiety and Depression Scale (HADS), Coping Inventory for Stressful Situations (CISS) and Cognitive Scale for Functional Bowel Disorders (CSFBD).

Results. IBS patients were significantly more anxious and had greater negative bowel cognitions than controls. There were no significant differences between IBS and IBD patients on any of the measures. There were several significant positive relationships between the four measures in the IBS group. For example, private self-consciousness (on the SCS) was related to all negative bowel cognitions on the CSFBD (except for disease conviction), anxiety and depression (on the HADS) and emotion- and task-focused coping (on the CISS). Coping (social diversion, emotion- and task-focused) was also related with various negative bowel cognitions. Finally, when IBS patients were subdivided into anxious and non-anxious groups, anxious IBS patients used significantly greater emotion-focused coping and had greater worries in relation to embarrassment/shame, anger/frustration, social approval and self-nurturance. The results are discussed in relation to previous literature and the Self-Regulatory Executive Functioning model. An alternative model based on the findings is also proposed.

Conclusion. IBS patients who are psychologically distressed may benefit from psychological intervention that consists of cognitive and attentional training.
Acknowledgements

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1. INTRODUCTION

Over the past few decades there has been an increasing amount of interest in the role of psychological factors in Irritable Bowel Syndrome (IBS). What appears to be emerging from the literature is the recognition that psychosocial factors may play a part in the predisposing, precipitating and perpetuating stages of the condition. Most psychosocial research to date has investigated psychological distress, in particular anxiety and depression. Various psychological interventions in treating psychological distress in IBS patients have also been investigated, although these have tended to be the more mainstream interventions such as cognitive behavioural therapy, psychodynamic therapy and hypnosis.

Wells and Matthews (1994) introduced an information-processing model in an attempt to understand whether interactions between appraisals, attention control and self-beliefs maintain emotional distress. The Self-Regulatory Executive Function (S-REF) model suggested that self-consciousness and negative self-beliefs were important in maintaining psychological distress as well as influencing an individual's ability to cope in stressful situations. To the authors' knowledge, there have been no studies investigating the S-REF model in the IBS population. The role of self-consciousness and possible interactions with negative cognitions, psychological distress and coping has also not been investigated. If such factors were found to be important, this could influence the content of psychological treatments offered.

The introduction chapter will be divided into eight main sections. The first section will provide a brief overview of Inflammatory Bowel Disorders (IBD). IBD patients are sometimes used as a useful comparison group with IBS (Blanchard, 2001) since both groups suffer bowel irregularity and pain and it is therefore possible to compare differences between organic and functional bowel conditions.
Sections two to four will focus in more detail on IBS, under three central themes: background information, psychological aspects and psychological intervention in IBS. The fifth section will then provide an overview on the role of coping, attentional processing and self-consciousness in affective conditions, with particular emphasis on the S-REF model. The sixth section will discuss the clinical implications that the S-REF model has for IBS, followed by an overall conclusion of the introduction. Finally, research ideas with associated hypotheses will be provided.

1.1 Inflammatory Bowel Disorders (IBD)
There are numerous types of gastrointestinal (GI) disorders, all of which can be categorised into organic or non-organic conditions. Organic bowel conditions include the inflammatory bowel disorders (IBD), diverticular disease and peptic ulcer disease, and such conditions can be diagnosed using medical investigative procedures.

There are two main types of IBD: Ulcerative Colitis (UC) and Crohn's Disease (CD). They are often considered together because both are idiopathic and often chronic/relapsing in nature. However, they are distinct conditions and affect different parts of the colon. UC is an inflammation and ulceration of the mucosa and submucosa of the colon rarely occurring in the small intestine. In comparison, CD is an inflammatory process that commences under the mucosa and then spreads to all layers of the intestine wall. Although it can affect any part of the GI tract, it most often affects the small intestine.

The annual incidence rates for IBD were reported as 20 per 100,000 of the population in the United Kingdom (UK), with UC being two to three times more likely to be diagnosed to CD (Rubin, Jones, Price & Stevens, 2000). Although approximately 1% of the population will experience at least one episode of IBD during their lifetime, the mortality rate is low. Up to two thirds of people with UC have mild symptoms and manage these in the community, whilst the more severe cases are referred to secondary care services (Phillips, 1994).
The main symptom of IBD is diarrhoea, which may contain blood, has persisted for more than two weeks and has no identifiable pathogen. A thorough assessment from a specialist GI clinic may be required, including various medical procedures such as an endoscopy and mucosal biopsy. Radiological studies are sometimes carried out for CD. During severe relapses, hospital admittance may be necessary. Management of IBD is facilitated in areas that allow rapid access to specialist clinics.

Short-term medication using corticosteroids is normally administered to bring about remission, followed by appropriate medication to assist longer-term maintenance and reduction of future relapses. Both UC and CD patients are more at risk of bowel cancer than the general population (Blanchard, 2001). Surgery is necessary for 15-20% of UC patients and up to 50% of CD patients.

Some studies have found IBD patients to be less psychologically distressed than IBS patients (Walker, Roy-Bryne, Katon, Li, Amos et al., 1990; Schwartz, Blanchard, Berreman, Scharff, Taylor et al., 1993; Walker, Gefland, Gefland & Katon, 1995; Gomborone, Dewsnap, Libby & Farthing, 1995) whilst others have not (e.g. Talley, Phillips, Bruce, Twomey, Zinsmeister et al., 1990). Although stress is not thought to be a primary cause of IBD, studies on rats with colitis have shown that restraint stress may evoke an inflammatory reaction (Phillips, 1994). A fairly recent study found that after adjustment for severity of IBD, patients with a co-morbid anxiety and depressive disorder were significantly more likely to experience GI symptoms, non-GI symptoms and functional impairment when compared to a group of IBD patients without diagnosed psychiatric disorders (Walker, Gefland, Gefland, Creed & Katon, 1996).

Only a few studies have investigated psychological treatment in IBD. One such study (Schwartz & Blanchard, 1991) compared a 12-session individual multi-component stress management programme with a control group. Both groups had patients with UC and CD. CD patients responded initially to the treatment, with a reduction in GI symptoms, although this effect was not maintained after treatment.
finished. Patients with UC however, showed an increase in GI symptoms. Psychological improvement was more apparent in UC than CD patients, as measured on the Beck Depression Inventory (BDI) and State and Trait Anxiety Inventory (STAI). The sample sizes were small (10 in the treatment group and 11 controls) and Blanchard (2001) has cautioned against the use of CBT approaches for IBD patients until larger studies have been conducted.

1.2 Background information on Irritable Bowel Syndrome (IBS)

Many bowel conditions have no obvious organic origin. They are referred to as functional bowel disorders (FBD), of which IBS is the most common type. IBS is a functional disorder of the lower gastrointestinal tract. The main presenting difficulties include abdominal pain, changes in bowel motion (diarrhoea or constipation) and bloating. Whilst patients with IBS may be prescribed medication to treat the presenting symptoms (e.g. antispasmodics, stool softeners or antidiarrheals), only temporary relief is obtained (Colwell, Prather, Phillips & Zinsmeister, 1998).

Research studies have shown that there are differences in patient characteristics between those people who never seek medical assistance for their IBS symptoms, those who manage their symptoms in the community with minimal medical intervention and those who request referrals to gastroenterologists or other specialities (Longstreth, Hawkey, Mayer, Jones, Naesdal et al., 2001). However, it is not always clear which IBS group is being described. When it is apparent, the term 'IBS consulter' will be used to describe those patients who have been referred to tertiary care services (i.e. specialist gastroenterology services). When the sample has not been described clearly or when a mixed sample has been used, the term IBS patient will be used.

The background information on IBS has been further divided into diagnostic criteria, prevalence and annual incidence rates, and course and impact of IBS, each of which are discussed below.
1.2.1 Diagnostic criteria

Recurrent pain is the main reason why people with IBS seek help, followed by bloating, diarrhoea or constipation (Blanchard, 2001). However, there are currently no diagnostic physiological or psychosocial tests for IBS. Diagnosis is by exclusion, where any medical investigations conducted by gastroenterologists have negative results.

Different functional bowel disorders (FBD) can be distinguished using symptom clustering. This approach is useful when categorising conditions in research studies as well as identifying treatment options. With increased scientific knowledge, diagnostic criteria can be updated and adapted as necessary. However, a difficulty with this approach is that there may be an overlap of IBS symptoms with other FBD and diagnoses of FBD are reliant on clinical criteria alone.

The Manning criteria was introduced in the 1970's to assist with aiding diagnosis of IBS (Manning, Thompson, Heaton & Morris, 1978). The frequency of 15 symptoms were analysed in a group of IBS patients and organic bowel disease patients. From these symptoms, four were found to be more commonly associated with IBS, including relief of pain with bowel movements, looser stools with pain onset, more frequent stools with pain onset and noticeable abdominal distension. There was also a trend for IBS patients to report greater passage of mucus and feelings of incomplete rectal evacuation. Manning et al. found that 94% of IBS patients had at least two of these symptoms in comparison to 46% of patients with organic bowel disorders. Problems with this study included relatively small sample sizes (just over 30 per group) and only five people in the organic disorder group had colonic difficulties. In addition, it has since been recognised that presence of abdominal pain is necessary for an IBS diagnosis (Kay, Jorgensen & Lanng, 1998). Another problem was that the frequency of IBS symptoms was only stated for two of the symptoms.

Some studies have investigated the sensitivity and specificity of the Manning criteria in diagnosing IBS, with inconsistent results obtained (e.g. Poynard,
Couturier, Frexinos, Bommelaer, Hernandez et al., 1992; Rao, Gupta, Jain, Agrawal & Gupta, 1993). This led to the review of IBS diagnosis and the development of the Rome I criteria, using information on epidemiological and clinical studies (Drossman, Richter, Talley, Thompson, Corazziari et al., 1994). The Rome I criteria is outlined in Table 1.

Table 1. The Rome I criteria for diagnosing IBS

Continuous or recurrent symptoms that have occurred for at least three months of:

1. Abdominal pain or discomfort, relieved with defecation or associated with a change in frequency or consistency of stool.
2. Accompanied by two or more of the following, on at least one-fourth of occasions or days:
   a. altered stool frequency.
   b. altered stool form (hard or loose/watery stool)
   c. altered stool passage (straining or urgency, feeling of incomplete evacuation).
   d. passage of mucus.
   e. bloating or feeling of abdominal distension.

The Rome I criteria have required both abdominal pain and changes in bowel activity to be present. Data from random population studies have found distinct groupings of IBS symptoms that met the Rome I criteria (Whitehead, Crowell, Bosmajian, Zonderman, Costa et al., 1990; Taub, Cuevas, Cook, Crowell & Whitehead, 1995). In a large cohort study in Denmark, the Rome I criteria were compared to the Manning criteria and 59% of individuals were found to fulfil both (Kay, Jorgensen & Lanng, 1998). However, concern has been raised about the variety of symptoms that people with IBS could potentially present with, thus restricting the ability to define more specific gold standard criteria.

Recently, the Rome I criteria have been revised into the Rome II criteria (Thompson, Longstreth, Drossman, Heaton, Irvine et al., 1999). The latter criteria are less restrictive, permit a longer duration over which symptoms may occur as
well as providing supportive symptoms to aid diagnosis. The Rome II criteria are illustrated in Table 2.

Table 2. The Rome II criteria for diagnosing IBS.

At least 12 weeks, which need not be consecutive, in the preceding 12 months, of:
1. Abdominal discomfort or pain.
2. Accompanied by two or more of the following:
   a. relieved by defecation
   b. onset associated with change in stool frequency and/or consistency
   c. onset associated with change in form or appearance of stool

Supportive symptoms of the irritable bowel syndrome:
1. fewer than three bowel movements a week.
2. more than three bowel movements a day.
3. hard or lumpy stools.
4. loose (mushy) or watery stools.
5. straining during a bowel movement.
6. urgency (having to rush to have a bowel movement).
7. feeling of incomplete bowel movement.
8. passing mucus during a bowel movement.
9. abdominal fullness, bloating, or swelling.

The Manning Criteria are less restrictive than the Rome I criteria, explaining why higher incidence values are produced when it is used. A recent study compared the Rome and Manning criteria (Boyce, Koloski & Talley, 2000). A postal questionnaire within an Australian population was sent to individuals over 17 years old who had been randomly selected from the electoral roll within a local government area. The questionnaire included sections on gastrointestinal symptoms over the past year (which included the three different diagnostic criteria), a shortened version of the Eysenck Personality Questionnaire (to measure neuroticism and extroversion), the Delusions-Symptoms-States Inventory (to measure anxiety
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and depression), the SF-12 (to measure mental and physical ability) and the Sphere (to measure somatic distress).

Of the 4,500 people invited to participate, 72% (n = 2910) responded. Of these, 398 (13.7%) met at least one of the IBS diagnostic criteria, with considerable overlap between the criteria. More specifically, 4.4% met the Rome I criteria, 6.9% met the Rome II criteria and 13.6% met the Manning criteria. Although psychological factors were not found to differentiate the criteria, people meeting either one of the Rome criteria experienced more severe abdominal pain and bowel problems than people who just fulfilled the Manning criteria. A criticism of this study is the use of a postal design. Diagnosis by this method may not be as reliable as a physician interview, although the authors argue that their questionnaire was valid and reliable. The authors also do not appear to have differentiated the IBS groups (i.e. IBS consulters and those remaining in primary care or community settings).

In summary, over the past twenty-five years, a variety of diagnostic criteria, in addition to the above, have been proposed for IBS. The lack of consistency poses a problem when making comparisons between research findings, for example prevalence rates or frequency of psychological difficulties. In addition, none of the published criteria have included a severity rating scale or accounted for impairment or disability, despite evidence to validate the use of such visual analogue scales (Drossman, Li, Toner, Diamant, Creed et al., 1995).

1.2.2 Prevalence and annual incidence rates

The prevalence rate refers to the number of known individuals who have a condition on a given day. In IBS, up to one in five individuals may have the condition at any one time (Colwell, Prather, Phillips & Zinsmeister, 1998). This figure is similar in North American and UK populations with prevalence rates between 9% to 22% in the North American adult population (Toner, Segal, Emmott & Myran, 2000) and between 13.6 to 22% in UK adult populations (Heaton, Ghosh & Braddon, 1991; Jones & Lydiard, 1991). However, a more recent study conducted in General Practices in England found only 76 out of 3111 patients (2.4 %) fulfilled an IBS
diagnosis (Thompson, Heaton, Smyth & Smyth, 2000). The differing prevalence values within any one cultural population may be partly accounted for by different diagnostic criteria used. For example, Thompson et al. (2000) included the more restrictive Rome I criteria, which had not been developed when the earlier UK studies were conducted.

The annual incidence rate refers to the number of new cases each year. A study carried out in Sweden reported an annual incidence rate for IBS of 1-2% (Agreus, Svardsudd, Nyren & Tibblin, 1995). In community populations, there are twice as many women diagnosed with IBS as men, but up to four to five times as many in tertiary care settings (Toner, Segal, Emmott & Myran, 2000). Most IBS patients are aged between 24 to 41 years old (Stockbrugger, Coremans, Creed, Dapoigny, Muller-Lissner et al., 1999) and IBS is less likely to be diagnosed in people over the age of 65 years old (Talley, O'Keefe, Zinsmeister & Melton, 1992). Improvement of symptoms may occur in approximately half of IBS patients with time and those individuals who have high levels of anxiety, depression and longevity of complaints tend to have a poorer prognosis (Talley, 1999). Whilst IBS may be a chronic and disabling condition, it is not thought to affect life expectancy.

1.2.3 Course and impact of IBS

Although many individuals may suffer IBS at some stage in their lives, the majority will not seek further specialist medical intervention. However some individuals are referred to a gastroenterologist, either because their symptom presentation is unclear or because the individual believes that there is something more seriously wrong with them. IBS patients who are referred for further investigation account for 12% of medical consultations in primary care settings and 28% of new gastroenterology referrals in Western countries (Drossman, Whitehead & Camilleri, 1997).

The cost of IBS to the health care system is considerable, including numerous prescriptions and many unnecessary diagnostic and intrusive tests. IBS consulters have also been found to visit their G.P for more non-gastrointestinal symptoms when compared to IBS patients or other medical patients (Sandler, Drossman,
Matlan & McKee, 1984). In addition, illness resulting from FBD was the second main pain-related cause of absenteeism at work in the United States (Sternbach, 1985 as cited in Blanchard & Galovski, 1999). Patients who are most disabled by their IBS symptoms have been found to acquire the highest health care costs, as well as have more days off sick from work, with an average of 13.4 days off over a year period (Drossman, Li, Andruzzi, Temple, Talley et al., 1993). Using the Short Form-36 (SF-36) measure for health quality of life, IBS patients in the UK reported lower quality of life scores when compared to a control group. IBS patients also used more health services and had more days off work than controls (Akehurst, 1999 as cited in Akehurst & Kaltenthaler, 2001).

Creed, Ratcliffe, Fernandez, Tomenson, Palmer et al. (2001) investigated patients with severe IBS to identify whether severity and psychological symptoms influenced health-related quality of life and health-care costs. Psychological measures used included the Hamilton Depression Scale (HDS) and Symptom Checklist 90 Revised (SCL-90R). These, along with demographic information and IBS symptomatology were used to predict health-related quality of life (as measured using the SF-36), health care costs (calculated over the past 12 months) and loss of productivity over the past year. The study was carried out in the north of England from seven different secondary and tertiary gastroenterology clinics. Patients aged 18 to 65 years old who met the Rome I criteria, had symptoms in excess of six months or more and had not responded to standard medical treatment (i.e. pharmacological interventions) were recruited. In addition, patients were required to score greater than 59 on a visual analogue scale, representing moderate to severe abdominal pain, and have no recorded contraindications to selective serotonin re-uptake inhibitors or psychotherapy.

Of the 257 participants, 80% were women, mean age was 40 years and 98% were white. The median duration that participants had bowel symptoms was eight years and most had attended gastroenterology clinics for some time before entering the study. Over the previous 30 days, pain was experienced an average of 24.2 days. Over the previous year, activities were restricted on an average of 145 days (s.d
In the past six months, patients visited their physician on an average of 6.9 days. Over the past year, mean health care costs averaged $1743 per patient (approximately £1210), mostly accounted for by hospital visits and primary care costs.

Seventy patients reported unemployment due to ill health. When compared to the rest of the sample, this group were the most severely disabled by their IBS, as measured on the SF-36 Physical Component Score (SF-36 PCS). They were also found to have higher health care costs, were significantly older (mean of 44.7 years for the unemployed group in comparison to mean of 38 years for the rest of the sample) and generally had less than 11 years full time education. They reported more severe abdominal pain, had more psychological symptoms on the HDS, the SCL-90R somatisation score and SCL-90R global severity index score. Psychological symptoms were the primary reason for unemployment due to ill health rather than severity of IBS.

Overall, health-related quality of life, as measured by the SF-36 PCS, was found to be independently and significantly predicted by psychological symptoms. However neither psychological nor abdominal symptoms were found to predict health care and loss of productivity costs and the authors therefore postulated that even if severe symptoms of IBS are treated, these costs may not necessarily decline. It is difficult to generalise these findings to the wider IBS population since patients were only selected if they had severe symptoms and probably represented the worst scenario. Another problem with this study is that cost information was obtained retrospectively, making it difficult to assess its accuracy.

1.3 Psychological aspects of IBS
There has been a great deal of interest in the role that psychological issues play in IBS. Some researchers have suggested that it is the IBS consulters who are the most psychologically distressed (Whitehead, Bosmajian, Zonderman, Costa & Schuster, 1988) and have more severe symptoms (van der Horst, van Dulmen, Schellevis, van
Eijk, Fennis et al., 1997). However, there will inevitably be some individuals who seek medical treatment who have no psychological or psychiatric difficulties.

The biopsychosocial model has recently been used to facilitate our understanding of the link between biological, psychological and social factors in IBS. The model accounts for the role of stress from predisposing to perpetuating stages, as well as psychosocial influences. This model will therefore be considered first in more detail below. This will be followed by a more detailed discussion of the evidence in favour of the role of stress, followed by psychological problems typically encountered by IBS people.

1.3.1 The biopsychosocial model
For many years, clinicians have been trying to use the biomedical or disease-based model to understand IBS. Such an approach suggests a single cause of IBS due to either structural or biochemical dysfunction, and conceptualises the condition in terms of a disease-basis. This framework implies that illness is due to an identifiable disease, and organic and functional conditions exist as independent entities. However, this latter point is certainly not accurate, since IBD patients can also suffer functional conditions and psychiatric problems (Isgar, Harman, Kaye & Whorwell, 1983; Walker, Gefland, Gefland, Creed & Katon, 1996).

In recent years the biopsychosocial model was introduced as a possible framework for explaining IBS (Drossman, 1998). Psychosocial factors were broken down into predisposing, precipitating and perpetuating factors. Predisposing factors, for example environmental or genetic, were thought to be important during the early stages in life, although these alone may not be sufficient to trigger the onset of IBS. Psychosocial factors, such as severe stressful life events, may at a later point precipitate the onset or exacerbation of IBS symptoms, as well as maintain the condition. Such psychosocial factors influence the ability of a person to manage or cope with their IBS symptoms as well as whether they seek help (Gaynes & Drossman, 1999).
Within this model, biological factors include altered motility and visceral hypersensitivity. The model illustrates a reciprocal relationship between psychosocial and biological factors via the central nervous system-enteric nervous system. IBS symptoms are explained in terms of a dysregulation of the brain-gut neuroenteric systems, in other words, a dysregulation of the central nervous system-neuroenteric system pathways. Some researchers have found IBS patients to be more viscerally hypersensitive, reporting lower thresholds for gut pain when measured using balloon distension (Mertz, Naliboff, Munakata, Niazi & Mayer, 1995). However, Whitehead and Palsson (1998) suggested that these findings might be due to a response bias in IBS patients, since such findings are dependent on the type of measurement employed.

Studies have provided evidence in favour of the role of the central nervous system in modulating sensation, with IBS patients having different brain physiology to controls (Silverman, Munakata, Ennes, Mandelkern, Hoh et al., 1997). Following rectal distension, Silverman et al. found that controls activated an area of the brain known as the anterior cingulate gyrus (an area of the limbic system in which heavy opiate binding occurs). In contrast, IBS patients activated the prefrontal cortex (associated with hypervigilance and anxiety) in response to or even anticipation of rectal distension. By activating this region, IBS patients may be increasing their pain perception as well as hypervigilance for their pain symptoms.

Diagnostic and management decisions are often made by physicians based on the amount of pain that patients complain of. Those who report minimal pain are less likely to receive a diagnosis or advice about management of symptoms. In contrast, those reporting high levels of pain may undergo extensive investigations. Drossman, Whitehead, Toner, Diamant, Hu et al. (2000) attempted to determine which psychosocial, behavioural and physiological factors cause severity in people with FBD, where pain was the predominant presenting symptom. Female patients aged 18 to 65 years old, who met the Rome I criteria were recruited. Severity of pain was determined using the Functional Bowel Disorder Severity Index.
Of the 211 participants, the majority were white (84%), had a mean age of 39.3 years and mean of 14.6 years education. There were 144 patients with moderate FBD and 67 with severe FBD. Most (83.3%) had IBS, and other diagnoses included painful functional constipation, chronic functional abdominal pain and unspecified FBD. On a daily pain record, patients with severe FBD reported significantly more pain than the moderate FBD group. Severe FBD patients were significantly more depressed on the BDI, scored higher on most aspects of the Sickness Impact Profile, the Catastrophising Scale of the Coping Strategies Questionnaire, as well as reporting that they felt less able to control or decrease their symptoms. On the IBS-Quality of Life measure, the severe FBD group reported a significantly lower quality of life.

Behavioural measures indicated that severe FBD patients spent more days in bed due to GI symptoms, visited their physicians more often, made more telephone calls due to GI symptoms and had a significantly higher hospitalisation record over the past two years compared to patients with moderate FBD. Multiple logistic regression found behavioural factors to be the best predictor of severity of FBD. The authors recommended the use of both pharmacological and psychological interventions to help improve behavioural factors. Criticisms of this study are the exclusion of male participants and although most participants were diagnosed with IBS, it was not clear whether the findings were specific to IBS or as applicable across the different FBD groups.

Overall, there are several advantages to the application of the biopsychosocial model in IBS. Not only does it explain the relationship between biological and psychosocial factors, it also provides a multi-dimensional framework to which intervention can be directed. Van Dulmen, Fennis and Mokkink, van der Velden and Bleijenberg (1995) found an improvement in clinical outcome when psychosocial factors were addressed, as shown by a reported decrease in anxiety levels and worries that something more sinister may be wrong following a positive appointment with a gastroenterologist.
Introduction

The biopsychosocial model recognises the role of stress and psychosocial factors on IBS symptoms (e.g. Drossman, McKee, Sandler, Mitchell, Cramer et al., 1988), and some authors have considered IBS to be a stress-related condition (e.g. Whitehead, 1994). Therefore, the next section will provide a discussion on the research conducted on the role of stress in IBS.

1.3.2 The role of stress in IBS

The stress hypothesis suggests that events occurring in an individual’s life will have a significant influence on whether physical or psychological problems develop (Hinkle, 1973). There are several ways of assessing this hypothesis. One technique is to use a life event scale to determine the number of stressful events (typically recognised as causing distress) that a person has suffered. This supposes that events occur to a person rather than being influenced by their personality. An alternative technique is to measure how an individual cognitively appraises events and demands, as well as their perceived ability to cope in such circumstances. In this instance, stress could be measured by the amount of distress or hassles reported on a daily basis.

Various studies have attempted to identify whether stress causes IBS or is significant in relapses and maintenance of symptoms. Creed, Craig and Farmer (1988) provided evidence to suggest that severe life stress predisposes people to FBD. Blanchard (2001) discussed anecdotal evidence on IBS patients attending a psychology research centre in Albany, USA who acknowledged the role of stress in their condition. A more scientifically valid study, carried out in a General Practice setting in England (Thompson, Heaton, Smyth & Smyth, 2000) found 59% of IBS patients acknowledged that stress aggravated their condition. However, patients who were referred to gastroenterologists were less able to identify links between stress and their symptoms, instead believing that there was a medical reason underlying their difficulties, for example gut disease or cancer (Thompson, Heaton, Smyth & Smyth, 1996. Thompson, Heaton, Smyth & Smyth, 2000). In such cases, Toner, Stuckless, Ali, Downie, Emmott et al. (1998a) found these patients selectively focused on abdominal sensations as well as searching for confirmatory
information to their beliefs. Thompson et al. (2000) found that, of the IBS patients diagnosed by a G P, 46% feared cancer, and most (74%) continued to have these fears even after visiting their physician.

Unfortunately the process of diagnosing IBS by exclusion, using numerous medical investigations, can impact significantly on the psychological distress experienced. Studies on somatisation conditions have shown that psychological symptoms, psychiatric diagnoses (including somatisation disorder and hypochondriasis) and amount of functional disability increase in a linear fashion with the number of unexplained medical symptoms (Katon, Sullivan & Walker, 2001).

Some authors have reported significant correlations between bowel symptoms and stress in IBS patients (e.g. Whitehead, Crowell, Robinson, Heller & Schuster, 1992), whilst others have not (e.g. Schwarz, Blanchard, Berreman, Scharff, Taylor et al., 1993). In this latter study the Social Readjustment Rating Scale was administered to an IBS, IBD and control group to provide a unitary life events score (LES) over the preceding year. A significant positive relationship was found in the IBS group between the LES and BDI, STAI and Psychosomatic Symptom Checklist scores, but not with GI symptoms. However, there was no support for the role of stressful life events in causing IBS symptoms due to the lack of significant differences between the IBS, IBD and control groups on LES scores.

There are a number of potential methodological difficulties to consider when assessing the role of stress on physical or psychological complaints. These include using retrospective reports, not accounting for individual differences in stress levels and bowel symptoms, and identifying the correct time-scale when investigating relationships between stress and bowel symptoms.

More recent studies have attempted to take such methodological concerns into consideration. For example, Dancey, Taghavi and Fox (1998) applied a prospective time-series approach to investigate relationships between daily stress and IBS symptoms. They applied within-person correlations to analyse the data.
Participants were asked to rate frequency of seven typical IBS symptoms on a daily basis as well as completing a questionnaire asking about 117 different daily hassles. Just over half the sample reported that hassles on one day were a function of the previous day's hassles. When this procedure was adopted for symptoms, only seven participants (23%) reported this to be the case. Hassles over the previous four days significantly predicted symptoms in 43% participants, and in 37% of participants, hassles were predicted by the previous four days of symptoms. The authors concluded that stress does have a significant role in IBS. Problems with this study include the fact that no corrections were made for potential statistical artefact that may have resulted from conducting multiple analyses. Participants were recruited from a charity network with no information provided on how patients managed their symptoms (i.e. via physician, gastroenterologist or no support). They also relied on patients reporting of an IBS diagnosis, which could vary depending on the criteria used.

In the same year, Bennett, Tennant, Piesse, Badcock & Kellow (1998) published a paper suggesting that chronic life stressors predicted symptom intensity. They had a large sample size of people with FBD (n = 117), recruited from an out-patient gastroenterology clinic, although only 74 (63%) solely had a diagnosis of IBS. Patients were assessed on life stress, using the Life Events and Difficulties Schedule. Symptom intensity was recorded at three time intervals, time of entry to study at 6 months and 16 months. No clinical improvement was observed in any patient who had experienced a chronic high threatening stressor (e.g. divorce, housing difficulties and redundancies) over the 16-month period. The results suggested that chronic stressful situations might maintain IBS symptoms and prevent recovery.

In summary, stressful situations, especially the more severe and chronic stressors, potentially affect a person's ability to recover from IBS symptoms. What is still unclear is whether IBS patient's ability to cope in stressful situations is hindered.
The next section focuses on the type of psychological difficulties encountered in the IBS population.

1.3.3 Psychological issues
A number of studies over the past three decades have investigated psychological morbidity within the IBS population. A recent review of diagnoses of anxiety and depression (Toner, Segal, Emmott & Myran, 2000) provided rates between 50 to 100% in IBS patients. Psychological measures used include the BDI, Minnesota Multiphasic Personality Inventory (MMPI), STAI, Hospital Anxiety and Depression Scale (HADS), Illness Attitude Scale, SCL-90 and General Health Questionnaire. The Diagnostic and Statistical Manual of Mental Disorders (DSM) has also been used to provide more formal psychiatric diagnoses.

Distress and disease can both initiate physical symptoms (Katon, 2001). Even several decades ago, it was apparent that people who have unexplained medical pathology, for example, migraine headaches, fatigue and gastrointestinal problems were found to have more psychological distress and were more likely to have an anxiety or depressive condition that met the DSM-IV criteria (Robbins, Meyersburg & Tanck, 1974; Mechanic, 1978). Patients who have a psychiatric diagnosis utilise health services more often than those without such a diagnosis.

This section will first compare psychological difficulties across IBS and IBD populations. This will then be followed by a review of psychological problems within the IBS population.

1.3.3.1 Comparisons between IBS and IBD patients
A number of studies have compared psychological distress in IBS and IBD groups. Talley, Phillips, Bruce, Twomey, Zinsmeister et al. (1990) found no significant differences between IBS and organic gastrointestinal (GI) patients on the hypochondria, depression and hysteria sections of the MMPI, but both groups were significantly higher on these measures when compared to a control group. Talley et al.'s sample sizes had high mean age ranges of 53 years in the IBS group and 58
years in the organic GI disease group, so it could also be argued that they were not representative of their respective conditions. However, Schwartz, Blanchard, Berreman, Scharff, Taylor et al. (1993), who recruited IBS patients via advertisement or referrals from private physicians, reported similar findings on the MMPI. In addition, no differences were reported on the BDI between the IBS and IBD groups, although significant differences were found on the STAI (both State and Trait factors), with the IBS group reporting higher scores on both anxiety domains. Walker, Roy-Bryne, Katon, Li, Amos et al. (1990) found their IBS group had significantly higher scores than the IBD group on the somatisation, anxiety and general symptom index of the SCL-90, but not on the BDI.

All three of the above studies were conducted in the United States of America. A UK study conducted by Gomborone, Dewsnap, Libby and Farthing (1995) found IBS patients to be significantly more depressed when compared to both IBD and controls. However, the mean BDI score in the IBS group was 9.3, which is just within the 'normal' boundaries, suggesting that although scores are higher in IBS, they are not clinically significant.

Blanchard's (2001) review of such studies concluded that IBS patients were more psychologically distressed than organic GI patients or controls. However, this should be interpreted with caution since not all studies showed significant differences. The inconsistency of such results may be partly attributable to cross-cultural differences, making it difficult to generalise.

The BDI and STAI were not designed for use as diagnostic criteria. A different impression of psychological difficulties is apparent when more formal diagnostic criteria are used. Prevalence rates for psychiatric disorders using the revised third version of the DSM (DSM-III-R; American Psychiatric Association, 1987) within IBS groups have varied from 33% (Blewett, Allison, Calcraft, Moore, Jenkins et al., 1996) to 94% (Lydiard, 1992). Walker, Gefland, Gefland and Katon (1995) recruited IBS patients from a tertiary-care clinic and found that nearly all had at least one lifetime psychiatric diagnosis. In contrast, psychiatric disorders in IBD
were reported to range from 19% (Walker, Roy-Bryne, Katon, Li, Amos et al., 1990) to 65% (Walker et al., 1995). More specifically, Walker et al. (1995) reported significantly higher percentage of IBS patients with major depression, generalised anxiety disorder (GAD) and somatic disorder compared to IBD patients. It is important to remember that all of the above studies recruited patients from either university GI clinics or special GI clinics and are likely to represent the more severe cases.

1.3.3.2 Psychological distress within the IBS population

A UK study found that only four out of 25 IBS patients were anxious and none were depressed as measured on the HADS (Thornton, McIntyre, Murray-Lyon & Gruzelier, 1990). Blanchard and colleagues have conducted a number of studies over the past few decades at a centre in Albany offering psychological intervention to IBS patients (e.g. Neff & Blanchard, 1987; Blanchard, Schwarz, Suls, Gerardi, Scharff et al., 1992; Payne & Blanchard, 1995). Patients either self-referred or were referred via their physician. Data from such research trials showed patients to have BDI scores ranging from 10.9 to 13.7 (Blanchard, 2001), suggestive of mild depression. Normative data on several psychological measures, including the BDI and STAI suggested that not all IBS patients had psychological difficulties, with nearly half having BDI scores lower than 10.

In the USA, the prevalence of affective disorder in the general population, using the DSM-III-R is approximately six percent (Blazer, Kessler, McGonagle & Swartz, 1994). A one-year prevalence rate for GAD is between three to six percent (Weissman & Merikangas, 1986). Using psychiatric diagnoses in the IBS population, Blanchard (2001) presented data on 250 IBS patients who had voluntarily sought psychological intervention. Of these, 65.6% had a diagnosable mental disorder, of which 52.4% was accounted for by an anxiety disorder. The most common anxiety disorder (26.4% of cases) was GAD, followed by social phobia in 9.6% of cases. When comparing Blanchard's data with other studies, similarities were found in GAD rates with Walker, Roy-Bryne, Katon, Li, Amos et al. in 1990 (54% GAD) and Walker, Gefland, Gefland & Katon in 1995 (58%
GAD). However, Blewett et al. (1996) only reported GAD in 5% of their IBS group. This latter discrepancy may be partly accounted for by differences in psychiatric diagnostic criteria used, since Blewett et al. administered the Composite International Diagnostic Interview whilst the other studies administered the DSM-III-R.

When considering depression, there was little consistency between Blanchard's (2001) rates for major depression and dysthymia (3.2% and 6.4% respectively) with Walker et al. (1995), who reported rates of 76% for major depression and 39% for dysthymia.

Some studies have attempted to compare psychological differences between different IBS groups, although this has proved difficult due to the lack of consistency between how researchers define their samples. Drossman, McKee, Sandler, Mitchell, Cramer et al. (1988) conducted a study using students and hospital employees. IBS sufferers, identified following a gastroenterological examination, were categorised into IBS-patients if they had consulted a doctor for their bowel symptoms in the previous six months and had less than four self-initiated physician visits for bowel problems in the last five years. In contrast, IBS non-patients represented those individuals who had never sought medical assistance for GI symptoms. IBS-patients were found to have significantly higher 'clinical' scores on the hysteria (20%), depression (21%), hypochondriasis (33%), psychasthenia (23%) and schizophrenia (25%) sections of the MMPI when compared to IBS non-patients and controls. IBS-patients also reported more days in pain, with greater severity compared to the other groups (as measured on the McGill Pain Questionnaire). In comparison, IBS non-patients showed very few differences on the MMPI to the control group. Despite the biased sample (female and college educated), it is the lack of clarity in defining the medical intervention that IBS-patients had sought before entry into the trial i.e. from G.P's or from gastroenterologists which causes concern. Only IBS-patients who had made less than four self-initiated GI related visits to their physician in the past five years were recruited, justified by Drossman et al. as reducing the influence that the health care
system may have had on the condition. However, this appears rather low and suggests that their IBS-patient sample was representative of people who mainly managed their symptoms in the community at primary care level.

A much more clearly defined sample was provided in Whitehead, Bosmajian, Zonderman, Costa and Schuster's study (1988) which compared community patients (recruited from church women's societies and charities) with medical clinic patients (from a gastroenterology service). For each sample, patients were further categorised into FBD, IBS and lactose malabsorption groups. A control group was also recruited in the community sample. Significant differences were observed between each of the community patient groups and medical patient groups on the Hopkins Symptom Checklist (HSC). The IBS community group did not significantly differ to the other community groups on this scale. However, numbers in each sub-group were small, for example 16 in the IBS community group and 10 in the IBS medical group, which may have reduced the statistical validity of the analysis.

Since Drossman et al. (1988) and Whitehead et al.'s (1988) studies, several other researchers have failed to find significant differences in psychological state between IBS consulters and other IBS patients (e.g. Whitehead, Burnett, Cool & Taub, 1996; Gick & Thompson, 1997; Jarrett, Heitkemper, Cain, Tuftin, Walker et al., 1998). Again, variations in recruitment sources applied, for example, Gick and Thompson's (1997) recruits were college students who had mostly sought medical intervention for their symptoms at primary care level. In contrast, Jarrett et al. recruited most of their participants through advertisement.

A very interesting paper investigated implications of recruitment from different sources on IBS research findings (Longstreth, Hawkey, Mayer, Jones, Naesdal et al., 2001). IBS patients were recruited from three sources. Primary care patients (n = 121) were recruited from two primary care services in England, 72 IBS patients were recruited by newspaper advertisements in Los Angeles, USA and the referral patients (n = 52) were consecutively recruited from a single gastroenterologist. All
participants were aged 18 to 65 years old, fulfilled the Rome I criteria for IBS and had moderate or severe symptom severity (as self-rated over the previous seven days). The HADS was administered to measure psychological distress.

Results suggested that advertisement participants were significantly older than the other two groups, were less likely to have visited a physician due to IBS symptoms over the past year and mostly reported IBS symptoms as moderate rather than severe. They had also received more psychiatric consultation over the previous 5 years than primary care patients. Primary care patients used antispasmodic drugs more often than the other two groups. In contrast, antidepressant drugs were used more frequently in the referred rather than the primary care group. Nearly a quarter of referred patients (23%) reported their IBS symptoms as severe, compared with 13% of primary care patients. For psychological distress, a score greater than 10 on each of the HADS anxiety and depression sections classified definite cases of anxiety or depression. A score between eight and ten indicated 'doubtful case' and a score less than eight was classified as no anxiety or depression. All three groups had some IBS patients with definite anxiety and/or depression scores, although the extent varied between groups. For example, primary care patients were significantly more anxious but significantly less depressed than the advertisement group. There were no significant differences in psychological distress between the referred group and other two groups. However, the data suggested similarities in the percentage of IBS patients who had clinical anxiety scores in the referred and primary care groups (40% and 47% respectively), in contrast with only 25% of the advertisement group. Only 13% of referred patients were definitely depressed and 73% were definitely not depressed.

Overall, Longstreth et al. concluded that IBS duration was related to depression, whereas severity of symptoms was related to anxiety. Whilst this study provided useful information about recruitment sources, it is surprising that the authors conducted their study in two countries. They found significant differences in certain demographic characteristics between groups, with the English primary care group being significantly less educated, more likely to be home owners, and more
likely to be smokers than the two USA groups. It is therefore difficult to ascertain whether differences between the groups were due to cross-cultural differences or were an accurate reflection of the differing recruitment sources. It would therefore be useful to conduct a similar study, recruiting the three different groups in just one country. Perhaps the greatest implication is that differences (sometimes quite marked) do exist between recruitment sources, and careful consideration should be given when comparing such studies.

1.3.4 **Summary of psychological aspects of IBS**

In conclusion, there is inconsistent data available to determine whether IBS patients are more psychologically distressed than IBD patients. Using more formalised psychiatric diagnoses, IBS patients do appear to have more psychiatric diagnoses, typically depression and/or anxiety.

With regard to the IBS population, whilst Blanchard (2001) found anxiety disorders to be more typical than depressive conditions in IBS patients, other studies (e.g. Walker, Gefland, Gefland & Katon, 1995) found the reverse situation. There do appear to be psychological and demographic differences depending on where IBS patients are recruited, although further studies are still warranted in this area to provide more substantive evidence.

The greatest implication of the findings on psychological aspects of IBS is support for the role of psychological intervention. The next section will discuss the different psychological interventions applied to IBS patients, along with research evidence into the efficacy of such approaches.

1.4 **Psychological therapies for IBS**

Over the past twenty years, there have been several studies investigating type and efficacy of psychotherapeutic interventions in IBS. Different approaches include cognitive behavioural therapy (CBT), hypnotherapy, stress management, multi-component treatment packages, biofeedback, relaxation techniques and psychodynamic therapy. The primary outcome measure suggestive of treatment
success has been improvement in GI symptoms (Blanchard & Galovski, 1999). A review by Talley, Owen, Boyce & Paterson (1996) into the various psychological treatment studies highlighted that all but one had methodological weaknesses, including non-specific factors (therapist empathy, attention and expectancy), small sample sizes, poor protocol description and inappropriate statistical analyses. In addition, the variety of therapeutic procedures and psychological outcome measures used, as well as recruitment of patients from different sources, made comparison between studies difficult.

Although Talley and others (e.g. Read, 1999) have suggested that the efficacy of psychological treatment for IBS remains to be established, our understanding in this area has increased and provided a framework with which to improve future research designs. The three main areas in which psychological intervention has been investigated include psychodynamic therapy, hypnotherapy and CBT. These will be discussed in turn.

1.4.1 Psychodynamic therapy

Read (1999) discussed a psychoanalytic perspective of psychosomatic difficulties in terms of 'anguish that cannot be thought about and worked through by discussion' (pg. 474). Importance was given to early experiences and separations that affected an individual's ability to cope with later life events. Such intolerable feelings and emotions in people with IBS were thought to be 'held in the bowel' and Read hypothesised that this may account for the reason why patients with the more severe symptoms search out medical explanations, rather than identifying underlying psychological distress. The aim of psychoanalytical or psychodynamic therapy in IBS is to assist with verbal expression of emotions and distress and enable people to have more control over their symptoms and lives.

There have been two significant randomised control trials (RCT) using brief psychodynamic therapy in IBS. The first was by Svedlund (1983) who found significantly greater improvements post-treatment in abdominal pain and total somatic symptoms in a psychotherapy group when compared to controls, and this
improvement was more pronounced (using physician ratings) 12 months later. The psychotherapy provided was aimed at identifying relationships between stressful situations and abdominal symptoms and helping individuals to cope with both stressors and emotions. Eight years later, Guthrie, Creed, Dawson and Tomenson (1991) published a study encompassing a detailed assessment session, brief psychodynamic therapy and relaxation training. Guthrie et al. found greater improvement of abdominal pain and diarrhoea in the treatment group after three months in comparison to controls. Significant improvements in the treatment group were also recorded on the Hamilton Rating Scale for Depression and the Clinical Anxiety Scale. Improvements were observed after a year, with 68% of treatment patients rating themselves on global rating scales as better or much better.

1.4.2 Hypnotherapy

Many of the earlier trials into hypnotherapy in IBS have been conducted by Whorwell and colleagues (e.g. Whorwell, Prior & Faragher, 1984). Progressive muscular relaxation has been used, along with bowel-focused imagery, where patients were directed to place a hand on their abdomen and feel a sense of warmth. Patients were asked to imagine their bowel as a river, the flow of which was under their control. Audiotapes were provided to encourage daily self-hypnosis. Early findings appeared very favourable, with all 15 patients allocated to the hypnotherapy group reporting significant improvements in abdominal symptoms and sense of wellbeing (measured weekly on a scale of 0 to 3, where 0 equated to no improvement and 3 equated to maximum improvement). Another study (Houghton, Heyman & Whorwell, 1996) also found significant differences between a hypnotherapy group and waiting list group on bowel symptoms and quality of life, with the treatment group having better outcomes. However, criticisms of this latter study include the use of global retrospective symptom ratings and patients not being randomly assigned to groups. Gonsalkorale, Cruickshanks, Whelan, Miller, Randles et al. (2000) found that improvement in IBS symptoms, using hypnotherapy, was associated with cognitive change, as measured on the Cognitive Scale for Functional Bowel Disorders (CSFBD). Overall, the research into hypnotherapy for IBS has indicated who may benefit from such an approach.
Introduction

Poorer outcomes have been found in patients over 50 years old and those with high levels of psychological distress (Whorwell, Prior & Colgan, 1987; Harvey, Hinton, Gunary & Barry, 1989).

1.4.3 Cognitive Behaviour Therapy

The role of Cognitive Behaviour Therapy (CBT) for IBS has received the greatest amount of attention (Blanchard & Galovski, 1999). A CBT approach would take the stance that IBS is a behavioural disease with cognitive, behavioural and physiological aspects all playing an important part in how an individual responds to life situations (Toner, Segal, Emmott & Myran, 2000). Central to CBT is how individuals think about their bowel symptoms, with fixed cognitive beliefs about what is causing the illness, alongside anxiety, resulting in the maintenance and exacerbation of symptoms. CBT aims to change cognitive distortions and dysfunctional thinking to enable individuals to have greater control over their symptoms and appraise their situation in a more positive way.

Earlier studies using CBT incorporated a variety of different components into the treatment package (e.g. Neff & Blanchard, 1987), examples of which included relaxation training, education and brief cognitive stress coping therapy. However, this made it difficult to identify which components were most beneficial. More recent studies have improved methodologically. Toner, Segal, Emmott, Myran, Ali et al. (1998) conducted a CBT group trial, where patients were randomly allocated to receive either CBT or psychoeducation over 12 weekly group sessions (six people per group) lasting 90 minutes per session. A control group that continued to receive normal medical intervention was also recruited. Toner et al. reported significant improvements in depression levels on the BDI in the CBT group, when compared to the psychoeducation and control groups.

Other studies have investigated individual cognitive therapy (e.g. Greene & Blanchard, 1994; Payne & Blanchard, 1995), where IBS was discussed in terms of an 'autonomic-nervous-system-mediated reaction to stress' with a particular emphasis on the role of cognitions in relation to IBS symptoms. Most people
recruited to both cognitive trials met at least one Axis 1 psychiatric disorder. Greene and Blanchard (1994) found significant improvements in depression levels in the cognitive group as measured on the BDI, but not in controls. The cognitive group also improved significantly on the Automatic Thoughts Questionnaire (ATQ) and Dysfunctional Attitudes Scale (DAS) in comparison to controls, as well as with primary GI symptoms, but no change was observed in anxiety levels, when measured using the STAI. Group sizes were small with 10 per group. This study was improved upon in Payne and Blanchard's trial, which also included a self-help psychoeducational support group although group sizes were still small (approximately 12 people per group). Significant improvements in primary GI symptoms were observed in the cognitive group when compared to the other two groups as well as with depression, trait anxiety and negative components of the ATQ.

1.4.4 Summary of psychological therapies
Overall, the above review illustrates that psychological treatment is beneficial to some IBS patients, despite the methodological limitations of various studies. Different therapeutic approaches may benefit different individuals, with psychodynamic and cognitive therapy being more suitable for people with psychiatric problems, hypnotherapy for those under 50 years of age who suffer less psychological distress.

An important aspect of CBT in understanding IBS is that cognitive distortions can result in heightened anxiety levels and hypervigilance to bodily sensations. This may increase sensations, reinforce the beliefs that there is an underlying serious medical condition, and subsequently affect coping strategies employed. The final section of this introduction chapter is devoted to possible links between coping styles and self-consciousness with affective disorders (in particular anxiety and depression).
1.5 Coping, attentional processing, self-consciousness and the S-REF model
Theories of coping, in relation to attentional processing will be discussed first, followed by a review of the literature on coping and self-consciousness. The self-regulatory executive functioning (S-REF) model of attentional processing will then be introduced as a possible explanation for associations between these factors. Although some studies have investigated coping styles in IBS, to the authors knowledge, no studies have focused on self-consciousness or the role of the S-REF model.

1.5.1 Theories of coping and attentional processing
The interactional model of anxiety, stress and coping (Endler, 1988, 1993, 1997) is a four-stage process. The first stage suggests that interactions occur both between and within person variables (e.g. trait anxiety, cognitive style and vulnerability) and situational variables (e.g. life events, hassles and traumas). The next stage is a two-way interaction between an individual's perception of danger with the first stage, which in turn alters levels of state anxiety (third stage). The reactions to changes in state anxiety occur at the fourth stage and include coping reactions and behaviour, defence mechanisms, biochemical and physiological reactions and illnesses. A feedback loop occurs to maintain a continual interactional process highlighting the importance of each individual variable in each phase.

Endler and Parker (1990) differentiated three types of coping. The first, task-focused coping (or problem focused coping) referred to attempts that an individual made to alter an external situation. The second, emotion-focused coping, represented efforts made to change both cognitive and emotional reactions without directly altering external situations. Finally, avoidance coping was where an individual avoided thinking about a situation by using strategies such as distraction. Studies have shown that people suffering from a range of affective conditions, including anxiety and depression, were more likely to use emotion-focused and avoidance coping strategies, and less likely to use task-focused coping strategies (Holahan & Moos, 1987; Dusenberg & Albee, 1988). This theory has however, been criticised for not taking into account certain information processes involved
with coping and appraisal, for example, the limited capacity of attentional processes, or the impact of attentional selectivity on coping (Matthews & Wells, 1996).

Attentional resources are necessary for processing information. Negative emotional states can decrease attentional resources available (Matthews & Wells, 1996), and strategic, rather than automatic processing, is more susceptible to such declines. The choice of coping strategy employed is not static and will vary depending on the situation (e.g. Folkman, Lazarus, Gruen & De Longis, 1986). Different coping strategies also place different attentional demands on a person, with task-focused strategies using more resources than avoidance related strategies. Coping strategies tend to use strategic processing. However, in some circumstances they may become automated with practice or if an individual influences the process they adopt, opting for low demanding coping strategies when mental resources have declined.

Another relevant theory is Beck's schema theory (1967) in which schema can be defined as 'generic knowledge that contributes to the individual's choice of coping strategy in any given situation' (Matthews & Wells, 1996 pg. 575). Beck's theory suggested that an individual's beliefs (or schemas) influence coping mechanisms. Individuals with affective disorders were more likely to have self-related schemas that were comprised of maladaptive negative beliefs. If emotion-focused coping strategies (such as self-criticism) rather than task-focused coping strategies were used, negative self-beliefs became reinforced.

Overall, in stressful situations, people with affective disorders are more likely to use negative emotion-focused and avoidance coping strategies and less likely to implement task-focused coping strategies. This results in a reduction in the quality of attentional performance (Matthews & Wells, 1996). In addition, focusing on negative events may prevent someone from attending to more positive and helpful information.
1.5.2 Coping and self-consciousness

Self-consciousness (or self-focus) is the amount by which a person focuses on 'the self' instead of external circumstances or internal unrelated thoughts. Fenigstein, Scheier and Buss (1975) differentiated between private self-consciousness (scrutinising oneself and self-reflection) and public self-consciousness (being aware about certain self-aspects which could be scrutinised by others). Self-focus is important when trying to appraise internal responses and initiate self-regulating behaviours. However, problems arise if an individual continues to be self-focused, since it affects self-regulating behaviours. Such increased levels of self-focus, determined by high private self-consciousness scores, can affect emotional or physiological responses and may reduce cognitive resources.

Ingram (1990) found that high levels of self-consciousness might contribute to the cause or maintenance of affective conditions. The relationship between self-consciousness and affective disorders is reciprocal. For example, consider someone who suffers panic disorder. He or she will self-focus on bodily sensations and interpret minor changes in physical functioning, for example heart beating faster, in a catastrophic way. This results in increased worry, recollection of unhelpful cognitions about heart attacks and coping strategies which in turn increases self-focus and results in a vicious circle of events.

Several theories have suggested that self-consciousness affects the coping strategies used (e.g. Carver & Scheier, 1981). If a situation is appraised as successful, self-focus will increase task-focused coping strategies. However, if a negative outcome is expected, emotion-focused and avoidance strategies may be employed.

The implications of self-consciousness are an increase in negative state, higher demands on attentional resources and increased attention to the self, as well as retrieval of dysfunctional self-beliefs (Matthews & Wells, 1996). Self-consciousness may therefore have an important contribution to the onset and perpetuation of acute occurrences of negative affect as well as cognitive distortions. Difficulties occur in emotional disorders when attentional processes are chronic and
intensely self-focused. The beliefs selected affect the appraisal of a situation, subsequent behavioural responses and cognitive coping strategies. When these responses and strategies demand too much of the attentional system, disconfirmatory information can not be processed, resulting in worry or rumination, activation of dysfunctional self-beliefs and monitoring for potential threatening situations.

Positive relationships have been reported between private self-consciousness and stress vulnerability (Fenigstein, Scheier & Buss, 1975) and everyday cognitive failures, as measured on the Cognitive Failures Questionnaire (Broadbent, Cooper, Fitzgerald & Parkes, 1982). In relation to anxiety, self-consciousness was positively related to Speilberger trait anxiety (Dickstein, Wang & Whitaker, 1981). Wells (1985, 1991) demonstrated that in threatening situations, a positive relationship occurred between high levels of private self-consciousness with state-anxiety, worry and somatic symptoms. Taking some of these findings one stage further, Wells and Matthews (1994) investigated whether private self-consciousness and cognitive failures predicted coping in stressful situations in a group of female general and psychiatric nurses. Participants were asked to recall whether a recent stressful situation (over the past month) was controllable, uncontrollable or uncertain. They were also asked to rate the importance of the event and whether it was work related or personal. The Method and Focus of Coping Measure was used to assess how participants coped with the situation. Items in the Method and Focus of Coping Measure were broken down into two coping subscales: problem-focused and emotion-focused. In addition, the role of suppression in coping was measured using a 12-item suppression subscale. Private self-consciousness was measured using the Fenigstein, Scheier & Buss's (1975) Self-Consciousness Scale and the Cognitive Failures Questionnaire was also administered.

There were slightly more work-related than personal stressful situations recalled (57.6% and 42.4% respectively) and most of the 139 participants (82%) reported that the stressful situation was of great importance to them. There was substantial variability in the amount of control reported over the situation. Results suggested
that the importance of the event was the best predictor for the coping strategy chosen, namely problem-focused coping but this coping strategy was less likely to be implemented when the situation was perceived to be low in controllability. Overall, when the situation was stressful and high in cognitive demands, self-focus was related to a decrease in active coping. Those participants who were highly self-focused reported a general decrease in all types of coping when in a mixed controlled (uncertain) situation. Unfortunately this study did not measure avoidance coping, which has previously been reported to be highly correlated with private self-consciousness (Scheier, Carver & Gibbons, 1981). It is also difficult to know how these findings can be generalised, since the authors only recruited female participants and did not take into account the role of psychological distress. In addition, the relationship between cognitive failures and coping remained somewhat ambiguous.

There are minimal studies investigating coping strategies within the IBS population. Dinan, O'Keane, O'Boyle, Chua and Keeling (1991) found that the onset and perpetuation of IBS might be linked with inadequate coping styles that are used in stressful situations. A more recent study compared stressful life events in IBS patients with normal controls (Pinto, Lele, Joglekar, Panwar & Dhavale, 2000) to identify whether they caused clinical anxiety and depression as well as whether any psychopathology affected coping strategies. The study was carried out in India on 30 IBS patients, recruited using the Manning criteria from a gastroenterology department of a general hospital. Controls were 'drawn randomly from the normal population' and matched on demographics. The study consisted of a semi-structured interview to collate socio-demographic information, followed by three questionnaires; the HADS, the presumptive stressful life events scale (PSLES), and the Mechanisms of Coping Scale. IBS patients had an average symptom duration of 2.7 years. They had significantly more stressful life events to controls and over 50% were clinically anxious or depressed (score greater than 10 for either the anxiety or depression subscale on the HADS). However, stressful life event scores were higher in all IBS patients irrespective of their HADS scores, implying that such high levels did not necessarily result in psychological difficulties.
The Mechanisms of Coping Scale was divided into five categories: passivity, fatalism and escape-avoidance represented negative coping style, and problem-solving and expressive-action represented positive coping styles. IBS patients with clinical HADS depression or anxiety scores were significantly more likely to use negative coping strategies than IBS patients without clinical anxiety or depression scores. This suggested that coping strategies in IBS patients might be affected if they are suffering from clinical anxiety or depression. The authors recommended that in this subgroup of individuals, pharmacotherapy should be prescribed for the psychopathology, alongside psychotherapy in the form of cognitive restructuring techniques, to help alter cognitive distortions and negative coping styles.
1.5.3 The S-REF model

A possible explanation for the role of self-consciousness in psychological distress is found in the self-regulatory executive function (S-REF) model, illustrated in Figure 1.

Figure 1. The S-REF model, with feedback loops omitted (Wells & Matthews, 1994)

- Dispositional self-focus
- Introducing thoughts
- External cues

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**S-REF**

<table>
<thead>
<tr>
<th>Appraisal of coping options</th>
<th>Modification of self-beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice and formulation of specific coping strategy</td>
<td>Long-term memory (self-beliefs)</td>
</tr>
</tbody>
</table>

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**OUTCOMES**

- Negative emotion
- Worry and rumination (emotion-focus)
- Loss of functional resources
- Increased avoidance/reduced effortful task-focus
- Monitoring of initial and external threat cues
Wells and Matthews (1994) introduced the S-REF model to conceptualise how interactions between appraisals, attention control, and self-beliefs are involved in maintaining emotional disorders. The S-REF is an information-processing model consisting of three distinct levels of processing. The first is a low level process, representing unconscious automatic processing of external and internal stimuli. It is rapid in nature and does not require attention. External cues are likely to represent whether an individual feels criticised by others. Internal cues include negative thoughts, or information obtained from long term memory in which a disparity occurs between the ideal and actual state. The second level of processing is controlled, forms part of consciousness, requires attentional processes and is involved in the appraisal of situations. The third level contains self-beliefs that inform the content and operations of the controlled process.

The S-REF is the processing component in level two, which is partly meta-cognitive in nature and forms interactions between levels one and three. It is a cognitive attentional syndrome aimed at minimising the difference between the actual and ideal state. It can be activated by several predisposing factors, including self-focus, processing negative self-beliefs and retrieval of schema-like negative self-knowledge. In such circumstances, attentional resources become directed towards internal processing. In contrast, S-REF activity is decreased when predisposing factors are positive, for example, with positive beliefs about the self and when positive emotions are processed.

One of the major functions of the S-REF is in selecting a coping strategy. There is no fixed link between type of coping used and degree of self-focus, since the strategy chosen will vary depending on the individual and the situation they are in. However, in anxiety disorders, where worry is a prominent feature, the S-REF is more likely to retrieve active worry and rumination as part of an emotion-focused coping strategy. Since worry is in part a metacognitive belief, it may also be appraised negatively. Thus S-REF activity, whilst attempting to decrease worry, may in fact make the problem worse (Wells, 2000).
1.5.4 Summary of coping, attentional processing, self-consciousness and the S-REF model

The S-REF model would suggest that psychological problems are associated with self-focus and dysfunctional cognitions or self-beliefs. These factors make heavy demands on the attentional resources available. With the bias of attentional resources in these areas, alternative and more positive information is prevented from being processed. The S-REF model would also suggest that in such situations, the coping strategies used are more likely to be emotion-focused and avoidant, since these require less attentional resources than task-focused coping strategies.

1.6 Clinical implications

The clinical implications of investigating the S-REF model and associated factors (i.e. self-consciousness) are to inform clinicians when deciding on the most suitable psychological treatments. The earlier review on psychological interventions suggested that various approaches might be effective in treating psychological distress in IBS. One such approach used cognitive therapy, which is particularly interested in how a person interprets bodily sensations. Cognitive therapy is fundamental to the S-REF model. Treatment of psychological problems focuses on helping clients to obtain new processing skills by disturbing self-focused processing cycles, allowing the processing system to receive and absorb new information. In addition to the cognitive strategies, attentional procedures are employed to divert the person’s attention away from him/herself in order to process more helpful and positive beliefs. Self-control training may be beneficial as well as training in the use of more effective coping strategies (e.g. task-focused) in stressful situations.

1.7 Conclusion

This chapter has already illustrated the importance of psychological factors, using the biopsychosocial model, in our understanding of IBS. In addition, some IBS patients may suffer from anxiety and depression and to a greater extent than patients with organic bowel conditions. However, to the author’s knowledge, no studies to date have investigated the role of self-consciousness in IBS nor the involvement that
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this may have with affective state, worries and coping strategies. The S-REF model has also not been investigated within an IBS population.

The actual causal links between dysfunctional coping strategies, attentional bias and psychological distress is not known. However, what has been reported is a reciprocal relationship between self-focus and psychological distress. Wells (1985, 1991) also found that private self-consciousness in particular was positively associated with increased state-anxiety, worry and somatic symptoms.

Relationships between psychological distress and coping strategies have been reported in IBS patients. Pinto, Lele, Joglekar, Panwar and Dhavale (2000) found that psychological distress, as measured on the HADS, was positively correlated with an increased use of negative coping strategies (passivity, escape-avoidance and fatalism) in stressful situations in a group of IBS consulters.

If IBS consulters are self-focused and have increased negative self-beliefs, this may add to the symptoms of affective disorders by increasing negative moods, reducing functional resources available, increasing attentional demands to self-referent stimuli, as well as access to negative material. This will impact on the ability to cope effectively in stressful situations. Therefore, it is important to investigate the relationship of self-consciousness with psychological distress, coping strategies and negative cognitions and whether these factors are more pertinent in IBS patients than people with organic bowel conditions.
1.8 Research questions and hypotheses

1.8.1 Research question 1

To investigate whether IBS consulters are more psychologically distressed (anxious and/or depressed), self-conscious, have negative cognitions about their bowels and use negative coping strategies in stressful situations (emotion-focused and avoidant coping strategies rather than task-focused) compared to IBD patients or normal controls.

1.8.1.1 Hypothesis 1a.

IBS consulters will be significantly more anxious and/or depressed than IBD patients or controls.

Prediction

IBS consulters will have higher scores on the Hospital Anxiety and Depression Scale (HADS) compared to IBD patients or controls.

1.8.1.2 Hypotheses 1b.

IBS consulters will be more self-conscious than IBD patients or controls.

Prediction

IBS consulters will have significantly higher private and public self-consciousness scores and social anxiety scores as measured on the Self-Consciousness Scale (SCS) compared to IBD patients or controls.

1.8.1.3 Hypotheses 1c.

IBS consulters will have more negative cognitions about bowels than IBD patients or controls.

Prediction

IBS consulters will have significantly higher scores on the Cognitive Scale for Functional Bowel Disorders (CSFBD) compared to IBD patients or controls.
1.8.1.4 Hypotheses 1d.
IBS consulters will be more likely to use emotion-focused and avoidant coping strategies rather than task-focused coping strategies in stressful situations than IBD patients or controls.

Prediction
IBS consulters will have significantly higher emotion-focused and avoidant coping scores and lower task-focused coping scores on the Coping Inventory in Stressful Situations (CISS) compared to IBD patients or controls.

1.8.2 Research question 2.
There will be relationships between self-consciousness, negative cognitions about bowels, psychological distress and coping strategies used in stressful situations in IBS consulters.

1.8.2.1 Hypotheses 2a.
There will be an association between self-consciousness and negative cognitions about bowels in IBS consulters.

Prediction
There will be a positive correlation between self-consciousness (as measured on the SCS) and negative cognitions about bowels (as measure on the CSFBD) in IBS consulters.

1.8.2.2 Hypotheses 2b.
There will be an association between self-consciousness and psychological distress in IBS consulters.

Prediction
There will be a positive correlation between self-consciousness (as measured on the SCS) and psychological distress (as measure on the HADS) in IBS consulters.
1.8.2.3 Hypotheses 2c.
There will be an association between self-consciousness and the types of coping strategies used in stressful situations in IBS consulters.

*Prediction*
There will be a positive correlation between self-consciousness (as measured on the SCS) and emotion-focused and avoidant coping strategies (as measured on the CISS) in IBS consulters. There will be a negative correlation between self-consciousness (as measured on the SCS) and task-focused coping strategies (as measured on the CISS) in IBS consulters.

1.8.2.4 Hypotheses 2d.
There will be an association between psychological distress and negative cognitions about bowels in IBS consulters.

*Prediction*
There will be a positive correlation between psychological distress (as measured on the HADS) and negative cognitions about bowels (as measured on the CSFBD) in IBS consulters.

1.8.2.5 Hypotheses 2e.
There will be an association between psychological distress and the types of coping strategies used in stressful situations in IBS consulters.

*Prediction*
There will be a positive correlation between psychological distress (as measured on the HADS) and emotion-focused and avoidant coping strategies (as measured on the CISS) in IBS consulters. There will be a negative correlation between psychological distress (as measured on the HADS) and task-focused coping strategies (as measured on the CISS) in IBS consulters.

1.8.2.6 Hypothesis 2f.
There will be an association between cognitions about bowels and the types of coping used in stressful situations in IBS consulters.

*Prediction*
There will be a positive correlation between cognitions about bowels (as measured on the CSFBD) and emotion-focused and avoidant coping strategies (as measured on the CISS) in IBS consulters. There will be a negative correlation between cognitions about bowels (as measured on the CSFBD) and task-focused coping strategies (as measured on the CISS) in IBS consulters.

1.8.3 Research question 3
This final research question is interested in whether there are differences between IBS consulters who are psychologically distressed and those who are not psychologically distressed.

1.8.3.1 Hypothesis 3.
Psychologically distressed IBS consulters will be more likely to use emotion-focused and avoidant coping strategies in stressful situations (compared to task-focused), have more negative worries about their bowels and be more self-conscious when compared to IBS consulters who are not psychologically distressed.

Prediction
Psychologically distressed IBS consulters will have significantly higher scores on the emotional and avoidant factors of the CISS and significantly lower scores on the task factor of the CISS compared to IBS consulters who are not psychologically distressed. In addition, psychologically distressed IBS consulters will have significantly higher scores on the CSFBD and SCS compared to IBS consulters who are not psychologically distressed.
2. METHOD

2.1 Design
A controlled between-groups design was adopted in which the independent variable was study group with three conditions: Irritable Bowel Syndrome (IBS), Inflammatory Bowel Disorder (IBD) and controls. There were four dependent variables: psychological distress, self-consciousness, cognitions and coping. The first research question compared differences between the three groups on all dependent measures using one-way analysis of variance. The second research question investigated relationships between the dependent variables for the IBS group only. The final research question compared differences between the clinically anxious or depressed IBS consultee with the non-anxious IBS consultee using pairwise comparisons.

2.2 Participants
2.2.1 IBS and IBD patients
People with a definite diagnosis of IBS (using the Rome I criteria) or IBD were recruited from a gastroenterology follow-up clinic at the Leicester General Hospital. The Rome I criteria was used rather than the Rome II criteria since it was currently in practice in the gastroenterology service. The Rome I criteria also offers a more stringent diagnosis, requiring people to have had symptoms recently (rather than in the past 12 months). Given that limited studies have applied the Rome II criteria to date, it was felt that the Rome I criteria would enable comparisons with previous findings.

Inclusion criteria for participants were:
1) Aged 18 to 65 years old.
2) Definite diagnosis of IBS or IBD.
3) No diagnosis of a secondary chronic medical condition in the previous 12 months.
4) English speaking.
Forty IBS patients and 40 IBD patients were invited and consented to participate between August to December 2001. Of these, 33 IBS and 35 IBD patients returned the questionnaires. There were no significant differences between those who returned and those who did not return the questionnaires with regard to age or gender for either of the two groups.

2.2.2 Controls
Controls were recruited from a fracture clinic at the Leicester Royal Infirmary. Inclusion criteria were:
1) Age 18 to 65 years old.
2) No history of a diagnosed bowel condition (either functional or organic).
3) No diagnosis of any other chronic medical condition in the previous 12 months.
4) English speaking.
5) Had not received psychological or psychiatric treatment in the preceding 12 months.

After attending the first fracture clinic, it became apparent that most of the fracture patients were young males, children or older adults. In order to provide a matched control sample for the IBS and IBD groups, partners/spouses and parents of fracture patients were also recruited. Forty-four controls were invited and consented to participate between August to December 2001, of whom 35 returned the questionnaires completed. There were no significant differences between those who returned the questionnaires and those who didn't with regard to age or gender.

Demographic information for all three groups who completed the questionnaires is discussed in more detail in the results section.

2.3 Procedure
2.3.1 IBS and IBD patients
In consultation with the gastroenterologist, it was agreed that the follow-up gastroenterology clinic would be the most suitable place to recruit patients with IBS, since all investigative procedures would have been completed and alternative
medical explanations eliminated. IBS patients attending the clinic would have been diagnosed using the Rome I diagnostic criteria and were typically discharged back into the care of their general practitioners. In contrast, the IBD patients were rarely discharged from the clinic and instead had their condition regularly monitored, especially during relapses.

Attendees at the clinic had a variety of presenting gastroenterology problems ranging from liver disorders, acid reflux, anaemia, pancreatitis, butterfat intolerance etc. The clinic was organised by a clinic co-ordinator. Two specialist gastroenterology nurses attended the clinic to address any specific patient concerns.

Prior to the clinic, patients were identified as fitting the inclusion criteria by one of the specialist gastroenterology nurses. Patients with IBS or IBD were given a letter of invitation by the consulting doctor, which included an 'opt in' form (see Appendix 1) and a patient information sheet (see Appendix 2). Those interested in participating were asked to sign a consent form (see Appendix 3), which the doctor countersigned. Following consultation, details of consenting patients were passed to the researcher who met patients individually in a private consultancy room. Patients were given the opportunity to ask questions and if they were still interested in participating, a demographics sheet was completed (see Appendix 4). The patient was shown each of the four questionnaires and instructions on how to complete each form. They were given a self-addressed and stamped envelope so that they could easily return the completed questionnaires.

Those patients who requested more time to think about the study were given the information sheet and an 'opt-in' form to take away, along with a self addressed and stamped envelope. At a later stage, if they were interested in participating, they were asked to sign the form and provide their contact details. They were then contacted and asked for a suitable time with which to visit them in order to obtain consent and provide the questionnaires.
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After two weeks, if no responses had been obtained from consented patients, a follow-up letter was sent (see Appendix 5) along with another copy of the questionnaires and a self addressed and stamped envelope.

2.3.2 Controls
Control patients were recruited from a fracture clinic, which ran daily each morning. A similar procedure was adopted to the IBS and IBD groups. Consultants at the clinic introduced the study to patients, partners or parents fitting the criteria (see Appendices 6 to 9 for the relevant forms e.g. control information sheet). The consultant obtained consent. Following their appointment, individuals met the researcher to complete demographic information and were shown how to complete the questionnaires.

2.4 Questionnaires
There have been several questionnaires designed to assess a variety of difficulties that people with FBD may experience. For example, the Functional Digestive Disorders Quality of Life Questionnaire (FDDQL; Chassany, Marquis, Scherrer, Read, Finger et al., 1999) includes domains of daily activities, diet, sleep, discomfort, coping with disease, control of disease and stress. An alternative, the IBS Quality of Life measure (IBSQOL; Hahn, Kirchdoerfer, Fullerton & Mayer, 1997) includes nine domains of emotional, mental health, sleep, energy, physical functioning, diet, social role, physical and sexual relations. However, these quality of life measures were felt to be too broad and did not assess certain aspects of particular interest e.g. cognitions in greater detail.

Four areas were assessed in this study, including cognitions, self-consciousness, coping and psychological distress. The questionnaires chosen to assess these functions are described in more detail below.

2.4.1 Measuring cognitions
Over the past few decades there have been several questionnaires designed to measure cognitive thinking in a variety of research or clinical settings. For
example, the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978) was the original method of measuring cognitive style in cognitive therapy studies in the USA. The DAS consists of 40 items which people were asked to rate on a seven point Likert scale from 'disagree totally' to 'agree totally'. This questionnaire has been used in a few studies involving IBS patients e.g. Drossman, Whitehead, Toner, Diamant, Hu et al. (2000) used the DAS to compare ratings between a group of FBD patients who reported moderate or severe pain. There appears to be limited research using such cognitive tools to measure outcomes in IBS cognitive therapy studies, with a preference instead in the use of psychological distress measures such as the BDI or STAI (e.g. Boyce, Gilchrist, Talley & Rose, 2000).

Another cognitive questionnaire is the Meta-Cognitive Questionnaire (MCQ; Cartwright-Hatton & Wells, 1997). The MCQ has five subscales: positive beliefs; beliefs about uncontrollability and danger of thoughts; cognitive confidence; need for control, responsibility and punishment; cognitive self-consciousness. A disadvantage with the questionnaire is it's length since it consists of 65 items. However, the main disadvantage with both the DAS and MCQ, as well as other cognitive questionnaires, are that they do not address specific worries that people may have in relation to bowel conditions.

Cognitive Scale for Functional Bowel Disorders (CSFBD, Toner, Stuckless, Ali, Downie, Emmott et al., 1998b)

The CSFBD was the first questionnaire designed to measure specific cognitions in people with functional bowel disorders, in particular IBS (see Appendix 10). Themes for the questionnaire were obtained from a number of sources, including client's thought diaries, literature reviews and experience of clinicians and researchers working in the area of FBD. The original questionnaire consists of 25 items although a version which includes an extra six items is also currently being investigated in research trials by the main author and this longer version is described below.
Eleven main themes in the CSFBD questionnaire were identified. The first was *bowel performance anxiety* that included worries about how the bowel functioned in certain situations. Such anxiety resulted in people trying to manage their environment or food to reduce the impact of any potential bowel problems. The second theme was *control*, which corresponded to an individual feeling that they lacked control over their bowel symptoms. This may result in the person trying to control their environment or avoid situations that they perceived to be difficult. Another theme was related to *pain*, since IBS symptoms can be extremely painful. The fourth theme was *perfectionism*, referring to the very high standards that individuals set for themselves without allowing for any flexibility. Another theme was *anger frustration*, in relation to feelings that people may experience as a consequence of having a FBD. *Self-efficacy* referred to the person's perceived inability to cope with their symptoms. The seventh theme was *social approval*, in which individuals wanted to be seen in a positive light by others and feared being perceived as incompetent. *Embarrassment shame* related to having a bowel condition, which can be difficult to talk about with others, and the effects that it can have in situations e.g. needing to visit the toilet frequently. These feelings may also be in relation to not having an organic disorder and instead having a condition with no medical diagnosis. Heightened sensitivity to *social rules and norms* was the ninth theme where individuals may set high standards for themselves and others and maintain rigid beliefs about what is and is not socially acceptable. *Self-nurturance* refers to individuals who have difficulty taking into account their needs and desires. The final theme was *disease conviction*.

When the original questionnaire was designed (25 items), the authors reported high internal consistency, and did not find any contamination with social desirability. In addition, their results suggested high concurrent criterion validity, high content validity, face validity and acceptable convergent validity. Cognitive change, as measured on the CSFBD, was found to be associated with hypnotherapy intervention as well as severity of IBS symptoms (Gonsalkorale, Cruickshanks, Whelan, Miller, Randles *et al.*, 2000). Advantages of the CSFBD questionnaire are that it is relatively brief and easy to administer. The questions are specifically
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tailored to people with FBD, identifying cognitive worries in relation to their bowel symptoms.

2.4.2 Measuring self-consciousness

The most popular questionnaire to date for assessing self-consciousness is the Self-Consciousness Scale (SCS; Fenigstein, Scheier & Buss, 1975). A copy of the SCS can be found in Appendix 11. The SCS consists of three factors, private and public self-consciousness and social anxiety. An alternative to the SCS is the Body Consciousness Questionnaire (Miller, Murphy & Buss, 1981). The BCQ assesses private body consciousness (internal bodily sensations), public body consciousness (the focus on external appearance of the body) and body competence (how able individuals think their body is e.g. strength and co-ordination). Miller et al. found the BCQ private and public domains were correlated with the SCS private and public factors. The BCQ is not as well researched or applied as the SCS (Cramer, 2000) and the SCS has also been translated into many different languages (e.g. Swedish; Nystedt & Smari, 1989). Many studies have investigated the relationship between self-consciousness and psychopathological states (for a review, see Ingram, 1990). The SCS is versatile with individual factors of the SCS having been investigated, for example, Wells (1985) and Wells and Matthews (1994) just used the private factor of the SCS in their studies.

Self-Consciousness Scale (SCS; Fenigstein, Scheier & Buss, 1975)

There are three factors in the SCS. The private self-consciousness factor focuses on attention to a person's inner thoughts, feelings, moods and attitudes. The public self-consciousness factor assesses a person's general awareness of himself or herself as a social object that has an effect on others. The social anxiety factor investigates the discomfort that an individual feels when in the presence and under the focus of others. The public and private factors therefore assess the process of focusing attention on oneself whereas social anxiety occurs as a result of this process.

The SCS consists of 23 items related to one of the three factors, public (7 items), private (10 items) and social anxiety (6 items). Each item is rated on a scale of 0 to
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4, with 0 representing 'extremely uncharacteristic', up to 4 representing 'extremely characteristic'.

Fenigstein et al. (1975) reported a moderate correlation between public self-consciousness with both private self-consciousness and social anxiety. Their findings from test-retest correlation suggested the questionnaire had reasonable reliability.

2.4.3 Measuring coping

There have been a number of different questionnaires devised to assess coping. These include the Ways of Coping Questionnaire (WCQ; Folkman & Lazarus, 1988), the COPE (Carver, Scheier & Weintraub, 1989) and the Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990). When designing the WCQ, Folkman and Lazarus suggested that coping had two main functions, emotion-focused (managing distressing emotions) and problem-focused coping (changing the problem that is causing the distress). Disadvantages with the WCQ are its length, consisting of 66 items. The authors have actively encouraged users to make changes to the items depending on their research questions. However, this latter point makes comparisons between studies more difficult and prevents the questionnaire acting as a standardised test. The number of factors that it contains has varied depending on the sample being investigated and test-retest reliabilities are not reported in the manual.

An alternative measure is the COPE, a 52-item questionnaire with 13 subscales. It was designed as a multi-dimensional measure of assessing coping with physical illness. Unfortunately low to moderate alpha coefficients were reported in the manual for several of the subscales. A shortened version, the COPE-short has also been developed by Cartwright and Lamb (1996).

Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990)

The CISS is a self-report measure of multidimensional coping designed to reliably assess the coping styles or strategies used by individuals in stressful situations (see
The CISS consists of 48 items. Factor analysis revealed three factors: task-orientated coping, emotion-orientated coping and avoidance-orientated coping (Endler & Parker, 1990). The avoidance-orientated scale can be further subdivided into distraction and social diversion scales. The task-orientated coping scale represents task-orientated efforts that a person may use to either solve a problem, alter the situation or cognitively restructure the problem. The emotion-orientated coping scale represents emotional reactions that tend to be self-orientated. Whilst reactions may be aimed at decreasing stress, the opposite effect may occur, for example becoming too emotional or angry. Lastly, the avoidance-orientated coping scale includes activities or cognitions that are focused on avoiding a stressful situation and may be through distraction or social diversion. Respondents are asked to rate each item on a scale from 1 (representing 'not at all') to 5 (representing 'very much').

The second edition manual of the CISS provides normative data for adults, college students, adolescents, and psychiatric clinical patients (Endler & Parker, 1999). It also reports information on the reliability and validity of the CISS. For example, coefficient alpha reliabilities (the extent to which all items measure the same construct) were generally reported to be high across the different normative groups, suggesting very high internal reliabilities. Moderate to high test-retest reliability values were reported. Very low or non-significant inter-correlations were reported between the factors, supporting the multidimensionality of the questionnaire. Construct validity findings suggested that emotion-orientated coping was highly related to somatisation, psychopathology and psychological distress. In contrast, both task-orientated coping and avoidance-orientated coping were unrelated to these variables.

Overall, the CISS has several advantages over the other coping questionnaires. It was specifically designed to measure the interactions between stress, anxiety and
Method

coping. The role of stress is particularly relevant to this study since stress is involved with the maintenance of IBS symptoms and can also prevent recovery (Bennett, Tennant, Piesse, Badcock, Kellow, 1998). The CISS is slightly shorter than the WCQ and COPE and the CISS manual also provides data supporting the measure in terms of reliability and validity.

2.4.4 Measuring psychological distress

There have been several standardised questionnaires measuring anxiety and depression levels, for example the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh, 1961) and the State Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 1983). The BDI was designed to measure depression and is available in both a long and short format. The aim of the long form was to provide a quantitative measure of depression severity but it was not designed to act as a diagnostic tool. Problems with the BDI are that patients have reported that it can be depressing to complete and people may have difficulty choosing between the options available on each item (Lindsay & Powell, 1994). The BDI also contains questions that are somatic in nature and overall scores may get contaminated when used in medical settings. The STAI is the mostly widely used assessment of anxiety and consists of 20 adjectives, which are then separated into either state or trait anxiety categories. Both the BDI and STAI have been widely used in previous IBS research studies (e.g. Schwarz, Blanchard, Berreman, Scharff, Taylor et al., 1993; Neff & Blanchard, 1987; Greene & Blanchard, 1994; Payne & Blanchard, 1995).

Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983)

The HADS was originally developed as a self-report measure of anxiety and depression levels in medical settings, although it is now used in a wide range of clinical, research and community settings. A copy of the HADS can be found in Appendix 13. Questions were designed so that they would not be contaminated by physical complaints such as changes in appetite, fatigue and insomnia. The HADS also has an advantage over other measures, including the BDI and STAI, being brief and easy to administer. It provides a measure for anxiety and depression, rather
than requiring two separate questionnaires to measure these domains. The HADS is most recommended for use in medical health care settings (Zigmond & Snaith, 1983). It has also been applied to IBS research studies (e.g. Pinto, Lele, Joglekar, Panwar & Dhavale, 2000), including several British studies (e.g. Thornton, McIntyre, Murray-Lyon & Gruzelier, 1990 and Longstreth, Hawkey, Mayer, Jones, Naesdal et al., 2001).

The HADS contains fourteen questions, seven each for anxiety and depression. Questions were derived from clinical experience rather than using factor analysis. Each question has four responses and is scored from 0 to 3, with a higher score representing greater difficulties. The authors originally suggested scoring the questionnaire as follows: score between eight to 10 indicates possible clinical disorder and score between 11 to 21 indicates probable clinical disorder. More recently Johnston, Wright and Weinman, (1995) proposed that total scores for both anxiety and depression could be divided into four categories ranging from normal (score of 0 to 7), mild (score 8 to 10), moderate (score 11 to 14) to severe (score of 14 to 21). Carroll, Kathol, Noyes, Wald and Clamon (1993) however recommended using a cut-off of 11 or more to separate cases from non-cases. The HADS manual reports good internal consistency (alpha coefficients of 0.93 for anxiety and 0.9 for depression), face validity, concurrent validity and construct validity. A recent article provided up to date normative data for a non-clinical sample and reported a mean score of 6.14 (s.d=3.76) for anxiety and mean score of 3.68 (s.d=3.07) for depression (Crawford, Henry, Crombie & Taylor, 2001). This article also provided separate female and male percentile scores for both subcategories.

2.5 Ethical consideration and approval
The design of this study and the use of the questionnaires were carefully chosen so as to minimise undue distress to any individuals. It was felt necessary to have the use of a quiet room or space to discuss the study with participants and answer any questions in privacy. Ethical approval was sought for the study from the Leicestershire Ethics Committee. An application was submitted in January 2001 and approval granted the following month.
3. RESULTS

The previous chapter discussed the methodology used in this study. This chapter will present the results obtained in relation to the three research questions. Firstly, the rationale behind the statistical analysis applied will be discussed. The research findings will then be subdivided into five main sections; an overview of the demographic information, descriptive data on the questionnaires followed by results for each of the three individual research questions and associated hypotheses. Finally, a summary of the overall results will be presented.

3.1 Selection of statistical analysis

Before statistical analysis commenced, the data was checked to determine whether it met the assumptions of parametric analysis, i.e. that populations are normally distributed, have homogeneity of variance (normal distributions have the same variance) and that data is taken from interval or ratio scales.

To identify whether the data was normally distributed, it was visually inspected using histograms with a superimposed normal distribution curve for each factor. Using this approach, some of the variables were skewed. In addition, Kolmogorov-Smirnov values were calculated for each factor of the dependent variables. Using this procedure, 7 out of the 11 variables on the Cognitive Scale for Functional Bowel Disorders (CFSBD) had significant values for most of the three groups (p < .05) suggesting non-normality. In addition, the control group had significant Kolmogorov-Smirnov values (p < .05) on the Hospital Anxiety and Depression Scale (HADS). Transforming the data did not improve the significance levels.

To test for homogeneity of variance, the Levene Statistic was applied. This test is thought to be more powerful than the F test, the latter of which is based on dividing the largest variance by the smallest variance (Howell, 1987). Results using the Levene's test suggested that four variables did not demonstrate homogeneity of variance (p < .05), including the emotion-focused and distraction factors from the Coping Inventory for Stressful Situations (CISS) and the disease conviction and
Results

perfectionism factors from the Cognitive Scale for the Functional Bowel Disorder (CSFBD).

The third condition for parametric analysis is that data is taken from interval or ratio scales. Most of the questionnaires were ordinal in nature. However there is much debate in the literature as to whether this last assumption needs to be met. Some authors argue that parametric analyses can be applied to ordinal data (e.g. Bryman & Cramer, 1997) and others claim that parametric criteria tend to be overly restrictive and that parametric analysis tends to be relatively unaffected by violating the assumptions (Howell, 1987).

However, given that none of the three conditions for parametric analysis were met, non-parametric analysis was conducted. The Kruskal-Wallis one-way analysis of variance was used to compare differences between the three independent groups. When investigating relationships between factors for the IBS group, non-parametric one tailed bivariate correlation analysis using Spearman’s rho was used. The Mann Whitney U test was applied to test differences between IBS consulters categorised as psychologically distressed or not.

All of the analyses was conducted using the Statistical Package for Social Sciences (SPSS) for Windows, Version 10.
3.2 Research findings

3.2.1 Demographic data

There were 33 IBS patients, 35 IBD patients and 35 controls who returned the questionnaires between August and December 2001. Table 3 illustrates the demographic details of the three groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean age (s.d) in years</th>
<th>Gender (% females)</th>
<th>% &lt; 12yrs Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBS (n = 33)</td>
<td>41.09 (12.7)</td>
<td>70</td>
<td>64</td>
</tr>
<tr>
<td>IBD (n = 35)</td>
<td>43.09 (11.6)</td>
<td>54</td>
<td>51</td>
</tr>
<tr>
<td>Controls (n = 35)</td>
<td>39.37 (8.7)</td>
<td>63</td>
<td>60</td>
</tr>
</tbody>
</table>

There were no significant differences between the groups with regard to age. Seventy percent of IBS patients were female, in comparison to 54% of IBD patients and 63% of controls, but this difference was not significant ($\chi^2 = 1.726, p = 0.42$). There were no significant differences between the groups with respect to number of years education ($\chi^2 = 1.11, p = 0.58$), with two thirds of IBS patients (64%) having less than 12 years education.

Small numbers were obtained in each of the different ethnic, marital status and occupation categories. Therefore for each factor, certain categories were combined. With regard to ethnicity, people were classified into whether they considered themselves white/white European or Asian/other. In relation to marital status, people were categorised as to whether they were married/cohabiting or single, divorced or widow/er. People's occupation was considered as either employed or unemployed/retired. The three groups were compared in relation to these new categories and the results are illustrated in Table 4.
Table 4. Ethnicity, marital status and occupation of the three groups.

<table>
<thead>
<tr>
<th></th>
<th>% IBS (n = 33)</th>
<th>% IBD (n = 35)</th>
<th>% Controls (n = 35)</th>
<th>$\chi^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White or European</td>
<td>85</td>
<td>69</td>
<td>83</td>
<td>3.24</td>
<td>0.2</td>
</tr>
<tr>
<td>Asian/other</td>
<td>15</td>
<td>31</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>82</td>
<td>77</td>
<td>80</td>
<td>0.23</td>
<td>0.89</td>
</tr>
<tr>
<td>Single, divorced or widow/er</td>
<td>18</td>
<td>23</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>76</td>
<td>66</td>
<td>91</td>
<td>6.8</td>
<td>0.034*</td>
</tr>
<tr>
<td>Unemployed or retired</td>
<td>34</td>
<td>34</td>
<td>9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* significant at $p < .05$

There were no significant differences between the groups with regard to ethnicity ($\chi^2 = 3.24$, $p = 0.2$) with most people being white or European. There were no significant differences between the three groups in relation to marital status ($\chi^2 = 0.23$, $p = 0.89$) with most patients in each group being married. However, there was a significant difference in employment status ($\chi^2 = 6.8$, $p = 0.034$) between the three groups. When pairwise comparisons were conducted, there were significantly fewer IBD patients in employment than controls ($\chi^2 = 6.87$, $p = 0.009$) but no significant differences between IBS consulters and controls ($\chi^2 = 3.076$, $p = 0.08$) or IBS consulters and IBD patients ($\chi^2 = 0.83$, $p = 0.36$).

In the IBS group, most (81.8%) had an IBS diagnosis for less than one year. In comparison, all IBD patients had been diagnosed for at least one year, and 13 (37%) had been diagnosed for over 10 years. Given that most IBS patients do not return to the gastroenterology clinic following diagnosis, the length of time that patients had experienced IBS symptoms was also recorded. This varied considerably, with a median length of three years. There were 39% who had symptoms for up to two years, 30% had symptoms between three to five years, 6% had symptoms for six or seven years and 18% having symptoms between 14 to 30 years (in two cases, symptom duration was not known).
When the IBS group were asked what their main presenting IBS symptom was, 10 people (30.3%) had diarrhoea, 13 (39.4%) had abdominal pain, six (18.2%) had constipation, two (6.1%) had bloating and two had abdominal pain and diarrhoea. The three groups were asked whether they were taking any medication. Since only one control patient was taking medication, this group was excluded from further analyses. There were significantly more IBD patients on medication for their symptoms compared to IBS patients ($\chi^2 = 6.06, p = 0.014$).

There were no significant differences in the number of people in the IBS and IBD groups who had received either psychological or pharmacological treatment for psychological difficulties ($\chi^2 = 1.37, p = 0.242$).

Within the control group, fracture patients were compared to those without fractures on demographic details and no significant differences were found.

3.2.2 Descriptive data for the questionnaires

Table 5 illustrates the descriptive data for the HADS.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Median</th>
<th>Inter-quartile range</th>
</tr>
</thead>
<tbody>
<tr>
<td>HADS anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>11.3</td>
<td>4.17</td>
<td>11.0</td>
<td>7.5 - 15.5</td>
</tr>
<tr>
<td>IBD</td>
<td>35</td>
<td>10.03</td>
<td>4.87</td>
<td>9.0</td>
<td>6.0 - 13.0</td>
</tr>
<tr>
<td>Control</td>
<td>35</td>
<td>8.11</td>
<td>3.83</td>
<td>7.0</td>
<td>6.0 - 10.0</td>
</tr>
<tr>
<td>HADS depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>6.42</td>
<td>4.0</td>
<td>5.0</td>
<td>3.0 - 10.0</td>
</tr>
<tr>
<td>IBD</td>
<td>35</td>
<td>5.97</td>
<td>4.11</td>
<td>5.0</td>
<td>3.0 - 8.0</td>
</tr>
<tr>
<td>Control</td>
<td>35</td>
<td>4.43</td>
<td>3.55</td>
<td>4.0</td>
<td>2.0 - 7.0</td>
</tr>
</tbody>
</table>

Note: HADS = Hospital Anxiety and Depression Scale

The mean HADS anxiety scores for both IBS consulters and IBD patients were higher than in the control groups, with IBS consulters having the highest median value and greatest inter-quartile range. On the HADS depression, both IBS consulters and IBD patients had higher mean scores than controls, although the median values were not too dissimilar.
Table 6 illustrates the descriptive data for the SCS.

### Table 6. Descriptive data for the SCS.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Median</th>
<th>Inter-quartile range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SCS public</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>17.73</td>
<td>5.82</td>
<td>18.0</td>
<td>14.0 - 23.0</td>
</tr>
<tr>
<td>IBD</td>
<td>35</td>
<td>16.37</td>
<td>5.57</td>
<td>16.0</td>
<td>12.0 - 21.0</td>
</tr>
<tr>
<td>Control</td>
<td>35</td>
<td>14.43</td>
<td>5.98</td>
<td>14.0</td>
<td>10.0 - 20.0</td>
</tr>
<tr>
<td><strong>SCS private</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>19.09</td>
<td>7.89</td>
<td>18.0</td>
<td>14.0 - 26.5</td>
</tr>
<tr>
<td>IBD</td>
<td>35</td>
<td>19.2</td>
<td>7.13</td>
<td>19.0</td>
<td>15.0 - 23.0</td>
</tr>
<tr>
<td>Control</td>
<td>35</td>
<td>16.54</td>
<td>6.01</td>
<td>16.0</td>
<td>13.0 - 20.0</td>
</tr>
<tr>
<td><strong>SCS social</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>13.67</td>
<td>5.05</td>
<td>13.0</td>
<td>9.5 - 18.0</td>
</tr>
<tr>
<td>IBD</td>
<td>35</td>
<td>13.0</td>
<td>5.15</td>
<td>13.0</td>
<td>9.0 - 17.0</td>
</tr>
<tr>
<td>Control</td>
<td>35</td>
<td>13.11</td>
<td>4.9</td>
<td>14.0</td>
<td>10.0 - 17.0</td>
</tr>
</tbody>
</table>

Note: SCS = Self-Consciousness Scale

Comparing the three groups, IBS consulters had the highest mean score, median value and inter-quartile range for public self-consciousness. On private self-consciousness, the mean score for IBS consulters and IBD patients were higher than controls although IBS consulters had the greatest inter-quartile range. The descriptive data for social self-consciousness were similar for all three groups.
The descriptive data for the CSFBD is presented in Table 7.

Table 7. Descriptive data for the CSFBD

<table>
<thead>
<tr>
<th>CSFBD</th>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Median</th>
<th>Inter-quartile range</th>
</tr>
</thead>
<tbody>
<tr>
<td>bowel</td>
<td>IBS</td>
<td>32</td>
<td>40.84</td>
<td>13.24</td>
<td>40.5</td>
<td>30.0 - 51.5</td>
</tr>
<tr>
<td>performance</td>
<td>IBD</td>
<td>35</td>
<td>41.43</td>
<td>14.36</td>
<td>43.0</td>
<td>31.0 - 53.0</td>
</tr>
<tr>
<td>anxiety</td>
<td>Control</td>
<td>34</td>
<td>26.35</td>
<td>12.37</td>
<td>29.5</td>
<td>15.25 - 36.5</td>
</tr>
<tr>
<td>control</td>
<td>IBS</td>
<td>32</td>
<td>9.44</td>
<td>3.31</td>
<td>9.5</td>
<td>8.0 - 12.0</td>
</tr>
<tr>
<td></td>
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<td>8.86</td>
<td>3.66</td>
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<td>6.0 - 12.0</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>34</td>
<td>5.62</td>
<td>2.87</td>
<td>6.0</td>
<td>2.0 - 8.0</td>
</tr>
<tr>
<td>disease</td>
<td>IBS</td>
<td>32</td>
<td>3.72</td>
<td>1.87</td>
<td>4.0</td>
<td>2.0 - 5.0</td>
</tr>
<tr>
<td>conviction</td>
<td>IBD</td>
<td>35</td>
<td>3.83</td>
<td>2.15</td>
<td>4.0</td>
<td>2.0 - 6.0</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>34</td>
<td>2.29</td>
<td>1.45</td>
<td>2.0</td>
<td>1.0 - 4.0</td>
</tr>
<tr>
<td>CSFBD</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pain</td>
<td>IBS</td>
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<td>14.76</td>
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<td>15.0</td>
<td>11.5 - 18.0</td>
</tr>
<tr>
<td></td>
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<td>13.69</td>
<td>5.41</td>
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<td>9.0 - 18.0</td>
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<td></td>
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<td>4.88</td>
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<td>3.0 - 12.0</td>
</tr>
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<td></td>
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<tr>
<td>anger/</td>
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<td>1.73</td>
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<td>4.57</td>
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<td>5.0</td>
<td>3.0 - 6.0</td>
</tr>
<tr>
<td></td>
<td>Control</td>
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<td>2.85</td>
<td>1.67</td>
<td>3.5</td>
<td>1.0 - 4.0</td>
</tr>
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<td>3.75 - 6.0</td>
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<td>IBS</td>
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<td>6.0</td>
<td>4.0 - 6.0</td>
</tr>
<tr>
<td></td>
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<td>35</td>
<td>4.66</td>
<td>1.89</td>
<td>5.0</td>
<td>4.0 - 6.0</td>
</tr>
<tr>
<td></td>
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<td>4.71</td>
<td>1.73</td>
<td>5.0</td>
<td>4.0 - 6.0</td>
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<td>10.25 - 17.0</td>
</tr>
<tr>
<td></td>
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<td>12.37</td>
<td>5.1</td>
<td>12.0</td>
<td>9.0 - 16.0</td>
</tr>
<tr>
<td></td>
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<td>11.24</td>
<td>4.23</td>
<td>12.0</td>
<td>8.0 - 14.25</td>
</tr>
<tr>
<td>CSFBD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>self-</td>
<td>IBS</td>
<td>32</td>
<td>28.63</td>
<td>8.33</td>
<td>30.5</td>
<td>22.0 - 35.75</td>
</tr>
<tr>
<td>efficacy</td>
<td>IBD</td>
<td>35</td>
<td>26.14</td>
<td>9.45</td>
<td>27.0</td>
<td>19.0 - 32.0</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>34</td>
<td>16.71</td>
<td>8.19</td>
<td>17.0</td>
<td>6.75 - 24.0</td>
</tr>
<tr>
<td>CSFBD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>self-</td>
<td>IBS</td>
<td>32</td>
<td>9.06</td>
<td>2.46</td>
<td>9.0</td>
<td>8.0 - 11.0</td>
</tr>
<tr>
<td>nurturance</td>
<td>IBD</td>
<td>35</td>
<td>8.09</td>
<td>2.95</td>
<td>8.0</td>
<td>7.0 - 10.0</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>34</td>
<td>7.21</td>
<td>3.04</td>
<td>7.5</td>
<td>4.0 - 9.25</td>
</tr>
</tbody>
</table>

Note: CSFBD = Cognitive Scale for Functional Bowel Disorders

A few of the CSFBD questionnaires were returned with some of the items unanswered. Therefore the numbers shown in Table 7 represent responses from participants who completed all items for each factor of the questionnaire.
Results

Both IBS consulters and IBD patients were similar in terms of the descriptive data for all of the CSFBD factors. IBS consulters and IBD patients had greater mean scores, median values and inter-quartile range on the CSFBD bowel performance anxiety, control, disease conviction, embarrassment/shame, pain, anger/frustration, self-efficacy and self-nurturance in comparison to controls. However, descriptive data for CSFBD perfectionism, social rules & norms and social approval did not appear to be dissimilar between the three groups.

Table 8 illustrates descriptive data for the CISS.

Table 8. Descriptive data for the CISS.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Median</th>
<th>Inter-quartile range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CISS task</td>
<td>IBS</td>
<td>33</td>
<td>56.48</td>
<td>10.98</td>
<td>56.0</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>34</td>
<td>52.85</td>
<td>13.07</td>
<td>51.0</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>34</td>
<td>57.85</td>
<td>11.65</td>
<td>57.5</td>
</tr>
<tr>
<td>CISS emotion</td>
<td>IBS</td>
<td>33</td>
<td>48.45</td>
<td>13.04</td>
<td>48.0</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>34</td>
<td>45.82</td>
<td>16.03</td>
<td>44.0</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>34</td>
<td>40.91</td>
<td>10.55</td>
<td>42.5</td>
</tr>
<tr>
<td>CISS avoidant</td>
<td>IBS</td>
<td>33</td>
<td>46.94</td>
<td>9.83</td>
<td>45.0</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>34</td>
<td>46.59</td>
<td>12.39</td>
<td>48.5</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>34</td>
<td>43.38</td>
<td>10.35</td>
<td>43.0</td>
</tr>
<tr>
<td>CISS distraction</td>
<td>IBS</td>
<td>33</td>
<td>21.06</td>
<td>5.86</td>
<td>20.0</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>34</td>
<td>22.03</td>
<td>7.77</td>
<td>23.5</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>34</td>
<td>19.29</td>
<td>5.21</td>
<td>19.0</td>
</tr>
<tr>
<td>CISS social diversion</td>
<td>IBS</td>
<td>33</td>
<td>17.45</td>
<td>4.45</td>
<td>17.0</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>34</td>
<td>16.15</td>
<td>4.23</td>
<td>15.5</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>34</td>
<td>15.74</td>
<td>4.81</td>
<td>16.0</td>
</tr>
</tbody>
</table>

Note: CISS = Coping Inventory for Stressful Situations

As with the CSFBD, not all items on the CISS were answered by a few of the participants. The numbers shown in Table 8 represent responses from the participants who completed all items for each factor on the CISS.

In terms of task-focused coping, IBS consulters had similar mean scores, median values and inter-quartile range to controls, which were all higher than IBD patients.
For emotion-focused coping, IBS consulters had the highest mean score, median value and inter-quartile range compared to the other two groups.

Although the mean scores for avoidant-focused and distraction-focused coping were similar between IBS consulters and IBD patients, IBD patients had the highest median value and greatest inter-quartile range for both of these factors.

Finally, for social diversion coping strategies, IBS consulters had slightly higher mean scores, median value and inter-quartile range than IBD patients and controls.

3.2.3 Research question 1

a) Are IBS consulters significantly more anxious and depressed than IBD patients or controls?

Table 9 illustrates the results when HADS scores were compared between the three groups using Kruskal-Wallis one way analysis of variance.

Table 9. Comparisons of HADS scores between the three groups.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean Rank</th>
<th>Kruskal-Wallis H</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>HADS anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>62.79</td>
<td>9.65</td>
<td>0.008*</td>
</tr>
<tr>
<td>IBD</td>
<td>35</td>
<td>53.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>35</td>
<td>40.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HADS depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>58.74</td>
<td>5.5</td>
<td>0.064</td>
</tr>
<tr>
<td>IBD</td>
<td>35</td>
<td>54.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>35</td>
<td>42.66</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*significant at p < .05

Note: HADS = Hospital Anxiety and Depression Scale

Results from Table 9 illustrate that there was a significant difference on the HADS anxiety scores between the three groups (H = 9.65, p = 0.008). There were no significant differences on depression scores between the three groups.

Although a significant finding was obtained on the HADS anxiety, the analysis does not identify which groups are significantly different from each other. Therefore, to
determine where the significance lies, non-parametric pairwise Mann Whitney U test was used. However, since this requires further analysis of the data, it increases the probability that Type 1 errors may occur (i.e. incorrectly rejecting a true null hypothesis). To reduce the effect of Type 1 errors, the 'Bonferroni' or 'Bonferroni inequality' procedure can be applied. This method was first introduced by Dunn (1961), who suggested that a more conservative probability level for each comparison should be used. Dunn stated that 'the probability of the occurrence of one of more events can never exceed the sum of their individual probabilities' (pg. 339, Howell, 1987). Therefore if three comparisons were made (as would be done in this example), the original probability level used ($p < .05$) is divided by the number of comparisons made to give a probability level of .017. This value was applied to the next set of comparisons made and Table 10 illustrates the results obtained.

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Ranks</th>
<th>Mann Whitney U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>HADS anxiety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>37.79</td>
<td>469.0</td>
<td>0.182</td>
</tr>
<tr>
<td>IBD</td>
<td>31.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS Controls</td>
<td>42.0</td>
<td>330.0</td>
<td>0.002*</td>
</tr>
<tr>
<td>IBD Controls</td>
<td>27.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>39.96</td>
<td>456.5</td>
<td>0.066</td>
</tr>
<tr>
<td></td>
<td>31.04</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* significant at $p < .017$

Note: HADS = Hospital Anxiety and Depression Scale

A significant difference was found between the IBS and control groups, and inspection of the mean ranks suggested that IBS consulters were significantly more anxious than controls ($U = 330$, $p = 0.002$). However the IBS group were not significantly more anxious than the IBD group and there were no significant differences in anxiety levels between the IBD and control groups.
b) Are IBS consulters more self-conscious than IBD patients or controls?

Table 11 illustrates the results when scores on the self-consciousness scale (SCS) were compared between the three groups using Kruskal-Wallis one way analysis of variance.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean Rank</th>
<th>Kruskal-Wallis H</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS public</td>
<td>IBS</td>
<td>33</td>
<td>60.39</td>
<td>5.51</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>35</td>
<td>52.64</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>35</td>
<td>43.44</td>
<td></td>
</tr>
<tr>
<td>SCS private</td>
<td>IBS</td>
<td>33</td>
<td>55.52</td>
<td>3.64</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>35</td>
<td>56.49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>35</td>
<td>44.2</td>
<td></td>
</tr>
<tr>
<td>SCS social</td>
<td>IBS</td>
<td>33</td>
<td>54.17</td>
<td>0.258</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>35</td>
<td>50.86</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>35</td>
<td>51.10</td>
<td></td>
</tr>
</tbody>
</table>

Note: SCS = Self-Consciousness Scale

There were no significant differences on the SCS between the three groups, suggesting that IBS consulters were not significantly more self-conscious that the IBD or control groups.
c) Do IBS consultants have more negative cognitions about bowels than IBD patients or controls?

Table 12 illustrates the results when CSFBD scores were compared between the three groups using Kruskal-Wallis one way analysis of variance.

Table 12. Comparisons of the CSFBD between the three groups.

<table>
<thead>
<tr>
<th>CSFBD</th>
<th>N</th>
<th>Mean Rank</th>
<th>Kruskal-Wallis H</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>bowel performance anxiety</td>
<td>IBS 32</td>
<td>59.98</td>
<td>20.34</td>
<td>&lt;0.001**</td>
</tr>
<tr>
<td></td>
<td>IBD 35</td>
<td>60.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control 34</td>
<td>32.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>control disease conviction</td>
<td>IBS 32</td>
<td>58.27</td>
<td>13.17</td>
<td>0.001**</td>
</tr>
<tr>
<td></td>
<td>IBD 35</td>
<td>58.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control 34</td>
<td>36.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>embarrassment/shame</td>
<td>IBS 32</td>
<td>56.92</td>
<td>10.52</td>
<td>0.005**</td>
</tr>
<tr>
<td></td>
<td>IBD 35</td>
<td>58.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control 34</td>
<td>37.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pain</td>
<td>IBS 33</td>
<td>63.82</td>
<td>21.33</td>
<td>&lt;0.001**</td>
</tr>
<tr>
<td></td>
<td>IBD 35</td>
<td>58.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control 34</td>
<td>32.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>anger/frustration</td>
<td>IBS 33</td>
<td>68.24</td>
<td>27.95</td>
<td>&lt;0.001**</td>
</tr>
<tr>
<td></td>
<td>IBD 35</td>
<td>55.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control 34</td>
<td>31.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>perfectionism</td>
<td>IBS 33</td>
<td>54.74</td>
<td>5.39</td>
<td>0.068</td>
</tr>
<tr>
<td></td>
<td>IBD 35</td>
<td>57.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control 34</td>
<td>42.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>social norms &amp; rules</td>
<td>IBS 33</td>
<td>57.11</td>
<td>1.84</td>
<td>0.398</td>
</tr>
<tr>
<td></td>
<td>IBD 35</td>
<td>48.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control 34</td>
<td>48.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>approval</td>
<td>IBS 32</td>
<td>58.05</td>
<td>3.72</td>
<td>0.156</td>
</tr>
<tr>
<td></td>
<td>IBD 35</td>
<td>51.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control 34</td>
<td>44.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>self-efficacy</td>
<td>IBS 32</td>
<td>64.72</td>
<td>24.87</td>
<td>&lt;0.001**</td>
</tr>
<tr>
<td></td>
<td>IBD 35</td>
<td>57.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control 34</td>
<td>30.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>self-nurturance</td>
<td>IBS 32</td>
<td>61.33</td>
<td>6.98</td>
<td>0.03*</td>
</tr>
<tr>
<td></td>
<td>IBD 35</td>
<td>49.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control 34</td>
<td>42.51</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*significant at p < .05  
**significant at p < .01  
Note: CSFBD = Cognitive Scale for Functional Bowel Disorders
Results from Table 12 suggest that there were significant differences (p < .01) between the three groups on the CSFBD bowel performance anxiety, control, disease conviction, embarrassment/shame, pain, anger/frustration and self-efficacy. Significant differences were also found at the p < .05 level for CSFBD self-nurturance.

For the CSFBD factors that were significant, pairwise comparisons using the Mann Whitney U test were conducted to identify which study groups were significantly different from each other. As before, the Bonferroni t procedure (using p < .017) was applied and Table 13 illustrates the results from this analysis.
### Table 13. Pairwise comparisons of the CSFBD between the study groups.

<table>
<thead>
<tr>
<th>CSFBD factor</th>
<th>Group</th>
<th>Mean Ranks</th>
<th>Mann Whitney U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowel performance anxiety</td>
<td>IBS</td>
<td>33.39</td>
<td>540.5</td>
<td>0.807</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>34.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IBS Controls</td>
<td>43.09</td>
<td>237.0</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>IBD Controls</td>
<td>44.47</td>
<td>275.0</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Control</td>
<td>IBS</td>
<td>35.55</td>
<td>510.5</td>
<td>0.532</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>32.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IBS Controls</td>
<td>44.20</td>
<td>201.5</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>IBD Controls</td>
<td>43.73</td>
<td>289.5</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Disease conviction</td>
<td>IBS</td>
<td>33.50</td>
<td>544.0</td>
<td>0.839</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>34.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IBS Controls</td>
<td>41.27</td>
<td>295.5</td>
<td>0.001*</td>
</tr>
<tr>
<td></td>
<td>IBD Controls</td>
<td>42.09</td>
<td>347.0</td>
<td>0.002*</td>
</tr>
<tr>
<td>Embarrassment/shame</td>
<td>IBS</td>
<td>33.16</td>
<td>533.0</td>
<td>0.733</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>34.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IBS Controls</td>
<td>40.27</td>
<td>327.5</td>
<td>0.005*</td>
</tr>
<tr>
<td></td>
<td>IBD Controls</td>
<td>41.61</td>
<td>363.5</td>
<td>0.005*</td>
</tr>
<tr>
<td>Pain</td>
<td>IBS</td>
<td>36.23</td>
<td>520.5</td>
<td>0.483</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>32.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IBS Controls</td>
<td>44.59</td>
<td>211.5</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>IBD Controls</td>
<td>43.27</td>
<td>305.5</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Anger/frustration</td>
<td>IBS</td>
<td>39.32</td>
<td>418.5</td>
<td>0.047</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>29.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IBS Controls</td>
<td>45.92</td>
<td>167.5</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>IBD Controls</td>
<td>43.44</td>
<td>299.5</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>IBS</td>
<td>36.70</td>
<td>473.5</td>
<td>0.277</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>31.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IBS Controls</td>
<td>44.52</td>
<td>191.5</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>IBD Controls</td>
<td>44.37</td>
<td>267.0</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Self-nurturance</td>
<td>IBS</td>
<td>38.11</td>
<td>428.5</td>
<td>0.096</td>
</tr>
<tr>
<td></td>
<td>IBD</td>
<td>30.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IBS Controls</td>
<td>39.72</td>
<td>345.0</td>
<td>0.01*</td>
</tr>
<tr>
<td></td>
<td>IBD Controls</td>
<td>37.56</td>
<td>505.5</td>
<td>0.279</td>
</tr>
</tbody>
</table>

* significant at p < .017
When the IBS and IBD groups were compared to each other in relation to CSFBD factors, no significant differences were found, indicating that both groups of patients had similar types of worries about bowel problems.

In contrast, the IBS consulters differed significantly from the controls on all eight CSFBD factors listed in Table 13. Inspection of the mean rank scores suggests that the IBS consulters had significantly more negative cognitions about their bowels in relation to bowel performance anxiety, control, disease conviction, embarrassment/shame, pain, anger/frustration, self-efficacy and self-nurturance.

The IBD group was significantly different from controls on seven of the eight CSFBD factors. Inspection of the mean ranks suggests that IBD patients had significantly more negative cognitions about their bowels in relation to bowel performance anxiety, control, disease conviction, embarrassment/shame, pain, anger/frustration and self-efficacy. However, there were no significant differences between these two groups in relation to self-nurturance.
d) Are IBS consulters more likely than IBD patients or controls to use emotion-focused and avoidant coping strategies rather than task-focused coping strategies in stressful situations?

The three groups were compared on the Coping Inventory for Stressful Situations (CISS) using Kruskal-Wallis one way analysis of variance and results are illustrated in Table 14.

Table 14. Comparisons on the CISS between the three groups.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean Rank</th>
<th>Kruskal-Wallis H</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CISS task</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>52.18</td>
<td>2.76</td>
<td>0.252</td>
</tr>
<tr>
<td>IBD</td>
<td>34</td>
<td>44.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>34</td>
<td>56.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CISS emotion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>58.95</td>
<td>5.11</td>
<td>0.078</td>
</tr>
<tr>
<td>IBD</td>
<td>34</td>
<td>51.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>34</td>
<td>42.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CISS avoidant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>54.98</td>
<td>2.89</td>
<td>0.236</td>
</tr>
<tr>
<td>IBD</td>
<td>34</td>
<td>54.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>34</td>
<td>44.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CISS distraction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>52.59</td>
<td>2.89</td>
<td>0.236</td>
</tr>
<tr>
<td>IBD</td>
<td>34</td>
<td>56.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>34</td>
<td>44.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CISS social diversion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBS</td>
<td>33</td>
<td>57.68</td>
<td>2.62</td>
<td>0.269</td>
</tr>
<tr>
<td>IBD</td>
<td>34</td>
<td>48.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>34</td>
<td>46.90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: CISS = Coping Inventory for Stressful Situations

There were no significant differences on the CISS between the three groups, suggesting that IBS consulters do not differ to IBD patients or controls in the type of coping strategies employed in stressful situations.
3.2.4 Research question 2

The second research question investigated whether there were relationships amongst the four dependent variables for the IBS group alone.

a) Is there a positive relationship between self-consciousness and negative cognitions about bowels in IBS consulters?

Table 15 illustrates the correlation values between the SCS and CSFBD questionnaires, using Spearman's rho one tailed bivariate correlation analysis.

Table 15. Correlation values for SCS and CSFBD in IBS consulters.

<table>
<thead>
<tr>
<th>SCS</th>
<th>Private</th>
<th>Public</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSFBD bowel performance anxiety</td>
<td>0.347*</td>
<td>0.294</td>
<td>0.021</td>
</tr>
<tr>
<td>CSFBD control</td>
<td>0.379*</td>
<td>0.273</td>
<td>0.180</td>
</tr>
<tr>
<td>CSFBD disease conviction</td>
<td>0.202</td>
<td>-0.207</td>
<td>-0.290</td>
</tr>
<tr>
<td>CSFBD embarrassment/shame</td>
<td>0.552**</td>
<td>0.272</td>
<td>0.108</td>
</tr>
<tr>
<td>CSFBD pain</td>
<td>0.410**</td>
<td>0.216</td>
<td>0.090</td>
</tr>
<tr>
<td>CSFBD anger/frustration</td>
<td>0.332*</td>
<td>0.371*</td>
<td>0.223</td>
</tr>
<tr>
<td>CSFBD perfectionism</td>
<td>0.462**</td>
<td>0.332*</td>
<td>0.390*</td>
</tr>
<tr>
<td>CSFBD social norms &amp; rules</td>
<td>0.446**</td>
<td>0.352*</td>
<td>0.070</td>
</tr>
<tr>
<td>CSFBD social approval</td>
<td>0.334*</td>
<td>0.376*</td>
<td>0.028</td>
</tr>
<tr>
<td>CSFBD self-efficacy</td>
<td>0.395*</td>
<td>0.319*</td>
<td>0.141</td>
</tr>
<tr>
<td>CSFBD self-nurturance</td>
<td>0.473**</td>
<td>0.398*</td>
<td>0.266</td>
</tr>
</tbody>
</table>

* significant at p < .05
** significant at p < .01

Note: CSFBD = Cognitive Scale for Functional Bowel Disorders; SCS = Self-Consciousness Scale

Private self-consciousness was significantly and positively correlated at the p < .01 level with CSFBD embarrassment/shame, pain, perfectionism, social rules & norms and self-nurturance as illustrated in Table 15. Private self-consciousness was also positively correlated at the p < .05 level with CSFBD bowel performance anxiety, control, anger/frustration, social approval and self-efficacy. There was no positive
correlation between private self-consciousness and CSFBD disease conviction. These results suggest that IBS consulters who are more privately self-conscious are more likely to have negative cognitions about their bowels in relation to bowel performance anxiety, control, embarrassment/shame, pain, anger/frustration, perfectionism, social norms & rules, social approval and self-nurturance.

Public self-consciousness was positively associated with CSFBD anger/frustration, perfectionism, social norms and rules, social approval, self-efficacy and self-nurturance at the p < .05 level, suggesting that IBS consulters who are more publicly self-conscious are likely to have negative cognitions about their bowels in these domains.

Social self-consciousness was only positively correlated with CSFBD perfectionism at the p < .05 level, suggesting that IBS consulters who are more socially self-conscious are also likely to have perfectionistic beliefs.

b) Is there a positive relationship between self-consciousness and psychological distress in IBS consulters?

Table 16 illustrates the correlation values between the SCS and the HADS questionnaires.

Table 16. Correlation values for SCS and HADS in IBS consulters.

<table>
<thead>
<tr>
<th>SCS</th>
<th>Private</th>
<th>Public</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>HADS anxiety</td>
<td>0.329*</td>
<td>0.203</td>
<td>0.127</td>
</tr>
<tr>
<td>HADS depression</td>
<td>0.344*</td>
<td>-0.048</td>
<td>0.178</td>
</tr>
</tbody>
</table>

* significant at p < .05

Note: HADS = Hospital Anxiety and Depression Scale; SCS = Self-Consciousness Scale

The correlation results from Table 16 suggest a positive correlation between private self-consciousness and anxiety and depression levels, indicating that IBS consulters who are more privately self-conscious are more anxious and/or depressed. There
Results

were no significant correlations between either public or social self-consciousness with anxiety or depression.

c) Is there a positive relationship between self-consciousness with emotion-focused and avoidant coping strategies in IBS consulters and a negative relationship between self-consciousness and task-focused coping strategies?

Table 17 illustrates the correlation values between the SCS and CISS questionnaires.

Table 17. Correlation values for SCS and CISS in IBS consulters.

<table>
<thead>
<tr>
<th></th>
<th>SCS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private</td>
</tr>
<tr>
<td>CISS task</td>
<td>0.32*</td>
</tr>
<tr>
<td>CISS emotion</td>
<td>0.55**</td>
</tr>
<tr>
<td>CISS avoidant</td>
<td>-0.012</td>
</tr>
<tr>
<td>CISS social diversion</td>
<td>0.025</td>
</tr>
<tr>
<td>CISS distraction</td>
<td>-0.109</td>
</tr>
</tbody>
</table>

* significant at p < .05
** significant at p < .01

Note: CISS = Coping Inventory for Stressful Situations; SCS = Self-Consciousness Scale

There was a positive correlation between all three of the self-consciousness factors with emotion-focused coping at the p < .01 level, suggesting that IBS consulters who are more self-conscious (privately, publicly and/or socially) are more likely to use emotion-focused coping in stressful situations.

Task-focused coping was positively correlated at the p < .05 level with public and private self-consciousness. This would imply that IBS consulters who are privately and publicly self-conscious are more likely to use task-focused coping in stressful situations.

There were no positive correlations between self-consciousness and avoidant (including social diversion and distraction) coping strategies.
d) Is there a positive relationship between psychological distress and negative cognitions about bowels in IBS consulters?

Table 18 illustrates the correlation values between the HADS and CSFBD questionnaires.

<table>
<thead>
<tr>
<th></th>
<th>HADS Anxiety</th>
<th>HADS Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSFBD bowel performance</td>
<td>0.248</td>
<td>0.072</td>
</tr>
<tr>
<td>anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSFBD control</td>
<td>0.193</td>
<td>0.234</td>
</tr>
<tr>
<td>CSFBD disease conviction</td>
<td>0.121</td>
<td>0.259</td>
</tr>
<tr>
<td>CSFBD embarrassment/shame</td>
<td>0.384*</td>
<td>0.121</td>
</tr>
<tr>
<td>CSFBD pain</td>
<td>0.327</td>
<td>0.266</td>
</tr>
<tr>
<td>CSFBD anger/frustration</td>
<td>0.636**</td>
<td>0.300</td>
</tr>
<tr>
<td>CSFBD perfectionism</td>
<td>0.110</td>
<td>0.095</td>
</tr>
<tr>
<td>CSFBD social norms &amp; rules</td>
<td>0.274</td>
<td>0.030</td>
</tr>
<tr>
<td>CSFBD social approval</td>
<td>0.393*</td>
<td>-0.030</td>
</tr>
<tr>
<td>CSFBD self-efficacy</td>
<td>0.504**</td>
<td>0.325</td>
</tr>
<tr>
<td>CSFBD self-nurturance</td>
<td>0.064</td>
<td>-0.025</td>
</tr>
</tbody>
</table>

* significant at p < .05
** significant at p < .01

Note: CSFBD = Cognitio Scale for Functional Bowel Disorders; HADS = Hospital Anxiety and Depression Scale.

There was a positive correlation (p < .01) between HADS anxiety scores and CSFBD anger/frustration and self-efficacy and a positive correlation (at the p < .05 level) with CSFBD embarrassment/shame and social approval. This would suggest that IBS consulters who were more anxious also had more negative cognitions about their bowels in relation to embarrassment/shame, anger/frustration, needing social approval and self-efficacy.

There were no significant correlations between HADS depression scores and any of the CSFBD factors.
Results

e) Is there a positive relationship between psychological distress with emotion-focused and avoidant coping strategies in IBS consulters and a negative relationship between psychological distress and task-focused coping strategies?

Table 19 illustrates the correlation values between the HADS and CISS questionnaires.

Table 19. Correlation values for HADS and CISS in IBS consulters.

<table>
<thead>
<tr>
<th>CISS</th>
<th>HADS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Anxiety</td>
</tr>
<tr>
<td>CISS task</td>
<td>0.177</td>
</tr>
<tr>
<td>CISS emotion</td>
<td>0.71**</td>
</tr>
<tr>
<td>CISS avoidant</td>
<td>0.219</td>
</tr>
<tr>
<td>CISS social diversion</td>
<td>0.321</td>
</tr>
<tr>
<td>CISS distraction</td>
<td>0.069</td>
</tr>
</tbody>
</table>

* significant at p < .05
** significant at p < .01

Note: CISS = Coping Inventory for Stressful Situations; HADS = Hospital Anxiety and Depression Scale

There was a positive correlation at the p < .01 level between HADS anxiety scores and CISS emotion-focused coping, suggesting that IBS consulters who were more anxious were more likely to use emotion-focused coping in stressful situations. No other significant correlations between HADS anxiety scores with other types of coping were found.

The only significant relationship between HADS depression and CISS scores was a positive correlation at the p < .05 level with CISS emotion-focused coping. This would suggest that IBS consulters who were more depressed were more likely to use emotion-focused coping in stressful situations.
f) Is there a positive relationship between cognitions about bowels with emotion-focused and avoidant coping in stressful situations and a negative relationship between cognitions about bowels and task-focused coping in stressful situations in IBS consulters?

Table 20 illustrates the correlation values between the CSFBD and CISS questionnaires.

Table 20. Correlation values for CSFBD and CISS in IBS consulters.

<table>
<thead>
<tr>
<th>CSFBD</th>
<th>CISS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Emotion</td>
</tr>
<tr>
<td>CSFBD bowel performance</td>
<td>0.330</td>
</tr>
<tr>
<td>anxiety</td>
<td></td>
</tr>
<tr>
<td>CSFBD control</td>
<td>0.372*</td>
</tr>
<tr>
<td>CSFBD disease conviction</td>
<td>-0.013</td>
</tr>
<tr>
<td>CSFBD embarrassment/shame</td>
<td>0.466**</td>
</tr>
<tr>
<td>CSFBD pain</td>
<td>0.438*</td>
</tr>
<tr>
<td>CSFBD anger/frustration</td>
<td>0.729**</td>
</tr>
<tr>
<td>CSFBD perfectionism</td>
<td>0.291</td>
</tr>
<tr>
<td>CSFBD social norms &amp; rules</td>
<td>0.451**</td>
</tr>
<tr>
<td>CSFBD social approval</td>
<td>0.321</td>
</tr>
<tr>
<td>CSFBD self-efficacy</td>
<td>0.523**</td>
</tr>
<tr>
<td>CSFBD self-nurturance</td>
<td>0.139</td>
</tr>
</tbody>
</table>

* significant at p < .05
** significant at p < .01

Note: CSFBD = Cognitive Scale for Functional Bowel Disorders; CISS = Coping Inventory for Stressful Situations.

The results from Table 20 suggest that emotion-focused coping was positively correlated at the p < .01 level with CSFBD embarrassment/shame, anger/frustration, social rules & norms and self-efficacy, and positively correlated at the p < .05 level with CSFBD pain and control.
Results

There were no significant correlations between avoidant-focused coping or distraction-focused coping with any of the CSFBD factors. However, there were some positive correlations between social diversion coping strategies and CSFBD factors, with a positive correlation at the p < .01 level with bowel performance anxiety and social rules & norms. There was also a positive correlation at the p < .05 level with CSFBD anger/frustration and social approval.

Task-focused coping was positively correlated at the p < .01 level with CSFBD bowel performance anxiety, embarrassment/shame and social norms & rules and positively correlated at the p < .05 level with CSFBD control.

3.2.5 Research question 3

The final question investigated whether there were any differences between psychologically distressed IBS consulters and those who were not psychologically distressed in relation to coping strategies, self-consciousness and negative cognitions about bowels.

Are there differences in the types of coping strategies used, negative cognitions about bowels and self-consciousness between psychologically distressed IBS consulters and those who are not psychologically distressed?

IBS consulters were divided into two groups according to their HADS anxiety and depression scores, with those scoring greater than 10 being classified as anxious or depressed. Those who scored less than or equal to 10 were categorised as a non-psychologically distressed group.

There were 18 (55%) patients who scored greater than 10 on the HADS anxiety and only 6 (18%) who scored greater than 10 on the HADS depression. Given the small number of IBS consulters who were depressed, no further analyses was carried out on this group.
Anxious IBS consulters were compared to those who were not anxious in relation to demographic variables. There were no significant differences in relation to age (\( t = -1.41, p = 0.168 \)), gender (\( \chi^2 = 1.12, p = 0.234 \)) and years education (\( \chi^2 = 0.109, p = 0.514 \)). It was not possible to statistically compare the two groups in relation to ethnicity, marital status, years of diagnosis, and whether they had received psychological intervention due to the small numbers in some of the categories. However, inspection of the data suggested that there were similarities in relation to ethnicity (13 anxious IBS consulters were white/white European in comparison to 15 non-anxious IBS consulters, and three anxious IBS consulters were Asian/other compared to two non-anxious IBS consulters). There were similar numbers of anxious IBS consulters who were married (\( n = 13 \)) to the non-anxious IBS consulters (\( n = 11 \)) and three in each group were single. In relation to number of years diagnosed with IBS, there were 14 patients in the anxious group compared to 13 in the non-anxious group who had only been diagnosed for less than one year. Only two of the non-anxious and four of the anxious IBS consulters had received psychological intervention.

Comparisons were made between the two groups in relation to their CISS, CSFBD and SCS scores using the Mann Whitney U test. Using the Bonferroni procedure to reduce the effect of Type 1 errors, a \( p < .025 \) was required for any results to be significant (since IBS consulters had been subdivided into two groups). The results of the pairwise comparison between anxious- and non-anxious IBS consulters on the CISS are illustrated in Table 21.
Table 21. Pairwise comparison of CISS between anxious IBS consulters and those who were not clinically anxious.

<table>
<thead>
<tr>
<th>CISS factor</th>
<th>IBS consulters</th>
<th>Mean Rank</th>
<th>Mann Whitney U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task</td>
<td>Not anxious</td>
<td>13.07</td>
<td>76.0</td>
<td>0.033</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>20.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotion</td>
<td>Not anxious</td>
<td>9.63</td>
<td>24.5</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>23.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidant</td>
<td>Not anxious</td>
<td>14.97</td>
<td>104.5</td>
<td>0.269</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>18.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distraction</td>
<td>Not anxious</td>
<td>16.87</td>
<td>133.0</td>
<td>0.942</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>17.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social diversion</td>
<td>Not anxious</td>
<td>13.37</td>
<td>80.5</td>
<td>0.048</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>20.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*significant at p < .025

Note: CISS = Coping Inventory for Stressful Situations

Results from Table 21 illustrate that there were significant differences between the anxious and non-anxious IBS consulters on the CISS emotion-focused coping factor (U = 24.5, p < 0.001). Inspection of the mean ranks suggests that anxious IBS consulters were significantly more likely to use emotion-focused coping in stressful situations when compared to non-anxious IBS consulters. There were no significant differences found on the other CISS factors.
Table 22 illustrates the pairwise comparison between anxious IBS consulters and those who were not clinically anxious on the CSFBD.

Table 22. Pairwise comparison of CSFBD between anxious and non-anxious IBS consulters.

<table>
<thead>
<tr>
<th>CSFBD factor</th>
<th>IBS consulters</th>
<th>Mean Rank</th>
<th>Mann Whitney U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowel performance anxiety</td>
<td>Not anxious</td>
<td>13.29</td>
<td>81.0</td>
<td>0.087</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>19.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>Not anxious</td>
<td>14.14</td>
<td>93.0</td>
<td>0.207</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>18.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease conviction</td>
<td>Not anxious</td>
<td>17.07</td>
<td>118.0</td>
<td>0.757</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>16.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Embarrassment/shame</td>
<td>Not anxious</td>
<td>10.93</td>
<td>48.0</td>
<td>0.003*</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>20.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>Not anxious</td>
<td>14.17</td>
<td>92.5</td>
<td>0.122</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>19.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anger/frustration</td>
<td>Not anxious</td>
<td>10.27</td>
<td>34.0</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>22.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perfectionism</td>
<td>Not anxious</td>
<td>14.60</td>
<td>99.0</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>19.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social norms &amp; rules</td>
<td>Not anxious</td>
<td>13.90</td>
<td>88.5</td>
<td>0.082</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>19.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social approval</td>
<td>Not anxious</td>
<td>11.96</td>
<td>62.5</td>
<td>0.015*</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>20.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Not anxious</td>
<td>11.29</td>
<td>53.0</td>
<td>0.005*</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>20.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-nurturance</td>
<td>Not anxious</td>
<td>15.11</td>
<td>106.5</td>
<td>0.454</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>17.58</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*significant at p < .025
Note: CSFBD = Cognitive Scale for Functional Bowel Disorders

In relation to negative cognitions about bowels, significant differences were found on the embarrassment/shame (U = 48.0, p = 0.003), anger/frustration (U = 34.0, p < 0.001), social approval (U = 62.5, p = 0.015) and self-efficacy (U = 53.0, p = 0.005). Inspection of the mean ranks suggests that the anxious IBS consulters had more negative cognitions in relation to embarrassment/shame, anger/frustration, social approval and self-efficacy when compared to non-anxious IBS consulters.
The results of the pairwise comparison between anxious- and non-anxious IBS consulters on the SCS are illustrated in Table 23.

Table 23. Pairwise comparison of SCS scores between anxious IBS consulters and those who were not clinically anxious.

<table>
<thead>
<tr>
<th>SCS factor</th>
<th>IBS consulters</th>
<th>Mean Rank</th>
<th>Mann Whitney U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>Not anxious</td>
<td>13.10</td>
<td>76.5</td>
<td>0.034</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>20.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>Not anxious</td>
<td>13.83</td>
<td>87.5</td>
<td>0.085</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>19.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Not anxious</td>
<td>14.53</td>
<td>98.0</td>
<td>0.179</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td>19.06</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: SCS = Self-Consciousness Scale

Results from Table 23 illustrate that there were no significant differences between the two groups in relation to self-consciousness.

3.3 Summary of research findings

With regard to demographic information, the only significant differences between the three groups were in relation to employment status and medication. Controls were more likely to be in employment than IBD patients and IBD patients were taking more medication than IBS consulters.

When the three groups were compared on the four questionnaires, IBS consulters were more anxious than controls and had greater negative bowel cognitions compared to controls (except for perfectionism, social rules & norms and social approval). The IBD group also had greater bowel cognitions compared to controls in relation to bowel performance anxiety, control, disease conviction, embarrassment/shame, pain, anger/frustration and self-efficacy. However, there were no significant differences between the IBS and IBD groups on any of the measures.
Results

There were many significant and positive relationships when correlational analysis was carried out on the four questionnaires for IBS consulters. To summarise, private self-conscious IBS consulters had negative bowel cognitions in all the areas measured except for disease conviction, were anxious and/or depressed and used emotion- and task-focused coping in stressful situations. Public self-conscious IBS consulters had certain negative bowel cognitions and also used emotion- and task-focused coping in stressful situations. Social self-conscious IBS consulters had perfectionistic beliefs and used emotion-focused coping in stressful situations. Anxious IBS consulters had negative bowel cognitions in relation to embarrassment/shame, anger/frustration, social approval and self-efficacy and used emotion-focused coping in stressful situations. Depression scores on the HADS were only related to the use of emotion-focused coping. Finally, significant positive correlations were found between emotion-, task-focused and social diversion coping with various negative bowel cognitions.

When the IBS consulters were subdivided into anxious and non-anxious groups and compared on the three remaining questionnaires, anxious IBS consulters were found to use significantly greater emotion-focused coping in stressful situations and have greater negative bowel cognitions in relation to embarrassment/shame, anger/frustration, social approval and self-nurturance. There were no differences between the two groups in relation to self-consciousness.
4. DISCUSSION

The purpose of this study was to investigate self-consciousness, psychological distress, negative cognitions about bowels and coping strategies used in IBS consulters. An IBD patient group was also recruited to identify whether any significant differences with IBS consulters on these variables could be explained in terms of organic versus functional bowel conditions.

This chapter will first discuss the sample of IBS patients recruited with reference to previous literature. This will be followed by a discussion on each of the research questions and associated hypotheses. The self-regulatory executive functioning (S-REF) model will be introduced as a possible explanation for any significant relationships found. The results will then be interpreted using an alternative hypothetical model. Methodological limitations of the study will be considered, followed by clinical implications and an overall conclusion of the study.

4.1 Sample of patients

The sample of IBS consulters recruited had a mean age of 41 years (s.d 12.7). This is similar to Creed, Craig and Farmer (1988) and Thornton, McIntyre, Murray-Lyon and Gruzelier (1990) who reported a mean age of 40 years in their IBS samples. Seventy percent of the IBS consulters were female, which is slightly lower than would be expected in tertiary care settings, where a percentage of 75 to 80 would be anticipated (e.g. Creed et al., 1988; Longstreth, Hawkey, Mayer, Jones, Naesdal et al., 2001). However, what is interesting is that Longstreth and Wolde-Tsadik (1993) found that between the ages of 41 to 50 years, a similar frequency of IBS symptoms occurs in both sexes. Although this would not totally account for the percentage obtained in this study, it may partly explain the slightly lower value.

Two thirds of the IBS consulters had less than 12 years of education. There are few studies that have reported the educational achievement of IBS patients. Of those that have, 45% of IBS patients in Creed et al.’s (1988) sample had less than 12 years educational achievement, which is lower than this current study. In contrast,
Johnsen, Jacobsen and Forde (1986) found that patients with more severe symptoms tended to have less formal education. Although a measure of IBS severity was not obtained in this current study, the Rome criteria is likely to diagnose those patients experiencing greater severity of pain and bowel problems (Boyce, Koloski & Talley, 2000). Others have also suggested that it is those reporting the greatest severity of pain who are likely to be seen by specialist services (Drossman, Whitehead, Toner, Diamant, Hu et al., 2000).

IBS patients generally had a diagnosis under one year, which is not surprising given that they were usually discharged from the service after receiving such a diagnosis. Median length of symptoms was three years which is less than Creed, Craig and Farmer (1988) who reported a median of 8 years. There were 24% IBS consulters who had symptoms greater than five years, which is less than Longstreth, Hawkey, Mayer, Jones, Naesdal et al. (2001), who reported 52% in their referred sample. Again, the lower values in this study are likely to be related to the discharge process in practice at the clinic used in this current study.

When the IBS consulters were compared on demographic details to the IBD and control groups, the only significant differences were in relation to employment status and medication. Controls were more likely to be employed compared to IBD patients. There were significantly more IBD patients taking medication than IBS consulters, which is not surprising given that pharmacological intervention is often used in IBD patients. There were no significant differences between those participants who completed the questionnaires to those that did not, again suggesting that the samples who responded were not biased in relation to demographic information obtained. None of the participants were excluded after recruitment, possibly due to the careful inclusion and diagnostic criteria used. However, the control sample had to be extended from just fracture patients to those attending the clinic (partners, parents or carers) who also fitted the criteria. This enabled a matched sample to be obtained.
Although it could be argued that fracture patients might have certain difficulties following their injury, there were no significant demographic differences between fracture patients and controls recruited without a fracture problem. Only one control subject was on medication (inhaledes for asthma) and none had received any psychological intervention over the past 12 months, suggesting that neither pharmacological nor significant psychological factors could have influenced their responses on the questionnaires.

In summary, the IBS patients recruited were fairly typical of the IBS consulter population. The IBD and control groups were felt to represent a matched sample with which to compare responses to the IBS group on the four questionnaires.

4.2 Research question 1
The first question investigated whether there were any significant differences between the IBS, IBD and control groups in relation to psychological distress, self-consciousness, negative cognitions about bowels and coping strategies used in stressful situations. Each dependent variable will be considered in turn.

4.2.1 Psychological distress
With regard to psychological distress, the IBS group were significantly more anxious than controls. It is less likely that this significant finding could be attributable to statistical Type 1 error since the Bonferroni procedure was applied. There were no differences in psychological distress between the IBS and IBD groups or the IBD and controls.

Comparing these findings to previous research studies, Pinto, Lele, Joglekar, Panwar and Dhavale (2000) found IBS consulters to be significantly more anxious and depressed on the HADS than controls. Schwartz, Blanchard, Berreman, Scharff, Taylor et al. (1993) found no differences in depression levels between IBS and IBD patients on the Beck Depression Inventory (BDI), but reported significantly higher levels of anxiety in the IBS group compared to the IBD group, using the State Trait Anxiety Inventory (STAI). Schwartz et al.'s IBS sample could be considered
slightly different to this study since they recruited participants using advertisements as well as referrals from private physicians and this mixed sample makes their results difficult to decipher.

Walker, Roy-Bryne, Katon, Li, Amos et al. (1990) found significant differences on anxiety scores but not depression scores in their IBS compared to IBD group. In contrast, Gomborone, Dewsnap, Libby and Farthing (1995) found significantly higher BDI scores in an IBS group compared to both IBD and controls, although the mean IBS group depression scores were not clinically significant. When Walker, Gefland, Gefland and Katon (1995) applied psychiatric diagnostic criteria, they reported a significantly higher percentage of IBS patients suffering generalised anxiety disorder and major depression compared to IBD patients.

Overall, the results correspond to some previous studies that found no differences in depression levels between IBS and IBD groups. Although the significant difference in the anxiety scores between IBS and controls corresponds to Pinto, Lele, Joglekar, Panwar and Dhavale's study (2000), the lack of a difference in anxiety scores between the IBS and IBD groups is in disagreement with most previous findings.

It could be argued that the lack of difference in anxiety scores between the IBS and IBD groups is because the IBD group was not representative of the IBD population. IBD patients were excluded from the study if they had received any intervention for psychological difficulties. With regard to demographics, Walker, Gefland, Gefland, Creed and Katon (1996) found IBD patients without psychiatric disorders had a mean age of 39.6 years (s.d 10.1) and 62% were female. Schwartz, Blanchard, Berreman, Scharff, Taylor et al. (1993) reported a mean age of 41.7 years and 63% were female in their sample. These characteristics were not dissimilar to the IBD patients recruited in this study, suggesting that they were demographically representative of IBD patients who were not psychologically distressed.

An alternative explanation is that the lack of difference in psychological distress between IBS and IBD patients may illustrate an improvement in the doctor-patient
Discussion

relationship and management of bowel related symptoms. Van Dulmen, Fennis, Mokkink and Bleijenberg (1996) found that if doctors recognised dysfunctional cognitions and anxiety during the consultation process in IBS patients, this led to a decrease in subsequent visits to patient's G.P and a reduction in medication for abdominal complaints. In this present study, IBS patients may have experienced a positive consultation with the gastroenterologist and were reassured (both medically and psychologically) that nothing sinister was wrong with them. Unfortunately, it is difficult to ascertain the effect of the doctor-patient relationship since participants were only recruited from one clinic setting. However, it was observed that patients tended to feel confident in what the consultants had told them at the clinic and did not appear to doubt the diagnosis that they had received.

Overall, the lack of difference in psychological distress between the IBS and IBD groups suggests that any psychological distress experienced may be as a result of having a bowel condition rather than something specific to IBS patients. The improved doctor-patient relationship may have alleviated any anxiety or depression typically associated with referred IBS patients.

4.2.2 Self-consciousness

When the three groups were compared on self-consciousness, no significant differences were found. Unfortunately, there are no previous studies that have investigated self-consciousness in IBS patients with which to compare these findings. The results therefore imply that self-consciousness is not an important factor in differentiating between IBS and IBD patients.

It could be argued that the lack of difference on the SCS between the IBS and control groups is attributable to some of the controls having fractures and feeling more self-conscious as a consequence of their injury (i.e. having an arm or leg in plaster). However, when the control group was separated into either fracture patient or relative/carer and compared on self-consciousness scores, no significant differences on self-consciousness scores were found.
Ingram’s (1990) review of self-consciousness in clinical disorders found that both anxiety and depression were associated with an increase in self-consciousness. The relationship between self-consciousness and affect is thought to be reciprocal. Using the S-REF model to explain the results obtained in this study, one would predict that if IBS consulters were more self-conscious, they would also have greater psychological difficulties, due to the demands that self-consciousness places on the attentional resources. Therefore, the lack of difference in self-consciousness between the three groups maybe related to the general lack of a difference in psychological distress reported.

4.2.3 Negative bowel cognitions
There were several significant findings when the three groups were compared on the Cognitive Scale for Functional Bowel Disorders (CSFBD). Both IBS and IBD groups had significantly greater negative cognitions about bowels compared to controls, but no differences were found between the IBS and IBD groups. No significant differences were found between the three groups regarding perfectionism, social rules and norms, and social approval and it may be that these areas are not important in differentiating IBS consulters from controls or other clinical conditions.

It is perhaps not surprising that both IBS and IBD patients reported increased bowel worries since both patient groups have to cope with bowel related difficulties. It also corresponds to the earlier finding that both IBS and IBD groups were similar in terms of psychological distress, suggesting that differences between functional and organic bowel conditions may not be as apparent as once thought. Issues that were particularly related to having a bowel condition included bowel performance anxiety, control, disease conviction, embarrassment/shame, pain, self-efficacy and anger/frustration. The only factor in which IBS, but not IBD patients, scored significantly higher than controls were in relation to self-nurturance. Thus, the need to take into account one’s own needs and desires may be more pertinent to IBS consulters rather than IBD patients.
To the author’s knowledge, no studies have compared IBS, IBD patients and controls in relation to cognitions. A study by Gonsalkorale, Cruickshanks, Whelan, Miller, Randles et al. (2000) found significant changes on all aspects of the CSFBD, except perfectionism and self-nurturance, following three months of hypnotherapy in IBS patients. Unfortunately they did not have a control group with which to compare their results. This current study found no differences in perfectionism, as measure on the CSFBD, and it may be that this is not applicable to IBS consulters or as sensitive to change.

In addition to Gonsalkorale et al.’s study, Drossman, Whitehead, Toner, Diamant, Hu et al. (2000) compared sub-groups of IBS patients using a different cognitive measures. They administered the dysfunctional attitude scale (DAS) and found no significant differences on this measure between IBS patients reporting either moderate or severe pain symptoms. However, the DAS does not contain questions that are bowel related. The findings from this study suggest that although the CSFBD questionnaire was originally designed for use with functional bowel patients, it may also be appropriate for organic bowel conditions as well.

4.2.4 Coping in stressful situations

The final comparison between the three groups was in relation to coping strategies employed in stressful situations. No significant differences were found, suggesting that IBS consulters do not have significantly different coping strategies to IBD patients or controls.

The biopsychosocial model proposed that poor coping style influences the course of IBS symptoms (Gaynes & Drossman, 1999). The coping measure used in this present research was in relation to stressful events. Therefore the lack of difference in this study may be related to the lack of differences in stressful situations experienced between the three groups. For example, Schwartz, Blanchard, Berreman, Scharff, Taylor et al. (1993) found no differences between IBS, IBD and controls when using a stressful life event scale. However, Pinto, Lele, Joglekar, Panwar and Dhavale (2000) reported higher stressful life event scores in IBS
consulters than controls. Unfortunately, they did not go on to identify whether coping strategies were different between their two groups.

There are only a few other studies that have investigated the role of coping in IBS patients. Of these, Drossman, Li, Leserman, Toomey and Hu (1996) studied the relationship between gastrointestinal (GI) symptoms and history of abuse with coping styles. They administered the Ways of Coping-Revised (WOC-R) and the catastrophising scale of the Coping Strategies Questionnaire (CCSQ). No relationship was found on the WOC-R with GI symptoms. This corresponds to the lack of difference in coping strategies used between the IBS and IBD groups in this study. However, on the CCSQ, a greater association was found with functional (compared to organic) GI diagnosis, younger age, less educational achievement and severity of abuse suggesting that these participants used catastrophising as a coping strategy. Unfortunately, there was no measure of catastrophising coping in the Coping Inventory for Stressful Situations (CISS) with which to compare with Drossman et al.'s study.

4.2.5 Summary of the comparisons between the three groups
Overall, the findings from this first research question suggests that IBS consulters were more anxious than controls. Both IBS and IBD groups had specifically greater negative worries about their bowels compared to controls. No differences were found in self-consciousness or coping strategies used in stressful situations between the three groups. At face value, the results suggest that in a gastroenterology setting, IBS patients do not differ from IBD patients. My impression of working in such a setting and from reading relevant literature is that IBS patients tend to be considered as more psychologically distressed than their counterparts. Professionals tend to view the distress experienced by IBS patients as part of their personality rather than as a consequence of having to live and cope with a functional bowel condition.

Using the S-REF model as a possible explanation for these results, the lack of significant findings in self-consciousness, coping and depression may be due to the
lack of difference in self-consciousness between the groups. If IBS consulters were not highly self-conscious, the demands on the attentional system would not have been sufficient enough to affect coping strategies or cause the difference in psychological distress that were anticipated. The lack of a difference between the three groups in relation to self-consciousness may be related to the lack of difference in depression scores. An alternative explanation is that increased negative cognitions and anxiety are not related to levels of self-consciousness and that the S-REF model can not be used to explain the results obtained. A closer inspection of the relationships between the variables would assist in determining whether certain factors are influencing one another and this will be discussed in the following research question in relation to IBS consulters.

4.3 Research question 2
The second research question attempted to identify whether any of the dependent variables were related in the IBS group. The findings of each comparison will be discussed in turn in relation to each one of the dependent variables.

4.3.1 Self-consciousness
4.3.1.1 Self-consciousness and negative bowel cognitions
Scores on self-consciousness were first correlated with scores on the CSFBD. There were many significant correlations, especially in relation to private self-consciousness, which was correlated with all CSFBD factors except disease conviction. The highest correlations (at $p < .01$) were between private self-consciousness and CSFBD embarrassment/shame, pain, perfectionism, social rules and norms and self-nurturance. Public self-consciousness was positively correlated with 6 of the 11 CSFBD factors at a significance level of $p < .05$.

It was surprising that social approval on the CSFBD did not correlate with social self-consciousness given their apparent similarities in the areas being investigated. However, social self-consciousness was correlated with CSFBD perfectionism. This latter result is similar to Saboonchi, Lundh and Ost (1999) who reported perfectionism to be significantly correlated with social self-consciousness in
patients with social anxiety (they did not correlate public and private SCS factors with perfectionism).

Matthews and Wells (1996) suggested that self-consciousness increased negative state and activated dysfunctional self-beliefs or cognitive distortions. The results in this study suggest that IBS consulters who are privately and publicly self-consciousness have many worries in relation to their bowel condition, although whether one predicts the other is not known. Socially self-conscious IBS consulters are mostly concerned about the high standards they set for themselves.

4.3.1.2 Self-consciousness and psychological distress

When self-consciousness scores were correlated with psychological distress, private self-consciousness was positively associated with both anxiety and depression. This finding is similar to that observed in other clinical groups e.g. Smith and Greenberg (1981) demonstrated a significant relationship between private self-consciousness and depression (at a sub-clinical level). Well's study (1985) used a real life-threatening situation of undergraduates who were just about to sit an examination and found a significant relationship between private self-consciousness and trait anxiety scores. In addition, Ingram's (1990) review of self-consciousness supported the positive relationship between self-consciousness and affective disorders. Thus, the findings in this current study are similar with those from previous research.

4.3.1.3 Self-consciousness and coping

Previous studies have reported relationships between self-consciousness and coping styles where self-consciousness activates task-focused coping strategies in positive situations. In contrast, emotion-focused and avoidance coping strategies are activated when negative outcomes are anticipated (e.g. Carver & Scheier, 1981). In this study, when self-consciousness was correlated with coping strategies, all three self-consciousness factors were highly and positively correlated with emotion-focused coping. Both private and public self-consciousness were also positively correlated with task-focused coping although at a slightly lower significance level.
The results obtained could be accounted for in several ways. It could be argued that emotion-focused coping is the most important form of coping in IBS consulters during stressful situations. The stronger significant correlation values for emotion-focused coping could be explained using the S-REF model. This model would propose that emotion-focused coping is used when IBS consulters are self-conscious since this form of coping does not demand a lot of attentional resources. However, what was interesting was the significant relationship between task-focused coping strategies and aspects of self-consciousness. Wells and Matthews (1994) suggested that the importance of an event best predicted the coping strategy employed. Therefore, in this study, the stressful situation identified may not have been as important, as threatening, or as demanding enough to drain attentional resources to cause an increase in avoidance-focused coping and a reduction in task-focused coping.

### 4.3.1.4 Summary of self-consciousness

Overall, self-consciousness appears to be important for some IBS consulters, especially private self-consciousness. The relationship between private self-consciousness with affect and negative cognitions corresponds to previous findings by Wells (1985, 1991). Matthews and Wells (1996) suggested that self-consciousness increased negative state and activated dysfunctional self-beliefs or cognitive distortions. Whilst it is not possible to make predictions about the nature of such relationships in this study, the results suggested that highly self-conscious IBS consulters are psychologically distressed, have greater worries in relation to their bowel condition and use emotion-focused and task-focused coping in stressful situations.

### 4.3.2 Psychological distress

#### 4.3.2.1 Psychological distress and negative bowel cognitions

Only a few significant positive correlations were obtained when psychological distress was correlated with negative bowel cognitions. Anxious IBS consulters had worries in relation to the embarrassment/shame of having a bowel condition, felt
angry/frustrated, worried about how they appear in the eyes of others and felt unable to cope with their condition.

Depression scores were not related to worries about bowels. Beck's schema theory (1967) suggested that maladaptive beliefs are more likely to occur in individuals who suffer affective conditions. Thus, the lack of significant findings between depression scores and negative bowel worries may be due to the fact that IBS consulters were not typically depressed. Only 6 IBS consulters (18%) scored greater than 10 on the Hospital Anxiety and Depression Scale (HADS), and it is therefore perhaps not surprising that they did not have increased negative cognitions typically associated with being in a depressive state.

4.3.2.2 Psychological distress and coping
In relation to coping, psychological distress scores were positively correlated with emotion-focused coping strategies in stressful situations. The correlation value for anxiety with emotion-focused coping was almost twice as high as for depression, possibly because a greater percentage of IBS consulters were anxious (55%) than depressed (18%). The significant finding between emotion-focused coping and psychological distress corresponds to previous studies (Holahan & Moss, 1987; Dusenberg & Albee, 1988) where this form of coping aims to reduce the emotional distress initiated by the stressor. However, the data from this current study did not find a positive relationship between psychological distress and avoidant coping or a negative relationship with task-focused coping, suggesting that IBS consulters were not trying to avoid or alter the source of the stress. In contrast, Pinto, Lele, Joglekar, Panwar and Dhavale (2000) found that psychological distress decreased positive coping strategies irrespective of stressful life event scores.

4.3.2.3 Summary of psychological distress
Overall, anxious IBS consulters had specific negative bowel related cognitions and used emotion-focused coping in stressful situations. Depressed IBS consulters used emotion-focused coping. The lack of a relationship between depression scores and
negative bowel cognitions may be related to the fact that most IBS consulters were not depressed.

The S-REF model could be used to explain the lack of a significant inverse relationship between task-focused coping and psychological distress (in particular anxiety, since over half of IBS consulters were anxious) in terms of the demands that task-focused coping places on the attentional system. In an anxious state, it is easier to opt for less demanding strategies such as emotion-focused coping, rather than the more demanding and resourceful positive coping strategies (i.e. task-focused). When patients were asked to complete the CISS they were asked to recall situations that were stressful, difficult or upsetting. However, the situations recalled were not recorded and these situations may not have been as stressful or demanding enough to cause an inverse relationship between anxiety and task-focused coping. Only further research would put light on this issue.

4.3.3 Negative bowel cognitions and coping

The final relationship was between negative bowel cognitions and coping in stressful situations. Significant positive correlations were found for emotion-focused coping, social diversion and task-focused coping with certain CSFBD factors, with some overlaps in the different coping strategies used. For example, CSFBD social rules & norms was related to positive (task-focused) and negative (emotion-focused and social diversion) coping strategies.

Meadows, Lackner and Belic (1997) conducted a qualitative study to explore the patient's perspective on having IBS. Patients reported that if they could control the stress in their lives, they felt they would not experience symptoms. There was a great need for patients to be in control of their symptoms, with most attempts being related to dietary intake. This may explain the use of task-focused coping in relation to some bowel related worries.

Overall, positive and negative coping strategies were used in relation to bowel related worries except for disease conviction, perfectionism and self-nurturance. In
discussion

Comparison to other clinical groups, patients with simple phobias or panic disorders used more avoidance-coping mechanisms compared to controls as well as a decrease in the use of cognitive threat devaluation strategies (Davey, Burgess & Rashes, 1995). Gonsalkorale, Cruickshanks, Whelan, Miller, Randles et al. (2000) found that beliefs about perfectionism and self-nurturance (as measured on the CSFBD) did not change following a course of hypnotherapy in IBS patients and it could be that these two factors are not as pertinent to this client group.

Beck's schema theory (1967) suggested that in individuals with affective conditions, the use of emotion-focused coping reinforced maladaptive negative beliefs. However, whilst this may be occurring in relation to some bowel related cognitions, the use of additional task-focused strategies for other cognitions suggests that a balancing act was occurring between positive and negative strategies. In addition, not all of the IBS consulters in this study would be categorised as having an affective condition.

The S-REF model would propose that task-focused coping strategies are beneficial in the short-term, but with time, attentional resources become depleted, resulting in the greater use of emotion-focused and avoidant coping strategies. None of the CSFBD factors were significantly related to just task-focused coping. Therefore, the use of task-focused coping in IBS consulters may eventually be reduced if a stressful situation persisted, was more demanding or less controllable, although this cannot be deduced from the findings presented here.

4.3.4 Summary of the correlation between self-consciousness, psychological distress, coping and negative bowel cognitions in IBS consulters

Overall, in IBS consulters, private self-consciousness is related to psychological distress, negative bowel cognitions, emotion- and task-focused coping strategies used in stressful situations. Public self-consciousness is related to some negative bowel cognitions, emotion and task-focused coping strategies. Social self-consciousness is only related to perfectionistic ideas and emotion-focused coping.
Anxiety was related to cognitions about feeling embarrassed and/or ashamed, angry and/or frustrated about having a bowel condition, social approval and feeling unable to cope with such a condition. It was also related to emotion-focused coping in stressful situations, as were depression scores.

Finally, IBS consulters who have negative bowel cognitions (excluding disease conviction, perfectionism and self-nurturance) used a mixture of positive and negative coping strategies in stressful situations.

### 4.4 Research question 3

IBS consulters who are psychologically distressed may be referred to psychology services. It was therefore of interest to identify whether this group had any particular characteristics in relation to self-consciousness, coping strategies and negative bowel cognitions. The HADS cut-off value of 11 or more was used to separate IBS consulters according to whether they were psychologically distressed or not, since it was felt that this cut-off was clinically meaningful (Carroll, Kathol, Noyes, Wald & Clamon, 1993). The IBS group was split almost equally into those who were anxious and those who were not in terms of HADS anxiety scores. However, most IBS consulters were not depressed. Therefore, no further analyses were conducted using this division, since it was not felt to be statically viable or clinically meaningful.

When Pinto, Lele, Joglekar, Panwar and Dhavale (2000) separated their IBS group on HADS scores, they found over 50% of their sample were clinically anxious or depressed. Thus, there were similarities with this study and Pinto et al.'s in relation to the percentage of IBS consulters with anxiety scores, but not in terms of depression. In contrast, a study conducted in the UK (Thornton, McIntyre, Murray-Lyon & Gruzelier, 1990) found only 4 out of 25 patients were anxious on the HADS and none of their sample were depressed. The depression results from this current study were similar to Longstreth, Hawkey, Mayer, Jones, Naesdal et al. (2001) who reported that only 13% of their referred patients were depressed on the HADS.
In terms of demographic details, there were no significant differences between those who were anxious and those who were not. Differences on the questionnaires were found on four of the CSFBD factors, with the anxious IBS consulters having greater negative bowel related worries than the non-anxious group. The anxieties were in relation to anger or frustration in having to cope with a functional bowel disorder, the feeling of being unable to cope, the embarrassment and shame of not having an apparent cause or cure for their condition, and finally, the anxiety about how they appeared to others.

Pinto, Lele, Joglekar, Panwar and Dhavale (2000) found their anxious IBS group used more negative coping strategies on the Mechanism of Coping Scale. The results from this study supported Pinto et al.'s finding, with anxious IBS consulters significantly more likely to use emotion-focused coping in stressful situations to non-anxious IBS consulters. However, anxious IBS consulters in this current study were no more likely to use avoidance coping strategies compared to those who were not anxious.

Overall, anxious IBS consulters may have specific types of worries in relation to bowels and use emotion-focused coping when in stressful situations in comparison to non-anxious IBS consulters. No significant differences were found on the self-consciousness scale, suggesting that it is not important in differentiating between anxious and non-anxious IBS consulters.

4.5 An alternative hypothetical model to interpret the results

The findings from this study have been interpreted in relation to previous literature and the S-REF model. However, it may be that there is an alternative explanation for the results. IBS consulters were more anxious and had greater negative bowel cognitions compared to controls. Given that self-consciousness and coping were not significantly different in IBS consulters when compared to IBD patients and controls, it could be hypothesised that these factors do not directly cause the anxiety and negative bowel cognitions experienced. When IBS consulters were considered apart from the two other groups, various associations were found between self-
Discussion

consciousness, psychological distress, negative bowel cognitions and coping. Thus, whilst self-consciousness may not cause anxiety and negative bowel cognitions, it did appear to be related to these factors as well as coping.

Wells and Matthews (1994) proposed that self-consciousness has a direct effect on the S-REF system, which is involved in employing coping strategies (see Figure 1, pg 35). Self-beliefs, selected from long-term memory, also influence the S-REF system. Various outcomes include negative emotion, increased use of negative coping strategies and worry.

The results from this study do not entirely correspond to the role of self-consciousness suggested by Wells and Matthews. Instead, negative bowel cognitions and anxiety appear to be more pertinent in IBS consulters than self-consciousness and coping strategies. The important aspect of the S-REF model in this context appears to be in relation to it acting as an attentional limited resource. As levels of the attentional system become depleted, this effects coping and self-consciousness and psychological distress. Figure 2 is introduced as a hypothetical model in an attempt to explain the findings from this current study. It combines aspects of the biopsychosocial model with cognitive theory and the S-REF attentional syndrome.
Figure 2. Hypothesised model for understanding the relationship between self-consciousness, psychological distress, negative cognitions and coping in IBS consulters

Early experience

PREDISPOSING FACTORS

Bowel related dysfunctional assumptions

PRECIPITATING FACTORS

ATTENTIONAL RESOURCES

Psychological distress

Self-consciousness  Coping

Outcomes include:
- Increased worry
- Increased negative coping strategies
- Decrease in task-focused coping strategies
- Feelings of anger/frustration etc.
Discussion

Schema form early on in an individual's life. Predisposing factors include genetic, social and family influences. During development, dysfunctional assumptions are formed about many aspects of life, influenced by societal and family expectations. In relation to general cognitions, an individual may learn that they should always be in control and must always do their best at everything. More specifically, in relation to bowels, an individual may learn that one should always be in control of bodily functions, that it is not appropriate etiquette to pass gas in public, or to go to the toilet during a meal. Many of these cognitions may not cause difficulties throughout life. However, various precipitating factors such as stressful life events, or a gastrointestinal infection may challenge these cognitions. In such instances, bowel activity may be affected. In some individuals, these cognitions may become dysfunctional, resulting in an increase in anxiety levels, self-consciousness and changes in coping strategies. Thus whilst task-focused coping may have been applied in normal circumstances, the lack of attentional resources causes an increase in emotion-focused coping and a decrease in task-focused coping. The reciprocal relationship between psychological distress, self-consciousness and coping maintains such difficulties, which in turn reinforces the negative bowel cognitions.

The early schemas or precipitating factors for the IBS consulters were not identified in this current study. However, IBS consulters did have many negative bowel cognitions. These cognitions were associated with levels of anxiety, self-consciousness and coping strategies. IBS consulters were privately self-conscious and to a lesser extent, publicly self-conscious. This suggests that they mostly scrutinised themselves and self-reflected. However, by doing this, they would have become more aware of their bowel functioning which in turn would increase anxiety levels. Both emotion-focused, social diversion and task-focused coping were being utilised, although the latter to a lesser extent. This suggests that attentional resources had not been drained sufficiently to cause an inverse relationship with task-focused coping.

Inspection of the correlational values suggests that the strongest relationships in IBS consulters were between anxiety, CSFBD anger/frustration and emotion-focused
Discussion

coping. The anger/frustration is in relation to having to cope with a functional bowel disorder and feeling frustrated about the symptoms experienced. These feelings result in an increase in anxiety levels as well as emotion-focused coping. Although self-consciousness was significantly correlated with all of these factors (at p < .05), the correlation values were highest between emotion-focused coping and public and private self-consciousness. This would suggest that self-consciousness is not the main factor in determining coping strategies and psychological distress. However, further research is required to determine whether certain factors predict others and whether these relationships are specific to IBS consulters or could be applied within a wider context.

Although the model in Figure 2 includes depression as part of the psychological distress factor, there were very few associations between depression scores and the other variables. This may suggest that IBS is a condition more associated with anxiety rather than depression. The anxiety appeared to be most related to feelings of embarrassment/shame, anger/frustration, social approval and self-efficacy. However, the other negative bowel cognitions were also important since they were related to aspects of self-consciousness and coping.

Overall, it is acknowledged that this model is purely speculative and based on the current findings. However, what it is attempting to do is challenge the role of self-consciousness in the S-REF model in the context of IBS consulters and the results obtained. Further research is warranted to identify whether the relationships proposed in Figure 2 accurately reflect the relationships identified in IBS consulters in this study.
4.6 Limitations of the study

There are several methodological limitations that should be considered when interpreting the findings from this study, including design, sample and measures. These will be discussed in turn below.

4.6.1 Design

A cross-sectional controlled between-groups design was adopted for the purpose of this research. An alternative approach would be to conduct a longitudinal study to allow for changes in responses over a period of time. It would have been interesting to identify whether IBS consulters' responses altered from the point of referral to diagnosis. However, this could have been difficult since at the initial stages, they may not have been ready to accept such an explanation for their difficulties. It would also have meant recruiting people who may have had alternative explanations for their difficulties e.g. lactose intolerance, thus causing unnecessary concern. A longitudinal approach could have followed IBS consulters from the point of diagnosis over the first six months to a year. There was not sufficient time to carry out such a piece of work, especially since it took several months to recruit 33 IBS consulters.

Another disadvantage of conducting a cross-sectional design was that it does not allow inferences to be made about the causality of any relationships identified. However, investigating correlations in this study has identified future areas to research.

4.6.2 Sample

The number of patients recruited in each group was sufficient to allow comparisons to be made. The numbers obtained are also similar to those obtained in several other studies (e.g. Pinto, Lele, Joglekar, Panwar & Dhavale, 2000). However, a larger sample would have been more ideal in minimising against Type 2 errors i.e. not identifying a significant result. In attempt to reduce Type 1 errors, the Bonferroni procedure was applied when the three groups were compared using post-
hoc analysis, as well as when the IBS consulters were separated according to their HADS scores.

It could be argued that some of the results from the correlational analysis were due to chance. Adopting a lower significance level of $p < .01$ may have reduced this effect, accounting for only the higher correlational values. Whilst this may reduce the chance of Type 1 errors, the chance of Type 2 errors is increased since they are inversely related. Therefore, correlational values that were significant at $p < .05$ were discussed in this research since such findings can indicate future areas to research. A larger sample using the same questionnaires may have strengthened the findings obtained.

Patients in this study were not randomly selected but where recruited consecutively after their appointment with the consultant. Although it could be argued that this lead to a bias in both the IBS and IBD samples, the demographic information obtained did suggest that they were not dissimilar from patients recruited in previous studies. In addition, whilst there were no age or gender differences between those who agreed to participate and those that did not, there may have been psychologically differences. It is not possible to identify whether this is the case since no psychological information was obtained on those that did not send back the questionnaires.

The Rome I criteria was used because it was used in the clinic setting. It also meant that IBS patients had to have experienced symptoms over the past 12 weeks prior to diagnosis (Boyce, Koloski & Talley, 2000). Although Boyce et al. suggested that the Rome II criteria may be more useful in research settings, the use of the Rome I criteria enabled comparisons to be made with previous studies. The Rome I criteria is also the strictest of the criteria available, minimising against the chance that someone could have an alternative explanation for their difficulties.

A measure of severity of bowel problems was not used in this study. Although such visual analogue scales are thought to be valid with the IBS client group, it was not
thought to be relevant to the research questions. In addition, previous studies have suggested that referred clients experience the most severe symptoms (van der Horst, van Duimen, Schellevis, van Eijk, Fennis et al., 1997) and are the most psychologically distressed (Whitehead, Bosmajian, Zonderman, Costa & Schuster, 1988).

4.6.3 Measures
Perhaps the most problematic of the questionnaires used in this study was the CSFBD. The CSFBD is a new instrument developed for use within research and clinical settings to monitor change. Apart from the original study investigating it's design and statistical properties, no other data is currently available on it's effectiveness in identifying difficulties. It is also not possible to make comparisons with other studies.

When corresponding with the first author of the questionnaire to obtain permission to use the CSFBD, it was advised that the extended version was used, since further studies are being conducted to identify which version is the most appropriate. However, this may have meant that unnecessary questions were included. The CSFBD was not normally distributed. Controls had a tendency to answer at the lower end of the Likert scale, whilst both IBS and IBD patients tended to respond at the upper end. This created a skew in the results.

The Self-Consciousness Scale (SCS) was originally published in 1975 but has since been used in numerous studies and translated into many different languages. There is some debate about how many factors can be identified e.g. Burnkrant and Page (1984) proposed a 4-factor model in which the private self-consciousness factor was separated into internal state awareness and self-reflectiveness. In Cramer's (2000) review of the SCS factor structures, he also discusses the 5-factor and 6-factor models that have been proposed. The 3-factor model was chosen for this study since it enables comparisons to be made with previous studies, and there remains no conclusive evidence as to which factor structure is the most appropriate for use.
The Coping Inventory for Stressful Situations was used, partly because of its good statistical properties and partly because it can be broken into task-, emotion and avoidance-focused coping. These three factors have previously been investigated in relation to self-consciousness, psychological distress, negative affect and the S-REF model has also been applied as an explanation for such relationships. As mentioned earlier, this questionnaire does not ask the respondent to recall the stressful, difficult or upsetting situation when completing the questionnaire. It was therefore not possible to compare such situations between the three groups or relate them to responses on the other questionnaires.

4.7 Future research

The findings from this study have highlighted a number of areas that would benefit from future research and are summarised below.

Firstly, with regard to the IBD and IBS groups, it would be interesting to conduct a multi-centre study in England, to identify whether these groups are similar in terms of psychological distress, since most studies comparing these two groups have been conducted in the USA.

Secondly, it would be interesting to investigate the effect of the doctor-patient relationship on psychological factors in IBS patients. Gaynes and Drossman (1999) recommended a variety of treatment approaches in the management of IBS patients. These included establishing a good therapeutic relationship, discussing psychosocial factors, for example the role of stressors in an individual's life, addressing any concerns or misconceptions that patients had through the use of education, reassurance and reconceptualisation approaches. In addition, they recommended reinforcing healthy behaviours, providing patients with a choice in psychopharmacological medication, involving patients when planning treatment goals and referring to mental health professionals when psychological distress is apparent. A national study could be conducted to identify whether psychological distress was reduced when IBS patients were managed holistically.
A promising finding was the identification of bowel related worries in IBD patients using the CSFBD. Although this questionnaire was originally developed for use within the functional bowel disorder population, it may be as relevant to other organic bowel disordered groups. It would therefore be beneficial to explore how appropriate this questionnaire is for IBD patients. Although Blanchard (2001) advised against the use of CBT approaches in treating IBD patients, it did appear that they have many negative cognitions in relation to their condition, which would benefit from some form of psychological intervention.

Fourthly, it would be interesting to investigate in greater detail the types of coping used by IBS consulters. Measuring how stressful the situations was as well as the level of controllability and importance that it has on the individual may add further insight into the relationship between coping strategies with psychological distress, self-consciousness and negative bowel cognitions.

Finally, the proposed hypothetical model could be investigated to identify whether it accurately reflects the experiences of IBS consulters in relation to the four dependent variables. It would be beneficial to explore these relationships as well as determine whether certain factors predicted others or whether any such relationships were reciprocal.

4.8 Clinical implications

Many psychological interventions have focused on applying cognitive behavioural treatment in IBS patients. It was therefore felt important to investigate the role of self-consciousness, psychological distress, coping and negative bowel worries in IBS consulters to help inform such psychological interventions and adapt if necessary. The S-REF model was also used to explain any results since it has previously been applied in understanding the relationship of self-consciousness with psychological distress, coping and dysfunctional cognitions. An alternative working model was also proposed.
Whilst self-consciousness was not important in differentiating IBS consulters from IBD patients or controls, self-consciousness was related to the three other psychological components investigated in the IBS group. Both privately and publicly self-conscious IBS consulters had greater negative bowel cognitions, were psychologically distressed and used emotion and task-focused coping. The S-REF model would suggest that highly self-conscious individuals put increased demands on attentional resources. This biases attention away from positive information on to areas that do not place high demands on resources including psychological distress, negative coping styles and negative cognitions.

It is often the IBS patients who appear psychological distressed that are referred to psychological services. However, what was interesting was that self-consciousness did not differentiate anxious from non-anxious IBS consulters. Self-consciousness may therefore be overlooked during assessment and intervention procedures. Instead, anxious IBS consulters are likely to present with specific bowel related worries and the use of emotion-focused coping. All of these areas warrant further investigation during the assessment stage.

The alternative hypothetical model could account for the findings by suggesting that dysfunctional assumptions, formed early on in an individual's life were more pertinent in determining levels of self-consciousness, psychological distress and coping. Whilst this is similar to the cognitive model, the proposed model also takes into consideration attentional resources available and the interactions between self-consciousness, coping and psychological distress on the attentional system.

From a clinical perspective, you would anticipate IBS consulters who have negative bowel related worries to focus on their bowel symptoms and interpret symptoms in a catastrophic way. This will lead to an increase in worry, self-focus, emotion-focused coping and psychological distress. Identifying such negative bowel cognitions may be essential for psychological intervention. Treatment may benefit from a combination of cognitive and attentional methods, for example teaching IBS consulters new processing skills as well as attentional methods in attempt to divert
Discussion

attention away from the self on to more positive beliefs. Training in self-control techniques as well as increasing task-focused coping strategies may also be important. Cognitive techniques would assist in modifying dysfunctional beliefs as well as decreasing psychological distress, in particular anxiety levels.
5. CONCLUSION

Drossman and Thompson (1992) described which IBS groups would most benefit from psychotherapy. They separated IBS patients who seek some form of medical intervention into three distinct groups, depending on IBS severity and the impact that it had on their lives. Patients with mild IBS were thought to account for 70% of the IBS population, managing with minimal medical intervention. These patients had little or no psychological difficulties and responded best to education, reassurance and possible dietary intervention. The second group represented those with moderate IBS, and accounted for 25% of the population. They may request referrals to gastroenterologists and were more likely to experience psychological or psychiatric difficulties. This group was most likely to be referred for psychological intervention. The final group was those with severe IBS and represented the final 5%. They generally had psychiatric or psychological co-morbidity and tended to believe that they had a serious underlying medical condition. They were less likely to accept a referral for psychological intervention and Drossman and Thompson recommended using multi-disciplinary intervention approaches including antidepressants and physician directed behavioural techniques.

The sample recruited in this study is likely to fall into Drossman and Thompson's second category. The findings from this study suggest that such IBS consulters were not significantly different to IBD patients on the psychological questionnaires investigated. However, IBS consulters were more anxious and had greater negative bowel cognitions compared to controls. Several significant positive relationships were identified between the four questionnaires studied, including private and public self-consciousness, emotion and task-focused coping, negative bowel cognitions and psychological distress (in particular anxiety). Anxious IBS consulters differed from non-anxious IBS consulters in terms of increased negative bowel cognitions and emotion-focused coping. The proposed hypothetical model which combines cognitive theory with the S-REF and biopsychosocial model may assist in our understanding of such findings as well as highlighting additional areas that may be useful during psychological assessment and intervention.
6. REFERENCES


References


References


References


References


Appendix 1. Letter of invitation for IBS and IBD patients.

July 2001

Dear Sir/Madam

Re: Self Consciousness and Coping in Irritable Bowel Syndrome

A research study is being carried out at the Leicester General Hospital by Alexandra Dent.

This study has been designed to investigate whether people with irritable bowel syndrome (IBS) are self conscious about their condition and how they cope in stressful situations. It is also of interest to identify whether this differs to people with an inflammatory bowel disease (IBD) or people with no functional or organic bowel problems.

If you are interested in participating, you will be asked to complete four questionnaires, which will take approximately 30 minutes of your time. Your responses would be very valuable and it is hoped that the results of this study will help us to identify the most appropriate psychological care in the future.

If you would like to take part in this study, details of which are given on the information leaflet enclosed, please complete the reply slip at the bottom of this letter. At this stage, you will also be asked to complete a consent form. Please do not feel obligated to decide today - you may prefer to have some time to think about the study before deciding. However, if you already feel happy to participate, you may have an opportunity to fill in the questionnaires today. If you would like some time to think about the study, a pre-paid envelope is provided for your convenience. At a later stage, if you decide to participate, please return the reply-slip and consent form to Alexandra Dent. She will then contact you to arrange a convenient time for you to fill in the questionnaires.

I would like to thank you for taking time to read this letter and hope to hear from you soon. If you have any queries, please feel free to contact Alexandra Dent on 0116 2584958.

Yours sincerely

Dr Mayberry, Consultant Physician
Department of Gastroenterology, Leicester General Hospital
Telephone No: 0116 2584439
Self Consciousness and Coping in Irritable Bowel Syndrome

Please return in the enclosed pre-paid envelope to:

Mrs Alexandra Dent
Trainee Clinical Psychologist
Hadley House,
Department of Medical Psychology,
Leicester General Hospital
Gwendolen Road
Leicester
LE5 4PW

Thank you

• I am interested in taking part in the above study and agree to .................. contacting me:

• I understand that I am under no obligation to take part in the study

Name: ...............................................................................................................

Address: ...........................................................................................................

.................................................................

.................................................................

Telephone No: .......................................................................................

Date: .................................................................................................
Appendix 2. Patient information sheet for IBS and IBD patients.

**Self Consciousness and Coping in Irritable Bowel Syndrome**

by Alexandra Dent, Trainee Clinical Psychologist

Contact details: Alexandra Dent, Department of Medical Psychology, Hadley House, Leicester General Hospital, Gwendolen Road, Leicester, LE5 4PW.

Telephone: 0116 2584958

1. **What is the purpose of the study?**

As part of my Doctorate in Clinical Psychology, I am interested in whether people with irritable bowel syndrome (IBS) are self conscious about their condition and how they cope in stressful situations. I am also interested in identifying whether this differs to people with an inflammatory bowel disease (IBD) or people with no functional or organic bowel problems.

2. **What will be involved if I take part in the study?**

The study consists of four questionnaires and should not take more than 30 minutes of your time. Each questionnaire will be asking specific questions about a certain topic. They include a questionnaire about
a) self-consciousness
b) beliefs people may have about bowel functioning
c) different coping strategies that you may use in stressful situations
d) how you have been feeling recently

You can either agree to participate and complete the questionnaires today or if you wish to have time to think about the study, a self-addressed and stamped envelope will be provided so that you can return the reply-slip and consent form at your convenience. I will then contact you to arrange a convenient time for you to complete the questionnaires. If at any stage you have any difficulties with completing the questionnaires, please feel free to contact me on the telephone provided above.

3. **Will information obtained in the study be confidential?**

All information will be kept confidential as required under the Data protection Act. During the write-up of the study, no participant will be identifiable and anonymity will be maintained.

4. **What happens if I do not wish to participate in this study or wish to withdraw from the study?**

If you do not wish to participate in this study or if you wish to withdraw from the study you may do so without justifying your decision and your future treatment will not be affected.

Thank you for your time
Appendix 3. Consent form for IBS and IBD patients.

**Self Consciousness and Coping in Irritable Bowel Syndrome**

by Alexandra Dent, Trainee Clinical Psychologist

**PATIENT CONSENT FORM**

This form should be read in conjunction with the Patient Information Leaflet

I agree to take part in the above study as described in the Patient Information Sheet.

I understand that I may withdraw from the study at any time without justifying my decision and without affecting my normal care and medical management.

I understand that members of the research team may wish to view relevant sections of my medical records, but that all the information will be treated as confidential.

I understand medical research is covered for mishaps in the same way as for patients undergoing treatment in the NHS i.e. compensation is only available if negligence occurs.

I have read the patient information leaflet on the above study and have had the opportunity to discuss the details with Alexandra Dent and ask any questions. The nature and the purpose of the questionnaires have been explained to me and I understand what will be required if I take part in the study.

Signature of patient .................................................................

Date .................................................................

(Name in BLOCK LETTERS)

---------------------------------------------------------------------

I confirm I have explained the nature of the Study, as detailed in the Patient Information Sheet, in terms which in my judgement are suited to the understanding of the patient.

Signature of Investigator ...........................................................

Date .................................................................

(Name in BLOCK LETTERS)

---------------------------------------------------------------------
Appendix 4. Demographics sheet for all three groups.

<table>
<thead>
<tr>
<th>Date:</th>
<th>Clinic: Gastroenterology/Fracture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hospital: Leicester General/Royal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Has the patient read the information sheet?</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the consent form signed?</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>

**STUDY NO. ****

**Gender:** M/F

**Status:** Married/Divorced/Single/Widow or widower/Cohabiting

**Work:** Employed/Unemployed/Self-employed/Student/Retired

**Occupation/previous occupation:** (if employed)

**Age left school**

**No. years education**

**Ethnic origin:** Which best describes their ethnic origin?

<table>
<thead>
<tr>
<th>White European</th>
<th>Indian</th>
</tr>
</thead>
<tbody>
<tr>
<td>White-Other</td>
<td>Pakistani</td>
</tr>
<tr>
<td>Black-Caribbean</td>
<td>Bangladeshi</td>
</tr>
<tr>
<td>Black-African</td>
<td>Chinese</td>
</tr>
<tr>
<td>Black-Other</td>
<td>Other Asian (pl. specify)</td>
</tr>
<tr>
<td></td>
<td>Other (i.e none of above)</td>
</tr>
</tbody>
</table>

**Medical History (pertinent to study)**

1. **Does the patient have any diagnosed bowel condition?** Yes/No

   **If yes, is this:** IBS/IBD/Other (please describe)

   **Date of diagnosis**

   **No. Years with condition**

   **a. For IBS Patients:**

   **Predominant presentation** (delete as appropriate) Diarrhoea/abdominal pain/constipation

   **b. For IBD Patients:** (ask the following questions)

   **Do you get up at night to pass stool?** Yes/No

   **Is the stool solid or liquid?** Solid/Liquid

   **Is there blood present?** Yes/No

2. **Are you currently receiving treatment for psychiatric/psychological problems?**

   Yes/No

   **If yes, please describe condition and treatment received**

3. **Have you had a diagnosis in the last 12months for a chronic illness?** Yes/No

   **If yes, please describe**
Dear

You may recall that I met you briefly when you attended Dr Mayberry's clinic on the (insert date) to discuss a research project that I am conducting. I am interested in how people cope with having a bowel condition and whether they feel self-conscious. At the time, you expressed an interest and consented to participating in the study. I am therefore writing to see whether you would still be interested in completing the four questionnaires. It should not take more than 20 to 30 minutes of your time. All information is kept confidential and anonymity is ensured on the responses you provide. The information obtained helps to identify the difficulties (if any) that people are experiencing and enables people like myself to determine the most effective psychological services to provide.

I am enclosing another copy of the information sheet about the study, along with the four questionnaires. I have also enclosed a self addressed stamped envelope so that if you are still interested in participating, you can return the questionnaires to me. If you are having any difficulties completing the questionnaires or if there are questions that you would like to ask, please do not hesitate to contact me on telephone number 0116 2584958. I will then contact you at your convenience.

Thank you for your time,

Yours sincerely.

Mrs Alexandra Dent
Trainee Clinical Psychologist

September 2001

Dear Sir/Madam

Re: Self Consciousness & Coping in Irritable Bowel Syndrome
(Control Group)

A research study is being carried out at the Leicester Royal Infirmary by Alexandra Dent.

This study has been designed to investigate whether people with irritable bowel syndrome (IBS) are self conscious about their condition and how they cope in stressful situations. As part of this study, it is important to identify whether these findings differ from people who are not suffering a functional or organic bowel problem. I am therefore inviting people attending an orthopaedic clinic to participate in the study and represent a ‘control group’.

If you are interested in participating, you will be asked to complete four questionnaires, which will take approximately 30 minutes of your time. Your responses would be very valuable and it is hoped that the results of this study will help us to identify the most appropriate psychological care for people with Irritable Bowel Syndrome in the future.

If you would like to take part in this study, details of which are given on the information leaflet enclosed, please complete the reply slip at the bottom of this letter. At this stage, you will also be asked to complete a consent form. Please do not feel obligated to decide today - you may prefer to have some time to think about the study before deciding. However, if you already feel happy to participate, you may have an opportunity to fill in the questionnaires today. If you would like some time to think about the study, a pre-paid envelope is provided for your convenience. At a later stage, if you decide to participate, please return the reply-slip and consent form to Alexandra Dent. She will then contact you to arrange a convenient time for you to fill in the questionnaires.

I would like to thank you for taking time to read this letter and hope to hear from you soon. If you have any queries, please feel free to contact Alexandra Dent on 0116 2584958.

Yours sincerely

Mr B. Bhowal, Consultant Orthopaedic Surgeon
Department of Gastroenterology, Leicester Royal Infirmary
Telephone No: 0116 2585325
Self Consciousness and Coping in Irritable Bowel Syndrome

Please return in the enclosed pre-paid envelope to:

Mrs Alexandra Dent
Hadley House,
Department of Medical Psychology,
Leicester General Hospital
Gwendolen Road
Leicester
LE5 4PW

Thank you

• I am interested in taking part in the above study as part of a control group and agree to .......................................................contacting me:

• I understand that I am under no obligation to take part in the study

Name: ...............................................................................................................

Address: ........................................................................................................

........................................................................................................

........................................................................................................

Telephone No: .........................................................................................

Date: ...........................................................
Appendices

Appendix 7. Patient information sheet for controls.

Self Consciousness and Coping in Irritable Bowel Syndrome
CONTROL GROUP
by Alexandra Dent, Trainee Clinical Psychologist

Contact details: Alexandra Dent, Department of Medical Psychology,
Hadley House, Leicester General Hospital, Gwendolen Road,
Leicester, LE5 4PW.

Telephone: 0116 2584958

You are being invited to take part in a research study as part of a control group. This means that you will represent a group of people without a bowel condition. Before you decide it is important that you understand why the research is being done and what it will involve.

1. What is the purpose of the study?

As part of my Doctorate in Clinical Psychology, I am interested in whether people with irritable bowel syndrome (IBS) are self conscious about their condition and how they cope in stressful situations. It is also important to establish whether these findings are different to people who do not suffer a functional or organic bowel problem. I am therefore inviting people attending an orthopaedic clinic to participate in the study and represent a control group.

2. What will be involved if I take part in the study?

The study consists of four questionnaires and should not take more than 30 minutes of your time. Each questionnaire will be asking specific questions about a certain topic and will be the same regardless of whether you have a bowel condition or not. The questionnaires will ask about:

e) self-consciousness
f) beliefs people may have about bowel functioning
g) different coping strategies that you may use in stressful situations
h) how you have been feeling recently

If you do not have time to complete the questionnaires on the day of your appointment, I can provide a self-addressed and stamped envelope so that you can return the questionnaires at your convenience. If you have any difficulties with completing the questionnaires, please feel free to contact me on the telephone number provided above.
3. **Will information obtained in the study be confidential?**

All information will be kept confidential as required under the Data protection Act. During the write-up of the study, no participant will be identifiable and anonymity will be maintained.

4. **What if I am harmed by the study?**

Medical research is covered for mishaps in the same way as for patients undergoing treatment in the NHS i.e. compensation is available if negligence occurs.

5. **What happens if I do not wish to participate in this study or wish to withdraw from the study?**

If you do not wish to participate in this study or if you wish to withdraw from the study you may do so without justifying your decision and your future treatment will not be affected.

**Thank you for your time**
Appendix 8. Consent form for controls.

Self Consciousness and Coping in Irritable Bowel Syndrome
CONTROL GROUP
by Alexandra Dent, Trainee Clinical Psychologist

PATIENT CONSENT FORM

This form should be read in conjunction with the Patient Information Leaflet

I agree to take part in the above study as part of a control group described in the Patient Information Sheet.

I understand that I may withdraw from the study at any time without justifying my decision and without affecting my normal care and medical management.

I understand that members of the research team may wish to view relevant sections of my medical records, but that all the information will be treated as confidential.

I understand medical research is covered for mishaps in the same way as for patients undergoing treatment in the NHS i.e. compensation is only available if negligence occurs.

I have read the patient information leaflet on the above study and have had the opportunity to discuss the details with ..................... and ask any questions. The nature and the purpose of the questionnaires have been explained to me and I understand what will be required if I take participate in the study.

Signature of patient ..............................................................

Date ..........................................................

(Name in BLOCK LETTERS)

I confirm I have explained the nature of the Study, as detailed in the Patient Information Sheet, in terms which in my judgement are suited to the understanding of the patient.

Signature of Consultant: ..........................................................

Date ..........................................................

(Name in BLOCK LETTERS)
Dear

You may recall that I met you briefly when you attended the fracture clinic on the to discuss a research project that I am conducting. I am interested in how people cope with having a bowel condition. I asked whether you would be interested to participate as a control, which means that you do not have a diagnosed bowel condition. At the time, you expressed an interest and consented to participating in the study. I am therefore writing to see whether you would still be interested in completing the four questionnaires. It should not take more than 20 to 30 minutes of your time. All information is kept confidential and anonymity is ensured on the responses you provide. The information obtained helps to identify the difficulties (if any) that people are experiencing and enables people like myself to determine the most effective psychological services to provide.

I am enclosing another copy of the information sheet about the study, along with the four questionnaires. I have also enclosed a self addressed stamped envelope so that if you are still interested in participating, you can return the questionnaires to me. If you are having any difficulties completing the questionnaires or if there are questions that you would like to ask, please do not hesitate to contact me on telephone number 0116 2584958. I will then contact you at your convenience.

Thank you for your time.

Yours sincerely,

Mrs Alexandra Dent
Trainee Clinical Psychologist
Appendix 10. Copy of the Cognitive Scale for Functional Bowel Disorders (reproduced with permission from Toner, B.B)

**Instructions**

Listed below are some statements of typical thoughts which people with IBS have had. For each of these statements, please indicate with a tick (✓), the extent to which each has applied to you over the past month.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Slightly disagree</th>
<th>Neutral</th>
<th>Slightly agree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I often worry that there might not be a bathroom available when I need it.</td>
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<td>2. I cannot function normally when I get bowel symptoms.</td>
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<td>3. I often worry about passing gas in public.</td>
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<td>4. When I have bowel symptoms, I'm in agony.</td>
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<td>5. It's important to do my absolute best at everything I try.</td>
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<td>6. I am constantly frustrated by my bowel symptoms.</td>
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<td>7. I often feel that this abdominal pain will never go away.</td>
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<td>8. Having bowel symptoms interferes with my feeling good about myself.</td>
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<td>9. I worry that if I go on a trip I will have bowel problems.</td>
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<td>10. I often worry that I won't be able to concentrate because of abdominal pain.</td>
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<td>11. It is extremely embarrassing to have to keep going to the bathroom.</td>
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<td>12. I am often concerned about lasting through an event because of my bowel problems.</td>
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<td>13. The idea of being late upsets me.</td>
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<td>14. I often feel very down about having bowel symptoms.</td>
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<td>15. I have the thought of making a fool of myself in front of other people</td>
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<td>16. My bowel symptoms make me feel out of control.</td>
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<tr>
<td></td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Slightly disagree</td>
<td>Neutral</td>
<td>Slightly agree</td>
<td>Agree</td>
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<td>17.</td>
<td>If I go out to eat in a restaurant, I often worry that I will have bowel symptoms.</td>
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<td>18.</td>
<td>My bowel problems keep me from taking advantage of opportunities.</td>
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<td>19.</td>
<td>If I go to the bathroom frequently, other people will think that there is something wrong with me.</td>
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<td>20.</td>
<td>I feel that my bowel symptoms are too much for me to handle.</td>
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<tr>
<td>21.</td>
<td>I constantly worry about losing control of my bowels when I'm out somewhere.</td>
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<td>22.</td>
<td>I feel guilty if I spend time nurturing myself.</td>
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<td>23.</td>
<td>I often worry about not having enough time to get to the bathroom.</td>
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<tr>
<td>24.</td>
<td>When I am getting bowel symptoms, I feel like I have to get home immediately.</td>
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<tr>
<td>25.</td>
<td>I feel that I am always sick with bowel problems.</td>
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<tr>
<td>26.</td>
<td>Because of my bowel problems, I become anxious when I think about upcoming social events.</td>
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<tr>
<td>27.</td>
<td>I often give up my own wishes in order to make other people happy.</td>
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<td>28.</td>
<td>I do things I don't want to do, just to avoid confrontation.</td>
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<td>29.</td>
<td>I frequently worry about getting stuck in traffic and not being able to get to a bathroom.</td>
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<tr>
<td>30.</td>
<td>I often worry that other people will hear my stomach make noises.</td>
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<tr>
<td>31.</td>
<td>Nothing seems to help my bowel symptoms.</td>
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</tbody>
</table>

Thank you for your time and co-operation.
Appendix 11. Copy of the Self-Consciousness Scale

Self-Consciousness Scale

This questionnaire is designed to investigate your degree of self-consciousness in different situations (including private and public situations). Please circle a number from 0 (extremely uncharacteristic) to 4 (extremely characteristic) which best describes how you feel for each item.

1. I am 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 am 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 a lot. 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 someone 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 the house is 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

Thank you for your time

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Appendix 12. Copy of the Coping Inventory for Stressful Situations
**CISS — Adult**by Norman S. Endler, Ph.D., F.R.S.C. & James D.A. Parker, Ph.D.

Name: ____________________________ Age: _____ Sex: M F Date: _____/_____/

**Occupation:** ____________________________ **Education:** ____________________________ **Marital Status:** ____________________________

**Instructions:** The following are ways people react to various difficult, stressful, or upsetting situations. Please circle a number from 1 to 5 for each item. Indicate how much you engage in these types of activities when you encounter a difficult, stressful, or upsetting situation.

<table>
<thead>
<tr>
<th>Not At All</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. Schedule my time better.
2. Focus on the problem and see how I can solve it.
3. Think about the good times I've had.
4. Try to be with other people.
5. Blame myself for procrastinating.
6. Do what I think is best.
7. Become preoccupied with aches and pains.
8. Blame myself for having gotten into this situation.
9. **Window shop.**
10. Outline my priorities.
11. Try to go to sleep.
12. Treat myself to a favorite food or snack.
13. **Feel anxious about not being able to cope.**
15. Think about how I solved similar problems.
16. Tell myself that it is really not happening to me.
17. Blame myself for being too emotional about the situation.
18. Go out for a snack or meal.
19. **Become very upset.**
20. Buy myself something.
21. **Determine a course of action and follow it.**
22. Blame myself for not knowing what to do.
23. Go to a party.
24. Work to understand the situation.
25. **"Freeze" and not know what to do.**
26. Take corrective action immediately.
27. Think about the event and learn from my mistakes.
28. Wish that I could change what had happened or how I felt.
29. **Visit a friend.**
30. Worry about what I am going to do.
31. **Spend time with a special person.**
32. Go for a walk.
33. Tell myself that it will never happen again.
34. Focus on my general inadequacies.
35. **Talk to someone whose advice I value.**
36. Analyze the problem before reacting.
37. **Phone a friend.**
38. Get angry.
39. Adjust my priorities.
40. See a movie.
41. **Get control of the situation.**
42. Make an extra effort to get things done.
43. **Come up with several different solutions to the problem.**
44. Take some time off and get away from the situation.
45. **Take it out on other people.**
46. Use the situation to prove that I can do it.
47. **Try to be organized so I can be on top of the situation.**
48. Watch TV.
Appendix 13. Copy of the Hospital Anxiety and Depression Scale
SPECIAL NOTE

THE FOLLOWING IMAGE IS OF POOR QUALITY DUE TO THE ORIGINAL DOCUMENT. THE BEST AVAILABLE IMAGE HAS BEEN ACHIEVED.
Doctors are aware that emotions play an important part in most illnesses. If your doctor knows about these feelings he will be able to help you more.

This questionnaire is designed to help your doctor to know how you feel. Read each item and place a firm tick in the box opposite the reply which comes closest to how you have been feeling in the past week. Don't take too long over your replies: your immediate reaction to each item will probably be more accurate than a long thought-out response.

Tick only one box in each section.

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel tense or 'wound up':</td>
<td>Most of the time, A lot of the time, Occasionally, Not at all</td>
</tr>
<tr>
<td>I still enjoy the things I used to enjoy:</td>
<td>Definitely as much, Not quite so much, Only a little, Hardly at all</td>
</tr>
<tr>
<td>I get a sort of frightened feeling as if something awful is about to happen:</td>
<td>Very definitely and quite badly, Yes, but not too badly, A little, but it doesn't worry me, Not at all</td>
</tr>
<tr>
<td>I can laugh and see the funny side of things:</td>
<td>As much as I always could, Not quite so much now, Definitely not so much now, Not at all</td>
</tr>
<tr>
<td>Worrying thoughts go through my mind:</td>
<td>A great deal of the time, A lot of the time, From time to time but not too often, Only occasionally</td>
</tr>
<tr>
<td>I feel cheerful:</td>
<td>Not at all, Not often, Sometimes, Most of the time</td>
</tr>
<tr>
<td>I can sit at ease and feel relaxed:</td>
<td>Definitely, Usually, Not often, Not at all</td>
</tr>
<tr>
<td>I feel as if I am slowed down:</td>
<td>Nearly all the time, Very often, Sometimes, Not at all</td>
</tr>
<tr>
<td>I get a sort of frightened feeling like 'butterflies' in the stomach:</td>
<td>Not at all, Occasionally, Quite often, Very often</td>
</tr>
<tr>
<td>I have lost interest in my appearance:</td>
<td>Definitely, I don't take so much care as I should, I may not take quite as much care, I take just as much care as ever</td>
</tr>
<tr>
<td>I feel restless as if I have to be on the move:</td>
<td>Very much indeed, Quite a lot, Not very much, Not at all</td>
</tr>
<tr>
<td>I look forward with enjoyment to things:</td>
<td>As much as ever I did, Rather less than I used to, Definitely less than I used to, Hardly at all</td>
</tr>
<tr>
<td>I get sudden feelings of panic:</td>
<td>Very often indeed, Quite often, Not very often, Not at all</td>
</tr>
<tr>
<td>I can enjoy a good book or radio or TV programme:</td>
<td>Often, Sometimes, Not often, Very seldom</td>
</tr>
</tbody>
</table>