The Relationship between Social Problem-Solving and Self-Esteem in Anorexia Nervosa

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Declaration

This thesis has been composed by myself, the work contained herein is my own and is not being submitted as part of any other degree.

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Abstract

Introduction

Cognitive-behavioural theories of anorexia nervosa suggest that anorexia develops out of feelings of ineffectiveness and loss of identity which lead the individual to develop ineffective coping strategies and experience low self-esteem. The current study aimed to investigate social-problem solving and self-esteem in anorexia, using multidimensional measures, with the hypotheses that specific elements of these constructs would be specific to eating pathology and that self-esteem would mediate the relationship between social problem-solving and eating pathology.

Methods

The study examined multidimensional measures of social problem-solving and self-esteem in 55 female inpatients with a diagnosis of anorexia nervosa and 50 non-clinical matched controls. Participants completed four standardised self-report measures of general symptoms, eating disorders, social problem-solving and self-esteem at one time point only.

Results

Results yielded significant differences between groups on all measures. Within groups analysis revealed positive problem orientation, negative problem orientation and avoidance coping and both self-worth and self-competence components of self-esteem were significantly related to anorexic pathologies involving feelings of concern over eating, weight and shape, but less related to eating restraint. Path analysis indicated that self-esteem mediated the relationship between social problem-solving and eating pathology.

Discussion

The results provide further evidence for the importance of problem orientation and avoidance coping in anorexia and the importance of the worth and competency components of self-esteem. The results also suggested that social problem-solving and self-esteem were significant in development and maintenance of concerns regarding eating weight and shape, but less so to eating restraint. Finally, the results provided support for the mediating role of self-esteem in the relationship between social problem-solving and anorexia, however the issue of causality remains unresolved.

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CHAPTER 1: INTRODUCTION

1.1: General Introduction

The current study aims to investigate the relationship between specific psychological factors in individuals suffering from anorexia nervosa. The study first provides an introduction to anorexia nervosa, outlining the historical context, clinical presentation, epidemiology, etiological factors and diagnostic criteria. The study then explores the co-morbidity of anorexia nervosa with other psychological conditions and examines the research pertaining to the types of treatment available for the condition. The study considers the available etiological theories of anorexia nervosa, and finally, examines some of the psychological factors considered in the literature to be most commonly associated with the condition.

The literature review indicates that individuals with anorexia nervosa are consistently found to have low self-esteem and poor social problem-solving abilities. However, of these studies, a limited proportion have utilised anorexic populations, instead inferring the results from non-clinical populations. Further, these studies have tended to examine one-dimensional models of self-esteem and have failed to provide clarification of the problem-solving constructs involved. The current study examines the literature pertaining to the concepts of both self-esteem and social problem-solving in order to delineate clear definitions of these constructs. There is some literature to suggest that these constructs are multi-factorial and may interact within the anorexic presentation, suggesting the possibility of a mediational relationship, with elements of self-esteem mediating the impact of poor social problem-solving on the anorexic pathology. Thus, the current study attempts to examine the interaction

between multidimensional self-esteem and social problem-solving in an anorexia population and considers the impact that a clearer understanding of these variables may have on treatment outcome.

1.2: Introduction to Anorexia Nervosa

1.2.1: Clinical Presentation of Anorexia Nervosa

Anorexia nervosa is a psychiatric disorder characterised by a refusal to maintain a healthy body weight, and is associated with a number of psychological factors and physical consequences. It is a disorder that has been documented for many years throughout history, going back as early as the 17th century (Silverman, 1997). However, it was not until the 1970s that anorexia began to receive proper recognition as a psychiatric condition (Gordon, 1992). In recent years, numerous psychological theories have been developed in an attempt to understand the etiological and maintaining factors associated with anorexia nervosa and a number of psychological treatments have been developed.

Beumont (2002) proposes three main characteristics are apparent in a typical anorexic presentation. Firstly, a preoccupation with weight and shape, secondly, a refusal to maintain healthy body weight and thirdly, the physical result of starvation. The anorexic individual's preoccupation with weight and shape is well documented in the literature (Garner, Olmsted, Polivy & Garfinkel, 1984; Wolff & Serpell, 1998). Refusal to maintain a healthy weight is associated with several behaviours that constitute two main anorexic sub-types. *Anorexic-restrictors* maintain low weight by restricting food intake to the point of starvation and maintain this extremely low food intake, some also decrease weight further by over-exercising. The *anorexic-*

binge/purge type tend to display patterns of purging subsequent to food intake by vomiting or use of laxatives, diuretics and/or the use of excessive exercise. This sub-type can be distinguished from bulimia nervosa, where the sufferer also purges after food intake, as the anorexic individual will not maintain a healthy body weight, whilst bulimics are often of normal weight. Finally, the physical manifestations of anorexia nervosa that are common to most sufferers are malnutrition, amenorrhea, disturbed endocrine functioning, head hair loss and excess body hair.

1.2.2: Epidemiology & Etiology of Anorexia Nervosa

Prevalence rates for anorexia nervosa are currently estimated at 0.5-1% (Flament, Godard & Vigan, 1998) with Pawluck & Gorey (1998) estimating that 19 per 100, 000 women are affected. According to Nielson (2001), approximately 9.6% of individuals diagnosed with anorexia nervosa will not survive, which gives it the highest mortality rate of any psychiatric condition.

Anorexia nervosa is also characterised by a relatively poor prognosis. Research has reported that longer duration, lower body mass index (BMI)[1], increased age at onset, associated personality and psychological difficulties and complex family dynamics are risk factors associated with poor prognosis (Connan & Treasure, 2000). However, one of the main reasons for poor prognosis in anorexia nervosa is that many individuals with anorexia tend to be quite ambivalent with regard to treatment, resulting in low treatment compliance. According to Kaplan & Garfinkel (1999), anorexic inpatients are twice as likely as any other psychiatric inpatient group to drop

[1] BMI can be calculated as follows: height in metres/weight in kilograms^2. A BMI below 20 is considered to be underweight and a BMI of less than 17.5 constitutes partial fulfilment for a diagnosis of Anorexia Nervosa. (DSM-IV-TR)

out of treatment, with Eivors, Button, Warner & Turner (2002) citing drop out rates of up to 50% in some treatment facilities.

There are a number of etiological factors cited in the literature as having particular relevance to anorexia nervosa. Gender is considered to be a major factor, with the overwhelming majority of sufferers being female[2] (Striegal-Moore & Smolak, 2002). However, approximately 10% of individuals presenting with anorexia nervosa are males (Hoek, 1995). The little research that has been conducted into men with anorexia nervosa has suggested that men are less likely than women to seek treatment and that the symptoms of anorexia may present slightly differently in males. For example, over-exercising and an obsession with developing muscle definition rather than straightforward emaciation may be more prominent in male sufferers (Anderson, 1984; 2002).

Age at onset is a factor that has been examined, with anorexics tending to present in mid to late adolescence (Leicher & Gertler, 1988; Russell, Szumuckler, & Dare, 1987). However, anorexia nervosa is by no means exclusive to young women and all age groups can be affected, although there is some research to suggest that late onset anorexia nervosa (first presentation at over 25 years of age) may have some significant differences to adolescent onset anorexia nervosa. For example, Inagaki, Horiguchi, Tsubouchi, Miyaoka, Yegaki & Seno (2000) report that whilst late-onset anorexia nervosa has similar clinical features, the psychological factors are more consistently associated with life stressors and trauma and late-onset anorexia nervosa

[2] Throughout this document, where necessary, the author has used the prefixes of 'her', 'herself' and 'she'. This is due to the fact that the majority of research investigating anorexia nervosa, including the current study, has employed an exclusively female population. However, it is acknowledged that men do comprise a subset of sufferers of anorexia nervosa.

tends to be associated with poorer outcome. These finding were supported by Tobin, Molteni & Elin (1995) who reported high incidences of trauma in late onset anorexia nervosa and Casper & Jabine (1996) who also reported an association between late onset and poorer outcome. Finally, Boast, Coker & Wakeling (1992) reported that late onset anorexics were less likely to have comorbid psychiatric conditions in comparison to the younger anorexics. Therefore, whilst research in this area is limited, there does seem to be some evidence to suggest that anorexia nervosa in adults may differ from that in adolescents in terms of prodromal and comorbid factors. Anorexia nervosa is not unheard of in older adults either. Cosford & Arnold (1992) reviewed literature that examined prevalence of anorexia in older adults (over 65 years of age) and reported that, whilst relatively rare, older adults do present with eating disorders, with similar clinical characteristics of the more typical younger patient.

Culture and ethnicity were traditionally considered to be an etiological factors in anorexia, as the majority of research had suggested that anorexia nervosa was common amongst white women living in western societies, leading to the belief that eating disorders were triggered by cultural influences such as the Western promotion of slenderness as desirable. However, anorexia is not unheard of in non-Western societies and researchers such as Lee & Katzman (2002) report that incidences of anorexia nervosa in Asia and Africa are increasing. Also, Striegal-Moore & Smolak (2002) point out that very little research has been conducted into the prevalence of anorexia nervosa in women of other cultural backgrounds living within Western societies. Thus, these researchers suggest that the etiological factors of anorexia nervosa may be more complex than theories of social conformity suggest.

One other factor that has been regularly associated with presentation of anorexia nervosa is occupation, such as athletics, ballet and fashion modelling. However, Byrne (2002) argues that while these occupational groups do seem to have a higher prevalence of anorexia than other occupations, other factors need to be considered. For example, the majority of individuals peak in these professions in late adolescence and early adulthood, which is the age most associated with first onset of anorexia. Also, these occupations tend to attract those who are extremely driven, perfectionistic and success orientated, which are also personality factors associated with individuals with anorexia who are not athletes, dancers or fashion models. Therefore, again the causal factors associated with anorexia nervosa cannot be entirely delineated by issues of conformity to a desired body shape or weight.

A final factor that has been consistently related to the onset of anorexia nervosa is dieting. Research has indicated that women who maintain normal weight but display harmful eating behaviours, such as 'yo-yo' dieting, obsessive calorie counting or use of 'fad' diets and anorexic-type attitudes toward eating and weight may be at risk for a future clinical diagnosis (Bunnell, Shenker, Nussbaum, Jacobson & Cooper, 1990). Some researchers have suggested that these behaviours and cognitions constitute what has been referred to as *partial syndrome eating disorder* (Clinton & Grant, 1992) and have suggested that this syndrome can be a prodromal factor in the onset of a clinically diagnosed eating disorder, with approximately 20-25% of restrictive dieters being diagnosed with an eating disorder within 1 – 2 years (Shisslak, Crago & Estes, 1995).

1.2.3: Diagnostic Criteria of Anorexia Nervosa

The diagnostic criteria outlined by the Diagnostic and Statistical Manual for Disorders-4th Edition-Revised (DSM-IV-TR) state that a diagnosis of anorexia nervosa could be made when the individual fulfils the following criteria:

A. A refusal to maintain body weight at or above a minimally normal weight for age and height, specifically a body weight of less than 85% of what is expected for age and height.
B. Intense fear of gaining weight or becoming fat, even though underweight.
C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape in self-evaluation, or denial of the seriousness of the current low body weight.
D. In postmenarcheal females, amenorrhea, e.g., the absence of at least three consecutive menstrual cycles.

1.2.4: Co-morbidity of Anorexia Nervosa with Other Psychological Conditions

Other psychological conditions have been found to have a high co-morbidity with anorexia nervosa, such as depression, anxiety and obsessive-compulsive disorder. Depression has been found to have a relatively high comorbidity with anorexia nervosa in a number of studies, with Piran, Kennedy & Garfinkel (1985) reporting depressive disorders in 30 – 50% of individuals with anorexia nervosa. Other researchers have indicated that depression may also constitute a risk factor for future onset of anorexia nervosa (Levy & Dixon, 1985) and may be associated with increased severity of symptoms such as lower weight (Eckert, Goldberg, Halmi, Casper & Davis, 1982).

Godart, Flament, Perdereau & Jeamment (2002) conducted a meta-analysis of literature between 1985-2001 examining the comorbidity of anorexia nervosa with anxiety disorders such as generalised anxiety, panic disorder, social phobias and obsessive-compulsive disorders. The researcher reported that, whilst prevalence rates varied significantly across the studies (from 23% in one study by Laessle, Kittl, Fichter, Wittchen & Pike, 1987 to 54% in a study by Piran, Kennedy, Garfinkel & Owens, 1985) generally, anxiety disorders were found to be significantly associated with disordered eating. However, the authors conclude that more research needs to be conducted in to this area to clarify the relationship between anorexia nervosa and anxiety. A further study by Bulik, Sullivan, Fear & Joyce (1997) examined the relationship between childhood onset anxiety and adult onset anorexia nervosa and concluded that tentative evidence exists for the suggestion that anxiety disorders in childhood may constitute a risk factor for future onset of eating disorders.

There have been a number of studies examining the comorbidity of anorexia with obsessive-compulsive disorders (OCD), with the assumption being that the obsessive, perfectionistic and ritualistic traits characteristic of OCD sufferers are similar to the traits that drive or compel the anorexic. Studies examining this relationship have concluded that there is indeed a significant prevalence of OCD in anorexia (Milos, Spindler, Ruggiero, Klaghofer & Schnyder, 2002) and also that the two conditions share similar clinical characteristics (Fassino, Piro, Daga, Leombruni, Mortara & Rovera, 2002; Halmi, Sunday, Klump, Strober, Leckman, Fichter, Kaplan, Woodside, Treasure, Berrettini, Al Shabboat, Bulik & Kaye, 2003). Several studies have suggested that anorexics may present with *obsessive-compulsive personality disorder* (Matsunaga, Kiriike, Twasaki, Miyata, Yammagami & Kaye, 1999; Serpell,

Livingstone, Neiderman & Lask, 2002). Others have reported that OCD may be a risk factor for onset of anorexia, with Thornton & Russell (1997) reporting OCD symptoms in 37% of anorexic inpatients, with the diagnosis of OCD being made prior the onset of anorexic symptoms in the majority of cases. Finally, Fahy, Oscar & Marks (1993) reported that 12.6% of individuals with OCD had an earlier diagnosis of anorexia nervosa.

1.3: Treatment of Anorexia Nervosa

1.3.1: Service Provision

Currently, a fairly limited range of services exists for individuals suffering from anorexia nervosa in the UK and the availability of services varies from area to area. Different levels of treatment are usually offered depending on the severity of the eating disorder. However, very little outcome data exists on the effectiveness of any one psychotherapeutic treatment for anorexia nervosa. In fact, Gowers, Edwards, Fleminger, Massoubre, Wallin, Canalda, Strakova, Hannesdottir, Almquist, Aronen, Scholz, Höerder, Skarderaud, & Boyadjieva (2002) conducted a survey of service provision for eating disorders in 12 countries throughout the European Union (including the UK). The authors concluded that, whilst a relative consensus existed regarding the need to provide a range of services dependent on patient need, the types of interventions employed as well as criteria for inpatient admission varied significantly across participating countries.

Wilson, Vitousek & Loeb (2000) examined the *stepped care treatment model* in relation to eating disorders. This model proposes that a range of treatment options of varying intensity be available to service users and that the level of care should be

matched to patient need to ensure that the patient is not given too high a level of care, which may foster dependency as well as being cost ineffective, and also to ensure that the patient is not provided with a level of care that falls below what is needed. The authors reported that the lower levels of stepped care, involving self-help, would be inappropriate for individuals with anorexia nervosa, as the severity of the condition, associated physical complications and traditional lack of motivation within the client group mean that specialised services are required.

Garner & Needleman (1997) propose that the physical state of the patient is the main factor to be considered when deciding upon the right service for someone with a diagnosis of anorexia nervosa. Should the patients BMI be below 17.5, then typically inpatient care, preferably at a specialised treatment facility, would be considered the most appropriate course of treatment, as the individual may not be able to function on a day to day basis and health risks would be a major concern. In-patient services tend to place initial emphasis on weight-gain programmes, employing a multidisciplinary approach with both medical and psychotherapeutic staff typically involved in the running of the programmes. There is, however, no one standardised inpatient programme for anorexia and, to date, there is no published research evaluating treatment outcome in eating disorder inpatient facilities.

As with inpatient programmes, outpatient care of individuals with anorexia nervosa typically employs a multidisciplinary approach. Individuals with anorexia nervosa treated at outpatient level would be typically managed within a specialist eating disorders service, or if such a service were not available, within a community mental health team. Psychiatrists, dieticians and clinical psychologists would

normally be involved, with other professionals such as psychiatric nurses, occupational therapists and social workers being referred to, should the case require this.

1.3.2: Family Therapy

One therapy that has reported a fair amount of success in the treatment of anorexia nervosa in adolescents is family therapy, which is based on the assumption that anorexia nervosa develops as an avoidance response to the onset of puberty and the attendant physical, emotional and social changes, and is mediated and maintained through family dynamics (Dare, 1985). As this theory is obviously focused on adolescent sufferers, family therapy tends to be used exclusively with this population (Russell, Szumuckler & Dare, 1987).

Several outcome studies have indicated the effectiveness of family therapy with anorexics within this age group. For example, Hall & Crisp (1987) conducted a randomised controlled trial examining two family therapy groups, one utilising behavioural and psychoeducational techniques and focusing on improving knowledge of dietetics and nutrition, and the other group employing psychotherapeutic interventions. Results indicated that whilst in both groups the anorexic individual improved in terms of weight restoration, the latter group displayed significant differences in terms of psychosocial adjustment. More recently, a study by Crisp, Norton, Gowers, Halek, Bowyer, Yeldham, Levett & Bhat (1991) conducted a randomised controlled trial comparing three family therapy groups with a no treatment group and concluded that the three treatment groups all yielded significant improvements in weight restoration, psychosocial functioning and eating pathology,

when compared with the controls. Further, a randomised controlled trial by Geist, Heinmann, Stephen, Davis & Katzman (2000) compared two family therapy groups, one offering individual family psychotherapy and the other offering group based psychoeducation and concluded that there were no significant differences between the two groups in terms of weight restoration and psychological functioning, suggesting that family therapy can work equally well as an individual or group treatment.

1.3.3: Cognitive-Behavioural Therapy

In terms of interventions for adult sufferers of anorexia nervosa, both inpatient and outpatient services tend to employ a cognitive-behavioural approach. However, very little outcome data is available to assess the effectiveness of this approach in the treatment of anorexia. Kaplan (2002) conducted a review of empirical studies of cognitive-behavioural therapy in the treatment of anorexia and reported that less than 20 controlled trials were identified in the literature. Kaplan reported that while some of these studies yielded moderately significant results (Channon, DeSilva, Hemsley & Perkins, 1989; Serfaty, Turkington, Heap, Ledsham & Jolley, 1999; Treasure, Todd, Brolly, Tiller, Nehmed & Denman, 1995), interpretation of findings was difficult due to small numbers and high drop-out rates.

For example, the study by Channon *et al* (1989) compared cognitive-behavioural therapy, an educational behavioural treatment to facilitate weight restoration and a routine management group consisting of sessions with a psychiatrist. Eight patients were assigned to each group. Whilst results indicated significant improvements in all three groups in terms of weight restoration, psychosexual functioning and eating pathology, there was no evidence that cognitive-behavioural

interventions were more effective than the other types of treatment. However, as the study was under-powered, no firm conclusions could be made on the basis of the outcome.

Further, the study by Treasure *et al* (1995) compared two treatment groups, one employing a cognitive analytic approach and the other utilising educational behavioural therapy. Fourteen and sixteen patients were assigned to each group respectively. Results indicated that whilst those in the cognitive analytical groups yielded significantly better results on a measure of self-reported improvement when compared with the behavioural group, on all other outcome measures, no significant differences were revealed between groups. Again this study employed relatively small numbers, therefore, the clinical implications of the results are tentative.

Finally, the study by Serfaty *et al* (1999) attempted to compare outcome in a group of twenty-five anorexics receiving cognitive therapy with ten anorexics receiving dietary counselling. The authors reported that, at six months, two participants from the cognitive therapy group and all ten from the dietary counselling group had dropped out. The authors reported that, at six months, the cognitive therapy group were displaying a significant improvement in terms of BMI. Moreover, in terms of eating pathology, only elements pertaining to drive for thinness, introspective awareness and maturity fears were significantly improved, whilst bulimic symptoms, body dissatisfaction, ineffectiveness, interpersonal distrust and perfectionism did not yield any significant improvements. However, it is evident that cognitive therapy was more effective at engaging patients. As with the above studies, the numbers were low and thus any inferences that can be made from the outcome are tentative.

Therefore, the question of the effectiveness of cognitive-behavioural therapy for anorexia nervosa remains unanswered. The high rates of drop out in the treatment of anorexia nervosa have been well documented in the literature. Some authors have attempted to decipher the reasons behind the reluctance of anorexics to attend for treatment. A range of reasons have been reported, such as a sense of disempowerment and inability to move beyond pre-contemplation of change (Eviors, Button, Warner & Turner, 2003) and inability to give up perceived 'gains' of anorexic behaviours, issues of trust in therapy, relinquishing of control and additional complications of comorbid affective and anxiety disorders (Kaplan & Garfinkel, 1999). Obviously the resistance to change and high rates of drop out in anorexia nervosa have significant implications for the development of treatment programmes and can have a detrimental effect on the ability to measure treatment outcome.

1.3.4: Psychodynamic and Interpersonal Psychotherapy

Other types of psychotherapy have been employed in the treatment of adults with anorexia nervosa, for example, psychodynamic psychotherapy, which uses a psychodynamic approach, using the therapeutic relationship to explore themes between interpersonal process and eating behaviours (Steiger & Israel, 1999). Also, interpersonal psychotherapy, which aims to improve interpersonal functioning, has been used with moderate success in the treatment of bulimia nervosa (Fairburn, Jones, Peveler, Hope & O'Connor, 1993), leading some researchers to propose that this may also be an effective treatment option for individuals with anorexia nervosa (Fairburn, 2002). However, no outcome data exists on the efficacy of either psychodynamic psychotherapy or interpersonal psychotherapy in the treatment of anorexia nervosa.

1.3.5: Pharmacotherapy

Finally, in terms of pharmacological treatment of anorexia nervosa, the few studies that have been conducted have reported that medication in the treatment of anorexia nervosa was found to be ineffective in reducing eating pathology (Garfinkel & Walsh, 1997). Leach (1995) reported that anti-depressant medication was found to correlate with reduced depressive symptoms in a sub-set of anorexic patients. However, the author concluded that '*..psychotherapy using cognitive and behavioural interventions remains central to the effective treatment of anorexia nervosa*' (Leach, 1995, p. 632).

1.4: Etiological Theories of Anorexia Nervosa

A number of theories have been developed which attempt to provide an explanation for the development of anorexia nervosa. The following section explores the main theories and then considers some of the recurring themes among them.

1.4.1: Family Systems Theory

One theory that has been commonly associated with the onset of anorexia nervosa is that the disorder develops as a crisis response to the maturational process. Crisp (1997) & Stroeber (1997) propose that anorexia nervosa with onset in adolescence may develop as a phobic avoidance to the onset of puberty, in terms of the physical, emotional and social changes that this means. The authors propose that the individual may resort to food restriction as a means of controlling body shape and maintaining a childlike body. The theory suggests a number of reasons for this. For example, teenage girls may equate natural physical changes as 'fatness' and attempt to avoid and control this, particularly as the young person has no command over the

onset of the process and the subsequent changes that occur. Further, the authors point out that in victims of childhood sexual abuse, which is prevalent in approximately 30% of anorexics, the maturation process, which is related is to sexual development, may seem repugnant and the individual may attempt to avoid dealing with this by trying to maintain a prepubescent shape. Adolescence brings other changes, particularly in terms of emotional and social development. The young individual is faced with challenges of identity and changes in the dynamics within the family as she becomes more independent. This theory proposes that anorexia nervosa may develop as a means of avoiding facing the challenges of one's developing identity and perhaps 'losing' support from parents. Furthermore, the individual may wish to remain childlike to prevent disturbing a status quo within the dynamics of the family. The authors also suggests that the family may unwittingly collude with this as they may be giving signals to the child that any changes within the family unit would not be welcomed. Therefore, this model proposes that, in essence, the development of anorexia nervosa is based upon the desire to avoid leaving childhood behind.

1.4.2: Stress-Diathesis Theory

A popular theory in eating disorders research is that eating disorders develop as a maladaptive coping mechanism in response to stressful life events, suggesting that individuals with anorexia experience a high level of stressful life events both prior to the onset of anorexic symptoms and during the course of their illness. This theory can be supported by a number of papers that indicate a significant correlation between anorexia and high levels of stressful life events, with Schmidt, Andrews, Blanchard & Treasure (1997) reporting a higher number of stressful life events preceding the onset of anorexia when compared with controls and Soukup, Beiler &

Terrell (1990) reporting that individuals with a current diagnosis of anorexia nervosa describe experiencing a level of stress that is significantly higher when compared with controls.

However, others have argued that stress and eating disorders are not necessarily correlated. For example, Troop, Holbery & Treasure (1998) conducted a study examining the number of stressful life events in the 2 years preceding onset of anorexia nervosa and, whilst their findings revealed that 63% of participants had experienced stressful life events, the remaining 37% did not in fact report any stressful life event in the years preceding onset of their symptoms. Similarly, Ball & Lee (2000) reviewed the literature examining the relationship between stressful life events and eating disorders and reported that 12 out of 23 studies revealed only a weak correlation or no correlation between stressful life events and the onset of disordered eating symptoms. They concluded that '*life events stress is not always a necessary precipitating factor for disordered eating*' (Ball & Lee, 2000, p.1007).

However, other researchers have suggested that the crucial component in the relationship between stress and the development of anorexia nervosa is the manner in which individuals with anorexia perceive and cope with stress, rather than the quantity of stressful life events that arise. Wilson & Fairburn (1993) have suggested that anorexic behaviours may be employed as a method of enhancing one's sense of control over one's life in the context of stressful life events and Soukup, Beiler & Terrell (1990) have proposed that individuals with anorexia tend to deal with stressful situations by avoiding having to confront them.

This is supported by literature stating that anorexic individuals respond differently to stressful life events when compared with healthy controls. For example, Troop & Treasure (1997) employed semi-structured interviews to compare coping strategies of 32 anorexics with 20 controls and reported that the anorexics displayed higher levels of rumination, avoidance and reported higher levels of helplessness than controls. These findings were replicated in a further study by Troop, Holbery & Treasure (1998) who employed similar measures and Troop, Holbery, Trowler & Treasure (1994), who employed a self-report measure of coping responses and also reported that individuals with anorexia nervosa presented more negative ruminations and cognitive avoidance when compared with controls.

In conclusion, the research examining the stress-diathesis model reports two relevant conclusions. Firstly, anorexic individuals perceive and tackle stress and stressful life events in a far more negative way, when compared with controls. Secondly, anorexic individuals may actually experience some gain from maintaining their anorexic pathologies as it may provide a way of distancing them or distracting them from stresses, problems and potential failures and disappointments, rather than facing up to them. Further, the anorexic pathology becomes a way of keeping the emotional consequences of negative events at bay. This makes sense given the high levels of resistance to, and drop out from, treatment in anorexia nervosa.

1.4.3: Societal Influence/Feminist Theory

Another prominent theory in the field of anorexia research is that anorexia develops in response to societal pressure to conform to a 'thin ideal' (Stice 2002). This author suggests that, particularly in Western societies, there has become an

increasingly marked tendency for young women, in particular, to desire an extremely slender form. According to the author, this slender body shape or 'thin ideal' is promoted via media channels in such a way as to suggest that to achieve the 'thin ideal' is to achieve not just a certain physical form but a range of attendant social and personal gains. Thus young women with certain vulnerabilities or predispositions may be susceptible to internalising these beliefs.

There is some support in the literature for this, for example, Silverstein, Perdue, Peterson & Kelly (1986) found that as rates of disordered eating have increased, concurrently images of women in fashion magazines have become substantially thinner. Likewise, the number of articles on dieting and weight loss have also been found to have increased over the years (Morris, Cooper & Cooper, 1989).

Therefore, it is possible that there is a link between the promotion in the media of extreme slenderness as desirable and the increase in dieting behaviours in women in an attempt to achieve this, which may be partially responsible for the increase in the number of women presenting with disordered eating behaviours. However, where societal and media influences will reach the vast majority of women within that society, only a relatively small proportion develop disordered eating. As suggested by Gillberg & Rastam (1995,) ' *the female body image as flaunted by the media may create a psychological environment in which anorexia nervosa is likely to develop if there are underlying personality characteristics'* pg. 127. In other words, women with eating disorders may have specific psychological and personality predispositions that make them vulnerable to internalising the belief that thinness equates worth.

1.4.4: Psychodynamic Theory

Further theories of anorexia nervosa have arisen out of models of attachment, which suggest that the anorexic pathology develops out of an underdeveloped sense of autonomy and identity. Bruch (1982) suggests that the anorexic pathology arises out of a poor attachment with the caregiver, who tends to be unresponsive to the child's emotional needs. Thus, in an attempt to maintain the precarious attachment, the child grows up compliant, but without any sense of autonomy or identity and with an underdeveloped sense of emotional expression. According to Bruch's theory, the anorexic individual feels powerless over her life, therefore, the cognitions and behaviours associated with anorexia nervosa perform a function. They provide the individual with a maladaptive sense of control and competency over their bodies and by extension, their lives. Further, the process of anorexia provides the individual with an identity and a purpose. The individual clings to their anorexic pathologies because they have been unable to develop any other sense of self or way of coping with their emotions. Bruch (1982) states, '*If there is little or no encouragement or even prohibition of independence during the individuation and separation phase, the child will remain tied to the parents, deprived of autonomy and decision-making ability*' (Bruch, 1982,p.1533).

Other researchers examining the lack of autonomy, identity and efficacy in individuals with anorexia nervosa have supported Bruch's theory. Stein & Corte (2003) for example, propose that over-controlling or perfectionistic parenting styles can foster an environment whereby the child is unable to develop an identity or 'self-concept', which leads to a lack of self-efficacy, creating a cognitive vulnerability to the development of anorexia nervosa. McLauglin, Karp & Herzog (1985) propose that

individuals with anorexia compensate for a lack of autonomy and effectiveness by developing perfectionistic, over controlling personality styles. There is a significant amount of research in the literature highlighting the high levels of perfectionism in individuals with anorexia (Cocknell, Hewitt, Sherry, Goldner, Flett & Remick, 2002; Hewitt, Flett & Ediger, 1995); Shafran, Cooper & Fairburn, 2002; Sutandar-Pinnock, Woodside, Carter, Olmsted & Kaplan, 2002; Wonderlich, 1997) which may lend support to this theory.

Thus, according to the psychodynamic model, anorexia nervosa develops out of poor attachment to one's parental figures, which results in a sense of ineffectiveness and fragmented identity. The individual feels incompetent, unable to deal with stress, lacking in a sense of self and in emotional expression. To compensate, she becomes very perfectionistic and develops unrelentingly high standards for herself. This facilitates the development of eating pathology, which the individual develops in an attempt to feel more in control and to provide a sense of self-efficacy and identity.

1.4.5: Cognitive-Behavioural Theory

It is clear that the assumptions of the above theories are not mutually exclusive and all may be contributing to the etiology and maintenance of anorexia nervosa. One model that appears to integrate the main points from all of the above theories is the cognitive behavioural approach. Fairburn, Shafran & Cooper (1999) & Garner & Vitousek & Pike (1997) have proposed a cognitive behavioural theory of anorexia nervosa which attempts to integrate the main cognitive and behavioural elements of the disorder. The theory proposes that anorexia nervosa develops out of a sense of

ineffectiveness and low self-worth, which causes the individual to develop unrelentingly high standards for herself and a subsequent need to have complete control over all areas of her life. Having this control leads to a sense of increased self-efficacy and self-worth.

The authors propose that eating can become the focus of this control for several reasons. Firstly, extreme food restriction can bring relatively immediate results and, therefore, gratification, and decreases in one's sense of ineffectiveness. This may be particularly salient in families that emphasise food control and also in cultures that endorse thinness and control of food intake. Furthermore, in adolescents, food restriction can delay the onset of puberty and the attendant changes that may be threatening to the individual's sense of control.

The authors propose that once in place, anorexic cognitions and behaviours can be maintained in a number of ways. Firstly, the ability to control food intake and the resulting change in shape and weight may augment the anorexic's sense of control and subsequently improve a sense of efficacy and worth. Secondly, starvation can lead to a range of physical and psychological effects, which can impede the anorexics' recovery, such as anxiety, depression, social withdrawal, ineffective problem-solving abilities, sleep disturbances, tiredness and weakness. Finally, these thought processes and behaviours can lead to the anorexic developing a maladaptive sense of identity as a 'good anorexic', where the ability to withstand extreme food restriction is viewed as a success and food intake is viewed as failure. Furthermore the anorexic's preoccupation with weight and shape, according to the authors, can result in an information-processing bias, whereby the anorexic begins to perceive themselves as

bigger than is 'acceptable'. According to the authors, these biases and maladaptive views of using food and dieting as a measure of one's success or failure are often endorsed by one's culture and/ or environment, which may revere thinness and food control.

1.4.6: Summary

As we have seen, there are a number of theories regarding the factors thought to contribute to the development and maintenance of the anorexic pathology. Whilst most of these theories offer important contributions to our understanding of anorexic nervosa, the cognitive behavioural model seems to most clearly generate a comprehensive understanding of why anorexia develops. However even this theory is ad hoc and does not provide systematic and empirical evidence for the connections found between psychological factors in anorexia nervosa. Anorexia nervosa is complex and multifaceted, and thus it is likely that the key to deciphering the causal and maintaining factors of anorexia nervosa is in the interplay between a number of variables. Two main themes seem to emerge from the theories. Firstly, the anorexic pathology is associated with a sense of ineffectiveness and inability to cope with perceived problems and a tendency to avoid dealing with problems. Secondly, the anorexic pathology is associated with difficulties of integration and acceptance and a poorly defined identity and self-concept. These constructs, in the broadest sense, suggest that individuals with anorexia have poor coping skills and low self-esteem. Thus, the following sections attempt to examine coping and self-esteem in more detail and consider their function in relation to anorexia nervosa, both individually and in terms of how the interaction between problem-solving and self-esteem may impact upon the anorexic pathology within a cognitive-behavioural framework.

There is a fair amount of research in the field of anorexia nervosa that states individuals with anorexia nervosa tend to have maladaptive problem solving skills and low self-esteem. For example, poor problem solving ability or coping style has also been frequently cited in the literature as related to anorexia nervosa with Bloks, Spinhoven, Callewaert, Willemse & Turksma, 2001; Espelage, Quittner, Sherman & Thompson, 2000; Garcia-Grau, Fuste, Miro, Saldana & Bados, 2002; Ghaderi & Scott, 2000; Kleinfeld, Wagner & Halmi, 1996; Nakahara, Yoshiuchi, Yamanaka, Sasaki, Suematsu & Kuboki, 2001; Troop, Holbery & Treasure, 1998 all reporting that individuals with anorexia nervosa displayed lower levels of coping in response to stress and higher levels of avoidance than healthy controls. Furthermore, Button & Warren, 2002; Fairburn, Shafran & Cooper, 1999 & Stein & Corte, 2003 all examined self-esteem in individuals with anorexia and concluded that anorexic individuals displayed significantly lower levels of self-esteem when compared with healthy controls. Therefore, it is clear that these two factors are significant to the anorexic pathology. However in order to examine the impact that these variables have on the anorexic pathology it is essential to understand the meaning behind the constructs and develop clear working definitions.

1.5: Understanding Coping/ Problem-Solving

1.5.1: Defining the Concept of Coping/Problem-Solving

The ability to problem solve has been acknowledged throughout history as an attribute imperative to development. However, it is only been studied in relation to mental health in the past sixty years during the emergence of the cognitive-behavioural paradigm of clinical psychology. In 1971 D'Zurilla & Goldfried introduced the notion of social problem-solving as a buffer against psychological

illness and since this time coping skills or problem-solving abilities have been considered to be a significant factor in several pathologies.

For example, a number of researchers have proposed that depression arises out of a maladaptive cognitive process that lead to an inability to effectively deal with problematic situations and generate effective solutions (Marx, Williams & Claridge, 1992, 1994; Nezu, Nezu & Perri, 1989). Ineffective problem solving abilities have also been found to be correlated with hopelessness and suicidal ideation, in both a clinical group of depressed individuals and a non-clinical sample (D'Zurilla, Chang, Nottingham & Faccini, 1998), generalised anxiety disorder (Ladouceur, Blias, Freeston & Dugas, 1998), self-harm and borderline personality disorder (Douglass, 2000) and behavioural adjustment in adolescents (Meir, 1997).

In contrast, effective problem-solving has been proposed to act as a defence against the development of psychological distress, for example, Chang (2002) examined the interaction between perfectionism and social problem solving and found that effective problem solving protected against the negative elements of perfectionism and the development of psychological distress in a group of college students. Therefore, the research would suggest that, not only can ineffective problem solving skills lead to psychological problems, but also that good problem solving skills may actually protect against the onset of pathology.

However, in order to examine the relationship between coping skills and problem solving and anorexia nervosa, it is first necessary to consider the meaning of the term and decide upon a satisfactory operational definition. Initial confusion can

arise from the different terminology used in the literature, with some researchers referring to '*coping skills*', others '*problem-solving*' and others '*social-problem-solving*'. D'Zurilla & Maydeu-Olivares (1995) state that '*coping skills*' refer to the activities employed by people to attempt to manage stressful events. Thus, coping skills can vary from the positive such as seeking social support, to the negative, such as substance abuse.

The authors conjecture that '*problem-solving*' is a specific type of coping skill, one whereby individuals apply thought processes and behaviours to specific situations in an attempt to minimise problems and associated negative emotions. According to these authors, the prefix of '*social*' refers to the type of problems that one encounters in day-to-day life that would have no easily generated solution, requiring the individual to access problem-solving skills and strategies. This would be as opposed to academic or scientific problems, which one would solve by following a recognisable set of rules. The authors further distinguish between *problem-solving* and *problem-implementation*, the former, referring to the processes whereby one generates solutions and the latter to the actual activity of carrying out the solutions.

Thus, the concept presented by the above authors indicates that the term *'social problem-solving'* refers to the cognitive-behavioural process of selecting and implementing behaviours designed to combat problems in everyday life. Considering this definition in specific terms of mental health, it is clear that effective social problem-solving could act as a buffering process to combat the ill effects of a range of mental health problems. While the use of ineffective problem-solving skills could create a vulnerability to mental health problems and/or exacerbate the duration,

severity and complexity of existing problems, as the individual may lack the skills to seek support, rationalise and manage their difficulties.

D'Zurilla & Maydeu-Olivares (1995) further deconstruct social-problem solving into a number of components. They propose that social-problem solving consists of two main sub-types, *problem orientation*, which is essentially the cognitive processes that predispose the individual to perceive problems in a certain way, and *actual problem-solving,* which are the methods that an individual will select to deal with the problems they face. According to the social-problem solving model, there are two types of problem-orientation. First, p*ositive problem orientation,* relating to the ability to cope well with challenge, high self-efficacy and an expectancy of positive outcome. The second problem orientation sub type is n*egative problem orientation,* which relates to inhibited cognitive processes, such as perceived threat, and low frustration tolerance and self-inefficacy. The authors also propose that there are three main actual problem-solving sub-types, which are firstly, r*ational problem solving*, which relates to constructive, conscious problem solving efforts, and comprises of problem definition and formulation, generation of alternative solutions, decision-making and solution implementation and verification. Second is *impulsivity / carelessness* style, which relates to ineffective problem solving characterised by hurried or incomplete strategies and lack of thinking things through. Finally there is a*voidance style,* which relates to ineffective problem solving typified by procrastination, passivity and holding others responsible/blaming others.

1.5.2: The Relationship Between Social Problem-Solving & Anorexia Nervosa

Social problem-solving skills have also been related to the development and maintenance of anorexia nervosa by a number of researchers. For example, Garcia-Grau, Fuste, Miro, Saldana & Bados (2002) conducted a non-clinical study examining coping styles and levels of disordered eating in a sample of 186 adolescent girls and concluded that avoidance, as a maladaptive form of coping with both problems and the negative emotions they generate, was the most significant predictor of disordered eating in this group. Other non-clinical studies have supported this finding, for example, Further, Koff & Sangini (1997) examined coping strategies in 128 female university students and reported that higher levels of emotion-focused and avoidance type coping correlated significantly with increased levels of disordered eating.

Maladaptive problem-solving in eating disorders has also been found in clinical samples. For example, Ghaderi & Scott (2000) examined coping in women with both current and past eating disorders, women who were either current or previous dieters and women with no history of eating disorders or dieting. Results indicated that avoidance type coping was used most frequently in the current and previous eating disorders groups, indicating that avoidance type coping may exist beyond recovery from eating disorders. Troop, Holbery & Treasure (1998) examined levels of coping in 12 women with a diagnosis of anorexia nervosa, 21 with a diagnosis of bulimia nervosa and 21 non-clinical controls. The authors concluded that avoidance type coping was significant in the eating disordered group, as was cognitive rumination, i.e., obsessing or worrying about a problem, with no significant differences between anorexic and bulimic groups.

Further, Nakahara, Yoshiuchi, Yamanaka, Sasaki, Suematsu & Kuboki (2001) examined coping styles in restricting and binge-purging anorexics and reported poorer planning and less positive appraisals in response to problems in both anorexic groups, when compared with controls. Also Bloks, Spinhoven, Callewaert, Willwmaw-Koning & Turksma (2001) examined coping in 56 anorexic and 32 bulimic inpatients and reported that individuals in both groups displayed poor problem-solving abilities when compared with controls, with no significant differences in levels of coping across the eating disordered groups. The authors also reported that maladaptive coping remained evident post- treatment, independently of improvements in eating pathology. Finally, a study by Paterson, Power, Yellowlees, Park & Taylor (2006) examined social problem solving in an inpatient sample of 27 women with a diagnosis of anorexia nervosa. The authors reported that elements of social problem-solving which significantly related to eating pathology were negative problem orientation and avoidance. Therefore, it appears that poor problem-solving is a significant element of the anorexic presentation and may also be a factor in the high levels of resistance to treatment reported in the anorexia literature.

Other researchers have proposed that problem solving may act as a mediator between stress and the development of eating disorders in some women (Catanach & Rodin, 1988; Sherman & Thompson, 1997), however, these studies have been conducted specifically with individuals with a diagnosis of bulimia nervosa, therefore, whether this would be found in women with anorexia nervosa has not been examined. Further, Troop, Holbrey, Trowler & Treasure (1994) examined coping styles of both bulimics and anorexics and reported that coping styles did not impact on the severity of pathology in either group.

Therefore, it appears that the research examining social problem-solving as a potential risk factor for the onset of anorexia nervosa has generated ambiguous results. However, there is some research to suggest that the impact of ineffective social problem-solving skills is a maintaining factor in anorexia nervosa. For example, Serpell, Treasure, Teasdale & Sullivan (1999) examined letters written by anorexics to '*anorexia my friend*' as part of a therapeutic exercise to establish what elements of the disorder were considered to be positive by the sufferer. The authors reported that, among the common themes in the letters, was that the anorexic thoughts and behaviours provided a means of avoiding negative emotions. Thus, it is possible that ineffective social problem-solving skills such as avoidance may be maintaining the anorexic pathology.

In conclusion, there are a number of studies examining the relationship between anorexia nervosa and social problem-solving and a recurring theme among many of these articles is the role of avoidance type coping in anorexia nervosa. Some papers have suggested that this constitutes a risk factors for the development of anorexia nervosa, whilst other propose that avoidance type coping may maintain the anorexic symptoms. However, most of these papers have focused on the actual problem solving styles rather than exploring both the cognitive orientations related to problem-solving as well as actual problem-solving. Nonetheless, we have seen from a review of the etiological theories of anorexia nervosa that a sense of ineffectiveness and inefficacy is often found to be part of the anorexic pathology and that this, in theory may lead to the development of eating pathology in an attempt to exert control, increase one's sense of effectiveness and identity. It is possible that the role of self-concept and self-esteem is also significant in this relationship. In order to explore this

further it is useful to delineate the concept of self-esteem in relation to the anorexic pathology.

1.6. Introduction to Self-Esteem

1.6.1: The Concept of Self-Esteem

Self-esteem as a concept has been explored and deconstructed by a number of researchers, and theories, assessment tools and therapies have been developed based on these findings. There are conflicting theories in the literature regarding what self-esteem is, thus, in order to examine the role of self-esteem in anorexia, it is first necessary to explore the mechanisms that comprise the construct of self-esteem.

Empirical research into the concept of self-esteem began to emerge in the 1960s. Prior to this, self-esteem was generally considered in psychoanalytic terms as a function of the ego. Morris Rosenberg (1979) cited in Mruk (1999) was one of the first researchers to thoroughly explore self-esteem as a concept. He conducted a large-scale study into self-perceptions and proposed that self-esteem constitutes a sense of perceived self-worth, e.g., that one is '*good enough.*' Rosenberg's theory was really the first to present self-esteem as a socially constructed phenomenon, i.e., that one's perceptions of what constitutes as '*good enough*' are dependent on the cultural environment in which one exists. According to Rosenberg, an individual has two perceived senses of self, the '*ideal*' self and the '*real self*', and the larger the discrepancy between the two senses of self, the lower the person's self-esteem will be. The notion of self-esteem as socially constructed has been examined further in the literature. For example, Leary, Schreindorfer & Haupt (1995) proposed a model of self-esteem based on social comparisons referred to as the '*sociometer model*'. This

theory postulates that low self-esteem exists when the individual feels a lack of belonging and experiences or perceives a sense of social exclusion. According to this model, low self-esteem can result in the onset of dysfunctional behaviours as the individual attempts to cope with isolation and increase their sense of belonging and identity.

Thus, the above models present self-esteem as a measure of socially constructed perceived self-worth. However, other researchers have proposed that self-esteem is not a one-dimensional concept and have argued that while self-worth is fundamental to self-esteem, the construct also consists of what researcher have tended to refer to as *self-competence*, i.e., one's perception of one's own ability to deal effectively with challenges (Brandon, 1994; Brissett, 1972; Brown, 1998; Epstein, 1979; Tafarodi & Milne, 2002). This idea of self-competence is similar to Bandura's (1989) notion of self-efficacy, that is, our sense of control and confidence in our ability to cope with problems and situations. Thus, according to this model, self-esteem consists of two separate but interrelated concepts, the first pertaining to one's sense of intrinsic value, i.e., worth or value, and the other pertaining to one's sense of instrumental value, i.e., one's perception of one's abilities and effectiveness.

Self-esteem as a two-dimensional construct can be incorporated into some of the cognitive models of self-esteem that have been presented by authors such as Epstein (1979) and Stein and Corte (2003). For example, Epstein (1979) proposed that, when working with a cognitive model of self-esteem, differentiations can be made between 'global' self-esteem, which is an overall sense of self, and 'situational' self-esteem, which is affected by day-to-day events. In other words, there is a

difference between state self-esteem, which can fluctuate in response to stimuli and trait self-esteem, which is essentially a pervading part of one's personality. According to the author, if one's trait or global self-esteem is low, then while positive situations may increase one's state or situational self-esteem, the global self-esteem will remain static. Therefore, when working with individuals with pathologies such as anorexia nervosa, it tends to be global, trait self-esteem that is affected, thus in order to make changes to self-esteem, it is vital to address underlying thoughts and beliefs.

Further, Stein & Corte (2003) propose that low self-esteem comprises of a number of negative self-concepts or schemas that consist of beliefs regarding one's worth, abilities, personality and social desirability. According to the authors, these self-concepts play an information-processing role within the individual, creating an attentional bias to what fits with the schema. According to Stein & Corte (2003), '*positive self-schemas may be viewed as cognitive resources that facilitate effective behavioural functioning whereas negative self-schemas may be viewed as cognitive liabilities that inhibit behaviour*', p.81.

Thus, contemporary self-esteem theories tend to consider self-esteem within a cognitive model, incorporating elements of both self-worth and self-competence. Other researchers have attempted to develop the concept of self-esteem further by taking the two constructs of worth and competence and attempting to consider the sub-components of these two elements, therefore creating a multidimensional theory of self-esteem. O'Brien & Epstein (1983) propose that self-esteem is a multi-layered hierarchical concept, which at the most basic level is global self-esteem, which is a general self-evaluation of one's self-concept. Within this is a range of components

that the authors believe will vary depending on one's life experiences. These consist of eight components, four comprising elements of self-worth, namely, likeability, lovability, moral self-approval and body appearance, and the other four encompassing elements of self-competence, namely competence, self-control, personal power and body functioning. Further, the researchers suggest that self-esteem also incorporates elements of identity integration, which is a measure of consistency of self-esteem and a measure of defensive self-esteem, consists of a type of pseudo self-esteem that the individual engages with to help buffer the negative effects of poor self-evaluation.

Thus, it is clear from the above exploration of the concept of self-esteem that self-esteem in essential to psychological well-being and therefore low self-esteem would likely be highly correlated with psychological distress. The research supports this with Andrews & Brown, 1995, Brown, Harris & Hepworth, 1995 & Klerman, 1998 all reporting that self-esteem is highly correlated with increased levels of depression and Brown, Andrews, Harris, Adler & Bridge (1986) proposing that low self-esteem constitutes a risk factor for the development of depression. Further low self-esteem has been found to be a significant factor in anxiety (Beck, Emery & Greenberg, 2005), substance abuse (Marr & Fairchild, 1993), childhood sexual abuse (Hazzard, Rodgers & Angert, 1993) and aggression (Baumeister, 1987). Self-esteem has also been regularly cited as a factor in the development and maintenance of anorexia nervosa, and the following section addresses this literature.

1.6.2: The Relationship between Self-Esteem & Anorexia Nervosa

There are a number of studies in the literature suggesting that low self-esteem is integral to the development of anorexia nervosa. However, these studies have

mainly employed one-dimensional self-esteem measures. For example, a clinical study by Williams, Power, Miller & Freeman (1993) compared 32 anorexic individuals and 30 bulimic individuals with a control group of dieters and a normal control group on measures such as one-dimensional self-esteem, perceived control and assertiveness, and found highly significant differences between the clinical and non-clinical participants, concluding that low self-esteem is characteristic of the eating disorder pathology. These finding are supported by Silverstone (1996) who investigated levels of one-dimensional self-esteem in 43 individuals with a diagnosis of anorexia nervosa and concluded that the anorexic sample reported lower levels of self-esteem than controls even when depression was partialled out. This suggests that low self-esteem may be significantly related to anorexia nervosa independently of the effects of other pathologies that are often highly co-morbid in anorexia nervosa.

While Kovacas (2003) examined self-esteem in 117 anorexic patients and reported that not only was self-esteem significantly lower in individuals with anorexia nervosa, but that self-esteem was predictive of treatment outcome, with individuals with lower self-esteem at admission to treatment, showing poorer treatment response at follow up.

Some researchers have proposed that low self-esteem constitutes a risk factor for the development of anorexia nervosa and there is some non-clinical literature to support this. For example, Button, Sonuga-Barke, Davies & Thompson (1996) examined the role of self-esteem prior to the onset of disordered eating in a non-clinical sample of adolescent schoolgirls. Button *et al* proposed that girls who displayed low self-esteem at age 11-12 would be more likely to display disordered

eating symptoms at age 15-16. The results supported this, with those in the low self-esteem range eight times more likely to score high on measures of restrained eating and eating pathology. The authors also found that low self-esteem at age 11-12 was a better predictor of eating pathology at age 15-16 than measures of fatness concern or dissatisfaction with weight. Further, Vohs, Voelz, Zachary, Pettit, Bardone, Katz, Abramson, Heatherton & Joiner (2001) conducted a longitudinal investigation examining perfectionism, body dissatisfaction and self-esteem in 70 female college students. They concluded that these three elements account in part for the development of disordered eating. Similarly, Tiggeman (2001) examined measures of self-esteem in relation to disordered eating, body dissatisfaction and life concerns in 306 adolescent females and reported that low self-esteem and low body dissatisfaction were strongly correlated with disordered eating.

Thus, self-esteem seems to be predictive of eating pathology in both clinical and non-clinical samples. The research appears to support the conjecture that low self-esteem creates a vulnerability to the development of eating pathology. Returning to the theories of anorexia nervosa explored in previous sections, a number of reasons for this could be postulated. For example, we could assume that individuals with low self-esteem could be more readily accepting of the premise that thinness equates with social acceptance, happiness and self-worth and to achieve this may create a sense of increased competency facilitating further eating disordered behaviour. As pointed out by Yellowlees (2001), ' *in those whose self-esteem is already low the assumption that to be worthy one has to be thin is readily accepted and assimilated into their existing mind set'* (Yellowlees, 2001, p. 56). Also, the development of eating pathology may

create a sense of increased effectiveness, which maintains the pathology and increases resistance to treatment by providing perceived gains.

Most self-esteem research has tended to utilise one-dimensional self-esteem models which emphasis the element of self-worth and neglect the element of self-competence. However, the only study to date to examine two-dimensional self-esteem in an anorexic sample (Paterson *et al*, 2006) indicated that the self-competence component of self-esteem was significantly correlated with eating pathology, while the self-worth component was not. This suggests that elements of self-esteem that relate to one's perceived sense of self-efficacy are more significant in the development and maintenance of anorexic cognitions and behaviours than one's sense of worth. This finding is surprising, as it would be expected that both elements of self-esteem would be significant to eating pathology. In order to elucidate the role of self-competence in the development of anorexia, in the absence of further research, we can refer to the role of self-efficacy in anorexia research, as we have learned, self-competence is closely related to self-efficacy. There are a number of papers examining self-efficacy in relation to a number of psychological problems such as anxiety (Bandura, 1989), depression (Ludman, Katon & Bush, 2003) and alcohol dependence (Maisto, Connors & Zywiak, 2000).

Self-efficacy has also been found to be a significant factor in the presentation of eating disorders. For example, Schneider, O'Leary & Agras (1987) reported that self-efficacy played a significant role in the patients' recovery from bulimia nervosa, as reported self-efficacy increased as bulimic behaviours decreased. This was supported by Wolff & Clark (2001) who assessed a treatment programme for bulimia

nervosa that focused on improving self-efficacy and reported a significant correlation between increased levels of perceived self-efficacy and decreased levels of binging/purging behaviours. Further, Linde, Jeffery, Levy. Sherwood, Utter, Pronk & Boyle (2004) reported that low levels of perceived self-efficacy were significantly related to increased levels of depression and poorer treatment outcome in outpatients with bulimia nervosa.

However, few studies have reported that impact of perceived self-efficacy in an anorexic sample, with a literature review revealing only one study by Marinilli, Guarda, Heinberg & DiClemente (2006). The authors reported that low levels of perceived self-efficacy were significantly correlated with increased levels of depression within the anorexic group, leading the researcher to conclude that self-efficacy may impact upon the severity of psychological distress.

Therefore, it has been demonstrated that both one-dimensional self-esteem, which focuses on worth, and low self-efficacy, which is related to self-competence in the two-dimensional self-esteem model, play significant roles in the anorexic pathology. With one study suggesting that competence may be more significant than worth in the anorexic pathology. By examining self-esteem and social problem solving as multidimensional concepts in an anorexic population, three issues can be addressed. Firstly, the elements of self-esteem that are most significant to the anorexic pathology can be elucidated. Secondly the elements of self-esteem that are significant to social problem-solving can be elucidated and finally, the interaction between self-esteem and social problem solving can be investigated with particular focus on how this interaction may impact upon the anorexic pathology. The next section addresses

the interaction between self-esteem and social problem-solving and the impact this interaction may have on the development of anorexia nervosa.

1.7: Interaction Between Self-esteem & Social Problem-Solving in Anorexia Nervosa

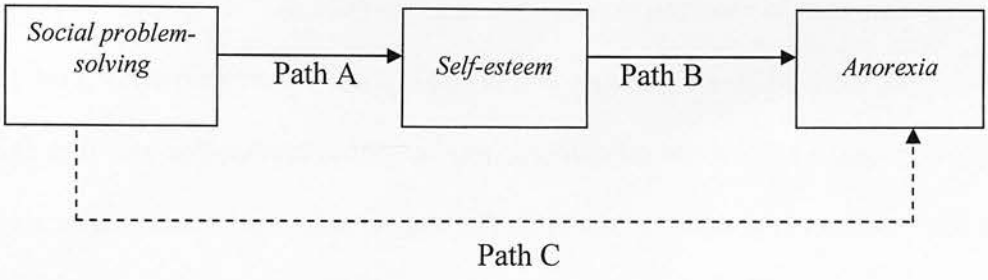
It is clear from the above examination of the literature that ineffective social problem-solving skills and low self-esteem have been regularly found to be related to the anorexic pathology. However, modern definitions of the concepts of social problem-solving and self-esteem reveal that these constructs are multifactorial and incorporate a number of factors. Further, the etiological theories of anorexia nervosa have indicated that the anorexic pathology incorporates a sense of ineffectiveness, poor problem-solving and a lack of identity, self-concept and self-esteem. However, most of the literature examining these concepts within an anorexic population fails to provide an adequate framework or model to account for the relationship between the concepts of problem-solving and self-esteem and also fails to consider how the interaction between these two factors may impact upon the anorexic pathology. The following attempts to postulate a model of social problem-solving and self-esteem and address how the juxtaposition of these two constructs may impact on the development and maintenance of anorexia nervosa.

By deconstructing self-esteem and problem-solving into multifactorial constructs comprising of a number of variables, it becomes apparent that some of these factors may be more significant to the anorexic pathology than others. Further it gives rise to the possibility that, not only are self-esteem and social-problem solving related, but also that the interaction between them is significant in the anorexic

pathology. The etiological theories of anorexia nervosa suggest that anorexia arises out of a sense of ineffectiveness and lack of control over themselves and their lives and that the individual feels ill equipped to deal with negative emotions and stress and lacking in self-esteem and that this leads the individual to develop unrelentingly high standards and the individual believes that if these standards are met, their sense of effectiveness and worth will be increased, which in turn leads to the development of anorexic behaviours and cognitions. Within this framework it is possible therefore, that the anorexic individuals lack of effectiveness and efficacy may have a direct impact on their feelings of self-worth and self-competence, i.e., their self-esteem, and that the anorexic individual attempts to improve her self-esteem and thereby her sense of effectiveness by the use of anorexic behaviours and cognitions. Thus, self-esteem could be said to mediate the relationship between social problem-solving and eating pathology.

Previous researchers have examined the impact of mediator variables on the development of pathology and there is literature advising on the methods to use and pitfalls to avoid when investigating a potential mediational model. In particular, Baron & Kenny (1984) state that for a mediational model to hold true, three conditions must be satisfied. Firstly, the independent variable (which in this case would be social problem-solving) would have to be shown to affect the mediator variable (which in this case would be self-esteem) and this would be Path A. Secondly, the mediator variable must be seen to affect the dependent variable (which in this case would be eating pathology) and this would be Path B. Finally, the relationship between the independent variable of social problem solving and the dependent variable of eating pathology would only be significant through the impact

of self-esteem, and this would be Path C. Thus, in conceptual terms, maladaptive problem-solving would impact directly on the twin self-esteem components of self-worth and self-competency, and these in turn would impact directly on the development of anorexic behaviours and cognitions. Thus, the relationship between maladaptive problem-solving and eating pathology would only exist through the existence of low self-esteem. This can be illustrated diagrammatically thus:



To consider the first condition, that social problem solving must affect self-esteem, there is some literature to support this. Perla & O'Donnell (2004) examined the relationship between problem-solving and self-esteem in a visually impaired population and reported that as problem-solving ability increased as did confidence and self-esteem leading the authors to conclude that '*..over time, good problem solving experiences may have a positive influence on social skills or situations in the workplace and may foster greater self-esteem in all aspects of life'*,pg.47.

Research examining the relationship between social problem-solving and self-esteem in student and pathology samples also found a relationship. For example, a non-clinical study by Mitchell (1987) examined the impact of two problem-solving constructs on self-esteem. These two constructs were, problem-cause, i.e., feelings of responsibility for the cause of the problem and problem-solution, i.e., feelings of responsibility for solving the problem. The author concluded that high levels of

problem-cause and low levels of problem-solution, significantly impacted on low self-esteem.

Further, Campbell & Fairey (1985) examined self-esteem and problem solving in a non-clinical sample of individuals rated as having either high or low self-esteem. The participants were asked to write an explanation for a hypothetical success or failure on a anagram task, then asked to state their expectancy of their performance on the task, then perform the task. The authors reported no differences were between high and low self-esteem individuals in the success explanation category. However, within the failure explanation category, individuals with low self-esteem stated poorer expectancies and performed poorer. The authors concluded that the task of writing failure explanations impacted on expectancy and performance. Thus lower performance is related not to ability but to the cognitive and emotional consequences of failure (or the contemplation of failure). This suggests that self-esteem and problem-solving are having a reciprocal effect on each other and also has clinical implications in that those who wrote success explanation had higher expectancies and better performance regardless of their level of self-esteem and may indicate that problem-solving cognitions and abilities can have a direct effect on self-esteem. This was supported by Tang, Liu & Vermillion (1987) who examined performance and self-esteem in 117 undergraduates on difficult and easy tasks and also found that individuals in the high or low self-esteem group were significantly different in terms of goal setting, performance and motivation. Further, Zuckerman (1979) conducted a review literature examining success and failure attributions and concluded '*overall it appears that self-esteem effects are obtained primary after failure*',p.261.

The impact of social problem-solving on self-esteem as a part of therapy has also been demonstrated to be effective. Mruk (1999) examined a number of self-esteem enhancement programmes and report that problem-solving training was an important element in the configuration of all of the programmes reviewed. The author concluded that '*one way to increase self-esteem is to teach people how to solve problems more effectively and efficiently*', p.110.

To consider the second condition, as we have seen from a review of the literature examining self-esteem in anorexia nervosa, that not only does low self-esteem correlate with high levels of eating pathology, but low self-esteem has also been found to be a predictor of treatment outcome and may constitute a risk factor for future development of eating pathology in non-clinical samples.

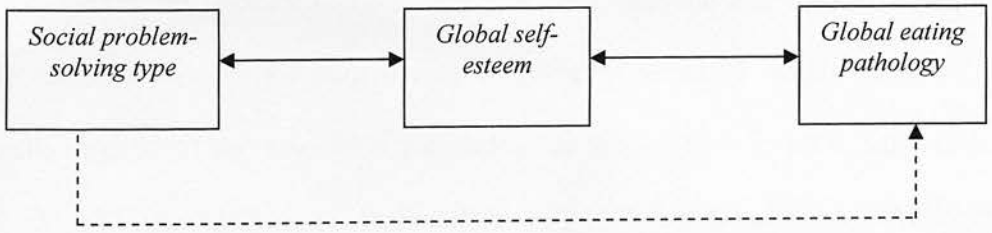
Finally, to consider the final condition stipulated by Baron & Kenny, that self-esteem must be seen to mediate the relationship between social problem-solving and eating pathology. Self-esteem as a mediator variable of psychological factors also has some support in the literature. A literature search revealed that previous studies have considered one-dimensional self-esteem as a mediator of perfectionism and depression. For example, Flett, Hewitt, Blankstien & O'Brien (1991), Preusser, Rice & Ashby (1994) & Rice, Ashley & Slaney (1998) all reported that self-esteem mediated the relationship between perfectionism and depression. Therefore, high self-esteem correlated with low levels of depression, inhibiting the maladaptive elements of perfectionism, such as the unrelenting high personal standards and obsessionality, and facilitating the positive elements of perfectionism, such as motivation and perseverance.

Further, a study by Fredrick & Grow (1996) examined the relationship between global self-esteem and autonomy in a non-clinical sample of university undergraduates and reported that, according to their analysis, self-esteem mediates the relationship between eating pathology and autonomy. The researchers concluded that self-esteem was a significant factor in the development of eating pathology. However, again these studies all chose to utilise a one-dimensional self-esteem model and none examined self-esteem as a mediator variable in a clinical sample and in relation to social problem solving and anorexia nervosa.

Finally, Paterson, *et al* (2006) examined the relationship between self-esteem and social problem-solving in an anorexic inpatient sample and found a mediational interaction between elements of self-competence and social problem-solving in that self-competence mediated the relationship between eating pathology and negative problem orientation and avoidance. This suggests that the roles of negative problem orientation and avoidance may be related to and facilitative of low self-competence and this interaction may be maintaining pathology by inhibiting the use of effective problem solving or facilitating the use of maladaptive problem solving. Moreover, this pattern was not replicated in a non-clinical control group suggesting that this interaction between the self-efficacy elements of self-esteem and the negative problem orientation and avoidance aspects of problem-solving may be a feature of pathology. However, the results of the study are tentative and hindered by some methodological limitations. For example, the anorexic sample was collected randomly throughout inpatient treatment, therefore, some participants were tested at admission, others at various points in treatment and other still, just prior to discharge. Thus, the level of self-esteem and social problem-solving in this sample may be subject to

treatment effects and the conclusions extrapolated from the results of the study could be improved by employing a more homogenous sample.

When investigating the possibility of a mediational role, the issue of causality must be addressed. A model whereby self-esteem mediates the relationship between social problem-solving and anorexic pathology, suggests a directional relationship whereby maladaptive problem solving leads to low self-esteem, which leads to eating pathology. However it must be considered that social problem-solving and self-esteem are dynamic concepts and while social problem-solving may impact on self-esteem, it is equally probable that eating pathology will have an effect on self-esteem and that self-esteem will impact on social problem solving. Thus, while an etiological model could be proposed, a model of eating pathology maintenance could also be postulated, whereby the existing eating pathology impacts further on low self-esteem which then maintains maladaptive problem-solving. The following diagram can illustrate this:



1.8: Conclusions, Aims and Hypotheses for the Current Research

1.8.1: Conclusions from the Literature

In summary, anorexia nervosa is a multi-factorial condition that has been found to be significantly associated with a number of psychological factors, including

poor social problem-solving and low self-esteem. The anorexic individuals' poor social problem-solving ability has been proposed in the literature as a contributory factor in the development and maintenance of the condition as well as its resistance to treatment. There is some research to propose that avoidance is particularly prevalent in anorexia and also that social problem-solving styles relating to poor self-efficacy are related to the anorexic pathology. Also, the concept of self-esteem as a multi-dimensional construct has been well documented in the literature. The research examining self-esteem in anorexia nervosa has suggested that both self-worth and self-competency are significant to the development and maintenance of eating pathology. Furthermore, previous research has postulated that elements of self-esteem may mediate the relationship between the anorexic pathology and the ability to face up to problems and approach problems in a constructive manner, therefore, it is possible that elements of low self-esteem may be instrumental in the development and maintenance of anorexia by facilitating the effect of maladaptive problem-solving on eating pathology and vice versa.

This has implications for both treatment outcome and recovery maintenance for the anorexic, as the patient may improve in terms of weight gain and eating pathology, but if the associated psychological factors such as poor problem solving ability and low self-esteem remain, then the possibility of relapse or treatment drop out, which is currently considered to be a significant barrier to effective treatment in anorexia, may be increased. However, research examining the interaction between multidimensional self-esteem and social problem solving in anorexia nervosa is currently limited and thus conclusions relatively tenuous. Further exploration is required to elucidate the roles of self-esteem and problem solving in anorexia nervosa.

The current study is designed to build on this previous research examining the relationship between self-esteem and social problem-solving in anorexia nervosa, particularly the potential mediating effect of self-esteem. The design of the current study will allow for the multi-factorial nature of these constructs by employing multi-factorial measures of self-esteem and social problem-solving and will attempt to minimise the methodological limitations of previous research.

1.8.2: Aims of the Current Research

The purpose of the current study is to assess the relationship between self-esteem and social problem-solving in an anorexic population, building on previous research and minimising methodological limitations by employing multi-dimensional measures and assessing all participants at admission.

Specifically, the research aims are as follows:

1./ To examine self-esteem as a multidimensional construct in an anorexic population and examine which elements of self-esteem are most significant to eating pathology.

2./ To examine social-problem-solving as a multi-dimensional construct and examine which elements are most significant to eating pathology.

3./ To examine these correlations in a non-clinical sample for comparison purposes.

4./ To investigate the potential mediating role of self-esteem in the relationship between social problem-solving and the development and maintenance of the anorexic pathology.

1.8.3: Hypotheses of the Current Research

Based on the literature review, the hypotheses of the current study are as follows:

1./ The anorexic group will display significantly lower levels of effective social problem-solving and significantly higher levels of maladaptive social problem-solving than controls.

2./ The anorexic group will display significantly lower levels of self-esteem than will the control group.

3./ Within the anorexic group, elements of social problem-solving pertaining to negative problem orientation and avoidance type problem-solving will be significantly related to eating pathology.

4./ Within the anorexic group, elements of self-esteem pertaining to both self-worth and self-competence will be significantly related to high levels of eating pathology.

5./ Within the anorexic group, self-esteem will mediate social problem-solving in relation to eating pathology.

6./ Within the mediational model, a feedback effect will be apparent with eating pathology impacting on social problem-solving through the mediational effect of self-esteem.

1.8.4: Null Hypotheses of the Current Research

1./ The anorexic group will not display significantly lower levels of effective social problem-solving and significantly higher levels of maladaptive social problem-solving than controls.

2./ The anorexic group will not display significantly lower levels of self-esteem than will the control group.

3./ Within the anorexic group, elements of social problem-solving pertaining to negative problem orientation and avoidance type problem-solving will not be significantly related to eating pathology.

4./ Within the anorexic group, elements of self-esteem pertaining to both self-worth and self-competence will not be significantly related to high levels of eating pathology.

5./ Within the anorexic group, elements of self-esteem will not mediate social problem-solving in relation to eating pathology.

6./ Within the mediational model, a feedback effect will not be apparent and eating pathology will not impact on social problem-solving through the mediational effect of self-esteem.

CHAPTER 2: METHODOLOGY

2.1: Design

The current study utilised a quantitative, cross sectional design, comprising of initially three groups, and eventually two groups. Firstly, an experimental group of anorexic inpatients, secondly, a control group of university students and, thirdly, another clinical, control group of primary care outpatients with psychological difficulties other than eating disorders. This third group was eliminated for reasons discussed below. Both within groups and between groups analyses were conducted to examine the main hypotheses.

2.2: Participants

A total of 105 participants comprised the two groups for the study. Three groups were initially recruited as follows:

2.2.1: Group One: Clinical Group

A cross sectional sample of 55 female patients, recruited from a specialist treatment facility, was employed in the study. Data were collected over a 12 month period as part of a large-scale outcome study led by the Priory Hospital, Glasgow and Tayside NHS Adult Clinical Psychology Department. The researcher of the current study had input to the measures employed in the design of this study, and measures of self-esteem and social problem-solving were included based on the results of previous research by the current researcher conducted in collaboration with the Priory Hospital, Glasgow, and in preparation for the current study, and ethical approval for the current study was granted by the Hospital Directors (See Appendix I). The data used in the

current study were collected within the inpatient facility, by either the staff nurses or an assistant psychologist. All participants met DSM IV criteria for anorexia nervosa when first admitted to the clinic and in all cases an experienced clinician had made the diagnosis. Participants were assessed at first admission to the clinic (although a significant proportion had received previous inpatient and outpatient treatment). Participants were identified by a qualified clinician and were considered to be mentally and physically capable to participate in the study. Participants were informed of their right to refuse to participate or to withdraw from participation at any time, without negative repercussions to their treatment or status within the hospital or thereafter.

Initially, 64 participants were identified as being appropriate, however, preliminary analysis revealed nine participants to have an eating pathology more typical of bulimia nervosa or eating disorders not otherwise specified, and these individuals were therefore eliminated from the final study.

2.2.2: Group Two: Age & Gender Matched Non-Clinical Control Group

A non-clinical comparison group of 50 age matched female university students was recruited from two universities in the East of Scotland. Exclusion criteria precluded males or individuals who had ever received treatment for an eating disorder. Participants were approached at the start of a lecture with the permission of university personnel and the ethics committee (See Appendix II). The students were informed that the study comprised part of a clinical psychology doctorate and the purpose was to investigate the role of self-esteem and social-problem solving in anorexia nervosa. They were also informed that their involvement would comprise a

control group and that they would be require to complete four self-report questionnaires pertaining to general psychological symptoms, eating issues, self-esteem and social problem-solving. Students were advised that participation was entirely voluntary and that they had the right to decline to participate or to withdraw from participation at any time without negative repercussions on their future studies within the university or treatment within the health service.

Two hundred and fifty questionnaire packs were distributed amongst the two universities and sixty were returned. Of the completed packs, three were incomplete and could not be included, three scored above cut off on the EDE-Q for eating pathology and four scored above cut off on the SCL-90 for symptoms of anxiety and/or depression. Therefore, a total of ten participants were considered to be ineligible for inclusion in the study and a total of 50 healthy controls were recruited into this group.

2.2.3: Group Three: Age & Gender Matched Clinical Control Group

The researcher initially aimed to collect a clinical comparison group of age-matched females from Tayside NHS Adult Clinical Psychology Department. (See Appendix III for approval from Tayside Ethics Committee for Medical Research). The justification for the inclusion of a second control group was to examine the interaction between self-esteem and social problem solving in a non-eating disordered sample in, with the rationale that the relationship between self-esteem and social problem-solving may manifest differently in this group in comparison to the anorexic group. However, this could not be confidently hypothesised, as there is not any currently existing research to support this claim.

Furthermore, the response rate in this group was poor. Initially, the researcher approached clinical psychologists within the department and presented them with the inclusion/exclusion criteria for participants and invited them to approach new patients for voluntary participation. Unfortunately, this yielded disappointing results and in two months the researcher received just three completed questionnaire packs from this group.

Reasons speculated for this include; that the pool from which participants were being drawn was very limited in that in order to maintain methodological rigidity and match clinical controls with the anorexic group, participants were being approached at first or second session. Secondly, two other research projects were being run concurrently in the same department employing similar participants, thus reducing participant availability. Thirdly, unfortunately, concurrent to the period of recruitment for the current study, all group therapy programmes within the department were undergoing redesign. Thus the researcher was unable to access groups for recruitment.

The researcher attempted to improve the response rate by employing three tactics. Firstly by increasing the scope of the data collection to include other Adult Clinical Psychology departments within Tayside and, secondly, the clinical psychologists were requested to ask patients for permission to have the researcher approach them personally and arrange a time suitable to meet and complete the questionnaires with the participant, should they wish to participate in the study, emphasising the voluntary nature of the study and ensuring the participant had read and fully understood the information sheet. Also, an assistant within the department

volunteered to help with this. Thirdly, the criteria for inclusion were altered so that participation could be sought at any point in treatment. The justification for this was that anorexic inpatients, by nature of their inpatient status will have received prior outpatient treatment and therefore will not be new to treatment per se. The clinical psychologists within the departments acquiesced to this. However, while the response rate did improve, in the remaining three months only a further fifteen completed questionnaire packs were returned to the department.

Therefore, a total of one hundred and thirty questionnaire packs were distributed throughout the Adult Clinical Psychology department and a total of eighteen were returned completed. Two were considered inadmissible, as they did not fit with the age-match of the anorexic group and two were returned incomplete. This left a total of fourteen eligible participants within this control group. As this failed to meet power criteria for a large effect size, and the chances of making a Type II error were high, this group was not included in the final write-up of the study.

2.3: Procedure for Data Collection

Participants in all groups were invited to complete a questionnaire pack at one time point only. Each questionnaire pack contained a letter for invitation from the researcher, a letter confirming the validity of the research by the clinical supervisor, an information sheet, consent form, demographics sheet and four standardised questionnaires. The demographics sheet required details of age and body mass index (BMI) or where not known, height and weight, and BMI was calculated by the researchers. BMI is probably the best indication of a persons weight to height ratio

and is usually measured as follows; under 20 = underweight; 20-25 = normal weight; 25-30 = overweight; above 30 = obese.

Participants were also asked to complete four standardised questionnaires pertaining to general pathology symptoms, eating pathology, self-esteem and social problem solving. An example of the letter of invitation can be found in Appendix IV, clinical supervisors letter in Appendix V, information sheet can be found in Appendix VI, consent form in Appendix VII and demographics page in Appendix VIII. The questionnaires used in the study are detailed as follows:

2.4: Measures

2.4.1: The Symptom Checklist-90- Revised (SCL-90-R): Derogatis (1994)

The SCL-90-R is a valid and reliable measure of self-reported general symptomatology, which is widely used in clinical research and clinical practice. The SCL-90-R contains 90 items pertaining to nine primary symptom dimensions and three global dimensions of psychiatric distress. The nine symptoms dimensions comprise *somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation* and *psychoticism*. The symptoms that these dimensions measure are as follows:

- *Somatization (12 items)*: Measures distress as a result of bodily sensations, such as pain, dizziness, palpitations, etc.
- *Obsessive-Compulsive (10 items):* measures symptoms that are considered to be indicative of an obsessive-compulsive type disorder, such as unwanted thoughts and impulses, which cause extreme distress and often compel the

individual to conduct compulsive or ritualistic behaviours in an attempt to control this distress.

- *Interpersonal Sensitivity (9 items):* measures symptoms of social awkwardness, low self-esteem and feelings of inadequacy and hyper-awareness of negative feedback from others.
- *Depression (13 items):* measures the symptoms generally associated with a clinical diagnosis of depression, including cognitive elements such as hopelessness, helplessness and suicidal ideation, behavioural elements such as lack of motivation and social withdrawal, and physical manifestations such as loss of energy.
- *Anxiety (10 items):* Measures the symptoms required for a diagnosis of general anxiety, such as frightening thoughts and images, feelings of dread, symptoms of panic and physical sensations of anxiety.
- *Hostility (6 items):* measures symptoms of anger, including irritability, aggression and violent impulses.
- *Phobic Anxiety (7 items):* measures symptoms of phobic avoidance to a feared stimulus, specifically social anxiety or agoraphobia.
- *Paranoid Ideation (6 items):* measures thought disorders of a paranoid nature, such as delusions of grandiosity and suspiciousness of others' intentions.
- *Psychoticism (10 items):* measures both positive and negative symptoms of psychoticism, from interpersonal isolation to psychotic or magical thinking.
- *Additional Items (7 items):* measure items that do not readily fit with any specific diagnostic criteria but still have clinical significance, such as problems with eating and sleeping, feelings of guilt and thoughts of death or dying.

The three global dimensions are as follows:

- *Global Severity Index:* measures severity of symptoms across the sub-types and, according to the authors, should be used as a global measure of symptomatology.
- *Positive Symptom Distress*: reflects the intensity of distress experienced by the symptoms.
- *Positive Symptom Total*: measures the number of positive response made by the participant, regardless of intensity.

Reliability of the SCL-90-R

The reliability of a test relates to the test's ability to consistently measure the constructs that it claims to measure. There are different ways in which a test's reliability can be ascertained. The SCL-90-R reports a high level of internal consistency reliability, that is, the consistency of the individual subscales (Croenbach's alpha (α) ranging from 0.77 to 0.90), and a high level of test-retest reliability, that is, the ability of the test to maintain reliability over repeating testing (test-rest r ranging from 0.68 to 0.90) (Degogatis, Rickells & Rock, 1976: Horowitz, Rosenberg, Baer, Ureno & Villasenor, 1988).

Validity of the SCL-90-R

The validity of a test represents its ability to correlate with the constructs it has been designed to correlate with (convergent validity) and its ability to remain discrete from all other constructs (discriminant validity). Peveler & Fairburn (1990) compared the SCL-90 with other measures of general pathology in diabetic and bulimic

populations and reported that the SCL-90-R demonstrated a high level of convergent-discriminant validity with these groups.

Rationale for using the SCL-90-R

The rationale for including a measure of general pathology in the study was to assess levels of general pathology in the anorexic group and non-clinical group. It is widely recognised that anorexia nervosa is highly co-morbid with depression, anxiety and obsessive-compulsive disorder. Also, research has demonstrated that the effects of starvation can produce symptoms of pseudo-psychosis in terms of paranoia and magical thinking. The SCL-90-R was not employed as a screening device for the anorexic group, as the purpose of the study was to assess the relationship between self-esteem and social problem-solving in a typical anorexic inpatient group. Further, selection criteria at the Priory Hospital's Eating Disorder Unit excluded individuals with a co-morbid diagnosis of psychosis or individuals sectioned under the Mental Health Act. Therefore, individuals who scored highly on any of the SCL-90-R subscales were not excluded from the anorexic group. However, the SCL-90-R was used as a screening tool for the non-clinical control group. Any normal population sample would be likely to include individuals with high levels of anxiety and depression and possibly other pathologies as well. Therefore, any individual scores that were considered outliers in preliminary analyses were excluded from the final analyses. See Appendix IX for a copy of the SCL-90-R.

2.4.2: The Eating Disorders Examination – Questionnaire (EDE–Q): Fairburn & Beglin (1994)

The EDE-Q was developed from the original Eating Disorders Examination (EDE), which is an interview based assessment and considered to be the 'gold standard' of eating disorders assessments. The EDE-Q is generally considered to be a reliable diagnostic tool, which has been routinely used in clinical and research practice. The EDE-Q incorporates elements of restraint, weight concern, shape concern, eating concern and a global eating pathology score.

Reliability of the EDE-Q

Fairburn & Beglin (1994), Black & Wilson (1996) and Binford, Le Grange & Jellar (2005) have all assessed the reliability of the EDE-Q in relation to the EDE in both eating disordered and community samples. The EDE-Q was reported to accurately measure dietary restraint and eating, weight and shape concern in both groups and was found to be highly correlated with the EDE, with the percentage of agreement ranging from 55.5% to 95.8% across the samples.

Validity of the EDE-Q

The above authors have reported a high level of convergent-discriminant validity when tested on a range of populations from normal controls, to anorexic, bulimic and substance abusing populations. The EDE-Q has been found to be psychometrically equivalent to the EDE. However, as a self-report measure, some authors have reported that the EDE-Q may be less accurate than the EDE, with Passi, Bryson & Lock (2003) reporting that anorexic symptoms tended to be overestimated with the EDE-Q, the authors proposed that ambiguity in the terminology used in some

of the questions may lead to lack of consistency in responses. However, Binford, Le Grange & Jellar (2005) reported the EDE-Q to have levels of convergent and discriminant validity that are comparable with the EDE and reported agreement between the two measures to be significant, particularly for anorexia nervosa.

Rationale for using the EDE-Q

While there is some disagreement over whether the EDE-Q is as accurate as the EDE in the assessment of eating pathology, the EDE-Q is a more practical tool, in that it is quicker and easier both to administer and score. It is an effective screening tool when used with normal populations and has the benefit of incorporating a measure of global eating pathology, a measure of eating restraint and measures of concern regarding attitudes towards one's eating, shape and weight. Thus the EDE-Q assesses behavioural and cognitive elements of eating pathology. See Appendix X for a copy of the EDE-Q.

2.4.3: The Multi-Dimensional Self-Esteem Inventory (MSEI): O'Brien & Epstein (1988)

The MSEI is a 116 question self-report measure of multi-dimensional self-esteem. It assesses self-esteem across 11 components, employing a Likert scale answer format. The MSEI is considered to be a valid and reliable measure of multi-dimensional self-esteem, with high levels of discriminant and convergent validity with both clinical and control populations. The MSEI measures a range of self-esteem components, with the conceptual basis of self-esteem incorporating two main sub-types of self-liking and self-competence. The MSEI incorporates eight main self-esteem components, with components of lovability, likeability, moral self-appraisal

and body appearance pertaining to the self-worth dimension of self-esteem, and components of competence, personal power, self-control and body functioning pertaining to the self-competence component of self-esteem. The authors give definitions of each of the subscales as follows:

- *Lovability (10 items):* reflects the sense of being loved, cared for and accepted by others and of being worthy of this.
- *Likeability (10 items):* reflects the sense of social desirability, popularity and ease with others.
- *Moral self-appraisal (10 items):* reflects the sense of one's ability to live up to self-imposed moral standards and values.
- *Body appearance (10 items):* reflects the sense of contentedness with one's appearance and of being physically attractive to others.
- *Competence (10 items):* reflects the sense of self-efficacy, confidence in one's ability to carry out tasks effectively.
- *Personal power (10 items):* reflects one's sense of being able to exert influence over others and be respected by others.
- *Self-control (10 items):* reflects the sense of discipline, tenaciousness and ability to regulate emotions and eating and drinking behaviours.
- *Body functioning (10 items):* reflects the sense of ease and confidence with one's physical capabilities such as exercise and health.

The MSEI also incorporates a measure of global self-esteem, which according to the authors is an comprehensive measure of general self-concept, and a measure of identity integration (10 items), which pertains to the cohesiveness of one's self-

concept and a measure of defensive self-enhancement (16 items), which pertains to a false sense of high self-esteem or a defensive self-esteem style.

Reliability of the MSEI

The internal consistency of the MSEI was measured in a community sample by O'Brien & Epstein (1988), who reported reliability coefficients with a Croenbach's alpha (α) of >0.80 for all subscales except defensive self-enhancement, which was 0.78. Test-retest reliability correlations were reported as being above 0.80 for all subscales except likeability and identity integration, which had correlations of 0.79 and 0.78 respectively. The authors reported that MESI scores could be considered stable over a 1-month period.

Validity of the MSEI

The MESI was found to have high levels of convergent-discriminant validity when compared with measures of one-dimensional self-esteem, personality and depression. The authors reported that global self-esteem, self-competence and identity integration were the most highly correlated subscales when compared with these other measures.

Rationale for using the MSEI

The MSEI is the only self-report measure of self-esteem that evaluates self-esteem as a multi-dimensional construct. Other self-report measures of self-esteem have employed a one-dimensional concept of self-esteem, which tends to focus on the self-worth component of self-esteem, with the exception of Tafarodi & Swann's (2001) Self-Liking/Competence Scale, which considers self-esteem across two

dimensions of self-worth and self-competence. As research into self-esteem has proposed that self-esteem is a multi-dimensional concept, incorporating the two elements of worth and competence, the MSEI and the SLCS are the only self-esteem measures to address this theory. The MSEI measures self-esteem across the two main components of self-worth and self-competence but also provides subscales within these two elements and has the added bonus of a defensiveness scale. Therefore, one can examine which elements of each main self-esteem component are most relevant to the population being examined. Finally, the high level of reliability within the MSEI is particularly important to the current study as, according to Baron & Kenny (1986) when testing for a mediational model, the mediator variable must have a high level of reliability to reduce the possibility of measurement error within the model. Mruk (1999) states that '*The MSEI's strengths are quite remarkable given the difficulties of testing in this area'*, p.102. See Appendix XI for a copy of the MSEI.

2.4.4: The Social Problem Solving Inventory - Revised (SPSI-R): (D'Zurilla & Maydeu-Oliveres, 1995)

The SPSI-R comprises of 52 items, containing 5 sub-types based on factor analysis of the original 70-item theory based measure. It has been found to be a reliable, comprehensive assessment of self-reported social problem-solving ability, comprising of two problem orientation measures and three actual problem-solving measures.

Problem orientation measures comprise of:

- *Positive Problem Orientation (PPO: 5 items):* relates to cognitive process such as positive self-appraisal, viewing problems as challenges, having realistic beliefs and positive outcome expectancies.

- *Negative Problem Orientation (NPO: 10 items):* relates to inhibited cognitive processes such as perceived threat and low frustration tolerance and self-inefficacy.

Actual problem solving measures comprise of:

- *Rational Problem Solving (RPS: 20 items):* relates to constructive, conscious problem solving efforts and ability to define problems, formulate solutions, make decisions, implement solutions and generate alternatives. RPS can be further broken down into problem definition and formulation, generation of alternative solutions, decision-making and solution implementation and verification.
- *Impulsivity / Carelessness Style (ICS: 7 items):* relates to ineffective problem solving characterised by impulsive, incomplete or careless attempts to solve problems.
- *Avoidance Style (AS: 7 items):* relates to ineffective problem solving typified by procrastination, passivity and inability to accept personal responsibility for problems.

Reliability of the SPSI-R

Internal consistency coefficients were developed with four age-matched community samples, adolescents, young adults, middle-aged adults and elderly adults. Results indicated Coenbach's alpha (α) > = 0.69 across the subtypes for each population, (Kant, D'Zurilla & Maydeu-Olivares, 1997; Sadowski, Moore & Kelly, 1994).

Validity of the SPSI-R

The five main subtypes of the SPSI-R have been checked for convergent and discriminant validity in both normal adult populations (D'Zurilla, Nezu & Maydeu-Oliveres, 2004) and psychiatric inpatients (Chang & D'Zurilla, 1996). The SSPI-R has been found to be significantly correlated with the original 70-item measure, however, it showed appropriate discriminant validity from measures of IQ or academic aptitude.

Rationale for using the SPSI-R

The value of the SPSI-R is that it discriminates between problem solving, i.e., approaching problems and generating solutions, and solution implementation, i.e., the process of applying the solution to the problem. The SPSI-R contains subscales which pertain to these different constructs, with problem orientation, i.e., positive problem orientation and negative problem orientation, as well as constructs of the problem solving process, i.e., rational problem solving, impulsivity/carelessness style and avoidance style. Employing a measure of social problem-solving that incorporates the cognitive processes behind the individual's approach to problems is particularly vital when investigating social-problem-solving in a clinical population, as the cognitive processes involved in social problem-solving are just as, if not more relevant than the actual problem- solving. See Appendix XII for a copy of the SPSI-R.

2.5: Power & Sample Size Calculations

In order to enlist likely effect sizes for the current study, a literature search was conducted to find previous studies that had employed the same measures and similar between groups designs. The literature search revealed very little clinical

versus non-clinical designs to have been conducted utilising the self-esteem and social problem-solving measures employed in this study. However, an examination of the literature employing similar participant groups and designs to the current study supports Cohen's (1992) suggestions for a large effect size. For example, Lenihan & Kirk (1990) examined personality in 34 eating disordered participants and 26 non-eating disordered controls, and Pearson's r correlations revealed large effect sizes within each of the groups. Further, Jacobson & Robins (1989) compared social dependency in 23 eating disordered participants and 38 non-clinical controls to reveal large effect sizes in the means of each group. Finally, Button (1990) examined construction of self in 32 participants with a clinical diagnosis and 31 matched controls, with independent samples t-tests indicating large effects sizes. Finally, D'Zurilla, Chang, Nottingham & Faccini (1998) examined social-problem solving and hopelessness in depression in psychiatric patients and multiple regression analysis revealed a large effect size $R^2 = .305$, effect size = 0.47.

The number of participants required for a statistically significant result was assessed by conducting power calculations using effect sizes found in other studies using the same measures and by using Cohen's (1992) tables for power calculations. According to Cohen's tables, when analysing differences between two independent means, to achieve power of 0.80, $\alpha = 0.05$, an N of 26 in each group will detect large population effect sizes and to achieve power of 0.80, $\alpha = 0.05$ an N of 64 in each group will detect medium effect sizes. The current study employed a trimmed N of 55 and 50 in the anorexic and non-clinical groups respectively, therefore, an effect size of between medium and large would be expected.

2.6: Ethical Issues & Approval

Ethical approval for the current study was granted from NHS Tayside Medical Ethics, University of Stirling Research Ethics Committee, University of Abertay Research Ethics Committee and The Priory Hospital, Glasgow Medical Directors (proof of ethical approval from each of these institutions can be found in Appendices I, II & II).

The main ethical issues concerned the use of the questionnaires employed in the study. As some of these questionnaires ask direct questions regarding mental health, including about anxiety, depression, eating disorders, self-esteem and problem-solving abilities, there may have been a risk of participants identifying personal psychological difficulties in these areas.

To minimise potential distress, certain procedures were taken. All groups were provided with an information sheet advising them of the nature of the study, what participation required, the rights of the participants and details of agencies that the participant could contact should the questionnaires evoke any feelings of distress. In terms of the two clinical samples, the anorexic group and the general pathology group, participants were given access to the clinician responsible for their case, while in the non-clinical control group, participants were given details of the student support services for each respective university and also details of their local health board psychology service. The voluntary and confidential nature of the study was emphasised both in the information sheet and verbally to the participants and they were also made aware of their right to refuse to participate or withdraw from the study at any time. Participants were provided with a consent form, informing them of all

their rights, which they were required to read and sign in the presence of the clinician or the researcher prior to participation. Therefore, participants were well informed of the nature of the study, of their own rights and of where to access support should this be required (copies of the Information Sheets and Consent Forms used in the study are included in Appendix VI & VII).

2.7: Statistical Analyses Employed in the Current Study

Following preliminary analyses to determine the suitability of each of the participants based on their responses, between groups comparisons were conducted using stepwise regression analyses and non-parametric Mann Whitney z-tests. Within groups analyses were conducted to investigate the main hypotheses of the study. Firstly Pearson's r correlations were calculated to examine relationships between the variables in each group. Secondly, path analyses were calculated to examine the potential mediating effect of self-esteem on the relationship between social problem-solving and eating pathology. The Baron & Kenny (1986) method of conducting path analysis was employed which involved a series of multiple regression analyses.

CHAPTER 3: RESULTS

3.1: Examination of the Distribution of the Data

When sampling from a normal distribution, one would generally expect that the distribution of scores would be approximately normal, increasingly so as the sample size increases. The sample distributions in the current study were first examined visually, and all the distributions for all the variables within the two groups appeared unimodal. However, in the anorexic group, global eating pathology, restraint and weight concern subscales of the EDE-Q were skewed, as were global self-esteem and body appearance sub-scales of the MSEI and the negative problem orientation subscale of the SPSI-R. In the non-clinical population, all the EDE-Q subscales were skewed, as were lovability and moral self-approval subscales of the MSEI and the negative problem orientation, impulsivity/carelessness and avoidance subscales of the SPSI-R. This was confirmed by examining the ratio of the skewness index to its standard error as when the z-score is above 1.96, or below –1.96, the distribution is taken to be significantly positively or negatively skewed.

In the anorexic group, logarithmic and square root transformations were able to normalise the global self-esteem subscale only, but actually worsened the skewness of the eating pathology subscales and were unable to normalise negative problem orientation. In the control group, global eating pathology, restraint and weight concern were normalised by applying logarithmic and square root transformations as were the SPSI-R subscales, however these calculations were unable to normalise eating concern and shape concern subscales of the EDE-Q and subscales of the MSEI were worsened by transformations. Therefore, analyses were conducted on non-

transformed data. Parametric tests like t-test and regression are known to be robust under departures from normality (Smithson & Verkuilen, 2006: Yanagihara & Yuan, 2005; van den Oord, Pickles & Waldman, 2003) and since parametric tests are generally more powerful and flexible than nonparametric, the original plan to use parametric tests was carried out. As a check nonparametric Mann Whitney z-tests were carried out and are reported in Appendix XIV. Tables 1.2 and 1.3 illustrating skewness and kurtosis for all subscales in both anorexic and control group, prior to transformation, can be found in Appendix VIII.

3.2: Descriptive Statistics for both Anorexic & Control Groups

Age in the anorexic group ranged between 17.0 years of age to 45.0 years of age (Mean = 24.58, SD = 6.80). Age in the matched control group ranged between 19.0 and 47.0 years of age (Mean = 26.25, SD = 6.87). In the anorexic group BMI ranged between 10.70 and 18.00, with a mean of 14.58, SD = 2.23, while in the control group, BMI ranged between 19.70 and 36.20, with a mean of 24.68, SD = 3.90). Table 1.1 details means and standard deviations for all psychological measures in the anorexic and control groups.

In the anorexic group, history of previous psychiatric treatment ranged from one to five years, with a mean of 3.06 years, SD = 1.42. All patients were assessed at admission to the inpatient unit. Data regarding restricting or binge/purging anorexic subtypes was mostly missing from the questionnaires. Out of the 55 participants, 17 stated they were restricting anorexics, 3 binge/purging anorexics, 5 reported that they were both restricting and binge-purging and 30 did not provide this information. Diagnostic information gathered from the EDE-Q indicated that none of the anorexic

individuals reported engaging in binging/purging behaviour in the past 4 weeks. Therefore, analyses were not performed to compare groups within the anorexic sample.

Table 1: Means and Standard Deviations for Anorexic & Control Groups

	Anorexic Group N = 55		**Control Group N = 50**	
	Mean	**SD**	**Mean**	**SD**
Age	24.58	6.80	26.71	7.15
BMI	14.59	2.23	24.68	3.90
EDE-Q – Eating Pathology				
Global Score	25.51	7.34	7.33	5.07
Restraint	4.49	1.48	1.17	0.97
Eating Concern	4.43	1.18	0.48	0.69
Shape Concern	4.68	1.60	1.74	1.21
Weight Concern	4.17	1.75	1.37	1.19
SCL-90_R – General Pathology				
Global Score	2.05	0.78	0.93	3.46
Somatisation	1.80	0.94	0.47	0.59
Obsessive Compulsive	2.44	0.98	0.63	0.67
Interpersonal Sensitivity	2.55	0.89	1.75	8.10
Depression	2.73	0.86	0.60	0.70
Anxiety	2.25	1.00	0.37	0.82
Hostility	1.28	0.87	1.27	0.86
Phobic Anxiety	1.46	1.17	0.14	0.45
Paranoid Ideation	1.75	0.79	0.29	0.43
Psychoticism	1.54	0.87	0.16	0.32
MSEI – Self-Esteem				
Global Score	16.74	5.98	30.91	7.89
Likeability	21.60	6.79	33.52	6.87
Lovability	27.09	7.64	36.15	8.10
Moral Self-Approval	32.11	7.83	37.13	8.01
Body Appearance	16.33	5.30	29.50	6.84
Competence	25.57	8.23	33.39	5.57
Personal Power	22.47	7.92	30.44	7.30
Self-Control	27.29	7.89	32.48	5.76
Body Functioning	19.85	6.31	27.74	6.88
Identity Integration	21.05	6.63	31.35	10.17
Defensive Self-Enhancement	48.29	8.44	49.59	6.84
SPSI-R – Social Problem-Solving				
Positive Problem Orientation	7.21	4.15	9.44	4.23
Negative Problem Orientation	29.38	9.08	13.72	8.21
Rational Problem Solving	34.78	14.77	37.29	14.22
Impulsivity/Carelessness	14.78	8.62	9.13	7.75
Avoidance	13.78	7.16	7.11	6.19

3.3: Comparisons with Normative Data for Anorexic and Control Groups

Fairburn & Beglin (1994) provide normative data for the EDE-Q for both anorexic and normal populations. Independent samples t-tests revealed that the current sample of anorexic individuals reported levels of eating pathology that were comparative with the normative data on all measures of eating pathology and revealed significant differences with the normal group. The control group displayed levels of eating pathology that were comparative with the normal group, but significantly different from the anorexic group.

Derogatis (1997) provides gender matched normative data for the subscales of the SCL-90-R for both psychiatric inpatient females and normal female populations. T-tests revealed that the anorexic sample displayed levels of general distress that were significantly higher when compared with general psychiatric inpatients. The non-clinical control group, however, displayed levels of pathology that were significantly different to the psychiatric normative data and revealed no significant differences with the non-clinical normative sample on all measures except interpersonal sensitivity, where the current sample had scores that were significantly higher than the non-clinical normative controls and were comparable with the psychiatric group.

D'Zurilla, Nezu & Maydeu-Olivares (2004) provide age matched normative data for the subscales of the SPSI-R for normal populations. When compared with the normative data for psychiatric adults provided by D'Zurilla, Maydeu-Olivares & Kant (1998), the anorexic sample displayed significantly poorer positive problem orientation and significantly higher levels of negative problem orientation and avoidance than the psychiatric population. However, the anorexic group displayed

levels of rational problem-solving that were comparable with, and levels of impulsivity that were significantly lower than, the psychiatric sample. When compared with the normative data for young adults (age range 17-39), the anorexic sample displayed significantly poorer positive problem orientation and rational problem solving, and significantly higher levels of negative problem orientation, but comparable levels of impulsivity/carelessness style. The non-clinical group, however, displayed levels of problem solving that were significantly different from the psychiatric norms and comparable with the community norms on all measures except rational problem solving which were comparable with the psychiatric sample.

Finally, O'Brien & Epstein (1988) provide gender matched normative data for all subscales of the MSEI for normal populations, but not psychiatric populations. When compared with the normative data, the anorexic group displayed significantly lower levels of self-esteem on all subscales except the defensive self-enhancement subscale, which was comparable. The non-clinical control group, however, displayed levels of self-esteem that were comparable with the community norms on all subscales.

3.4: Between Group Comparisons: Self-Esteem & Social Problem-Solving

Between-groups analyses were conducted to examine significant differences between the anorexic and the control group. As the measures employed in the study were multidimensional, a high level of correlation was expected between the variables. Therefore, stepwise regression analyses were utilised to examine which variables yielded the most significant differences between groups by considering which subtypes within each variable account for the most variance across the two

groups. Table 2 overleaf illustrates the variables, which yielded the most significant differences between groups.

Table 2: Stepwise Regression Analysis Indicating Most Significant Differences Between Groups

	B	Standard Error	Beta	Sig.
EDE-Q – Eating Pathology				
Eating Concern	-.206	.021	-.906	.000
Weight Concern	.049	.019	.200	.011
Restraint	-.044	.020	-.184	.033
SCL-90 – General Pathology				
Depression	-.307	.023	-.792	.000
MSEI – Self-Esteem				
Body Appearance	.024	.007	.429	.001
Global Score	.018	.006	.362	.003
SPSI-R – Social Problem-Solving				
Negative Problem Orientation	-.029	.003	-.644	.000

Table 2 indicates that the depression subtype of the SCL-90 yielded the most significant difference between the anorexic and control groups. On measures of eating pathology measures of eating concern, weight concern and restraint yielded the most significant differences between groups.

Hypothesis 1: The anorexic group will display significantly lower levels of effective social problem-solving and significantly higher levels of maladaptive social problem-solving than controls.

On measures of social problem-solving regression analysis indicated that negative problem orientation yielded the most significant differences between groups.

Hypothesis 2: The anorexic group will display significantly lower levels of self-esteem than will the control group.

On measures of self-esteem, global self-esteem and body appearance yielded the most significant differences between groups. Table 2 overleaf, provides the coefficients t-values and significance levels for the above variables. Non-parametric Mann-Whitney z-tests were also conducted to analyses differences between the means of the two groups (Appendix XIII).

3.5: Within Groups Comparisons: Associations between Variables in the Anorexic Group

Pearson's *r* correlations were calculated for associations between variables in the anorexic group. Table 3.1 illustrates all the correlations between eating pathology, self-esteem and social problem solving in the anorexic group and as expected, there was a high level of correlation between the variables within the groups. By examining the correlation matrix in Table 3.1, correlational patterns emerge and these are reported below.

3.5.1: Social Problem-Solving & Eating Pathology

Hypothesis 3: Within the anorexic group, elements of social problem-solving pertaining to negative problem orientation and avoidance type problem-solving will be significantly related to eating pathology.

Elements of eating pathology and social problem solving that were most significantly correlated ($p<.001$) were related to problem orientation and weight and shape concern. Also, avoidance type coping was highly correlated with shape concern. However, measures of rational problem solving and impulsivity/carelessness style did not correlate significantly with any measures of eating pathology.

3.5.2: Self-Esteem & Eating Pathology

Hypothesis 4: Within the anorexic group, elements of self-esteem pertaining to self-competence will be significantly related to high levels of eating pathology.

In the anorexic group, measures of eating pathology and self-esteem that were most significantly correlated ($p <.001$) were global self-esteem, lovability, likeability, body appearance and body functioning, which correlated significantly with global eating pathology and shape and weight concern. Across the eating pathology sub-scales, global self-esteem was highly significantly correlated to all measures of eating pathology. Weaker correlations were evident between competence and identity integration and shape and weight concern. However, moral self-appraisal and defensive self-enhancement were not correlated with any eating pathology measures.

Table 3.1: Correlations in the anorexic group

	EDE-Q-Global	EDE-Q-Restraint	EDE-Q-Eating	EDE-Q-Shape	EDE-Q-Weight	SPSI-R PPO	SPSI-R NPO	SPSI-R RPS	SPSI-R ICS	SPSI-R AS
SPSI-R- PPO	-.444**	-.174	-.315*	-.522**	-.434**	---	---	---	---	---
SPSI-R-NPO	.523**	.290*	.340*	.535**	.551**	---	---	---	---	---
SPSI-R-RPS	-.186	.006	-.254	-.176	-.201	---	---	---	---	---
SPSI-R-ICS	.235	.113	.131	.247	.197	---	---	---	---	---
SPSI-R-AS	.332*	.205	.167	.417**	.322*	---	---	---	---	---
MSEI-Global Score	-.506**	-.516**	-.427**	-.531**	-.471**	.530**	-.677**	.310*	-.378	-.450**
MSEI-Likeability	-.527**	-.245	-.291*	-.527**	-.526**	.451**	-.684**	.157	-.311*	-.484**
MSEI-Lovability	-.448**	-.240	-.355**	-.460**	-.439**	.489**	-.590**	.313*	-.409**	-.458**
MSEI-Moral Self-Appraisal	-.160	.021	-.210	-.227	-.150	.139	-.412**	.150	-.336*	-.367**
MSEI-Body Appearance	-.464**	-.228	-.254	-.502**	-.407**	.256	-.517**	.031	-.105	-.330*
MSEI-Competence	-.337*	-.260	-.202	-.300*	-.365**	.323*	-.478**	.152	-.193	-.279*
MSEI-Personal Power	-.185	.102	-.111	-.173	-.291*	.419**	-.406**	.375**	-.164	-.357*
MSEI-Self-Control	-.313*	.010	-.290*	-.347*	-.327*	.334*	-.399**	.275	-.342*	-.283*
MSEI-Body Functioning	-.440**	-.306*	-.324*	-.461**	-.426	.256	-.380**	.010	-.011	-.286*
MSEI-Identity Integration	-.325*	-.094	-.162	-.290*	-.436**	.464**	-.520**	.269	-.288*	-.420**
MSEI-Defensive Self-Enhancement	-.157	-.113	-.090	-.130	-.236	.227	-.393**	.174	-.324*	-.254

*** correlation is significant at <.001*

** correlation is significant at < 0.05*

3.5.3: The Relationship between Self-Esteem & Social Problem-Solving

The correlation matrix illustrated in Table 3.1 also indicates highly significant ($p < .001$) associations between elements of self-esteem and elements of social problems solving. These correlations were strongest between negative problem orientation and all measures of self-esteem. Correlations were also noted between positive problem orientation and global self-esteem, likeability, lovability, personal power and identity integration. Weaker correlations were indicated between avoidance style and all measures of self-esteem. Rational problem solving and impulsivity/carelessness style were the problem solving styles least associated with self-esteem in the anorexic group.

Pearson's r correlations were also calculated between eating pathology, self-esteem and social problem solving in the non-clinical control group. This group displays slightly different patterns of correlations from the clinical group, specifically, weight concern was less significantly related to the self-esteem subtypes, social problem solving was significantly less correlated with eating pathology and avoidance style was significantly less correlated with self-esteem. Table 3.2 in Appendix XIV illustrates the correlational patterns in this group.

3.6: Analyses in the Anorexic Group: A Mediational Model of Self-Esteem, Social Problem Solving and Eating Pathology.

Hypothesis 5: Within the anorexic group, self-esteem will mediate social problem-solving in relation to eating pathology.

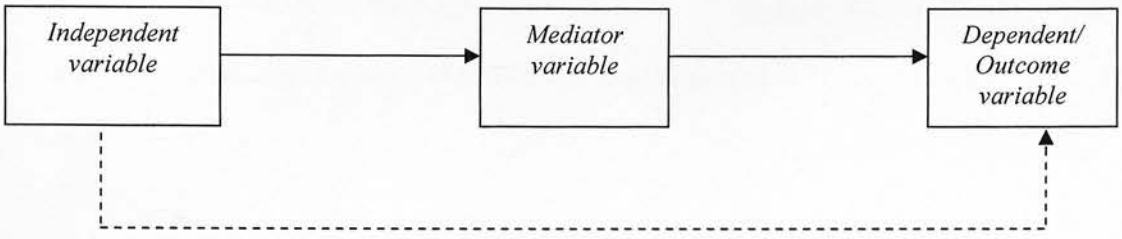
Path analyses were conducted by employing a series of regression analyses, as suggested by Baron & Kenny (1986), in the anorexic group to examine the potentially mediating effect of self-esteem components on the relationship between eating pathology and social problem-solving, and to investigate variables that predicted eating pathology.

Baron & Kenny (1986) propose two stages in the path analysis process. Firstly, that in order to test for mediator variables all variables in the model must be intercorrelated. As the above correlations suggest that self-worth and self-competency components of self-esteem are equally correlated with eating pathology, and that global self-esteem and global eating pathology were most significantly correlated with the other variables, it was decided that to test for a mediational model, the global self-esteem and global eating pathology subscales would be employed. Three of the social problem-solving measures were significantly correlated with eating pathology and global self-esteem, namely, positive problem orientation, negative problem orientation and avoidance style. Therefore, to test the hypothesis that self-esteem mediates eating pathology and social problem-solving, three path analyses were conducted with each of the significant social problem solving subscales.

The second stage is to perform three simple regression analyses. According to Baron & Kenny (1986), '*there is no need for hierarchical or stepwise regression or the computation of any partial or semi partial correlations.*'p.1177. The first equation involves regressing the potential mediator variable on the independent variable, and the independent variable must affect the mediator variable. The second equation involves regressing the dependent variable on the independent variable, and the independent variable must affect the dependent variable.

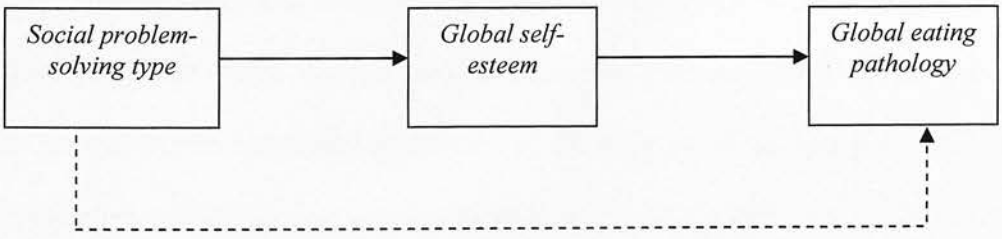
Finally, the third equation involves regressing the dependent variable on the independent and mediator variables simultaneously. According to Baron & Kenny (1986), perfect mediation is achieved if the independent variable no longer has an effect on the dependent variable in the third equation. The mediational model can be illustrated thus:

Figure 2.1 : Example of a Mediational Model



The mediator variable for the current study is global self-esteem and the independent variable is social problem solving. Global eating pathology is dependent on these two variables, directly dependent on self-esteem, which is influenced by social problem solving, and indirectly affected by social-problem solving, via the effect of self-esteem. Thus, the current hypothesised mediational model can be illustrated thus:

Figure 2.2 Example of a Mediational Model in the Current Research



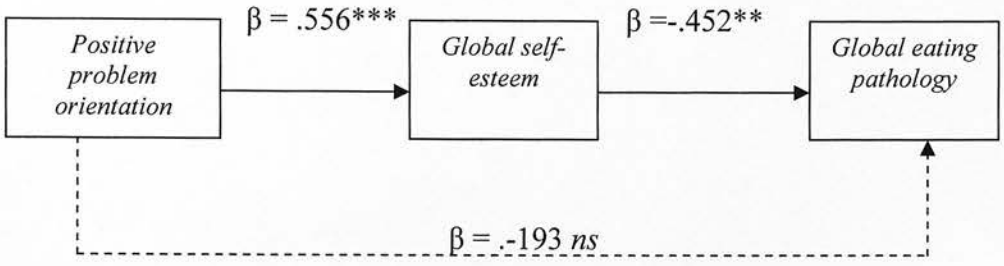
3.6.1: Model 1: Analysis of the Mediating Effect of Global Self-Esteem on Positive Problem Orientation and Global Eating Pathology

Firstly, a mediational effect was analysed between self-esteem, positive problem orientation and eating pathology. Self-esteem was regressed onto positive problem orientation. According to Baron & Kenny (1986), the standardised co-efficient must reveal that the independent variable (positive problem orientation in this instance) significantly affects the mediator variable, and this was demonstrated with a significant path of beta β = .556.

Next, global eating pathology was regressed onto positive problem orientation. In this instance, the independent variable (positive problem orientation) must significantly affect the dependent variable (global eating pathology) and, again, this was shown to be the case, with a significant path of beta β = -.444.

Finally, to test for the mediational effect, eating pathology was regressed onto positive problem orientation and global self-esteem simultaneously. Here, the mediator variable (global self-esteem) must significantly affect the dependent variable (global eating pathology) and perfect mediation is achieved if the independent variable (positive problem orientation) no longer has an effect. As illustrated in Figure 3.3 below, this was found to be the case with global self-esteem remaining significant in the equation with beta β = -.452, while positive problem orientation became nonsignificant with beta β = -.193.

Figure 2.3: Beta coefficients of the pathways between positive problem orientation, global self-esteem and global eating pathology.

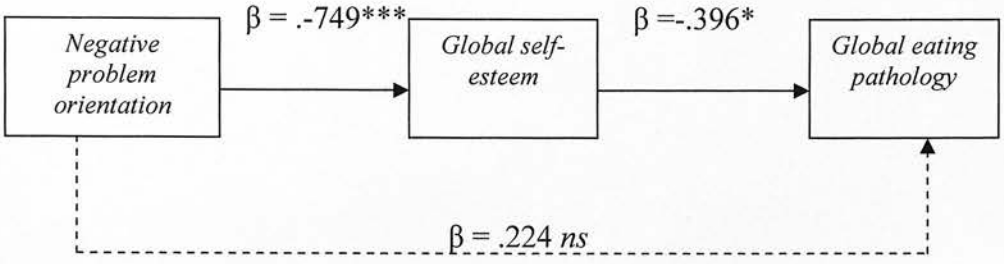


*$p<.05$ **$p<.01$ ***$p<.001$ *ns* = nonsignificant

3.6.2: Model 2: Analysis for the Mediating Effect of Global Self-Esteem on Negative Problem Orientation and Global Eating Pathology

A second path analysis was conducted to examine the mediational effect of self-esteem on the relationship between the second social problem-solving measure, negative problem orientation, and eating pathology. Again negative problem orientation was regressed onto global self-esteem and was found to have a significant effect with a beta β = -.749. Secondly, global eating pathology was regressed onto negative problem orientation and again a significant effect of beta =.520 was found. Finally, global eating pathology was regressed onto positive problem orientation and global self-esteem simultaneously and as illustrated in Figure 3.4 global self-esteem remained significant with a beta β = of -.396, whilst negative problem orientation is no longer significant with a beta β = of .224.

Figure 2.4: Beta Coefficients for the pathways between Negative Problem Orientation, Global Self-Esteem and Global Eating Pathology.

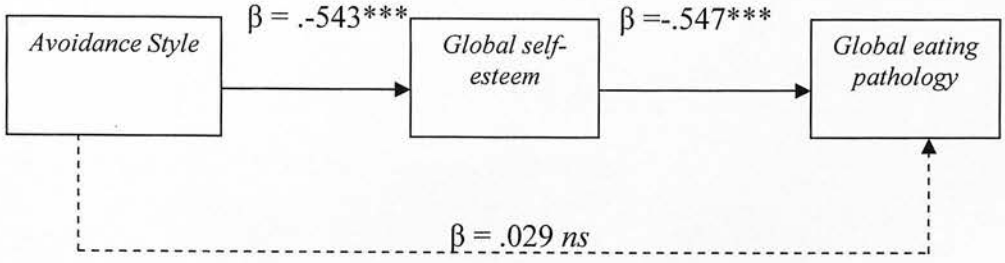


*p<.05 **p<.01 ***p<.001 *ns* = nonsignificant

3.6.3: Model 3: Analysis for the Mediating Effect of Global Self-Esteem on Avoidance Style and Global Eating Pathology

A final path analysis was conducted to examine the mediational effect of self-esteem on the relationship between avoidance style and eating pathology. Therefore, self-esteem was regressed onto avoidance style and a significant pathway was revealed with a beta of β = -.543. Next, eating pathology was regressed onto avoidance style and again a significant pathway was revealed with a beta of β = .327. Finally, eating pathology was regressed onto avoidance style and self-esteem simultaneously, and as illustrated in Figure 3.5, global self-esteem remained significant in the equation with a beta of β = -.547, while avoidance style was no longer significant with a beta of β = .029.

Figure 2.5: Beta Coefficients for the pathways between Avoidance Style, Global Self-Esteem and Global Eating Pathology.



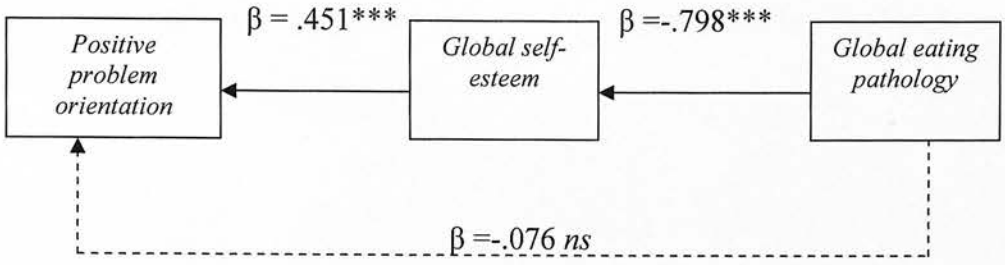
*$p<.05$ **$p<.01$ ***$p<.001$ *ns* = nonsignificant

3.7: The Feedback Effect within the Mediational Model

Hypothesis 6: Within the mediational model, a feedback effect will be apparent with eating pathology impacting on social problem-solving through the mediational effect of self-esteem

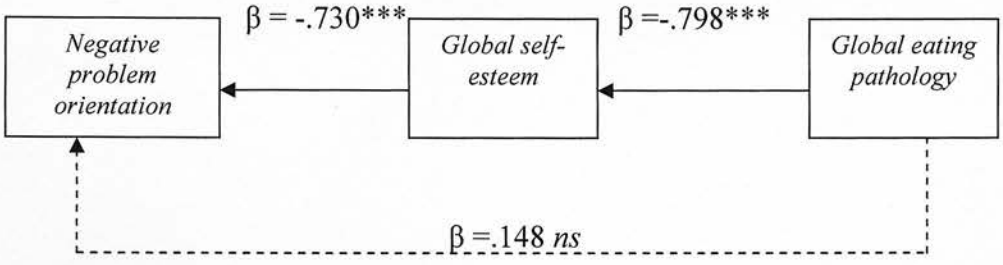
It was postulated that a maintaining pathway as well as a causal pathway would be established from the mediational model. In order to test this hypothesis, the same techniques as above were used but the independent and dependent variables were simply switched. Thus global eating pathology became the independent variable and social problem solving became the dependent variable as illustrated in Figures 2.6-2.8 below, similar patterns were found with global self-esteem mediating the relationship between all social problem-solving subtypes and eating pathology.

Figure: 2.6: Feedback Effect in the Mediational Model: Positive Problem Orientation



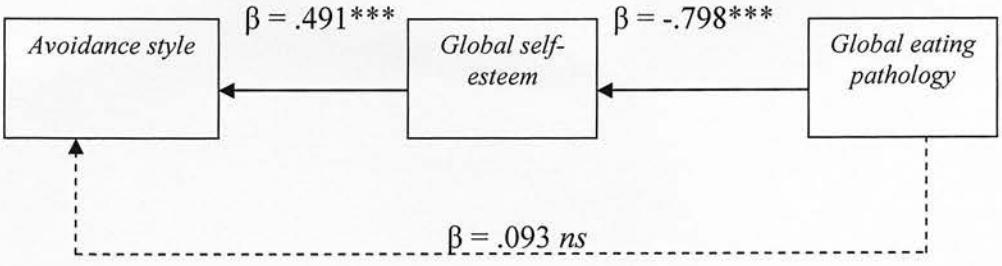
*p<.05 **p<.01 ***p<.001 *ns* = nonsignificant

Figure: 2.7: Feedback Effect in the Mediational Model: Negative Problem Orientation



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

Figure: 2.8: Feedback Effect in the Mediational Model: Avoidance Style



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

3.8: Reverse Causal Effects

Baron & Kenny (1986) suggest that, as a further precaution, one should interchange the mediator and outcome variables and run the path analysis again. If the outcome variable acts as a mediator between the other two variables then the mediational model could be less confidently ascertained. This was tested in the current study and it was found that the

relationship between self-esteem and social problem solving remained significant with or without the impact of eating pathology. The results of this can be found in Appendix XV.

CHAPTER FOUR: DISCUSSION

In this chapter, the results of the current study are explored with reference to the previous literature, and in terms of the experimental hypotheses. The implications of the results are discussed in terms of the anorexic pathology, and clinical relevance to treatment. Finally, the methodological limitations of the study are observed, with suggestions to improve upon these, and future directions for the research are surmised.

4.1: Discussion of the Main Findings

4.1.1: General Pathology in Anorexia Nervosa

The anorexic group displayed levels of general pathology that were not only higher than those of controls on all subscales, (except interpersonal sensitivity), but were also significantly higher than those of the normative sample of psychiatric inpatients. There is a considerable amount of research that demonstrates the high comorbidity of anxiety (Bulik *et al*, 1997; Godart *et al*, 2002; Goodwin & Fitzgibbon, 2002), depression (Eckert, *et al*, 1982; Levy & Dixon, 1985) and obsessive-compulsive disorder (Fahy, Oscar & Marks, 1993; Halmi *et al*, 2003; Matsunaga *et al*, 1999; Milos *et al*, 2002) in individuals with anorexia nervosa, thus scores on these subscales were expected to be significant.

However, it seemed a surprising result that the anorexic group would be displaying such high scores on measures such as psychoticism and paranoid ideation, and that they would report such high scores on the severity of symptoms subscale of the SCL-90-R. One possible explanation for these results may be that the anorexic group investigated in the current study were all tested at the point of admission to the inpatient facility. The purpose of this was to control for treatment effects, however, by assessing an anorexic group requiring

inpatient treatment prior to the commencement of treatment, the study has effectively targeted an extremely unwell sample. The mean BMI for the anorexics in the current study was 14.59, which is extremely underweight. Thus, the impact of starvation on this sample cannot be ignored. Studies examining the psychological consequences of starvation have noted that severe mood swings, psychotic symptoms, self-harm and suicidality are among the most severe manifestations of malnourishment. In a well documented and controversial study by Keys, Brozeck, Henschel, Mickelson & Taylor (1950), cited in Garner (1997), participants were screened for previous psychological well-being prior to the experiment, and were then subjected to prolonged periods of starvation, with the above symptoms being amongst those reported as a consequence. As the inpatient facility in the current study excluded individuals with a co-morbid diagnosis of a psychotic illness, or those sectioned under the Mental Health Act, then it can be assumed that the symptoms of psychoticism picked up from the SCL-90-R were a feature of the severity of the illness and malnourishment that the sample under investigation were presenting with.

4.1.2: Comparisons between the Anorexic and Non-Clinical Control Group

Hypothesis 1: The anorexic group will display significantly lower levels of effective social problem-solving and significantly higher levels of maladaptive social problem-solving than age and sex matched controls.

The findings from the current study, for the most part, upheld the above hypothesis. The results indicated that the anorexic group were displaying levels of effective social problem-solving that were significantly lower than the control group and levels of maladaptive social problem solving that were significantly higher than the control group. The

social problem-solving subtype, which yielded the most significant differences between the two groups, was found to be negative problem orientation, which indicates that when compared with controls, the anorexic individuals in the current sample are utilising problem solving approaches that involve a lack of self-efficacy and a tendency to feel threatened by problems.

That anorexic individuals have poor problem solving styles is supported by previous research. For example, Troop, Holbery, Trowler & Treasure (1994) reported that anorexic individuals display more avoidance type coping and less problem focused coping when compared with controls. Geller, Cocknell & Goldner (2000) reported that anorexic individuals displayed higher levels of negative interpersonal orientation than controls when faced with problems. Koff & Sangani (1997), Troop, Holbery & Treasure (1998) & Troop & Treasure (1997) all reported avoidance orientated coping, as well as negative rumination and emotion focused coping, when compared with controls. Garcia-Grau, Fuste, Miro, Saldana & Bados (2002) & Ghaderi & Scott (2000) both reported high levels of avoidance type coping when compared with controls, and Bloks, Spinhoven, Callewaert, Willemse-Koning & Turksma (2001) reported that these deficits in social problem-solving were apparent post-treatment, indicating that they may be resistant to the effects of therapy.

Hypothesis 2: The anorexic group will display significantly lower levels of self-esteem than will age and sex matched controls.

As expected, the results of the current study upheld the above hypothesis as the anorexic group did display significantly lower levels of self-esteem than the control group. These findings support previous literature, for example Corte & Stein (2005), and Silverstone

(1990) who both reported that individuals with anorexia displayed lower levels of self-esteem than matched controlled, even when controlling for the effects of depression.

In the current sample, the MSEI subscales that accounted for most of the variance between the two groups was global self-esteem and body appearance, with the anorexic group showing more significantly lower levels of these components than any other self-esteem constructs. According to O'Brien & Epstein (1988) the global self-esteem component constitutes a measure of one's general sense of self-esteem, which indicates that most self-esteem elements are significantly affected by anorexia. It is perhaps not surprising that body appearance accounted for much of the variance between the two groups as this self-esteem subtype is designed to reflect the individuals sense of contentedness with their appearance, which is obviously deeply affected in the anorexic.

4.1.3: Analysing Sub-Types of Social Problem-Solving and Self-Esteem

Hypothesis 3: Within the anorexic group, elements of social problem-solving pertaining to negative problem orientation and avoidance type problem-solving will be significantly related to eating pathology.

An examination of the subscales of social problem-solving that related to eating pathology in the anorexic group revealed that both problem orientation subscales of positive problem orientation and negative problem orientation were significantly correlated with eating pathology. Further, the only actual problem-solving type to be significantly related to eating pathology was avoidance style. Rational problem-solving and impulsivity carelessness were not significantly related to eating pathology. However, an interesting finding was that

positive problem orientation, negative problem orientation and avoidance style all correlated mainly with concerns regarding weight and shape, as opposed to restraint. This seems to suggest that the anorexic individuals in the current sample poor approaches to solving problems are impacting on their concerns regarding their weight and shape but does not seem to be affecting the way the think about their food intake.

These results seem to be consistent with previous literature examining coping and problem-solving in anorexia. For example, Koff & Sangani (1997) reported that individuals with anorexia tended to report using emotion-focused or avoidance-focused coping, as opposed to problem-focused coping. The authors also reported that this type of coping was significantly related to decreased levels of psychological functioning, which indicates that employing maladaptive coping strategies may affect level of pathology. Troop, Holbery & Treasure (1998) & Troop & Treasure (1997) both reported avoidance orientated coping, as well as negative rumination and emotion focused coping, was related to increased eating pathology. Also, Geller, Cocknell & Goldner (2000) reported that anorexic individuals displayed high levels of negative interpersonal orientation, which, according to the authors, means that anorexic individuals tend to suppress negative emotions and avoid facing up to stressors or situations that may invoke negative feelings. Finally, Paterson *et al* (2006) examined problem solving in an anorexic population using the SPSI-R. The authors also found that positive problem orientation, negative problem orientation and avoidance style correlated positively with eating pathology, while rational problem solving and impulsivity did not, which are results that have been upheld in the current study.

Thus, the findings of the current study support the suggestion that individuals with anorexia nervosa employ a problem orientation style that involves a sense of inefficacy, lack

of control over problems, a tendency to view problems as threats instead of challenges and have negative ruminations regarding one's coping abilities. Further, these cognitive orientations tend to lead individuals with anorexia nervosa to employ avoidance type coping strategies, where the individual procrastinates, avoids thinking about the problem and distracts herself from the problem, possibly with anorexic type behaviours.

The usefulness of a problem-solving measure that examines both cognitive orientations, or cognitive appraisals of problems, as well as actual problem solving techniques becomes apparent here, as the high levels of avoidance type coping have been well documented in the literature. However, by examining the cognitive approaches behind this, it emerges that the anorexic individual's sense of inefficacy and threat when faced with problems and stressors may be behind the high levels of avoidance.

Hypothesis 4: Within the anorexic group, elements of self-esteem pertaining to self-worth and self-competence will be significantly related to high levels of eating pathology.

Within the anorexic group, low global self-esteem was associated with all measures of eating pathology, namely, global self-esteem, restraint, eating concern, shape concern and weight concern. Of the self-esteem subtypes that represented the self-liking construct, low levels of likeability and lovability were related to all measures of eating pathology, except restraint. Likeability and lovability are the two subscales that seem to be most conceptually related to self-worth, which is the concept that most one-dimensional self-esteem scales seem most closely related to, therefore, that these elements of self-esteem are highly related to eating pathology would seem to support previous literature. While low body appearance

related to global eating pathology and shape and weight concern only, moral self-approval did not relate to eating pathology at all, indicating that eating pathology is not affected by one's sense of living up to one's self-imposed moral code. It is possible that the anorexic individuals moral code is enmeshed in their anorexic pathology and thus the anorexic individual feels that they are succeeding in living by their self-imposed rules by being a 'successful' anorexic.

It makes sense that low negative views of body appearance would relate to eating pathology. However, again it is interesting that none of these elements of self-esteem relate to restraint behaviour but more to concerns regarding eating, weight and shape. Thus it would appear that the anorexic's fears and concerns regarding their eating behaviours and appearance have a greater impact on self-worth than the actual act of restricting food intake.

The elements of self-esteem that comprise the self-competence construct are competence, personal power, self-control and body functioning. Again, unsurprisingly, negative views of body functioning related strongly to all measures, except eating concern. Low self-control was more weakly related to all measures except restraint, which suggests that there is a relationship between high levels of concern about one's eating behaviours and appearance and lack of control, but that this seems less important than self-worth. Personal power and competency was less significantly related to eating pathology and again none of the competency based self-esteem subtypes were related to restraint, which indicates that there is no relationship between the anorexic's sense of self-efficacy and how much she restricts her food intake, however, there does appear to be a connection between low self-efficacy and high levels of concern regarding eating behaviours and appearance.

One explanation for the lack of correlation between self-esteem and restraint may be that the level of restriction creates a false sense of efficacy and worth within the anorexic individual and compensates for the level of distress caused by eating and appearance. Thus the anorexic individual's self-esteem is falsely increased by restriction. However, as all the concern components are related to low self-esteem, this suggests that restriction does not alleviate concerns regarding eating and appearance This is also supported by research, which reports that a sense of being in control is one of the pervading features of anorexia nervosa and a feature that tends to play a role in the maintenance of the condition (Eviors *et al*, 2003; Kaplan & Garfinkel, 1999).

Finally, low identity integration yielded less obvious correlations with most of the eating pathology subscales but was highly significantly associated with weight concern. Identity integration comprises a measure of cohesiveness of self, which has been found to be related to psychological and physical well-being. For example, Donahue, Robins, Roberts & John (1993) and Sheldon, Ryan, Rawsthorne & Ilardi (1997) both reported that self-integration was a significant predictor of psychological and physical functioning. Therefore, it would be expected that identity integration would be related to pathology. Defensive self-enhancement was found not be related to eating pathology at all in the anorexic group.

In summary, the main findings to come out of an examination of the subtypes of self-esteem in anorexia nervosa are twofold. Firstly, that both elements of self-worth and self-competency are significantly related to eating pathology. This supports the bulk of literature examining self-esteem in anorexia, for example, studies examining one-dimensional self-esteem have consistently found a relationship between high levels of eating pathology and low self-esteem (Button & Warren, 2002; Williams et al, 1994). Further, studies examining

self-efficacy in eating pathology have consistently reported a connection between low self-efficacy and eating pathology (Marinilli *et al*, 2006). However, the only study to date to compare two-dimensional self-esteem in anorexia reported that self-competency only related to eating pathology (Paterson *et al*, 2006). One explanations for this result is, that the measure employed was more weighted toward competency being relevant in the population under examination. A study by Tafarodi & Walters (1999) examined levels of self-liking and self-competence in UK and Spanish populations, with the premise being that UK culture was more individualistic and goal orientated, while Spanish culture incorporated a more collectivist society. The authors hypothesised that self-competence would be higher in the UK-individualist culture and self-liking would be higher in the Spanish-collectivist culture. Results supported this in terms of self-competency, which was found to be higher in the UK sample, suggesting that competency may be more valued in the UK population and thus more sensitive to the effects of pathology, whilst self-liking may be more robust. Another reason for the paradoxical self-esteem response could be that the anorexic individuals the study were examined at various points in treatment. Therefore, self-worth may have improved as a treatment effect. Thus, the results of the current study seem to be supportive of the bulk of the literature, suggesting that both self-esteem constructs are significant to eating pathology.

The second important finding to emerge from the current study's examination of multi-dimensional self-esteem in an anorexic population was that most subscales of both self-worth and self-competency related to global eating pathology and concerns regarding weight, shape and eating, but few correlated significantly with restraint. This suggests that while self-esteem has consistently found to be related to eating pathology in previous studies, that self-esteem may actually be impacting on specific elements of eating pathology that focus on

cognitive ruminations regarding eating and physical appearance rather than the actual food restriction.

4.1.4: Associations between Social Problem-Solving and Self-Esteem

In the anorexic group, social problem-solving and self-esteem were highly intercorrelated. Negative problem orientation correlated highly significantly with all self-esteem subtypes indicating a strong association between self-esteem and this type of problem solving approach. Positive problem orientation also yielded highly significant correlations with a number of worth and competency based self-esteem subtypes indicating a lack of this problem solving style is also associated with low self-esteem. However, the only actual problem solving style to be highly correlated with a number of self-esteem subtypes was avoidance type coping.

Negative problem orientation appears to be conceptually similar to the self-competence component of self-esteem, incorporating feelings of low self-efficacy. It is, therefore, not too surprising that negative problem orientation correlates significantly with self-competence and self-liking. D'Zurilla, Maydeu-Olivares & Kant (1998) propose that while negative problem orientation is conceptually similar to self-efficacy, negative problem orientation tends to be situationally relevant, whilst low self-efficacy is a more general sense of ineffectiveness. It is possible, therefore, that negative problem orientation is amenable to treatment effects and, as it has been demonstrated that these factors affect each other, it is possible that improvements in negative problem orientation may facilitate improvements in self-efficacy, by improving confidence and a sense of power and control.

It is also interesting that the social problems solving subtypes that yielded the most significant correlations with self-esteem were also the components that yielded the most significant correlations with eating pathology. This indicates a relationship between these three variables, which was later demonstrated with path analysis.

4.1.5: Analyses of Subtypes of Social Problem-Solving and Self-Esteem in the Control Group

In comparison with the anorexic group, the control group displayed a slightly different correlational pattern between self-esteem and eating pathology, with concerns regarding eating, weight and shape yielding some strong correlations with more competency based self-esteem subtypes and less correlations with the worth based self-esteem subtypes. This suggests that in women without eating disorders concerns regarding weight and shape may affect their sense of competency but have less of an impact on self-worth. However, that concerns regarding one's eating habits and weight is affecting self-esteem levels in this group indicates that, even in women with low levels of eating pathology, levels of concern about eating and body shape, in particular, have a negative impact on levels of self-esteem. This is supported by previous research which indicates that eating concerns can affect self-esteem in non-eating disordered women. For example, Button *et al* (1996) reported that low self-esteem predicted increased levels of eating disordered thoughts and behaviours, four years later, in a non-clinical sample of adolescents. Also, a recent study by Bardone-Cone & Cass (2006) examined levels of self-esteem and body image in non-eating disordered adolescents before and after viewing pictures of extremely slender women. The results of the study indicated that the teenagers displayed significantly lower levels of self-esteem and satisfaction with their bodies after viewing the pictures.

The control group also showed far fewer significant correlations between pathology and social problem solving, indicating that low levels of functional social problem-solving and high levels of maladaptive social problem-solving are only highly relevant to eating pathology when eating pathology is clinically relevant. This may have implications for the development of eating pathology, for it seems that social problem solving and self-esteem are highly significant to eating pathology in clinical populations, but only self-esteem is relevant to eating pathology in non-clinical populations. Thus, the presence of ineffective problem solving may be significant in facilitating or hindering the development of clinically relevant eating pathology.

Finally, the control group displayed correlations between social problem-solving and self-esteem that were comparable to the anorexic group in terms of significance and patterns, with negative problem orientation again yielded highly significant correlations to most of the self-esteem subtypes. Again this highlights the importance of this problem solving approach to the role of self-esteem.

4.1.6: The Mediational Model of Social Problem-Solving & Self-Esteem in Anorexia

The above results have generated three main conclusions. Firstly, we have seen that the current study supports previous literature in that problem orientation, that is, the cognitive processes whereby one approaches problems is significant to eating pathology and also that avoidance type coping is specific to eating pathology. Secondly, we have seen that when using a multi-dimensional model of self-esteem, which deconstructs the two-dimensions of self-esteem down into components of worth and competency, elements of both self-esteem constructs are significant to elements of eating pathology related to concerns regarding eating, weight and shape, but less significantly related to restraint. Finally, we have seen that

self-esteem and social problem solving are highly intercorrelated with each other. However, a further aim of the current study was to examine the interactions between social problem-solving and self-esteem in relation to anorexia nervosa. Specifically, to examine the potentially mediating effect of self-esteem on the relationship between social problem-solving and eating pathology.

Hypothesis 5: Within the anorexic group, self-esteem will mediate social problem-solving in relation to eating pathology.

Previous research using an anorexic inpatient sample reported that self-esteem mediated the relationship between social problem solving and eating pathology (Paterson *et al*, 2006) that is, that the relationship between social problem-solving and eating pathology exists only through the effect that self-esteem has on these variables. In order to examine whether self-esteem mediated the relationship between eating pathology and social problem solving in the current sample, path analyses were conducted. For the purposes of clarity, the variables of global self-esteem and global eating pathology were employed, and three separate path analyses were conducted examining the mediating effect of global self-esteem on the relationship between eating pathology and positive problem orientation, negative problem orientation, and avoidance sub-types of social problem-solving, respectively. The results of the analyses provided support for the previous literature and for the hypothesis that self-esteem mediates the relationship between eating pathology and social problem solving.

Previous research suggested that this mediational pattern was specific to the anorexic group and was not repeated in the control group. However, we have seen that social problem solving is significant to eating pathology in the anorexic group but far less so in the non-

clinical group. The results of the current study suggest that self-esteem is having a mediational effect on eating pathology and the problem orientation constructs of social problem solving but not on the actual problem solving constructs. The discrepancies in these results may have been caused by the use of different eating pathology measures. The measure employed in the current study has no specific cut off point for diagnostic purposes, therefore, while the control sample's level of eating pathology was significantly less than the anorexic group's it is possible that some participants in this group are displaying sub-clinical levels of eating pathology. As the literature suggested, a significant percentage of females in a normal population do present with sub-clinical levels of eating pathology (Bunnell, Shenker, Nussbaum, Jacobson & Cooper, 1989; Shisslack, Crago & Estes, 1995).

Hypothesis 6: Within the mediational model, a feedback effect will be apparent, with eating pathology impacting on social problem-solving through the mediational effect of self-esteem.

The directionality of effect in the mediational model was investigated with the hypothesis being that self-esteem would also mediate the relationship between social problem solving and eating pathology in terms of the effect eating pathology has on social problem-solving. Again this hypothesis was supported and a reciprocal direction of effect was revealed. Put plainly, this means that social problem-solving affects eating pathology, but eating pathology also affects social problem solving, both, through the existence of low self-esteem. The mediational effect of self-esteem holds true in both models. However, statements regarding causality must be made with caution.

It is suggested from the result of the current study, as well as previous literature, that the majority of individuals with anorexia have maladaptive problem solving skills. However, it is also clear from previous studies that poor problem solving is not exclusive to anorexia, and is evident in a range of pathologies, thus not all individuals with poor problem solving have anorexia. Therefore, going back to the cognitive-behavioural theory of anorexia nervosa, it is possible that poor problem solving facilitates the development of anorexia and then the existence of the anorexic pathology maintains the poor problem solving via the influence of low self-esteem. However, it is equally possible that the existence of eating pathology facilitates poor problem-solving, as the results of the current study can make no firm claims regarding causality.

What does seem clear from the current study, however, is the pivotal role of self-esteem in the relationship between social problem solving and eating pathology, regardless of the direction of this relationship, self-esteem appears to be having a mediational effect. This lends support to previous literature, which suggests that self-esteem plays a mediating role between other variables and pathology (Flett, Hewitt, Blankstien & O'Brien, 1991; Preusser, Rice & Ashby, 1994; Rice, Ashley & Slaney, 1998). This result also lends support to the studies by Fredrick & Grow (1996) who reported that self-esteem mediated the relationship between autonomy and eating pathology and Paterson *et al* (2006) who reported that self-esteem mediated the relationship between social problem-solving and eating pathology.

4.2: General Discussion

The current study is the first to examine multidimensional self-esteem with social problem-solving in an anorexic inpatient population. Whilst, the results, principally, support previous research, there are also some interesting correlations between subtypes. The

main findings are, firstly, that both low self-worth and low self-competency are relevant to eating pathology. Secondly, low self-esteem is relevant to concerns regarding eating, weight and shape but less so to restraint. Thirdly, problem orientations are extremely important in the development of anorexic pathologies, as is avoidance type coping. Finally, whilst social problem-solving and self-esteem are extremely highly correlated with each other, self-esteem appears to mediate the relationship between social problem-solving and eating pathology. This mediational model was found to be bi-directional, thus statements regarding causality cannot be made.

The current study has drawn upon etiological theories of anorexia to propose a mediational model whereby self-esteem facilitates the relationship between eating pathology and social-problem solving. This hypothesis was based upon information derived from the cognitive-behavioural model of anorexia, which proposes that anorexia nervosa develops out of a sense of ineffectiveness and lack of identity, which makes the anorexic individual feel lacking in control, efficacy and worth and leads to the development of eating pathology. Research examining effectiveness in anorexia has reported that problem solving and coping is poor, while research examining self-esteem components of worth and efficacy have reported that self-esteem in low. Furthermore, research exists to suggest that poor problem solving and self-esteem impact negatively upon each other. Thus, the current study has attempted to consider these factors within a model whereby problem-solving impacts on eating pathology through the effect of self-esteem, whilst also considering the reciprocal effect these components have on each other.

There are a number of pitfalls that can be encountered when applying mediational models to dynamic concepts such as those clinical psychologists are usually interested in.

According to Baron & Kenny (1986), in a mediational model, the independent variable must cause the mediator variable, which then leads to the outcome variable, creating an indirect link between the independent variable and the outcome variable. In the current study, we have seen that the mediator variable (self-esteem) mediated the relationship between the independent variables (social problem solving subtypes) and the outcome variable (eating pathology). However, what is less clear is the manner in which social problem solving affects self-esteem. We have seen from the mediational models that the relationship between self-esteem and social problem solving is bi-directional, i.e., they both affect each other. The research support this reciprocity of problem solving and self-esteem, with Campbell & Fairy (1997) & Zuckerman (1979) both suggesting a causal relationship with social problem solving affecting self-esteem, and Cui & Valliant (1997) & Hammen (1991) suggesting that self-esteem has an equal impact on social problem solving.

To put the model postulated in the current study within the context of the cognitive-behavioural model, the following could be proposed. Anorexic individuals have been found to have a poor sense of effectiveness and a lack of identity, which impacts on self-efficacy and self-worth. Thus the anorexic sets unrealistically high standards for herself, which she thinks, if she is able to meet, will help her to gain a sense of effectiveness. Thus, the anorexic pathologies emerge as a means of gaining a sense of mastery and self-worth. However, as the standards set are unattainable, these pathologies actually serve to maintain the deficits in self-esteem and social problem-solving. Researchers have suggested that individuals with anorexia nervosa have high/strict self-imposed expectations, and report feeling under pressure to meet perceived expectations of others, and that these findings are not replicated in control groups of non anorexic individuals (Cocknell, Hewitt, Sherry, Goldner, Flett & Remick, 2002; Hewitt, Flett & Ediger, 1995).

Perfectionism has been found to be a significant factor in the anorexic personality, with Shafran, Cooper & Fairburn (2002) and Wonderlich (1997) describing high levels of perfectionism within anorexic populations, with high levels of perfectionism being associated with increased pathology, obsessionality, social withdrawal and unrelentingly high personal standards. Further, Sutandar-Pinnock, Woodside, Carter, Olmsted & Kaplan (2002) reported that level of perfectionism was a predictor for treatment outcome in anorexia nervosa, with those reporting a higher level of perfectionism at admission showing poorer treatment response at follow-up. Thus the perfectionistic personality style within anorexia nervosa seems to fit with the above model. The current study appears to lend support to the cognitive-behavioural model of anorexia nervosa, focusing specifically on the roles of social problem-solving and self-esteem and providing steps towards an elucidation of the roles of these variables by suggesting a mediational function of self-esteem. However, the issue of causality remains unclear and a potential area for future research.

4.3: Treatment Implications of the Findings of the Current Study

The results of the current study lend support for a model of social problem-solving that involves examining the cognitive processes involved as well as the actual problem-solving, as it is likely that, from a psychological perspective, these elements of problem-solving are particularly relevant and may be most amenable to treatment. Self-esteem clearly plays a highly significant role in the development and maintenance of eating pathology. The current study attempted to examine multidimensional self-esteem within an anorexic population and the results have indicated that elements of self-esteem that relate to both self-worth and self-competence are relevant to specific elements of the anorexic pathology, particularly those to do with concerns regarding eating, weight and shape. Thus, treatment

programmes devised for individuals with anorexia may wish to consider that worth and competency impact significantly on specific elements of the anorexic pathology.

The mediational role of self-esteem in the relationship between eating pathology and social problem-solving also has significant implications for treatment as the role of self-esteem appears to be affecting both eating pathology and facilitating the impact of poor problem solving on eating pathology. Many treatment programmes for anorexia nervosa will focus on practical, behavioural techniques to increase weight. While these techniques can be successful, particularly in inpatient programmes, it is clear that, unless the underlying cognitive elements that are motivating the anorexic to maintain her behaviours are addressed, then the beliefs on which these anorexic behaviours are founded will still exist, which increases the possibility of non-treatment compliance and relapse. Whilst these cognitive elements are multi-factorial, from the results of the current research it can be conjectured that, specific elements of both social problem-solving and self-esteem have particular relevance to the specific elements of the anorexic pathology.

4.4: Methodological Limitations of the Current Study

The current study benefits from the use of a non-clinical control to compare the results of the clinical sample, in terms of assessing the interactions between variables. However, ultimately, the current study may also have benefited from the inclusion of the clinical control group that the researcher had hoped to recruit. Thus, future research may wish to examine the hypotheses of the current study with other clinical groups such as those suffering from anxiety and depression. It would be of both academic and clinical relevance to examine multidimensional self-esteem and social problem-solving in these groups as well as the mediational model described in the current study. While it is very possible that the

interaction between social problem-solving and self-esteem would be similar in other pathologies, it may be that specific elements of social problem-solving and self-esteem have particular relevance to other pathologies. For example, body appearance may be more relevant in an eating pathology group than say a depressed group.

Further, the recruitment of an anorexic group at one time-point only, seems to be more methodologically rigorous in terms of controlling for treatment effects. However, in practice, this may not comprise a 'typical' anorexic group and, in the current study, this has meant that an extremely ill group of anorexic individuals has been assessed , as was reflected in the severity and distribution of the scores within the anorexic group. Therefore, while collecting data at admission has the benefit of controlling for treatment effects across the sample, the results would perhaps be different if the relationship between self-esteem and social problem-solving were examined at different points in treatment or with individuals receiving outpatient treatment and future treatment may need to address this by examining relationships between variables at different point in treatment.

4.5: Directions for Future Research

Obviously the conclusions drawn from the results of the current study are tentative and more investigation would be prudent before clear statements about the role of self-esteem and social problem solving in anorexia could be made. However, support for the mediational role of self-esteem is expanding. There are a number of directions that future research could take. One is to continue to examine the role of multi-dimensional self-esteem in anorexia, as larger samples or longitudinal designs might elucidate the importance of specific self-esteem elements. Whilst the impact of the different self-esteem subtypes on eating pathology are very subtle and hard to detect statistically due to the high correlations between them, these

differences may have important clinical implications, in terms of treatment adherence and effectiveness.

Furthermore, anorexia nervosa is a multi-factorial condition, with a myriad of psychological components comprising the anorexic pathology and current behaviours. The current study has attempted to examine how two of these factors, namely self-esteem and social problem-solving, connect to eating disorders and also how these variables affect each other within the framework of a cognitive-behavioural model, using multidimensional measures in an attempt to consider all aspects of these two constructs. However, it is clear that self-esteem and social problem-solving comprise only a small segment of the anorexic pathology and investigation of other related variables may provide steps toward elucidating the etiological and maintaining processes within the anorexic pathology. Specifically, future research may wish to examine the role of perfectionism in the development of maladaptive problem-solving and subsequent low self-esteem in an anorexic population.

The current study is the first to examine multidimensional self-esteem in an anorexic population and further research is needed to elucidate which elements are most pertinent to the anorexic pathology. It is worth considering that, while subtle differences between self-esteem sub-types may be difficult to detect statistically, due to the enormous correlation between the sub-types, these differences may have clinical importance, in terms of understanding the anorexic development and improving treatment compliance and success.

4.6: Summary & Conclusions

In conclusion, the results of the current study lend support for the importance of considering social problem solving and self-esteem as multidimensional constructs. Social

problem-solving as a construct encompassing both cognitive orientation and actual problem solving and self-esteem as a construct that incorporates the elements of self-worth and self-competence. The results of the current study also support previous research which has postulated a mediational model of self-esteem, where self-esteem mediates the relationship between social problem-solving and eating pathology and may offer support to the cognitive-behavioural theory, which has proposed that feelings of ineffectiveness and lack of self-concept are predictors of eating pathology. The role of self-esteem as both precipitating and maintaining anorexic pathologies is speculated. However, as the mediational effect of self-esteem was found to be bi-directional, with social problem-solving and eating pathology impacting on each other through the mediational effect of self-esteem, then statements of causality cannot be made. Self-esteem and social problem-solving are dynamic psychological constructs which have a high level of correlation, thus elucidating casual relationships within these constructs is extremely difficult. The current study has some methodological weaknesses, which could have been improved by the recruitment of a clinical control group and a longitudinal design, and the researcher proposes these as potential areas for future research along with examining the role of perfectionism in the development of maladaptive problem-solving and low self-esteem in anorexia. Finally, the results of the current study have treatment implications, specifically in terms of the pivotal role of self-esteem in the anorexic presentation.

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Appendix I

Ethical Approval from Priory Hospital, Glasgow

Date:	Mon, 31 Jul 2006 13:04:43 +0100
From:	"David Grierson" <DavidGrierson@prioryhealthcare.com> |
Subject:	RE: Urgent request
To:	<gillian.paterson@nhs.net>
Cc:	"Alex Yellowlees" <AlexYellowlees@prioryhealthcare.com>, "Katy Park" <KatyPark@prioryhealthcare.com>, "Stuart Cummings" <StuartCummings@prioryhealthcare.com>

Dear Gillian
I can confirm that the project entitled 'The relationship between Social Problem-
Solving & Self-Esteem in Anorexia Nervosa' has been granted ethical approval by the Priory Hospital Glasgow.

I trust that this will meet with your requirements and thank you once again for all your hard work and we look forward to seeing the published paper

Kind regards
David Grierson
Hospital Director

Appendix II

Ethical Approval from University of Stirling & University of Abertay

Date:	Mon, 17 Apr 2006 10:06:18 +0100
From:	"James Anderson" <j.r.anderson@stir.ac.uk> |
Subject:	RE: Paterson ethics
To:	<gillian.paterson@nhs.net>
Cc:	"Ronan O'Carroll" <ronan.ocarroll@stir.ac.uk>, "Anna L Fenge" <a.l.fenge@stir.ac.uk>

Gillian,

This is to inform you that your proposal entitled:

"The relationship between self-esteem and social-problems solving in anorexia nervosa"

has been approved by the psychology Ethics Committee.

Jim Anderson
Chair, Psychology Ethics Committee

MEMO

UNIVERSITY OF ABERTAY DUNDEE

Secretariat

FROM: Dr H Sveinsdottir

DATE: 2 June 2006

TO: **Miss Gillian Paterson**

CC: Chair of Research Ethics Sub-Committee

Dr Paula Collin, Project Supervisor

Dr Sean Harper, Project Supervisor

APPLICATION FOR ETHICAL APPROVAL OF RESEARCH

Thank you for submitting your application to a meeting of the Research Ethics Sub-Committee on 16 May 2006, seeking ethical approval for the inclusion of students from the University of Abertay in your research study.

Outcome

I can confirm that after consideration of your proposal, 'The Relationship between Self-Esteem and Social Problem-Solving in Anorexia Nervosa', the Sub-Committee agreed to approve your request to include students from the University of Abertay in a control (non-clinical) group for this study. The Sub-Committee emphasised, however, that provisions must be made for a medical or psychological referral path for the control sample should any medical issues arise in relation to the study. The Sub-Committee further recommended that you advise Tayside LREC as soon as possible that the University of Abertay Dundee is now a part of this study.

H Sveinsdottir

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Dr H Sveinsdottir
Senior Administrative Officer
Secretariat

Appendix III

Ethical Approval from Tayside Committee for Medical Research Ethics

Tayside Committee on Medical Research Ethic
B
Level 9
Ninewells Hospital & Medical School
DUNDEE
DD1 9SY
Telephone Number: 01382 632701
Fax Number: 01382 496207
www.nhstayside.scot.nhs.uk

NHS Tayside

Miss Gillian Paterson
Trainee Clinical Psychologist
Tayside Primary Care
Murray Royal Hospital
Muirhall Road
Perth
PH2 7BH

Date	16 March 2006
Your Ref	
Our Ref	NFB/JM/**06/S1402/14**
Enquiries to	Mr Nigel F Brown
Extension	32701
Direct Line	01382 632701
Email	nigel.brown@tuht.scot.nhs.uk or fiona.bain@tuht.scot.nhs.uk

Dear Miss Paterson

Full title of study: **The Relationship between Self-esteem and Social Problem-solving in Anorexia Nervosa**

REC reference number: **06/S1402/14**

Thank you for your letter of 21 February 2006, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Administrator.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

Conditions of approval

The favourable opinion is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Application		13 January 2006
Investigator CV	Supervisor CV - Dr Sean Harper	09 January 2006
Investigator CV	Supervisor CV - Dr Paula Collin	13 December 2005
Investigator CV	Miss Gillian Paterson	13 January 2006
Protocol	V 1	09 January 2006
Covering Letter		13 January 2006
Questionnaire	(SPSI-R) Questionnaire	
Questionnaire	The Eating Disorders Examination - Questionnaire (EDE-Q)	
Participant Information Sheet	Tayside Participant Information Sheet - V 2	21 February 2006
Participant Information Sheet	Stirling Undergraduate Participant Information Sheet - V 2	21 February 2006

Document	*Version*	*Date*
Participant Consent Form	V2	21 February 2006
Response to Request for Further Information	Covering Letter	21 February 2006
Other	The Multidimensional Self-Esteem Inventory (MSEI)	
Other	Supervisor Introductory Covering Letter - V1	09 January 2006
Other	Letter from AON Commercial Insurance	22 August 2005
Other	Demographics Page	
Other	The Symptom Checklist-90 (SCL-90)	

Research governance approval

The study should not commence at any NHS Tayside site until the local Principal Investigator has obtained final research governance approval from NHS Tayside R&D Department.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

06/S1402/14	**Please quote this number on all correspondence**

Yours sincerely

N.F. Brown

for **Chair**

Enclosures: Standard approval conditions

Copy to: Dr Sean Harper, University of Edinburgh
NHS Tayside R & D

Appendix IV

Letter of invitation for participants

NHS
Tayside

Primary Care Division
NHS Tayside
Murray Royal Hospital
Muirhall Road
Perth
PH2 7BH
Tel No: 01738 562 383
Fax No: 01738 562 260
www.nhstayside.scot.nhs.uk

Dear Sir or Madam

I am a Trainee Clinical Psychologist studying at Edinburgh University and working in Tayside Clinical Psychology Department. I am conducting a research study as part of my training in Tayside and I am looking for participants to take part in this study. My area of interest is concerned with the relationship between self-esteem and social problem solving in anorexia nervosa. I am recruiting **participants with anorexia, participants who are seeking treatment for other psychological problems beside anorexia and a control sample of university students**.

I would be grateful if you would take time to read the enclosed information pack and think about whether or not you would be willing to participate in this study. If you agree to participate please return your completed consent form and completed questionnaires in the separate stamped addressed envelopes provided **within two weeks**. If you are not interested in participating, please discard this information pack or return it blank.

If you have any further enquires please do not hesitate to contact me via the contact information provided on the enclosed Information Sheet.

Many thanks for your time.

Yours sincerely

Gillian Paterson
Trainee Clinical Psychologist

POSITIVE ABOUT DISABLED PEOPLE

Appendix V

Clinical Supervisors letter to Participants

Primary Care Division
NHS Tayside
Murray Royal Hospital
Muirhall Road
Perth
PH2 7BH
Tel no: 01738 562 383
Fax no: 01738 562 260
www.nhstayside.scot.nhs.uk

NHS Tayside

Dear Participant,

Self-Esteem & Social Problem-Solving in Anorexia Nervosa

I write to confirm that Gillian Paterson is carrying out a research project as part of her Clinical Psychology training. I am acting as her Clinical Supervisor and have agreed that she may contact you with an invitation to take part in the research project. I would be grateful if you would take the time to read the attached Information Sheet and consider taking part and I would be pleased to provide you with further information or answer any questions you may have concerning the project.

Yours sincerely,

Paula Collin

Dr Paula Collin
Chartered Clinical Psychologist

Appendix VI

Information Sheets:

Tayside Participants
University of Stirling Participants
University of Abertay Participants

Primary Care Division
NHS Tayside
Murray Royal Hospital
Muirhall Road
Perth
PH2 7BH
Tel no: 01738 562 383
Fax no: 01738 562 260
www.nhstayside.scot.nhs.uk

NHS Tayside

Self-Esteem & Social Problem-Solving in Anorexia Nervosa

Tayside Participant Information Sheet

We invite you to participate in a research project. We believe it to be of potential importance. However, before you decide whether or not you wish to participate, we need to be sure that you understand why we are doing this research and what you would be asked to do should you agree to participate. Therefore, we are providing you with the following information. Please read it carefully and be sure to ask any questions you have and, if you want, discuss it with outsiders. We will do our best to explain and to provide any further information you may ask for, now or later. You do not have to make an immediate decision.

The Background to the Study

As part of ongoing work at the Priory Hospital Glasgow, Stirling University and NHS Tayside, we are conducting research into what factors may be important in developing and sustaining eating disorders. In this study we would like to examine self-esteem and social problem solving skills in a group of people who do not have eating disordered behaviour but are still experiencing some psychological difficulties.

What does the study entail?

As part of this study we would like to ask you to fill in four questionnaires. The questionnaires include a symptom checklist related to any psychological difficulties you may have at present, a questionnaire dealing with any eating disordered behaviour you may have at present, a questionnaire relating to your self-esteem and a questionnaire relating to your social problem-solving skills. The questionnaires are all multiple choice and it should take you about 20 minutes to complete them all. You can take the questionnaires home so you can take your time filling them in as accurately as possible. You can then return them at your next regular treatment session, sealed in the envelope provided or you can post them to me directly.

What will happen to the information collected in the study?

If you are willing to take part in the study, all the information about you and the responses that you give on the questionnaires will be confidential with no names or personal information being used in the write up of the study. The information you give will be collated with other responses to assess whether there are any patterns in self-esteem and social problem-solving skills and whether these are specific to eating disordered behaviours.

What are the possible discomforts or risks?

Some questions in the questionnaires may identify areas of difficulty that you had not fully considered before. If this happens and you feel you are having difficulty coping with them, you can speak to the psychologist who is currently treating you.

What are your rights?

Participation in the study is entirely voluntary and you are free to refuse to take part or to withdraw from the study at any time without having to give a reason. Whether you participate or not in the study will have no effect on your current or future medical or psychological care or your relationship with the health care staff looking after you.

The Tayside Committee on Medical Research Ethics, which has responsibility for scrutinising all proposals for medical research on humans in Tayside, has examined the proposal for this research and has raised no objections from the point of view of medical ethics. The committee will also receive regular reports from NHS Tayside Monitors who will examine the records of the research while it is in progress.

If you are willing to take part in this study please complete the consent form on the next page. This consent form will be kept separate from any information about you and the questionnaires you complete to protect your confidentiality. If you wish a copy of the overall results from the study you can get this on request from myself at the number below. The study will be completed by August 2006.

If you have any difficulties or further questions please contact me or leave a message for me to get back to you:

Gillian Paterson on telephone number: 01738 621 151

Thank you for reading this Information Sheet and considering taking part in the study.

Version 2
21/02/2006

Primary Care Division
NHS Tayside
Murray Royal Hospital
Muirhall Road
Perth
PH2 7BH
Tel no: 01738 562 383
Fax no: 01738 562 260
www.nhstayside.scot.nhs.uk

NHS Tayside

Self-Esteem & Social Problem-Solving in Anorexia Nervosa

Stirling University Participant Information Sheet

We invite you to participate in a research project. We believe it to be of potential importance. However, before you decide whether or not you wish to participate, we need to be sure that you understand why we are doing this research and what you would be asked to do should you agree to participate. Therefore, we are providing you with the following information. Please read it carefully and be sure to ask any questions you have and, if you want, discuss it with outsiders. We will do our best to explain and to provide any further information you may ask for, now or later. You do not have to make an immediate decision.

The Background to the Study

As part of ongoing work at the Priory Hospital Glasgow, Stirling University and NHS Tayside, we are conducting research into what factors may be important in developing and sustaining eating disorders. In this study we would like to examine self-esteem and social problem solving skills in a sample of non-eating disordered people.

What does the study entail?

As part of this study we would like to ask you to fill in four questionnaires. The questionnaires include a symptom checklist related to any psychological difficulties you may have at present, a questionnaire dealing with any eating disordered behaviour you may have at present, a questionnaire relating to your self-esteem and a questionnaire relating to your social problem-solving skills. The questionnaires are all multiple choice and it should take you about 20 minutes to complete them all. Additionally there is a short form asking your age, sex and whether you have had help for psychological difficulties in the past. You should return the questionnaires separately from the consent form, sealed in the envelope provided.

What will happen to the information collected in the study?

If you are willing to take part in the study, all the information about you and the responses that you give on the questionnaires will be confidential with no names or personal information being used in the write up of the study. The information you give will be collated with other responses to assess whether there are any patterns in self-esteem and social problem-solving skills and whether these are specific to eating disordered behaviours.

What are the possible discomforts or risks?

Some questions in the questionnaires may identify areas of difficulty that you had not fully considered before. If this happens and you feel you are having difficulty coping with them you can speak to me directly or to some of the services listed over.

What are your rights?

Participation in the study is entirely voluntary and you are free to refuse to take part or to withdraw from the study at any time without having to give a reason. Whether you participate or not in the study will have no effect on your present or future studies or your relationship with any of the staff at the university. If you wish a copy of the overall results from the study you can get this on request from myself at the number below. The study will be completed by August 2006.

The Stirling University Ethics Committee and the Tayside Committee on Medical Research ethics, which have responsibility for scrutinising all proposals for research conducted in the department have both examined the proposal for this research and has raised no objections from the point of view of medical ethics.

If you are willing to take part in this study please complete the consent form on the next page. This consent form will be kept separate from any information about you and the questionnaires you complete to protect your confidentiality.

If you have any difficulties or further questions please contact me or leave a message for me to get back to you:

Gillian Paterson on telephone number: 01738 621 151

Should any issues arise from completing the questionnaires there are a number of organisations that provide help with eating disorders or other psychological difficulties. These include the Eating Disorders Association whose telephone number is 01603 621 414, Stirling University Student Support Services on 01786 467 166 and Forth Valley Clinical Psychology Services who can be contacted through your GP or directly on 01324 574 370.

Thank you for reading this Information Sheet and considering taking part in the study.

Headquarters
King's Cross, Clepington Road, Dundee, DD3 8EA
Chairperson, Mr Peter Bates
Chief Executive, Professor Tony Wells

Primary Care Division
NHS Tayside
Murray Royal Hospital
Muirhall Road
Perth
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Fax no: 01738 562 260
www.nhstayside.scot.nhs.uk

NHS Tayside

Self-Esteem & Social Problem-Solving in Anorexia Nervosa

Student Participant Information Sheet

We invite you to participate in a research project. We believe it to be of potential importance. However, before you decide whether or not you wish to participate, we need to be sure that you understand why we are doing this research and what you would be asked to do should you agree to participate. Therefore, we are providing you with the following information. Please read it carefully and be sure to ask any questions you have and, if you want, discuss it with outsiders. We will do our best to explain and to provide any further information you may ask for, now or later. You do not have to make an immediate decision.

The Background to the Study

As part of ongoing work at the Priory Hospital Glasgow, Stirling University and NHS Tayside, we are conducting research into what factors may be important in developing and sustaining eating disorders. In this study we would like to examine self-esteem and social problem solving skills in a sample of non eating disordered people.

What does the study entail?

As part of this study we would like to ask you to fill in four questionnaires. The questionnaires include a symptom checklist related to any psychological difficulties you may have at present, a questionnaire dealing with any eating disordered behaviour you may have at present, a questionnaire relating to your self-esteem and a questionnaire relating to your social problem-solving skills. The questionnaires are all multiple choice and it should take you about 20 minutes to complete them all. Additionally there is a short form asking your age, height and weight and whether you have had help for eating disorders in the past. You should return the questionnaires separately from the consent form, sealed in the envelope provided.

What will happen to the information collected in the study?

If you are willing to take part in the study, all the information about you and the responses that you give on the questionnaires will be confidential with no names or personal information being used in the write up of the study. The information you give will be collated with other responses to assess whether there are any patterns in self-esteem and social problem-solving skills and whether these are specific to eating disordered behaviours.

What are the possible discomforts or risks?

Some questions in the questionnaires may identify areas of difficulty that you had not fully considered before. If this happens and you feel you are having difficulty coping with them you can speak to me directly or to some of the services listed over.

What are your rights?

Participation in the study is entirely voluntary and you are free to refuse to take part or to withdraw from the study at any time without having to give a reason. Whether you participate or not in the study will have no effect on your present or future studies or your relationship with any of the staff at the university. If you wish a copy of the overall results from the study you can get this on request from myself at the number below. The study will be completed by August 2006.

The Stirling and Abertay University Ethics Committee and the Tayside Committee on Medical Research ethics, which have responsibility for scrutinising all proposals for research conducted in the department have examined the proposal for this research and has raised no objections from the point of view of medical ethics.

If you are willing to take part in this study please complete the consent form on the next page. This consent form will be kept separate from any information about you and the questionnaires you complete to protect your confidentiality.

If you have any difficulties or further questions please contact me or leave a message for me to get back to you:

Gillian Paterson on telephone number: 01738 621 151

Should any issues arise from completing the questionnaires there are a number of organisations that provide help with eating disorders or other psychological difficulties. These include the Eating Disorders Association whose telephone number is 01603 621 414, Abertay University Student Support Services on 01382 308 051 and Tayside Clinical Psychology Services who can be contacted through your GP or directly on 01382 306 150.

Thank you for reading this Information Sheet and considering taking part in the study.

Version 2
21/02/2006

Appendix VII

Consent Form

Self-Esteem and Social Problem-Solving in Anorexia Nervosa

NHS Tayside

Consent Form

NB: This form must be completed and signed by the research participant in the presence of someone with knowledge of the research designated by the Principal Investigator. This may be a doctor, nurse, clinical research assistant or other member of the research team who must countersign the form as witness to the participant's signature.

Please circle the appropriate answer

Have you read and understood the Participant Information sheet?	Yes	No
Have you been given the opportunity to ask questions and further discuss this study?	Yes	No
Have you received satisfactory answers to your questions?	Yes	No
Have you received enough information about this study?	Yes	No
Who have you spoken to? Dr/Mr/Ms_____		
Do you understand that your participation is entirely voluntary?	Yes	No
Do you understand that you are free to withdraw from this study:		
▪ At any time?	Yes	No
▪ Without having to give any reason?	Yes	No
▪ Without this affecting your present or future medical care?	Yes	No
Do you agree to any information given in this study being retained for use in future research? :	Yes	No

Note that it is a statutory requirement that if you agree to take part in the study, your research records and, if necessary, your medical records are available for scrutiny by monitors of the sponsor organisation which may be the NHS, University or a commercial organisation funding the study) and, in the case of clinical trails of medicines, the UK Regulatory Authorities.

Do you agree to take part in this study?	Yes	No

Participants signature_____ Date_____

Participants name in block capital letters_____

Telephone Contact (Participant)_____

Signature Witnessed by_____ Date_____

Witness name in block capital letters_____

Thank you for agreeing to take part in this research

Version
21/02/2006

POSITIVE ABOUT DISABLED PEOPLE

Appendix VIII

Demographics Page

NHS
Tayside

Participant Cover Sheet

This booklet should contain copies of the following:

1. The Symptom Checklist – 90 (SCL-90)
2. The Eating Disorders Examination – Questionnaire (EDE-Q)
3. The Multi-dimensional Self-Esteem Inventory (MSEI)
4. The Social Problem Solving Inventory – Revised (SPSI-R)

Demographics Section

Please provide the following information:

Age: _____

Body Mass Index: _____

If you do not know your Body Mass Index please provide your approximately height & weight in whatever system your are most familiar with, e.g., feet & inches or meters, stones & pounds or kilos.

Height: _____

Weight: _____

Have you ever been treated by any mental health service for an eating disorder? (circle) Yes No

Many thanks. The questionnaires are overleaf. All questions are multiple choices, so you will not be required to provide written answers. Please ensure you have read and understood the information sheet and signed the consent form before continuing. Please read each question carefully and put your completed questionnaires in the envelope provided.

Many thanks for your participation.

POSITIVE ABOUT DISABLED PEOPLE

Appendix IX

Symptom Checklist-90-R (SCL-90-R)

INSTRUCTIONS:

Below is a list of problems people sometimes have. Please read each one carefully, and blacken the circle that best describes HOW MUCH THAT PROBLEM HAS DISTRESSED OR BOTHERED YOU DURING THE PAST 7 DAYS INCLUDING TODAY. Blacken the circle for only one number for each problem and do not skip any items. If you change your mind, erase your first mark carefully. Read the example before beginning, and if you have any questions please ask them now.

	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY	EXAMPLE HOW MUCH WERE YOU DISTRESSED BY:
1	(0)	(1)	(2)	●	(4)	Bodyaches

	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY	HOW MUCH WERE YOU DISTRESSED BY:
1	(0)	(1)	(2)	(3)	(4)	Headaches
2	(0)	(1)	(2)	(3)	(4)	Nervousness or shakiness inside
3	(0)	(1)	(2)	(3)	(4)	Repeated unpleasant thoughts that won't leave your mind
4	(0)	(1)	(2)	(3)	(4)	Faintness or dizziness
5	(0)	(1)	(2)	(3)	(4)	Loss of sexual interest or pleasure
6	(0)	(1)	(2)	(3)	(4)	Feeling critical of others
7	(0)	(1)	(2)	(3)	(4)	The idea that someone else can control your thoughts
8	(0)	(1)	(2)	(3)	(4)	Feeling others are to blame for most of your troubles
9	(0)	(1)	(2)	(3)	(4)	Trouble remembering things
10	(0)	(1)	(2)	(3)	(4)	Worried about sloppiness or carelessness
11	(0)	(1)	(2)	(3)	(4)	Feeling easily annoyed or irritated
12	(0)	(1)	(2)	(3)	(4)	Pains in heart or chest
13	(0)	(1)	(2)	(3)	(4)	Feeling afraid in open spaces or on the streets
14	(0)	(1)	(2)	(3)	(4)	Feeling low in energy or slowed down
15	(0)	(1)	(2)	(3)	(4)	Thoughts of ending your life
16	(0)	(1)	(2)	(3)	(4)	Hearing voices that other people do not hear
17	(0)	(1)	(2)	(3)	(4)	Trembling
18	(0)	(1)	(2)	(3)	(4)	Feeling that most people cannot be trusted
19	(0)	(1)	(2)	(3)	(4)	Poor appetite
20	(0)	(1)	(2)	(3)	(4)	Crying easily
21	(0)	(1)	(2)	(3)	(4)	Feeling shy or uneasy with the opposite sex
22	(0)	(1)	(2)	(3)	(4)	Feelings of being trapped or caught
23	(0)	(1)	(2)	(3)	(4)	Suddenly scared for no reason
24	(0)	(1)	(2)	(3)	(4)	Temper outbursts that you could not control
25	(0)	(1)	(2)	(3)	(4)	Feeling afraid to go out of your house alone
26	(0)	(1)	(2)	(3)	(4)	Blaming yourself for things
27	(0)	(1)	(2)	(3)	(4)	Pains in lower back
28	(0)	(1)	(2)	(3)	(4)	Feeling blocked in getting things done
29	(0)	(1)	(2)	(3)	(4)	Feeling lonely
30	(0)	(1)	(2)	(3)	(4)	Feeling blue
31	(0)	(1)	(2)	(3)	(4)	Worrying too much about things
32	(0)	(1)	(2)	(3)	(4)	Feeling no interest in things
33	(0)	(1)	(2)	(3)	(4)	Feeling fearful
34	(0)	(1)	(2)	(3)	(4)	Your feelings being easily hurt
35	(0)	(1)	(2)	(3)	(4)	Other people being aware of your private thoughts
36	(0)	(1)	(2)	(3)	(4)	Feeling others do not understand you or are unsympathetic
37	(0)	(1)	(2)	(3)	(4)	Feeling that people are unfriendly or dislike you

	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY	HOW MUCH WERE YOU DISTRESSED BY:
38	0	1	2	3	4	Having to do things very slowly to insure correctness
39	0	1	2	3	4	Heart pounding or racing
40	0	1	2	3	4	Nausea or upset stomach
41	0	1	2	3	4	Feeling inferior to others
42	0	1	2	3	4	Soreness of your muscles
43	0	1	2	3	4	Feeling that you are watched or talked about by others
44	0	1	2	3	4	Trouble falling asleep
45	0	1	2	3	4	Having to check and double-check what you do
46	0	1	2	3	4	Difficulty making decisions
47	0	1	2	3	4	Feeling afraid to travel on buses, subways, or trains
48	0	1	2	3	4	Trouble getting your breath
49	0	1	2	3	4	Hot or cold spells
50	0	1	2	3	4	Having to avoid certain things, places, or activities because they frighten you
51	0	1	2	3	4	Your mind going blank
52	0	1	2	3	4	Numbness or tingling in parts of your body
53	0	1	2	3	4	A lump in your throat
54	0	1	2	3	4	Feeling hopeless about the future
55	0	1	2	3	4	Trouble concentrating
56	0	1	2	3	4	Feeling weak in parts of your body
57	0	1	2	3	4	Feeling tense or keyed up
58	0	1	2	3	4	Heavy feelings in your arms or legs
59	0	1	2	3	4	Thoughts of death or dying
60	0	1	2	3	4	Overeating
61	0	1	2	3	4	Feeling uneasy when people are watching or talking about you
62	0	1	2	3	4	Having thoughts that are not your own
63	0	1	2	3	4	Having urges to beat, injure, or harm someone
64	0	1	2	3	4	Awakening in the early morning
65	0	1	2	3	4	Having to repeat the same actions such as touching, counting, or washing
66	0	1	2	3	4	Sleep that is restless or disturbed
67	0	1	2	3	4	Having urges to break or smash things
68	0	1	2	3	4	Having ideas or beliefs that others do not share
69	0	1	2	3	4	Feeling very self-conscious with others
70	0	1	2	3	4	Feeling uneasy in crowds, such as shopping or at a movie
71	0	1	2	3	4	Feeling everything is an effort
72	0	1	2	3	4	Spells of terror or panic
73	0	1	2	3	4	Feeling uncomfortable about eating or drinking in public
74	0	1	2	3	4	Getting into frequent arguments
75	0	1	2	3	4	Feeling nervous when you are left alone
76	0	1	2	3	4	Others not giving you proper credit for your achievements
77	0	1	2	3	4	Feeling lonely even when you are with people
78	0	1	2	3	4	Feeling so restless you couldn't sit still
79	0	1	2	3	4	Feelings of worthlessness
80	0	1	2	3	4	The feeling that something bad is going to happen to you
81	0	1	2	3	4	Shouting or throwing things
82	0	1	2	3	4	Feeling afraid you will faint in public
83	0	1	2	3	4	Feeling that people will take advantage of you if you let them
84	0	1	2	3	4	Having thoughts about sex that bother you a lot
85	0	1	2	3	4	The idea that you should be punished for your sins
86	0	1	2	3	4	Thoughts and images of a frightening nature
87	0	1	2	3	4	The idea that something serious is wrong with your body
88	0	1	2	3	4	Never feeling close to another person
89	0	1	2	3	4	Feelings of guilt
90	0	1	2	3	4	The idea that something is wrong with your mind

Appendix X

Eating Disorder Examination-Questionnaire (EDE-Q)

EATING QUESTIONNAIRE

Instructions

The following questions are concerned with the PAST FOUR WEEKS ONLY (28 days). Please read each question carefully and circle the appropriate number on the right. Please answer all the questions.

ON HOW MANY DAYS OUT OF THE PAST 28 DAYS	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
1 Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight?	0	1	2	3	4	5	6
2 Have you gone for long periods of time (8 hours or more) without eating anything in order to influence your shape weight?	0	1	2	3	4	5	6
3 Have you tried to avoid eating any foods which you like in order to influence your shape or weight?	0	1	2	3	4	5	6
4 Have you tried to follow definite rules regarding your eating in order to influence your shape or weight; for example, a calorie limit, a set amount of food, or rules about what or when you should eat?	0	1	2	3	4	5	6
5 Have you wanted your stomach to be empty?	0	1	2	3	4	5	6
6 Has thinking about food or its calorie content made it much more difficult to concentrate on things you are interested in; for example, read, watch TV, or follow a conversation?	0	1	2	3	4	5	6
7 Have you been afraid of losing control over eating?	0	1	2	3	4	5	6

ON HOW MANY DAYS OUT OF THE PAST 28 DAYS	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
8 Have you had episodes of binge eating?	0	1	2	3	4	5	6
9 Have you eaten in secret? (Do not count binges.)	0	1	2	3	4	5	6
10 Have you definitely wanted your stomach to be flat?	0	1	2	3	4	5	6
11 Has thinking about shape or weight made it more difficult to concentrate on things you are interested in; for example read, watch TV or follow a conversation?	0	1	2	3	4	5	6
12 Have you had a definite fear that you might gain weight or become fat?	0	1	2	3	4	5	6
13 Have you felt fat?	0	1	2	3	4	5	6
14 Have you had a strong desire to lose weight?	0	1	2	3	4	5	6

OVER THE PAST FOUR WEEKS (28 DAYS)

15 On what proportion of times that you have eaten have you felt guilty because the effect on your shape or weight? (Do not count binges.) (Circle the number which applies.)

0 - None of the times
1 - A few of the times
2 - Less than half the times
3 - Half the times
4 - More than half the times
5 - Most of the time
6 - Every time

16 Over the past four weeks (28 days), have there been any times when you have felt that you have eaten what other people would regard as an unusually large amount of food given the circumstances? (Please put appropriate number in box.)

0 - No
1 - Yes [ ]

17 How many such episodes have you had over the past four weeks?

[ ][ ][ ]

18 During how many of these episodes of overeating did you have a sense of having lost control over your eating?

[ ][ ][ ]

---

19 Have you had other episodes of eating in which you have had a sense of having lost control and eaten too much, but have <u>not</u> eaten an unusually large amount of food given the circumstances?

0 - No
1 - Yes [ ]

20 How many such episodes have you had over the past four weeks?

[ ][ ][ ]

---

21 Over the past four weeks have you made yourself sick (vomit) as a means of controlling your shape or weight?

0 - No
1 - Yes [ ]

22 How many times have you done this over the past four weeks?

[ ][ ][ ]

---

23 Have you taken laxatives as a means of controlling your shape or weight

0 - No
1 - Yes [ ]

24 How many times have you done this over the past four weeks?

[ ][ ][ ]

---

25 Have you taken diuretics (water tablets) as a means of controlling your shape or weight?

0 - No
1 - Yes [ ]

26 How many times have you done this over the past four weeks?

[ ][ ][ ]

---

27 Have you exercised <u>hard</u> as a means of controlling your shape or weight?

0 - No
1 - Yes [ ]

28 How many times have you done this over the past four weeks?

[ ][ ][ ]

OVER THE PAST FOUR WEEKS 28 DAYS) (Please circle the number which best describes your behaviour.)	NOT AT ALL		SLIGHTLY		MODERATELY		MARKEDLY
29 Has your weight influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
30 Has your shape influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
31 How much would it upset you if you had to weigh yourself once a week for the next four weeks?	0	1	2	3	4	5	6
32 How dissatisfied have you felt about your weight?	0	1	2	3	4	5	6
33 How dissatisfied have you felt about your shape?	0	1	2	3	4	5	6
34 How concerned have you been about other people seeing you eat?	0	1	2	3	4	5	6
35 How uncomfortable have you felt seeing your body; for example, in the mirror, in shop window reflections, while undressing or taking a bath or shower?	0	1	2	3	4	5	6
36 How uncomfortable have you felt about others seeing your body; for example, in communal changing rooms, when swimming or wearing tight clothes?	0	1	2	3	4	5	6

Appendix XI

Multidimensional Self-Esteem Inventory (MSEI)

Section 1

Use the following scale for your responses to Section 1:

Fill in ① if the statement is *completely false*.
Fill in ② if the statement is *mainly false*.
Fill in ③ if the statement is *partly true and partly false*.
Fill in ④ if the statement is *mainly true*.
Fill in ⑤ if the statement is *completely true*.

For example, if you believe that a statement is *mainly true* in describing you, fill in the ④ circle for that statement on your rating sheet.

Example

1. ① ② ③ ● ⑤

① Completely false ② Mainly false ③ Partly true and partly faise ④ Mainly true ⑤ Completely true

1. I often fail to live up to my moral standards.
2. I nearly always feel that I am physically attractive.
3. I occasionally have doubts about whether I will succeed in life.
4. I have trouble letting others know how much I care for and love them.
5. No matter what the pressure, no one could ever force me to hurt another human being.
6. I am very well-liked and popular.
7. On occasion, I have tried to find a way to avoid unpleasant responsibilities.
8. I occasionally worry that in the future I may have a problem with controlling my eating or drinking habits.
9. It is often hard for me to make up my mind about things because I don't really know what I want.
10. I am not easily intimidated by others.
11. I am usually able to demonstrate my competence when I am being evaluated.
12. I don't have much of an idea about what my life will be like in 5 years.
13. I nearly always feel that I am physically fit and healthy.
14. I usually do the decent and moral thing, no matter what the temptation to do otherwise.
15. There are times when I doubt my sexual attractiveness.
16. I sometimes have a poor opinion of myself.
17. There are times when I have doubts about my capacity for maintaining a close love relationship.
18. The thought of shoplifting has never crossed my mind.
19. I sometimes feel disappointed or rejected because my friends haven't included me in their plans.
20. There have been times when I have felt like getting even with somebody for something they had done to me.
21. I feel that I don't have enough self-discipline.
22. In general, I know who I am and where I am headed in my life.
23. I am usually a lot more comfortable being a follower than a leader.
24. Most people who know me consider me to be a highly talented and competent person.
25. I often feel that I lack direction in my life—i.e., that I have no long-range goals or plans.
26. I nearly always feel that I am better physically coordinated than most people (of my own age and sex).
27. I almost always have a clear conscience concerning my sexual behavior.
28. There have been times when I felt ashamed of my physical appearance.
29. I put myself down too much.
30. In times of uncertainty and self doubt, I have always been able to turn to my family for encouragement and support.
31. I have never felt that I was punished unfairly.
32. My friends almost always make sure to include me in their plans.
33. There have been times when I intensely disliked someone.
34. I am sometimes concerned over my lack of self-control.
35. Once I have considered an important decision thoroughly, I have little difficulty making a final decision.
36. I have no problem with asserting myself.
37. There are no areas in which I have truly outstanding ability.
38. Sometimes it's hard for me to believe that the different aspects of my personality can be part of the same person.

Continued on next page. ▶

① *Completely false* ② *Mainly false* ③ *Partly true and partly false* ④ *Mainly true* ⑤ *Completely true*

39. Most of the people I know are in better physical condition than I am.
40. I often feel guilty about my sexual behavior.
41. I usually feel that I am better looking than most people.
42. All in all, I would evaluate myself as a relatively successful person at this stage in my life.
43. There have been times when I have felt rejected by my family.
44. It hardly ever matters to me whether I win or lose in a game.
45. On occasion I have avoided dating situations because I feared rejection.
46. There have been times when I have lied in order to get out of something.
47. I often give in to temptation and put off work on difficult tasks.
48. I seldom experience much conflict between the different sides of my personality.
49. I feel that I have a lot of potential as a leader.
50. I am usually able to learn new things very quickly.
51. I often feel torn in different directions and unable to decide which way to go.
52. I occasionally have had the feeling that I have "gone astray," and that I am leading a sinful or immoral life.
53. I have occasionally felt that others were repelled or "put off" by my physical appearance.
54. I nearly always have a highly positive opinion of myself.
55. I occasionally feel that no one really loves me and accepts me for the person I am.
56. I have almost never felt the urge to tell someone off.
57. People nearly always enjoy spending time with me.
58. There have been occasions when I took advantage of someone.
59. I have difficulty maintaining my self-control when I am under pressure.
60. I have often acted in ways that went against my moral values.
61. I am usually very pleased and satisfied with the way I look.

Section 2

In Section 2, you are to describe how often you experience the thoughts and feelings described in each item. Use the following scale for your responses to Part 2:

Fill in ① if you *almost never* experience them.
Fill in ② if you *seldom or rarely* experience them.
Fill in ③ if you *sometimes* experience them.
Fill in ④ if you experience them *fairly often*.
Fill in ⑤ if you experience them *very often*.

For example, if you *seldom or rarely* experience the thoughts and feelings described, fill in the ② circle for that statement on your rating sheet.

Example

1. ① ● ③ ④ ⑤

① *Almost never* ② *Seldom or rarely* ③ *Sometimes* ④ *Fairly often* ⑤ *Very often*

62. How often do you expect to perform well in situations that require a lot of ability?
63. How often do you lose when you get into arguments or disagreements with others?
64. Do you ever "stretch the truth" and say things that aren't completely true?
65. How often do you feel confident that you have (or someday will have) a lasting love relationship?
66. When you are meeting a person for the first time, do you ever think that the person might not like you?
67. How often do you feel proud of the way that you stay with a task until you complete it?
68. How often do you feel dissatisfied with yourself?
69. How often do you feel that others are attracted to you because of the way you look?
70. How often do you feel a sense of vitality and pleasure over the way your body functions in physical activities?
71. How often do you feel uncertain of your moral values?
72. How often do you feel self-conscious or awkward while you are engaged in physical activities?
73. How often do you feel very certain about what you want out of life?

Continued on next page. ▶

① *Almost never* ② *Seldom or rarely* ③ *Sometimes* ④ *Fairly often* ⑤ *Very often*

74. How often do you have trouble learning difficult new tasks?
75. When you are involved in group discussions, how often do you feel that your ideas have a strong influence on others?
76. Do you ever gossip?
77. How often do members of your family have difficulty expressing their love for you?
78. How often do you feel certain that people you meet will like you?
79. How often are you pleased with yourself because of the amount of self discipline and willpower that you have?
80. How often do you feel that you are a very important and significant person?
81. How often do you wish that you were more physically attractive?
82. How often does your body perform exceptionally well in physical activities, such as dancing or sports?
83. How often do you (by your behavior) set a good moral example for others younger than yourself?
84. How often do you feel clumsy when you are involved in physical activities?
85. How often do you feel conflicted or uncertain about your career plans?
86. How often do you feel that you can do well at almost anything you try?
87. How often are you able to be assertive and forceful in situations where others are trying to take advantage of you?
88. Have you ever felt irritated when someone asked you for a favor?
89. How often do you feel able to openly express warm and loving feelings toward others?
90. Does it ever seem to you that some people dislike you intensely, that they "can't stand" you?
91. How often do you feel that you are more successful than most people at controlling your eating and drinking behavior?
92. How often do you feel really good about yourself?
93. How often are you complimented on your physical appearance?
94. How often do you feel in top physical condition?
95. How often are you pleased with your sense of moral values?
96. How often does your body feel "out of sorts" or sluggish?
97. Have you ever felt that you lack the intelligence needed to succeed in certain types of interesting work?
98. Do you enjoy it when you are in a position of leadership?
99. Have you ever felt jealous of the good fortune of others?
100. Have you ever felt alone and unloved?
101. When you go out with someone for the first time, how often do you feel that you are well-liked?
102. How often are you able to exercise more self-control than most of the people you know?
103. How often do you feel highly satisfied with the future you see for yourself?
104. How often do you feel unattractive when you see yourself naked?
105. How often do you enjoy having others watch you while you are engaged in physical activities such as dancing or sports?
106. How often do you feel highly satisfied with the way you live up to your moral values?
107. How often do you feel that you are not as intelligent as you would like to be?
108. How often do you feel uneasy when you are in a position of leadership?
109. How often is it hard for you to admit it when you have made a mistake?
110. How often do people whom you love go out of their way to let you know how much they care for you?
111. How often do you feel that you are one of the most popular and likable members of your social group?
112. How often are you able to resist temptations and distractions in order to complete tasks you are working on?
113. How often do you feel lacking in self-confidence?
114. How often do you approach new tasks with a lot of confidence in your ability?
115. How often do you have a strong influence on the attitudes and opinions of others?
116. How often do you gladly accept criticism when it is deserved?

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Appendix XII

Social Problem-Solving Inventory-Revised (SPSI-R)

Social Problem Solving Inventory – Revised (SPSI-R)

Below are some ways that you might think, feel, and act when faced with problems in everyday living. We are **not** talking about everyday hassles and pressures that you handle successfully every day. In this questionnaire, a **problem** is something important in your life that bothers you a lot but you don't immediately know how to make it better or stop it from bothering you so much. The problem could be something about yourself (such as your thoughts, feelings, behaviour, appearance or health), your relationships with other people (such as your family, friends or boss), or your environment and the things that you own (such as your house, car, property or money). Please read each statement carefully and circle one of the numbers below which show how much the statement is true of you. See yourself as you **usually** think, feel, and act when you are faced with important problems in your life **these days**.

0 = **Not at all true** of me
1 = **Slightly true** of me
2 = **Moderately true** of me
3 = **Very true** of me
4 = **Extremely true** of me

1. I spend too much time worrying about my problems instead of trying to solve them.
0 1 2 3 4

2. I feel threatened and afraid when I have an important problem to solve.
0 1 2 3 4

3. When making decisions, I **do not** evaluate all my options carefully enough.
0 1 2 3 4

4. When I have a decision to make, I fail to consider the effects that each option is likely to have on the well-being of other people.
0 1 2 3 4

5. When I am trying to solve a problem, I often think of different solutions and try to combine some of them to make a better solution.
0 1 2 3 4

6. I feel nervous and unsure of myself when I have an important decision to make.
0 1 2 3 4

7. When my first efforts to solve a problem fail, I know that if I persist and do not give up too easily, I will be able to eventually find a good solution.
0 1 2 3 4

8. When I am attempting to solve a problem, I act on the first idea that occurs to me.
0 1 2 3 4

9. Whenever I have a problem, I believe that it can be solved.
0 1 2 3 4

10. I wait to see of a problem will resolve itself first, before trying to solve it myself.
0 1 2 3 4

11. When I have a problem to solve, one of the things I do is to look at the situation and try to identify what obstacles are keeping me from getting what I want.
0 1 2 3 4

12. When my first efforts to solve a problem fail, I get very frustrated.
0 1 2 3 4

0 = **Not at all true** of me
1 = **Slightly true** of me
2 = **Moderately true** of me
3 = **Very true** of me
4 = **Extremely true** of me

13. When I am faced with a difficult problem, I doubt that I will be able to solve it on my own - no matter how hard I try.
0 1 2 3 4

14. When a problem occurs in my life, I put off trying to solve it for as long as possible.
0 1 2 3 4

15. After carrying out a solution to a problem, I do **not** take time to evaluate all of the results carefully.
0 1 2 3 4

16. I go out of my way to try to avoid having to deal with the problems in my life.
0 1 2 3 4

17. Difficult problems make me very upset.
0 1 2 3 4

18. When I have a decision to make, I try to predict the good and the bad consequences of each option.
0 1 2 3 4

19. When problems occur in my life, I like to deal with them as soon as possible.
0 1 2 3 4

20. When I am attempting to solve a problem, I try to be creative and think of new or original solutions.
0 1 2 3 4

21. When I am trying to solve a problem, I go with the first good idea that comes to mind.
0 1 2 3 4

22. When I try to think of different possible solutions to a problem, I **cannot** come up with many ideas.
0 1 2 3 4

23. I prefer to avoid thinking about the problems in my life instead of trying to solve them.
0 1 2 3 4

24. When making decisions, I consider both the immediate consequences and the long-term consequences of each option.
0 1 2 3 4

25. After carrying out my solution to a problem, I analyse what went right and what went wrong.
0 1 2 3 4

26. After carrying out my solution to a problem, I examine my feelings and evaluate how much they have changed for the better.
0 1 2 3 4

0 = Not at all true of me
1 = Slightly true of me
2 = Moderately true of me
3 = Very true of me
4 = Extremely true of me

27. Before carrying out my solution to a problem, I practice the solution in order to increase my chances of success.
0 1 2 3 4

28. When I am faced with a difficult problem, I believe I will be able to solve it on my own if I try hard enough,
0 1 2 3 4

29. When I have a problem to solve, one of the first things I do is get as many facts about the problem as possible.
0 1 2 3 4

30. I put off solving problems until it is too late to do anything about them.
0 1 2 3 4

31. I spend more time avoiding my problems than solving them.
0 1 2 3 4

32. When I am trying to solve a problem, I get so upset that I cannot think clearly.
0 1 2 3 4

33. When I am trying to solve a problem, I set a specific goal so that I know exactly what I want to accomplish.
0 1 2 3 4

34. When I have a decision to make, I do **not** take the time to consider the pros and cons of each option.
0 1 2 3 4

35. When the outcome of my solution to a problem is not satisfactory, I try to find out what went wrong and then I try again.
0 1 2 3 4

36. I hate having to solve the problems that occur in my life.
0 1 2 3 4

37. After carrying out a solution to a problem, I try to evaluate as carefully as possible how much the situation has changed for the better.
0 1 2 3 4

38. When I have a problem, I try to see it as a challenge, or opportunity to benefit in some positive way from having the problem.
0 1 2 3 4

39. When I am trying to solve a problem, I think of as many options as possible until I cannot come up with any more ideas.
0 1 2 3 4

40. When I have a decision to make, I weigh the consequences of each option and compare them against each other.
0 1 2 3 4

0 = **Not at all true** of me
1 = **Slightly true** of me
2 = **Moderately true** of me
3 = **Very true** of me
4 = **Extremely true** of me

41. I become depressed and immobilized when I have an important problem to solve.
0 1 2 3 4

42. When I am faced with a difficult problem, I go to someone else for help in solving it.
0 1 2 3 4

43. When I have a decision to make, I consider the effects that each option is likely to have on my personal feelings.
0 1 2 3 4

44. When I have a problem to solve, I examine what factors or circumstances in my environment might be contributing to the problem.
0 1 2 3 4

45. When making decisions, I go with my "gut-feeling" without thinking too much about the consequences of each option.
0 1 2 3 4

46. When making decisions, I use a systematic method for judging and comparing alternatives.
0 1 2 3 4

47. When I am trying to solve a problem, I keep in mind what my goal is at all times.
0 1 2 3 4

48. When I am attempting to solve a problem, I approach it from as many different angles as possible.
0 1 2 3 4

49. When I am having trouble understanding a problem, I try to get more specific and concrete information about the problem to try to make it clearer for myself.
0 1 2 3 4

50. When my first efforts to solve a problem fail, I get discouraged and depressed.
0 1 2 3 4

51. When a solution that I have carried out does not solve my problem satisfactorily, I do **not** take the time to examine carefully why it did not work.
0 1 2 3 4

52. I am too impulsive when it comes to making decisions.
0 1 2 3 4

Appendix XIII

Descriptive Statistics for Anorexic & Control Groups

Table 1.2: Descriptive Statistics for Anorexic Group

Measures	N	Minimum	Maximum	Mean	SD	Skewness	Std. error	Kurtosis	Std. error
EDE-Q – Eating Pathology.939									
Global Score	55	6.50	34.25	25.51	7.34	-.908	.327	-.018	.644
Restraint	55	0.60	6.00	4.49	1.48	-1.241	.327	.939	.644
Eating Concern	55	1.40	6.00	4.43	1.18	-.837	.327	.254	.644
Shape Concern	55	0.75	8.20	4.68	1.60	-.676	.327	-.279	.644
Weight Concern	55	0.00	6.00	4.17	1.75	-.593	.327	-.964	.644
MSEI – Self-Esteem									
Global Score	55	10.00	36.00	16.74	5.98	1.329	.327	1.804	.644
Likeability	55	10.00	38.00	21.60	6.79	.410	.330	-.666	.650
Lovability	55	12.00	41.00	27.09	7.64	.004	.330	-.995	.650
Moral Self-Approval	55	11.00	49.00	32.11	7.83	-.390	.330	.385	.650
Body Appearance	55	10.00	34.00	16.33	5.30	1.603	.327	2.98	.644
Competence	55	12.00	44.00	25.57	8.23	.198	.327	-.579	.644
Personal Power	55	10.00	41.00	22.47	7.92	.439	.330	-.976	.650
Self-Control	55	10.00	43.00	27.29	7.89	-.171	.327	-.426	.644
Body Functioning	55	9.00	34.00	19.85	6.31	.386	.330	-.675	.650
Identity Integration	55	10.00	38.00	21.05	6.63	.455	.327	-.569	.644
Defensive Self-Enhancement	55	33.00	68.00	48.29	8.44	0.81	.327	-.270	.644
SPSI-R – Social Problem-Solving									
Positive Problem Orientation	53	0.00	16.00	7.21	4.15	.475	.337	-.734	.662
Negative Problem Orientation	53	2.00	40.00	29.38	9.08	-1.096	.333	.931	.656
Rational Problem Solving	53	0.00	69.00	34.78	14.77	.110	.340	-.198	.668
Impulsivity/Carelessness	53	2.00	34.00	14.78	8.62	.587	.333	-.502	.656
Avoidance	53	0.00	28.00	13.78	7.16	.059	.333	-.742	.656

Table 1.3: Descriptive Statistics for Control Group

Measures	N	Minimum	Maximum	Mean	SD	Skewness	Std. error	Kurtosis	Std. error
EDE-Q – Eating Pathology.939									
Global Score	50	0.75	20.25	7.33	5.07	.916	.337	.300	.662
Restraint	50	0.00	3.60	1.17	0.97	.730	.337	-.359	.662
Eating Concern	50	0.00	2.60	0.48	0.69	1.853	.337	2.474	.662
Shape Concern	50	0.00	5.25	1.74	1.21	.854	.337	.449	.662
Weight Concern	50	0.00	4.80	1.37	1.19	1.026	.337	.342	.662
MSEI – Self-Esteem									
Global Score	49	13.00	48.00	30.91	7.89	-.385	.340	-.020	.668
Likeability	49	15.00	45.00	33.52	6.87	-.622	.340	.165	.668
Lovability	49	6.00	50.00	36.15	8.10	-1.038	.340	2.682	.668
Moral Self-Approval	49	6.00	48.00	37.13	8.01	-1.942	.340	5.891	.668
Body Appearance	49	11.00	45.00	29.50	6.84	-.478	.340	.431	.668
Competence	49	20.00	50.00	33.39	5.57	.115	.340	.478	.668
Personal Power	49	13.00	46.00	30.44	7.30	-.283	.343	.347	.674
Self-Control	49	20.00	45.00	32.48	5.76	-.090	.340	.016	.668
Body Functioning	49	8.00	42.00	27.74	6.88	-.555	.340	1.558	.668
Identity Integration	49	6.00	50.00	31.35	10.17	-.704	.340	.224	.668
Defensive Self-Enhancement	49	31.00	62.00	49.59	6.84	-.626	.340	.034	.668
SPSI-R – Social Problem-Solving									
Positive Problem Orientation	49	1.00	20.00	9.44	4.23	.123	.347	-.086	.681
Negative Problem Orientation	49	0.00	36.00	13.72	8.21	.736	.350	.040	.688
Rational Problem Solving	49	7.00	74.00	37.29	14.22	.163	.347	-.452	.681
Impulsivity/Carelessness	49	0.00	38.00	9.13	7.75	1.501	.347	3.134	.681
Avoidance	49	0.00	28.00	7.11	6.19	1.897	.347	3.640	.681

Appendix XIV

Non-parametric Mann Whitney tests

Table 2.1: Non-Parametric Mann Whitney z-tests between Means of Anorexic & Control Group

	z-values	p-values
BMI	-8.43	<0.001**
EDE-Q – *Eating Pathology*		
Global Score	-8.14	<0.001**
Restraint	-7.79	<0.001**
Eating Concern	-8.65	<0.001**
Shape Concern	-7.25	<0.001**
Weight Concern	-.6.89	<0.001**
MSEI – Self-Esteem		
Global Score	-7.35	<0.001**
Likeability	-.6.67	<0.001**
Lovability	-5.27	<0.001**
Moral Self-Approval	-3.59	<0.001**
Body Appearance	-.7.38	<0.001**
Competence	-4.97	<0.001**
Personal Power	-4.56	<0.001**
Self-Control	-3.58	<0.001**
Body Functioning	-5.53	<0.001**
Identity Integration	-5.45	<0.001**
Defensive Self-Enhancement	-.956	.339
SPSI-R – Social Problem-Solving		
Positive Problem Orientation	-2.62	0.09*
Negative Problem Orientation	-6.54	<0.001**
Rational Problem Solving	-913	.361
Impulsivity/Carelessness	-3.41	0.001*
Avoidance	-4.74	<0.001**

Table 3.2: Correlations in the control group

	EDE-Q-Global	EDE-Q-Restraint	EDE-Q-Eating	EDE-Q-Shape	EDE-Q-Weight	SPSI-R PPO	SPSI-R NPO	SPSI-R RPS	SPSI-R ICS	SPSI-R AS
SPSI-R- PPO	-.365*	-.216	-.217	-.378*	-.263	---	---	---	---	---
SPSI-R-NPO	.274	.078	.219	.296	.140	---	---	---	---	---
SPSI-R-RPS	-.249	-.174	-.070	-.306*	-.094	---	---	---	---	---
SPSI-R-ICS	.025	-.080	-.043	.078	-.084	---	---	---	---	---
SPSI-R-AS	.043	-.177	-.047	.106	.013	---	---	---	---	---
MSEI-Global Score	-.509**	-.200	-.469**	-.540**	-.362*	.449**	-.699**	.311*	-.368*	-.251
MSEI-Likeability	-.359*	-.086	-.364*	-.348*	-.188	.242	-.599**	.239	-.376*	-.249
MSEI-Lovability	-.287	-.174	-.233	-.273	-.176	.352*	-.438**	.246	-.246	-.176
MSEI-Moral Self-Appraisal	-.409**	-.218	-.340*	-.330*	-.355*	.155	-.165	.192	-.064	.022
MSEI-Body Appearance	-.505**	-.173	-.479**	-.483**	-.390**	.529**	-.538**	.328*	-.261	-.250
MSEI-Competence	-.355*	-.095	-.226	-.435**	-.208	.373*	-.598**	.442**	-.455**	-.318*
MSEI-Personal Power	-.207	-.290	-.204	-.272	-.002	.423**	-.606**	.458**	-.427**	.288
MSEI-Self-Control	-.525**	-.236	-.553**	-.505**	-.400**	.346*	-.471**	.229	-.343*	-.285
MSEI-Body Functioning	-.533**	-.456**	-.426**	-.446**	-.494**	.281	-.417**	.151	-.188	-.104
MSEI-Identity Integration	-.309*	-.237	-.278	-.293*	-.201	.255	-.514**	.338*	-.314*	-.273
MSEI-Defensive Self-Enhancement	-.087	-.023	-.071	-.088	.071	.211	-.261	.328*	-.242	-.145

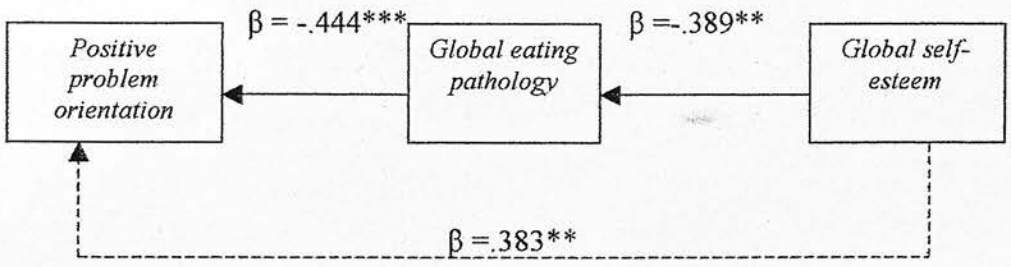
*** correlation is significant at <.001*

** correlation is significant at < 0.05*

Appendix XVI

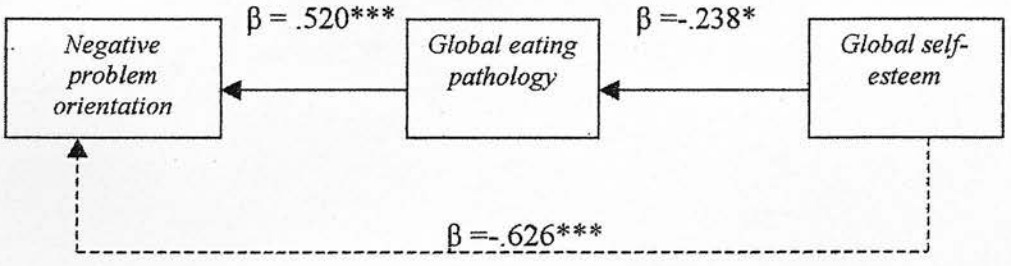
Path Analysis of Reverse Causal Effect

Figure: 2.9: Reverse Causal Effect: Positive Problem Orientation



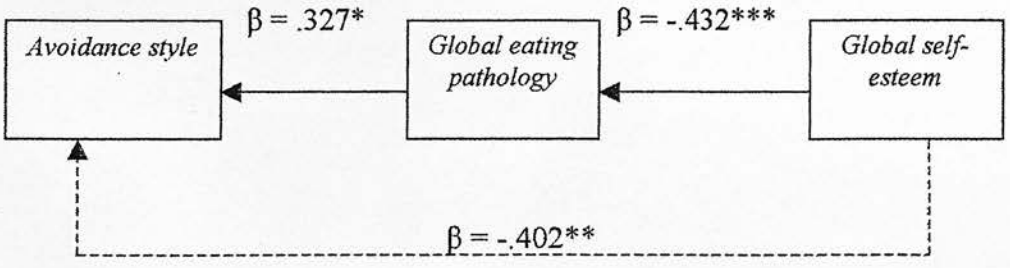
*p<.05 **p<.01 ***p<.001 *ns* = nonsignificant

Figure: 2.10: Reverse Causal Effect: Negative Problem Orientation



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

Figure: 2.11: Reverse Causal Effect: Avoidance Style



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