

Dimensions of Perfectionism in Eating Disorders:
Diagnostic Specificity and Prognostic Significance

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**Dimensions of Perfectionism in Eating Disorders:
Diagnostic Specificity and Prognostic Significance**

BY

Laura Anne Campbell

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of
Manitoba in partial fulfillment of the requirement of the degree**

of

DOCTOR OF PHILOSOPHY

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Abstract

This thesis examined perfectionism, as a multidimensional construct, in its specific and prognostic relationships to eating disorder (ED) symptomatology. Scores on perfectionism dimensions, self-criticism (a related construct), and depression and ED symptoms were gathered. In study 1, three participant samples were used: a clinical ED sample ($n = 78$), a clinical major depressive disorder (MDD) sample ($n = 76$), and a university sample ($n = 50$). A factor analysis of the perfectionism dimensions produced two factors representing adaptive and maladaptive perfectionism (per Frost et al., 1993). In group comparisons, all maladaptive dimensions were significantly higher in the ED sample, and most were higher in the MDD sample, compared to the non-clinical sample. No significant differences occurred between clinical samples. Maladaptive dimensions lacked specificity for ED and MDD. Conversely, adaptive perfectionism dimensions were significantly higher in the ED sample as compared to the MDD and university samples. Discriminant analyses demonstrated perfectionism components to have higher predictive accuracy than depression features for determining group membership (ED versus MDD), indicating adaptive perfectionism's specificity for eating disorders. Study 2 investigated the prognostic significance of perfectionism for ED through a naturalistic follow-up of ED participants ($n = 31$). Data was gathered at pre-treatment (Time 1) and 6 months into treatment (Time 2). A first set of multiple regression analyses, controlling for baseline ED and depression symptom severity, was conducted to investigate whether relevant Time 1 perfectionism scores would significantly predict more severe ED symptoms at Time 2. Baseline concern over mistakes predicted psychological symptoms and, when depression was not controlled, predicted behavioural symptoms; baseline self-criticism

showed a trend towards predicting bulimic symptoms. A second set of analyses investigated the predictive value of perfectionism change scores for change in ED symptoms. Change in self-criticism predicted change in psychological symptoms and, when mood was not controlled, predicted change in bulimic symptoms. Findings indicated specificity of adaptive perfectionism and prognostic significance of maladaptive perfectionism (especially in the form of self-criticism) for ED. As an alternative to the conceptualization of adaptive and maladaptive perfectionism, perfectionism and self-criticism were discussed in terms of excessive achievement strivings and negative evaluation concerns.

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Table of Contents

Abstract	p. 2
Acknowledgements	p. 4
Table of Contents	p. 6
List of Tables	p. 8
List of Figures	p. 9
List of Appendices	p. 10
Introduction	p. 11
Overview	p. 11
Bulimia Nervosa	p. 12
Anorexia Nervosa	p. 12
Eating Disorder Not Otherwise Specified	p. 13
Chronicity of Eating Disorders (ED) and Outcome of ED Treatment	p. 13
Conceptualizations of Perfectionism: Unidimensional and Multidimensional	p. 16
Unidimensional perfectionism	p. 16
Multidimensional perfectionism: Frost and colleagues	p. 16
Multidimensional perfectionism: Hewitt and Flett	p. 17
Associations between Frost and Hewitt & Flett dimensions	p. 18
Adaptive versus Maladaptive Dimensions of Perfectionism	p. 19
The Intra- and Interpersonal Dimensions of Perfectionism	p. 20
Perfectionism and Eating Disorders: Empirical Studies	p. 21
Perfectionism as a risk factor	p. 23
Predictive validity of perfectionism	p. 24
Multidimensional aspects of perfectionism related to ED	p. 26
Neurotic dimensions of perfectionism and the eating disorders	p. 27
The importance of both SOP- and SPP-type dimensions to anorexia nervosa	p. 29
The Frost dimensions	p. 30
Sociotropic (SOC-DEP) and autonomic (AUT-SC) themes in the eating disorders	p. 32
“Positive” and “negative” perfectionism and the eating disorders	p. 35
Specificity	p. 37
Specificity: Depression and the eating disorders	p. 39
Importance of perfectionism to depression	p. 40
The unique relationship of the self-criticism construct to multidimensional perfectionism	p. 42
Perfectionism as a Putative Predictor of Poor Prognosis	p. 43
Importance of Studying a Clinical Population	p. 44
Objectives and Hypotheses	p. 45

Study 1	p. 50
Method	p. 50
Participants and Procedure	p. 50
Measures	p. 54
Results	p. 58
Discussion	p. 70
Study 2	p. 78
Method	p. 78
Participants and Procedure	p. 78
Measures	p. 80
Data Analysis	p. 82
Results	p. 83
Prediction of ED Symptom Severity Over Time	p. 88
Analyses for Time 2 psychological eating disorder symptom composite (EDC psychological)	p. 88
Analyses for Time 2 behavioural eating disorder symptom composite (EDC behavioural)	p. 92
Analyses for Time 2 bulimia-related eating disorder symptom composite (EDC bulimia-related)	p. 94
Prediction of Eating Disorder Symptom Change: Treatment Process and Mediator Effects	p. 95
Analyses for change in psychological eating disorder symptoms (EDC psychological)	p. 96
Analyses for change in behavioural eating disorder symptoms (EDC behavioural)	p. 99
Analyses for change in bulimia-related eating disorder symptoms (EDC bulimia-related)	p. 100
Discussion	p. 102
General Discussion	p. 110
Overall Findings	p. 110
Reconceptualizing Perfectionism Terms: "Excessive Achievement Strivings and Maladaptive Evaluative Concerns"	p. 111
Proposed Model to Explain Mechanisms in Perfectionism at Work in Eating Disorders	p. 112
The Value of Prospective Studies in Eating Disorder and Perfectionism Research	p. 114
Clinical Implications and Recommendations for Treatment	p. 116
Limits of Current Study and Recommendations for Future Research	p. 117
Conclusion	p. 120
References	p. 122

List of Tables

Table 1	Results of Factor Analysis of Both MPS scales	p. 20
Table 2	Summary of Factor Loadings for Oblimin Two-Factor Solution for the Perfectionism Dimensions	p. 59
Table 3	Means and Standard Deviations for Scores on Frost et al. (1991) Dimensions from Present Study and Published Norms	p. 61
Table 4	Means and Standard Deviations for Scores on Perfectionism Dimensions and Composites, BDI, and Age; Multivariate and Univariate Analyses of Covariance and Post-hoc Group Comparisons	p. 64
Table 5	Classification Analysis for Clinical Group Membership by DEP and BDI Scores	p. 67
Table 6	Classification Analysis for Clinical Group Membership by Composite Adaptive Score and Composite Maladaptive Score	p. 68
Table 7	Classification Analysis for Clinical Group Membership by BDI, DEP, Composite Adaptive Score and Composite Maladaptive Score	p. 69
Table 8	Means and Standard Deviations of Time 1 Individual Perfectionism Dimensions, Perfectionism Composites, BDI and Eating Disorder Symptom Composites at Time 1 and Time 2	p. 87
Table 9	Correlations Among Time 1 Adaptive Perfectionism Dimensions & Composite, and Time 2 Eating Disorder Symptom Composites	p. 89
Table 10	Correlations Among Time 1 Maladaptive Perfectionism Dimensions & Composite, and Time 2 Eating Disorder Symptom Composites	p. 90
Table 11	Correlations Among Time 1 BDI and Time 2 Eating Disorder Symptom Composites	p. 91
Table 12	Prediction of Time 2 Eating Disorder Symptom Composite (EDC) Psychological	p. 92
Table 13	Prediction of Time 2 Eating Disorder Symptom Composite (EDC) Behavioural	p. 93
Table 14	Prediction of Time 2 Eating Disorder Symptom Composite (EDC) Bulimia-related	p. 95

Table 15	Prediction of Change in Eating Disorder Symptom Composite (EDC) Psychological	p. 98
Table 16	Prediction of Change in Eating Disorder Symptom Composite (EDC) Psychological by Maladaptive Perfectionism Composite	p. 99
Table 17	Prediction of Change in Eating Disorder Symptom Composite (EDC) Bulimia-related	p. 102

List of Figures.

Figure 1. Proposed specific vulnerability model outlining the mechanisms in which perfectionism-related constructs may operate in eating disorders	p. 114
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List of Appendices

Appendix A	DSM-IV Diagnostic Criteria for Bulimia Nervosa (APA 1994)	p. 141
Appendix B	DSM-IV Diagnostic Criteria for Anorexia Nervosa (APA, 1994)	p. 143
Appendix C	DSM-IV Diagnostic Criteria for Eating Disorder Not Otherwise Specified (APA, 1994)	p. 144
Appendix D	Patient Information and Consent Form	p. 145
Appendix E	Consent Form for University Sample	p. 147
Appendix F	Multidimensional Perfectionism Scale (MPS; Hewitt and Flett, 1991a) sample items	p. 148
Appendix G	Description of subscales and sample items from the Multidimensional Perfectionism Scale (MPS; Frost et al., 1990)	p. 149
Appendix H	Depressive Experiences Questionnaire (Bagby et al., 1994) sample items	p. 150
Appendix I	Beck Depression Inventory (Beck et al., 1991) sample items	p. 151
Appendix J	Eating Disorder Inventory – 2 (Garner, 1991) sample items	p. 152
Appendix K	Patient Information and Consent Form (Time 2)	p. 153
Appendix L	Body Image Assessment (BIA) Procedure (Williamson, 1990) sample of silhouettes	p. 155
Appendix M	Multidimensional Body-Self Relations Questionnaire (Cash, Winstead, & Janga, 1986) sample items	p. 157
Appendix N	Frequency of Bingeing and Purging (Author-written scale)	p. 158
Appendix O	Revised Restraint Scale (Herman & Mack, 1975; p. 653)	p. 159

Dimensions of Perfectionism in Eating Disorders:
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Overview

Eating disorders constitute a serious public health concern, due in part to their often intractable nature and resistance to treatment (Agras, 2001; Nielsen, 2001). One of the factors that has recently received attention in terms of its relation to the possible development and maintenance of eating disorders is the construct of perfectionism. Perfectionism has also been implicated in the presentation of several other psychological disorders, including depression. This study investigated different dimensions of perfectionism in relation to eating disorders (ED), looking in particular at the specificity and prognostic significance of perfectionism for the eating disorders. Goals of the study were accomplished through (i) the comparison of patients diagnosed with eating disorders to patients diagnosed with major depressive disorder and to a non-clinical sample of university students, and (ii) following eating disorders patients involved in a ED treatment program over time to assess the relationship between perfectionism and prognosis of eating disorder symptoms.

The introduction begins with an orientation to eating disorders and is followed by a review of the literature concerning dimensions of perfectionism, adaptive and maladaptive perfectionism, and perfectionism as related to the eating disorders. A discussion of specificity and the relationship of perfectionism to another clinical disorder, depression, is also included.

Bulimia Nervosa

According to the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV; American Psychiatric Association, 1994), bulimia nervosa (BN) is characterized by episodes of binge eating and inappropriate compensatory methods to prevent weight gain. As well, self-evaluation is excessively influenced by body weight and shape (APA, 1994). The DSM-IV criteria for BN specify that an individual cannot currently meet the diagnostic criteria for anorexia nervosa (AN), meaning that the diagnosis of BN is restricted to those individuals of average or above average weight. Furthermore, the DSM-IV divides the diagnosis of BN into subtypes based on whether the individual makes regular use of purging methods. Thus, there is the Purging Type wherein the individual regularly engages in self-induced vomiting or misuses laxatives, diuretics or enemas in the course of the current BN episode, and the Nonpurging Type which describes the use of “other inappropriate compensatory behaviors” (APA, 1994, p. 547) (e.g., excessive physical exercise, fasting) while the regular use of purging does not occur. Evidence has not been established that the two subtypes differ in terms of prognosis or responsiveness to treatment (Fairburn & Wilson, 1993). Prevalence rates for adolescent and young adult females are estimated at 1% to 3% (APA, 1994). The full DSM-IV diagnostic criteria for BN are included in Appendix A.

Anorexia Nervosa

The cardinal features of anorexia nervosa (AN), according to the DSM-IV, are a refusal by the individual to maintain a minimally normal body weight, an extreme fear of gaining weight, and a serious disturbance in the way in which the individual experiences her or his own shape and weight (APA, 1994). The DSM-IV criteria also state that in

postmenarcheal females, amenorrhea is experienced. There are two mutually exclusive subtypes of AN, Restricting Type in which the individual has not engaged in regular binge-eating or purging behaviour, and the Binge-Eating/Purging Type wherein regular being-eating or purging has occurred. Appendix B contains full DSM-IV criteria of AN. Prevalence rates for individuals who meet full AN criteria are estimated at 0.5%-1.0% among females in late adolescence and early adulthood, while subthreshold presentation of AN symptoms is much more common (APA, 1994).

Eating Disorder Not Otherwise Specified

The DSM-IV delineates another diagnostic category, eating disorder not otherwise specified (EDNOS), for use with those individuals who do not meet all of the diagnostic criteria for anorexia nervosa or bulimia nervosa but who possess clinically significant eating disorders. Although the term EDNOS might be interpreted as referring to eating problems of minor clinical significance, this is an incorrect assumption as individuals with EDNOS may have a clinical presentation that is as serious and complicated as that of individuals diagnosed with AN or BN, the two principal eating disorders (Walsh & Garner, 1997). Appendix C contains full DSM-IV diagnostic criteria for EDNOS.

Chronicity of Eating Disorders (ED) and Outcome of ED Treatment

Anorexia nervosa (AN) and bulimia nervosa (BN) are considered by many to be serious and prevalent health problems (e.g., Cooper & Fairburn, 1983; Herzog, Karin, Nussbaum, & Marmor, 1996; Shisslak, Crago, & Neal, 1990). The mortality rate associated with AN is among the highest of all psychiatric disorders and several studies indicate that the recovery rate for AN ranges from 23.7% to 50%. Anorexia nervosa is

often considered a chronic disorder, an idea supported by significantly high relapse rates in this population (Herzog et al., 1996).

Clinical experience and empirical study indicate that BN is a chronic disorder with symptoms persisting over several years (Fairburn, Peveler, Jones, Hope, & Doll, 1993; Joiner, Heatherton, & Keel, 1997). In a study that examined the temporal stability and predictive utility of symptoms and other variables related to BN, Joiner, Heatherton, & Keel (1997) found that previous bulimic status was related to an increased risk in exhibiting bulimic symptoms 10 years later. This risk was approximately 15 times greater as compared with the absence of bulimic history. These results indicate that symptoms of BN persist and that the course of bulimic symptoms is either chronic or recurrent, suggesting that BN is a “pernicious disorder with serious consequences for health and functioning” (p.1136, Joiner, Heatherton, & Keel, 1997).

Research efforts into the treatment of eating disorders are relatively new. As recently as the 1970s, AN was treated in hospital settings with bedrest, insulin, and chlorpromazine (Garfinkel, 1985). Bulimia nervosa was not even formally described until 1979 (Russell, 1979). Given this relatively short timeframe, much has been accomplished in understanding the disorders themselves and, in the case of bulimia nervosa, its treatment. Nonetheless, approximately 5% of patients with eating disorders die and 30-50% continue to demonstrate varying degrees of symptoms after treatment (Garfinkel, Halmi, & Shaw, 1992; Hsu, 1995; Steinhausen, 1995). Further research is imperative to improve eating disorder treatment and enhance the understanding of the underlying mechanisms of these disorders.

Few controlled studies investigating intervention for anorexia nervosa have been conducted, and no one particular type of therapy has been empirically supported as being more beneficial than other forms (Steinhausen, 1995). Outcomes of treatment for BN are variable. Some studies, for example, have demonstrated that short-term treatment results in abstinence from binge-purge episodes for one third of cases, while a high percentage of clients remains symptomatic at treatment termination (Garner, 1987; Mitchell, 1991). With such uncertainty about and variability in treatment outcome, it seems important to identify client variables to aid in selecting treatment approaches suitable for clients with different types of characteristics. Identifying outcome predictors is a necessary step in the development of empirically validated treatment of eating disorders.

Various constructs have been posited in the development, maintenance, and prognosis of the eating disorders, with perfectionism being one such construct. That perfectionism is a promising construct in this regard has been underscored through clinical anecdotal writings by such seminal names in the field as Bruch (1973) and through emerging empirical evidence, as discussed below. New measures to assess dimensions of perfectionism have been constructed in recent years, making the present the right time to empirically evaluate perfectionism's link to eating disorders. The current study aimed to do so. Following is a review of the literature concerned with the empirical investigations of perfectionism in relation to disordered eating behaviour. In order to explain the fundamental concepts about perfectionism, however, there is first a review of the construct of perfectionism in general and of specific dimensions identified as constituting perfectionism.

Conceptualizations of Perfectionism: Unidimensional and Multidimensional

Unidimensional perfectionism. The construct of perfectionism has been conceptualized in the literature in various ways and as being comprised of certain components, depending on the theory being used. Until relatively recently, much of the research on perfectionism has operationalized this construct as being unidimensional. For example, one of the early psychometric instruments designed to measure perfectionism was the Burns Perfectionism Scale (BPS; Burns, 1980). Burns conceptualized a perfectionistic individual as one “whose standards are high beyond reach or reason...who strains compulsively and unremittingly toward impossible goals and who measures his [*sic*] own worth entirely in terms of productivity and accomplishment” (1980, p. 34). The BPS conceptualizes perfectionism as being composed of one dimension, with high scores purportedly relating to problem affect and behaviour (Burns, 1983). As such, the BPS is considered a measure of maladaptive perfectionism.

Multidimensional perfectionism: Frost and colleagues. The principal characteristic of unidimensional definitions of perfectionism is the concept of establishing extremely high standards for one’s own *performance* (cf. Frost, Marten, Lahart, & Rosenblate, 1990). One of the primary problems with this definition of perfectionism is that it neglects to differentiate between effective, successful individuals who strive toward high goals and those individuals whose perfectionism is more maladaptive. Hamachek (1978) distinguished between normal and neurotic perfectionists, describing “normal perfectionists” as “...those who derive a very real sense of pleasure from the labors of a painstaking effort and *who feel free to be less precise as the situation permits.*” [*italics his*] (1978, p. 28). “Neurotic perfectionists”, on the other hand, were described as

individuals who "...are unable to feel satisfaction because in their own eyes they *never seem to do things good enough to warrant that feeling.*" [italics his] (Hamachek, 1978, p. 27). This distinction implies that pathology associated with perfectionism is likely accounted for by "critical evaluation tendencies" (Frost et al., 1990, p. 450) rather than by the actual setting of standards which are extremely high. This distinction between adaptive and maladaptive perfectionism is valuable because the setting of high standards for oneself has been associated with healthy functioning, while other dimensions of perfectionism appear to be associated with poor functioning (cf. Frost et al., 1990).

Perfectionism has more recently been described as a multidimensional construct by Frost and colleagues (1990). A review of the perfectionism literature led these authors to conclude that a variety of tendencies was associated with perfectionism. They developed the Multidimensional Perfectionism Scale (MPS; Frost et. al, 1990), which is comprised of the following six subscales: concern over mistakes (CM), organization (O), parental criticism (PC), parental expectations (PE), personal standards (PS), and doubts about actions (DA). As discussed in the next section, some dimensions have been considered to be more maladaptive than others.

Multidimensional perfectionism: Hewitt and Flett. A second problem associated with the unidimensional definition of perfectionism is that it concentrates solely on perfectionism directed towards the self. Hewitt & Flett (1991a) contended that, in addition to the intrapersonal dimensions, there are also interpersonal properties to perfectionism and that these properties are likewise relevant to psychopathology or other difficulties.

Through a comprehensive body of empirical study, Hewitt, Flett and colleagues (e.g., Hewitt & Flett, 1991a, 1993; Hewitt, Flett, Turnbull-Donovan, & Mikail, 1991) have also conceptualized perfectionism as a multidimensional variable and have identified three dimensions of this construct. They developed a multidimensional measure, also called the Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991a), which conceptualizes perfectionism as being comprised of self-related and interpersonal components. Specifically, they have described (i) self-oriented perfectionism (SOP) – the holding of extremely high expectations for the self, (ii) other-oriented perfectionism (OOP) – imposing unrealistic expectations on others, and (iii) socially prescribed perfection (SPP) – the perception that others are prescribing standards of perfection on oneself (Hewitt & Flett, 1991a). Both of the MPS measures address the problems with unidimensional conceptualizations of perfectionism. The psychometric properties of both MPS' are discussed in detail in the Measures section of Study 1.

Associations between Frost and Hewitt & Flett dimensions. Four separate studies have compared the two MPS scales through the investigation of different patient populations (Enns & Cox, in press; Flett, Sawatzky, & Hewitt, 1995; Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Hewitt, Flett, Turnbull-Donovan & Mikail, 1991). A comprehensive summary of the results (Enns & Cox, in press) indicated a consistent pattern of associations between the various measures. In general, the Frost dimensions that appeared to have the strongest association with SOP were CM and PS. Furthermore, SOP was the only Hewitt & Flett dimension that was consistently associated with O of the Frost scale, although this relationship was a modest one. SPP was associated with most of the Frost dimensions, except for O, suggesting a “broad relationship...with

various kinds of psychopathology” (p.14, Enns & Cox, in press). SPP was also the only Hewitt & Flett subscale to demonstrate a consistent strong relationship with PC and PE, highlighting the interpersonal aspect of the SPP dimension. CM and PS were the Frost subscales that overall showed the strongest relationships with OOP, although these relationships were weaker than the ones for SOP and these dimensions. The correlation between CM and SPP and that between PS and SOP were large, whereas most other relationships were moderate.

Adaptive versus Maladaptive Dimensions of Perfectionism

Both theorists and researchers (e.g., Adler, 1956; Burns, 1980; Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Hamachek, 1978; Pacht, 1984; Terry-Short, Owens, Slade, & Dewey, 1995) have suggested that the dimensions of perfectionism can be distinguished as possessing either adaptive or maladaptive qualities. For example, Hamachek (1978) theorized that there is a distinction between “normal” and “neurotic” perfectionism. Frost et al. (1993) compared the two MPS instruments and conducted a factor analysis of the scales. The factor analysis suggested that two domains represented the various MPS dimensions: “maladaptive evaluation concerns” (composed of the CM, PC, PE, DA, and SPP dimensions) and “positive achievement strivings” (composed of the PS, O, SOP, and OOP dimensions), as outlined in Table 1.

Table 1

Results of Factor Analysis of Both MPS scales

Maladaptive Evaluative Concerns (Maladaptive Perfectionism)	Achievement Strivings (Adaptive Perfectionism)
Concern over Mistakes (CM)	Personal Standards (PS)
Parental Criticism (PC)	Organization (O)
Parental Expectations (PE)	Self-Oriented Perfectionism (SOP)
Doubts about Actions (DA)	Other-Oriented Perfectionism (OOP)
Socially-Prescribed Perfectionism (SPP)	

Note. Results from Frost et al., 1993

The Intra- and Interpersonal Dimensions of Perfectionism

Self-oriented and socially-prescribed perfectionism are analogous to certain personality variables that have been discussed in relation to depression (Hewitt & Flett, 1993). These other variables are sociotropy (SOC) and autonomy (AUT) as described by Beck (1983) and dependency (DEP) and self-criticism (SC) as described by Blatt and colleagues (e.g., Blatt & Schichman, 1983). Sociotropic individuals have been described as possessing high needs for acceptance and approval from others, as being concerned about disapproval from others, as well as being highly invested in positive encounters with others (e.g., Coyne & Whiffen, 1995). Autonomous individuals have been described as being concerned with the internalized setting of goals, achievement of these goals, and resultant self-critical thoughts or behaviours when the goals are not reached (e.g., Coyne & Whiffen, 1995). Similarly, Blatt and colleagues differentiated between dependent (or anaclitic) depression and self-critical (or introjective) depression. In short, dependent

depression is associated with feelings of helplessness, loss, loneliness, and weakness, while self-critical depression is characterized by self-criticism and feelings of low self-worth, failure, guilt, and inferiority (e.g., Blatt, 1995). Originally proposed by separate authors, sociotropic and dependent personality factors are nevertheless analogous to one another (their pairing sometimes referred to as "SOC-DEP"), as are the personality variables of autonomy and self-criticism (known collectively as "AUT-SC") (cf. Coyne & Whiffen, 1995).

Self-oriented perfectionism may be conceptualized as an autonomy or self-criticism dimension, while socially-prescribed perfectionism may be considered a sociotropy or dependent element (cf. Hewitt & Flett, 1991a). It should be noted, however, that certain differences exist between the perfectionism dimensions and the SOC-DEP and AUT-SC constructs (Hewitt, Flett, & Ediger, 1996; Hewitt & Flett, 1991a).

Perfectionism and Eating Disorders: Empirical Studies

Few studies have investigated perfectionism dimensions in relation to eating disorders. However, some studies have investigated the association of comparable constructs (sociotropy, autonomy, dependency, and self-criticism), as well as related constructs such as self-expectations and concern about social approval, to eating disorder symptoms. Such studies, as outlined below, are important to review because of their overlap with the Hewitt and Flett perfectionism dimensions. The literature review that follows includes studies that have explored perfectionism dimensions, as well as those that have used constructs such as autonomy or sociotropy, to describe similar phenomenon. These latter constructs are reviewed because of their relation to the multidimensional perfectionism construct.

Earlier, it was mentioned that through seminal writings and the beginnings of empirical study, perfectionism has been shown to be a promising variable to investigate in relation to eating disorders. For example, studies have shown a relationship between eating disorders and unrealistic or perfectionistic standards for beauty and thinness (e.g., Garner, Olmsted, Polivy, & Garfinkel, 1984), as well as unrealistic aspirations that are difficult to attain (Butterfield & Leclair, 1988; Garner, Olmsted, & Polivy, 1983). Perfectionism is a personality style that has often been associated with eating disorders (e.g., Bauer & Anderson, 1989; Bruch, 1973; Garner, 1986; Slade, 1982) and has been associated with feeling fat in females (Striegel-Moore, McAvay, & Rodin, 1986). According to Slade (1982), obsessive-compulsive traits or tendencies toward perfectionism are the most commonly observed predisposing factors for the development of the eating disorders (AN and BN).

Individuals with anorexia nervosa and bulimia nervosa have regularly been assessed, for both clinical and research purposes, with the Eating Disorder Inventory (Garner, Olmsted, & Polivy, 1983), a self-report inventory developed to measure associated cognitive and behavioural characteristics. The EDI has a Perfectionism subscale on which individuals with anorexia nervosa and bulimia nervosa score higher than controls (e.g., Garner et al., 1983).

The link between bulimia symptoms and perfectionistic tendencies has been empirically demonstrated. For example, individuals diagnosed with BN, as well as those exhibiting subclinical bulimic symptoms, have been shown to exhibit greater perfectionism, defeatism, regret, and body dissatisfaction as compared to a non-eating-disordered group (Thompson, Berg, & Shatford, 1987). Perfectionism, along with related

features such as obsessive-compulsive rumination, scrupulousness, excessive orderliness, and rigidity, was evident in a group of hospitalized bulimic patients, while such traits were not significantly associated with a control group of general psychiatric patients (Rothenberg, 1990). Individuals who endorsed bulimic symptoms showed a tendency to possess rigid, perfectionistic beliefs (Ruderman, 1986).

Perfectionism as a risk factor. Perfectionism was found to be a risk factor for bulimic symptoms in women in two studies reported by Joiner, Heatherton, Rudd & Schmidt (1997). Rather than being a risk factor for all who demonstrated this variable, however, perfectionism was found to affect bulimic symptoms along a diathesis-stress model. Diathesis-stress models are often used to explain why certain individuals develop particular conditions or disorders, while other individuals do not. Such models involve the identification of (i) diatheses – pre-morbid stable characteristics associated with the individuals, variables which are presumed to exist in the individual prior to developing the disorder and (ii) environmental stressors associated with the manifestation of the disorder. The underlying premise of diathesis-stress models is that “stress activates a diathesis, transforming the potential of predisposition into the presence of psychopathology” (Monroe & Simons, 1991, p. 406).

The findings of Joiner, Heatherton, Rudd, & Schmidt (1997) indicated that perfectionism was a risk factor for those women who perceived themselves as overweight, whereas those women who did not have a perception of being overweight were unlikely to show signs of bulimic behaviour, whether or not they also demonstrated perfectionistic tendencies. Thus, the presence of perfectionistic tendencies may be thought of as a diathesis with perception of being overweight serving as the stressor.

Women demonstrating perfectionistic tendencies who did not feel overweight obtained bulimic scores similar to those who did not show perfectionistic tendencies. Interestingly, while perceived weight served to activate perfectionism as a risk factor, actual weight of the women did not. These findings have been more recently replicated and extended in further longitudinal studies, with self-esteem being found to moderate the interaction between perfectionism and perceived weight status (Vohs, Bardone, Joiner, Abramson, & Heatherton, 1999; Vohs et al., 2001).

The above studies by Joiner, Vohs and colleagues did not use a perfectionism measure that assessed domain-specific perfectionism. Instead, the authors used the Perfectionism subscale of the Eating Disorders Inventory (EDI-P; Garner et al., 1983), considered to be a measure of general perfectionism. The model supported by the studies of Joiner and colleagues suggests that general perfectionism is a diathesis for eating problems. Use of more specific perfectionism measures in the current study was expected to yield richer information about whether certain domains within perfectionism are more important in relation to ED.

Predictive validity of perfectionism. Most research investigating perfectionistic tendencies in eating disorders has been cross-sectional. However, Joiner, Heatherton, & Keel (1997) conducted a longitudinal study examining the temporal stability and predictive validity of bulimia-related variables over 10 years. These authors found perfectionism to be a long-term predictor of bulimic symptoms. Along with other variables, perfectionism as measured by the EDI-P showed moderate temporal stability (10-year test-retest $r = 0.56$). Earlier measures of perfectionism were predictive of

bulimia nervosa symptoms 10 years later as assessed by the EDI Bulimia subscale and a DSM-based interview.

Drive for thinness at Time 1, also as measured by the EDI (Garner et al., 1983), was a consistent and unique predictor of bulimic symptoms at Time 2. The drive for thinness construct has been described as “an inflexible need for and preoccupation with thin shape” (Joiner, Heatherton, & Keel, 1997; p. 1137). As suggested by Joiner and colleagues, the EDI drive for thinness variable seems to have an obsessive-compulsive quality. Indeed, the connection among drive for thinness, eating disorders and obsessive-compulsive disorder (OCD) is one that has been made by numerous authors (e.g., Rothenberg, 1990). The nature of the drive for thinness construct seems to be congruent with the construct of perfectionism as one might conceptualize it as a perfectionism dimension specific to eating disorders. If this were true, it would seem that the strength of the drive for thinness construct as a predictor in the Joiner, Heatherton, & Keel (1997) study corroborates empirical findings regarding the relationship of perfectionism with eating disorders.

In a longitudinal study of the prognostic value of scores on the Eating Disorders Inventory in patients with anorexia nervosa, high initial scores on the Perfectionism subscale were significantly associated with poor prognosis 5-10 years later and with severity of illness (Bizeul, Sadowsky, & Rigaud, 2001). The predictive validity of perfectionism for eating disorder symptoms typical of both anorexia nervosa and bulimia nervosa provides validation for further examining the facets of perfectionism that might be related to the eating disorders. Moreover, the findings of Joiner, Heatherton, & Keel (1997) suggest that it is important to investigate the prognostic significance of

perfectionism for eating disorders (that is, how perfectionism is related to the prediction of treatment response for ED). The present study attempted to address these objectives.

Multidimensional aspects of perfectionism related to ED. As discussed above, much of the research on perfectionism, including research focused on eating disorders, has operationalized it as a unidimensional cognitive construct. Few studies have investigated the association of the different perfectionism dimensions to eating disorder tendencies and behaviours. Hewitt, Flett & Ediger (1995) conducted one such study, applying their conceptualization of multidimensional perfectionism to the area of disordered eating behaviour. Hewitt and colleagues studied female university students to examine the association between self, other, and socially-prescribed dimensions of perfectionism and eating disorder symptomatology, body image, and appearance self-esteem. Findings suggested that self-oriented perfectionism was related to anorexic-type symptoms, dieting and concerns with being thinner, but did not seem to be as involved in other aspects of eating disordered behaviour. Socially-prescribed perfectionism was related more broadly to disordered eating patterns and concerns about appearance and self-esteem. Interestingly, other-oriented perfectionism was significantly related to increased body image disturbance. The authors suggested that, in a nonclinical population, concern regarding body image may also be associated with needing others to be perfect.

In the study by Hewitt et al. (1995), the lack of a relationship between self-oriented perfectionism and bulimic attitudes or behaviours may have been an artifact of the eating disorder measures they used, as they neglected to use more detailed measures such as the Eating Disorder Inventory (Garner et al., 1983) or structured clinical

interviews. Conversely, it may indeed reflect the absence of, or a lesser degree of, self-oriented perfectionism in those students who scored higher on bulimia items/measures. Nevertheless, it is important to note that this study was not done with a clinical population and may not generalize to individuals with diagnosed eating disorders.

One of the strengths of Hewitt et al.'s (1995) study is its support for the hypothesis that multidimensional aspects of perfectionism are relevant to eating disordered behaviour. Its use of a nonclinical sample, however, does not allow one to state with certainty that perfectionism is related in a similar way to a clinical population. The present study addressed this issue by looking at a clinical sample and by selecting patients with eating disorders on the basis of structured diagnostic interviews.

A recent study investigated whether self-oriented and socially-prescribed perfectionism, along with several other variables, may be risk factors for eating disorders in a sample of young adolescent girls (McVey, Pepler, Davis, Flett, & Abdolell, 2002). Self-oriented perfectionism was found to be one of the variables associated with high levels of disordered eating. This study, however, was conducted in a cross-sectional manner, making it difficult to make conclusions about variables being actual risk factors, as opposed to concomitants or consequences of disordered eating.

Neurotic dimensions of perfectionism and the eating disorders. Using the Hewitt & Flett MPS, as well as the Neurotic Perfectionism Scale (NPQ; Mitzman, Slade, & Dewey, 1994), Davis (1997) studied perfectionism in female patients diagnosed with anorexia nervosa, bulimia nervosa, or eating disorder not otherwise specified (EDNOS). The dependent variable was body esteem and did not include the other relevant behaviours and tendencies associated with eating disorders. Davis reported no differences

among the three groups on the various aspects of perfectionism and therefore analyzed the data on the complete sample of participants. Rather than discussing in terms of inter- and intrapersonal aspects of perfectionism, Davis used a framework of normal versus neurotic perfectionism, wherein self-oriented perfectionism (SOP) was considered to represent “normal perfectionism” and NPQ scores represented “neurotic perfectionism”. Findings suggested that both normal and neurotic perfectionism were related to body-image perceptions but that there was an interactive relationship, not an additive relationship. There was a positive relationship between positive perfectionism and body esteem that only existed when neurotic perfectionism was low. Body esteem was at its lowest when both normal and neurotic perfectionism were elevated. Moreover, these results were found when (overall) neuroticism was controlled. According to Davis (1997), the results indicated that eating disorder characteristics can be understood as manifestations of setting personal standards that are unreasonably high and as involving an intense fear of failing to reach goals. Such a conceptualization would seem to be captured by the construct of self-oriented perfectionism or possibly by Frost’s dimensions of concern over mistakes and personal standards. However, due to the manner in which the data were analyzed, it is not possible to make conclusions of this nature. The dependent variable in Davis’ study may be considered limited as it tapped only one characteristic of eating disorder symptomatology, body esteem. Including other characteristics (e.g., dieting or purging behaviours) may have yielded different results. Nevertheless, the study by Davis (1997) highlights the importance of looking at perfectionism dimensions in relation to eating disorders.

The importance of both SOP- and SPP-type dimensions to eating disorders.

Bastiani, Rao, Weltzin, and Kaye (1995) explored both the Hewitt & Flett dimensions and the Frost dimensions in relation to anorexia nervosa, using both MPS scales and samples of underweight restricting anorexia patients, weight restored anorexia patients, and a normal control group. The study confirmed that patients with AN possess perfectionistic tendencies. From their comparison of underweight and weight restored samples, the authors concluded that perfectionism persists following weight restoration. However, this statement must be examined with some caution as the study was not longitudinal. The authors concluded that individuals with AN seem to experience self-imposed perfectionism rather than perfectionism that is directed towards the expectations of others. This statement seems to be a generalization based on trends in the data, as socially-prescribed perfectionism was elevated in underweight anorexics as compared to normal controls. Nevertheless, the conclusions of Bastiani et al. (1995) parallel the findings of Hewitt et al. (1995) wherein self-oriented perfectionism was related to anorexic-type symptoms, while socially prescribed perfectionism was related to more broad eating disorder symptoms.

Using the anaclitic/introjective dichotomy as outlined by Blatt and colleagues (e.g., Blatt & Schichman, 1983), Steiger and Ghadirian (1989) have hypothesized that classical anorexia nervosa (meeting full diagnostic criteria) is an introjective pathology, wherein the pursuit of thinness is a means of expressing the desire to independently control one's own body and life. However, the cases of atypical AN reviewed by these authors suggested anaclitic pathologies in which immature personalities and chronic difficulties with self-regulation led to the repeated formation of dependent attachments or

to clinging to families of origin. Affective disorders were also associated with the anaclitic type, related to reactions to loss and abandonment, as opposed to self-esteem or self-worth injuries. Again, this anaclitic/introjective dichotomy can be viewed within the SOC-DEP versus AUT-SC model, which parallels the multidimensional view of perfectionism, particularly as outlined by Hewitt and Flett. Steiger and Ghadrian's (1989) study then seemed to be emphasizing the significance of SOC-DEP to eating disorders.

The Frost dimensions. A recent study by Halmi et al. (2000) found that, relative to non-clinical comparison participants, women with a history of anorexia nervosa had elevated scores on all subscales of the Frost MPS except Organization. Additionally, the scores on the Perfectionism subscale of the EDI-2 in the sample of women with an eating disorders history exceeded normative data. Furthermore, greater severity of eating disorder symptoms was associated with higher levels of perfectionism. This study suggested that perfectionism is a prominent personality feature of individuals with anorexia nervosa and suggested the importance of examining perfectionism in eating disorders using a multidimensional framework.

In two studies using non-patient female university students in their samples, Minarik and Ahrens (1996) investigated the relationship between perfectionism (total score and perfectionism dimensions) and pathology (i.e., eating behaviour, depressive and anxiety symptoms). In the first study, Minarik and Ahrens found a relationship between concern about mistakes (CM), as measured by the Frost MPS, and disordered eating behaviour, as measured by the Eating Attitudes Test – 26 (EAT; Garner, Olmsted, Bohr, & Garfinkel, 1979) and the EDI. There was also a relationship between doubts about actions (DA), although this was a weaker relationship than the one for CM. These

authors did not find a relationship between parental expectations, parental criticism, or personal standards with eating-disordered behaviour, despite expectations and prior studies which suggested that family environment is related to bulimia nervosa (e.g., Wonderlich, 1992) and the studies that have suggested that high personal standards may be associated with bulimia nervosa (e.g., Thompson et al., 1987).

The second study, conducted to replicate the unexpected results and to examine the specificity of perfectionism's relationship to anxiety as opposed to depression, also found that CM and DA were both related to eating disordered behaviours. Again, there was not a significant relationship between eating behaviour and personal standards or parental expectations. However, parental criticism was marginally associated with both eating measures, although when CM and DA were controlled for, PC did not predict residual scores of either eating measure.

Previously, Thompson et al. (1987) had found that worry about food, and weight-related issues (along with other cognitive distortions) was higher among a bulimic sample as compared to a bulimic-like group (i.e., fulfilling some but not all BN criteria) and a symptom-free control group. A sample item tapping this type of worry is "I frequently find myself worrying 'What if I go out of control and eat too much?'". Because of their findings regarding the positive relationship of CM and DA with disordered eating behaviour, Minarik and Ahrens (1996) hypothesized that the relationship between worry and BN, as observed by Thompson and colleagues, may be "due to a more generalized concern about mistakes" (p. 160). Minarik and Ahrens (1996) suggested that a more general fear of making mistakes is formed by society's standards of beauty into a fear of

not achieving those beauty ideals, thereby leading to eating attitudes and behaviours that are disturbed.

The complex relationships found in this study indicate the relevance in looking at multiple dimensions of perfectionism when investigating pathology. The association of CM to scores on the EAT and EDI suggests that SPP would also be associated with EAT and EDI scores in a non-clinical population, given the correlation between CM and SPP (Enns & Cox, in press). However, the use of a non-clinical sample makes it difficult to extrapolate the findings of Minarik and Ahrens (1996) to a defined clinical population (i.e., one with clinically diagnosed ED). The use of a clinical sample in the present study addressed this issue.

Sociotropic (SOC-DEP) and autonomic (AUT-SC) themes in the eating disorders.

A study describing coping styles, attitudes, and irrational beliefs of bulimic women found that this sample placed a high value on the approval of others, demonstrated tendencies towards self-denigration, and imposed a great deal of pressure on themselves to attain unrealistic standards (Butterfield & Leclair, 1988). This finding may be evidence for what has been described as self-oriented and socially prescribed perfectionism in women experiencing bulimia nervosa. Other studies have similarly demonstrated that high expectations for self and need for approval, as well as poor self-esteem and a sense of failure, were characteristic of females with bulimia nervosa (Katzman & Walchik, 1984; Lacey, 1984). Social dependency, along with concerns about evaluation and separation, were also observed to be elevated in individuals with high scores on a bulimia self-report test as compared to non-symptomatic individuals (Jacobson & Robins, 1989), although differences in social support were not found. In a sample of female undergraduates,

Public Self-Consciousness and Social Anxiety, as measured by the Self-Consciousness Scale (Fenigstein, Schier, & Buss, 1975), were associated with restrained eating (Blanchard & Frost, 1983), suggesting that individuals concerned with dieting may be characterized by sensitivity to social approval and disapproval.

In examining scores of female undergraduates on the Bulimia Test (BULIT; Smith & Thelen, 1984), a measure of bulimic symptoms, and the Rational Beliefs Inventory (RBI; Shorkey & Whiteman, 1977), a measure of irrational beliefs covering various domains, Ruderman (1986) concluded that women with bulimic tendencies are likely to have “distorted cognitions of a rigid, perfectionistic and demanding nature” (p. 197). Ruderman also concluded that individuals scoring high on the BULIT use other people as a frame of reference for judging themselves, relying more on external standards for making decisions about their behaviour than on internal standards. Ruderman’s (1986) findings lent support to the clinical observations of White and Boskind-White (1984), who noted that individuals with BN show great concern about pleasing others and gaining their approval. These characteristics are congruent with those typified by sociotropy and dependency as explained above.

Preoccupation regarding physical appearance (shape and weight) is an essential characteristic of both BN and AN (APA, 1994). It has been suggested that an underlying component of this preoccupation is a concern with the way in which others perceive the self generally (Striegel-Moore, Silberstein, & Rodin, 1993). Striegel-Moore et al. (1993) discussed this preoccupation with self-presentation and with how others view and assess oneself as the “social self”, using the nomenclature first delineated by James (1890/1983). In order to investigate the relationship of the social self to body esteem, as

well as to bulimia nervosa, Striegel-Moore et al. (1993) examined the relationship of social-self measures to body esteem in a nonclinical sample of women at Time 1 of a study, and then investigated any differences in these measures between nonclinical participants, individuals who scored high on eating disorder measures but were not clinical patients, and BN patients (Time 2). Findings indicated that concerns in the social-self domain were strongly associated with body dissatisfaction and disordered eating. Specifically, low body esteem was related to the social-self dimensions of Perceived Fraudulence (the experience of perceiving oneself as an imposter), Public Self-Consciousness (concern about others' reactions to the self), and Social Anxiety (discomfort when with others). These findings suggest that women with bulimic symptoms are preoccupied not only with how their physical selves are viewed by others, but also with the way in which others view the self in general. It seems conceivable that social self concerns are analogous to socially-prescribed perfectionism, in that both operate in an interpersonal manner.

Perfectionistic self-presentation, measured with an unpublished scale, was found to be related to bulimic and anorexic tendencies and to concerns regarding social evaluation of one's physical appearance (Hewitt et al., 1995). This suggests that eating disorders are related to strong needs to present oneself to others as being perfect and to avoid revealing imperfection regarding the self. It seems that social aspects of perfectionism are strongly related to appearance concerns.

As mentioned, sociotropy is related to themes of approval and acceptance while autonomy is related to themes of achievement and independence. Friedman and Whisman (1998) were interested in examining the association between BN and these cognitive-

personality styles, as well as the specificity of sociotropy and autonomy as they relate to symptoms of BN versus depression. Using a non-clinical undergraduate sample, these authors found that both sociotropy and autonomy were associated with BN symptomatology. However, when the effects of depressive symptoms were controlled, only sociotropy showed a unique association with BN symptoms. The authors concluded that need for approval and acceptance from others may be significant cognitive-personality features of bulimia nervosa. This is consistent with the studies cited above.

Friedman and Whisman (1998) discussed the possibility (as earlier suggested by Striegel-Moore, Silberstein, & Rodin, 1986) that individuals with a sociotropic propensity may be more susceptible to the societal messages in North American culture to be thin and that such individuals may be more likely to engage in restrictive eating patterns that can lead to bingeing. Moreover, these authors suggested that because of the extreme importance they place on interpersonal relationships, highly sociotropic individuals may be more inclined to “engage in particularly extreme restrictive behaviors to gain the approval of others” (p. 442).

“Positive” and “negative” perfectionism and the eating disorders. Terry-Short et al. (1995) conceptualized perfectionism dimensions in terms of being positive (related to achievement of positive consequences) or negative (a function of avoidance of negative reinforcers or consequences) and constructed a questionnaire called the Positive and Negative Perfectionism Scale (PANPS). Using a non-patient comparison group, a group with disordered eating, a group with symptoms of depression, and a group of successful athletes, these authors conducted a factor analysis on their perfectionism questionnaire and concluded that conceptualizing perfectionism as positive or negative was more

relevant than distinguishing between personal and social dimensions. That is, they found their questionnaire to clearly discriminate between positive and negative perfectionism, overriding the distinction between self-oriented and socially-prescribed perfectionism (as per Hewitt and Flett's work). The distinction made by Terry-Short et al. (1995) is in keeping with Hamachek's (1978) normal and neurotic dichotomy, a distinction between "satisfied" and "dissatisfied" perfectionists made by Slade & Dewey (1986), and the categories of positive achievement strivings and maladaptive evaluation concerns delineated by Frost et al. (1993).

Group comparisons suggested that the eating disorder group demonstrated a significantly higher level of positive perfectionism than the comparison group and a significantly higher score for negative perfectionism than the comparison group or the athletes. The eating disorder group scored highest on the negative dimension, highest on total perfectionism and its ratio of positive to negative perfectionism, similar to the depressed group's, was significantly lower than the ratios for the athletes and the comparison group. Psychological disturbance seemed to be related to a greater level of negative perfectionism relative to positive perfectionism.

As outlined in the following Objectives and Hypotheses section, one of the goals of the present study was to investigate the relationship between eating disorders and the various perfectionism dimensions. The relationship among the perfectionism dimensions themselves was also examined, to see whether variables "hung together" in some cohesive way, such as the aforementioned adaptive and maladaptive groupings.

Specificity

Diagnostic specificity refers to the notion that distinct mental disorders exist that are each composed of discrete patterns of symptoms (cf. Beck & Haaga, 1992). For example, principles of diagnostic specificity assume that depression and anxiety are composed of distinct symptom constellations. However, comorbidity research suggests that the two disorders overlap (L.A. Clark & Watson, 1991) and that many clients present and can legitimately be diagnosed with multiple diagnoses, leading to the conclusion that individuals may share basic vulnerabilities that lead to chronic negative state (Beck & Haaga, 1992). In other words, disorders such as anxiety and depression may lack diagnostic specificity. Ingram (1990; Ingram & Kendall, 1987) suggested that a psychopathology model based on a "meta-construct" makes more sense. The premise of this model is that psychological disorders share common cognitive factors (e.g., extreme self-focused attention) but are differentiated from each other by specific sub-factors (e.g., cognitions regarding loss in depression and danger in anxiety).

Bromet, Jandorf, Fennig, and Lavelle (1996) stated that many longitudinal studies investigating prognostic indicators lack a theoretical model and begin with the assumption that the disorder under question is a distinct entity despite the fact that different psychiatric disorders, as outlined in the DSM, actually have many major characteristics in common. This atheoretical view, these authors say, limits the "explanatory power" of the research because the focus is reduced to finding associations among patients with a single disorder (which happens to not be homogeneous).

An issue of particular pertinence to the current study and which falls within the domain of diagnostic specificity is the association of particular tendencies or traits with

certain psychological disorders. The principle of cognitive specificity, for example, hypothesizes that each psychological disorder possesses a discrete constellation of maladaptive cognitions (e.g., Clark, Beck, & Stewart, 1990). The various SOC-DEP and AUT-SC types of factors discussed in relation to depression, bulimia nervosa, and anorexia nervosa have at times been hypothesized to be specific variables that distinguish the respective disorders. However, these psychosocial variables may not be specific to the respective disorders, in that symptoms may be shared between disorders. For example, in a study investigating the diagnostic specificity of dependency and self-criticism variables for major depression versus panic disorder with agoraphobia, Bagby et al. (1992) found that the self-criticism dimension had a stronger relationship to depression (i.e., it may possess specificity for depression); whereas, the dependency dimension was nonspecific. Both depressed and panic disorder participants demonstrated similar scores on this latter measure. This study indicated that the self-critical personality dimension is a possible specific vulnerability factor for major depression but that the dependent dimension is likely not. Hewitt & Flett (1991b) also found that socially prescribed perfectionism (a dependency construct) is not necessarily specific to depression.

When a variable is shown to lack diagnostic specificity, it may be worth asking whether there are differences in quality between the way the variable is manifested in the two disorders that share that variable. Perhaps the variable in question means something different for each disorder or serves different functions in the two diagnostic categories. As an example, Joiner, Schmidt, and Wonderlich's (1997) findings suggested that "body-contingent" self-esteem may lack diagnostic specificity for the disorder of bulimia nervosa since this variable was also present in depressed women. The authors

hypothesized, however, that the nature or “phenomenology” of body-contingent self-esteem is different for BN groups versus those suffering from depression or other disorders. They posited that perhaps BN cognitions related to self-esteem may resemble “I hate my body and therefore myself” as opposed to “I hate myself and therefore extensions of my self, including my body”, which may be more characteristic of depressed women (Joiner, Schmidt, & Wonderlich, 1997; p. 74).

Although this theory has not yet been tested, support for this concept would indicate that self-esteem associated with BN would be more truly body-contingent, whereas the self-esteem associated with depression would be more representative of a globally negative view of the self that cuts across all domains of self-esteem, including satisfaction with one’s body. With regard to the above example of the dependency dimension, it may mean something qualitatively different for panic disorder populations than for depressed populations.

Specificity: Depression and the eating disorders. The discussion of specificity is germane to the current study due to the observed link between eating disorders and depression, and because of the salience of perfectionism to both these disorders. Generally, studies report a 50-60% lifetime comorbidity of major depressive episodes for individuals with AN, with another 35-40% of individuals with AN having a history of dysthymia (Herzog, 1984; Nielsen, 2001). Estimates for lifetime rates of major depression in BN range from 52-83% (Braun, Sunday, & Halmi, 1994). The comorbidity relationship between depression and eating disorders poses methodological problems and questions of causality. Are disordered eating behaviours (e.g., restricted eating or aberrant appetite) actually symptoms of depression or does depression manifest

psychologically or physiologically from an eating disorder (cf. Herzog et al., 1996)? There is some evidence, for example, that body-image and eating disturbances that develop in puberty might contribute to the elevated levels of depression observed in female adolescents (Stice, Hayward, Cameron, Killen, & Taylor, 2000). Investigations to date have been equivocal in their findings regarding this dilemma regarding the association between eating disturbance and depressed mood.

Importance of perfectionism to depression. Numerous studies have demonstrated an important relationship between depression and perfectionism. The two MPS measures in particular have been used to study this relationship. Using samples of undergraduate students, correlations between the Hewitt and Flett dimensions and symptoms of depression have been found (e.g., Flett, Hewitt, Blankstein, & O'Brien, 1991; Frost et al., 1993). In such studies, socially prescribed perfectionism has shown the strongest correlation with depression, whereas the relationship with self-oriented perfectionism has been less consistent and strong although generally positive, and other-oriented perfectionism has not generally been related significantly to depression (cf. Enns & Cox, 1999). Depressed patients demonstrated elevated levels of self-oriented perfectionism as compared to anxiety patients and normal control participants (Hewitt & Flett, 1991b). Both depressed and anxious patients demonstrated higher levels of socially-prescribed perfectionism compared to control participants. The authors suggested that self-oriented perfectionism may possess more specificity for depression and might not generalize to clinical anxiety. In a prospective test of a specific vulnerability hypothesis, Hewitt, Flett and Ediger (1996) found that, in a sample of patients with unipolar/bipolar depression, self-oriented perfectionism predicted symptoms of depression only when it interacted

with achievement stressors, and socially-prescribed perfectionism predicted depression as a main effect but did not interact with stressors of either sort (achievement or social stress).

Studies of undergraduate samples (Frost et al., 1990; Frost et al., 1993; Minarik & Ahrens, 1996) have reported correlations between the Frost MPS dimensions and depression. As summarized by Enns & Cox (1999; in press), doubts about actions and concern over mistakes demonstrated the strongest relationships with depression, whereas personal standards and organization showed negative or small positive correlations with self-reported depression.

The self-criticism construct has been implicated in depression by many theorists and researchers (e.g., Bagby et al., 1994; Blatt, 1974; Blatt et al., 1982; Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982; Coyne & Whiffen, 1995; Enns & Cox, 1997). Findings by Bagby et al. (1992) suggested self-criticism (SC as measured with the DEQ) to be one of the major vulnerability factors for major depression. A recent study by Rector, Bagby, Segal, Joffe, & Levitt (2000) found SC to be a significant negative predictor of depression scores for patients obtaining depression treatment.

Investigations, then, have shown the salience of perfectionism and self-criticism for both depression and eating disorders. Considering also the high comorbidity between these disorders, the question arises of whether perfectionism might be present in eating disorders simply because it is a variable associated with depression, which may be the "primary disorder" or "driving force" in those presenting with eating disorders. Given that a premise of diagnostic specificity involves particular tendencies (in this case, perfectionism) being associated with certain psychological disorders (e.g., eating

disorders), and given that perfectionism has been shown to be associated with both eating disorders and depression, a discussion of specificity becomes relevant to an investigation of eating disorders and perfectionism. In order to address this matter, the current study compared the eating disorder sample with data from a depression sample on the dimensions of perfectionism.

The unique relationship of the self-criticism construct to multidimensional perfectionism. From the investigations into the relationships between depression and the personality constructs of AUT-SC and SOC-DEP, a special relationship between perfectionism and self-criticism has been conceptualized by Enns & Cox (1997), Blatt (1995), and Bergner (1995). Blatt (1995) described self-oriented perfectionism (SOP) as involving “exceedingly high unrealistic standards and an intensive self-scrutiny and criticism” (p. 1006), suggesting that self-criticism may be a maladaptive element of SOP. He also described individuals with self-critical depression as possessing “a chronic fear of disapproval, criticism and rejection” (p. 1009) and thus as striving for perfection in their achievements. This latter description is suggestive of aspects of socially-prescribed perfectionism. Bergner (1995) has suggested that maladaptive self-criticism is associated with socially-oriented concerns such as being overly preoccupied with others’ views and being highly vulnerable to others’ criticisms. Furthermore, Shafran, Cooper, and Fairburn (2002), in their cognitive-behavioural framework of perfectionism, purported that a key feature of perfectionism is self-criticism and negative self-evaluation following failure to meet self-standards.

Two studies have compared the constructs of self-criticism and socially-prescribed perfectionism in their relationship to depression. Hewitt & Flett’s (1993) study

demonstrated a strong relationship between self-criticism and self-reported depression. Self-criticism was also strongly correlated with SOP ($r = .57$) and SPP ($r = .50$). Enns & Cox (1999) found that SPP, CM, and SC, as measured by the revised version of the Depressive Experiences Questionnaire (DEQ-R; Bagby, Parker, Joffe, & Buis, 1994), demonstrated medium to large correlations with self-reported depressive symptoms. All this seems to suggest that self-criticism may tap a specific maladaptive element of perfectionism that may not quite be encompassed by a focus solely on SOP or SPP. Because of the demonstrated importance of SC in relation to perfection, the current study included a measure of this construct.

Perfectionism as a Putative Predictor of Poor Prognosis

Across various modes of therapy, patient characteristics have been shown to be important predictors of response for therapy outcome (Blatt, 1992; cf. Blatt, Quinlan, Pilkonis, & Shea, 1995), and for therapeutic change (e.g., Blatt, Ford, Berman, Cook, & Meyer, 1988). Particularly relevant to the current study are the findings that perfectionism was a significant predictor of negative outcome of therapy for depression patients in four different forms of treatment and that perfectionism remained high among depressed individuals despite treatment (Blatt et al., 1995). This is an indication of how intractable a particular disorder may be when perfectionism is involved. It follows that targeting perfectionism in treatment may be important, when relevant, in order to improve the likelihood of treatment success. Given that various studies have demonstrated a link between perfectionism and eating disorders, it is important to know more about the prognostic utility of this construct in the treatment of eating disorders. As with depression, perfectionism may be related to poorer outcome in eating disorders.

Thus, knowing more about how perfectionism is related prognostically to eating disorders may aid in treatment planning wherein perfectionism is addressed, thus perhaps improving the likelihood of successful treatment.

With perfectionism having been demonstrated to be a long-term predictor of eating disorders (Joiner, Heatherton, & Keel, 1997), it is important to look at the way in which perfectionistic tendencies impact therapy (their prognostic significance) and whether they are permeable to change from therapy. Findings in these areas may improve treatment planning for the eating disorders. For example, targeting specific dimensions of perfectionism for a certain individual may be more helpful than trying to change overall perfectionism or targeting an area that is not pertinent to them (say, for example, self-oriented perfectionism). Towards gaining a better understanding of the manner in which perfectionism may impact on the status or progress of eating disorders in a clinical population, the present study examined perfectionism scores and eating disorder symptoms in a clinical eating disorder group over time.

Importance of Studying a Clinical Population

Much of the research investigating perfectionism as related to eating disorders has been done with non-clinical populations. It is important to look at the various perfectionism dimensions as they relate to a clinical sample. In particular, clinical research is useful in gaining a better picture of the type of relationship that exists between dimensions of perfectionism and the clinical aspects of eating disorders, helping to expand understanding of these disorders.

Objectives and Hypotheses

The primary goal of this thesis was to examine perfectionism, as a multidimensional construct, in its prognostic and specific relationships to eating disorder symptomatology. Two studies were used to accomplish the overall objectives. Three different participant samples were used in various aspects of the thesis: a clinical sample of patients diagnosed with eating disorders (ED sample), a clinical sample of patients diagnosed with major depressive disorder (MDD sample), and a non-clinical university student sample (UNIV sample).

The first part of Study 1 investigated the relationship of perfectionism dimensions to each other and examined which perfectionism dimensions were more highly associated with the eating disorder sample, as compared to (i) another clinical sample in which perfectionism has been implicated (MDD sample) and (ii) a non-patient sample (UNIV sample). As a further check regarding the degree of association of perfectionism dimensions to membership in the clinical samples, appropriate norms were also consulted.

Minarik and Ahrens' (1996) study demonstrated the relationship between concern over mistakes (CM) and disordered eating. Their research also showed a relationship between doubts about actions (DA) and eating disorder symptoms. Other studies, as discussed, showed a trend of social concerns being related to eating disorders that one might extrapolate to be related to socially-prescribed perfectionism (SPP). SPP has been found to be related to a broad range of disordered eating behaviours, as well as appearance concerns (Hewitt et al., 1995). Therefore, it was hypothesized that SPP, as

measured by Hewitt and Flett's MPS, as well as CM and DA, as tapped by the Frost MPS, would be elevated in the ED sample as compared to the non-clinical UNIV sample.

The four separate MPS comparison studies (Enns & Cox, in press; Flett, Sawatzky, & Hewitt, 1995; Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Hewitt, Flett, Turnbull-Donovan & Mikail, 1991) demonstrated a strong relationship between personal standards (PS) and self-oriented perfectionism (SOP). In the ED studies reviewed, there were generally more significant findings dealing with those concepts related to SPP than with SOP or PS. For example, Minarik and Ahrens (1996) reported a lack of relationship between PS and disordered eating. However, Terry-Short et al. (1995) found that individuals with eating disorders obtained high scores on both positive and negative perfectionism. Furthermore, Hewitt et al. (1995) found that SOP was associated with certain types of disordered eating behaviours (e.g., dieting, concerns about thinness). It was hypothesized, then, that "positive dimensions" such as PS and SOP would also be elevated in the eating disorder sample of the current study, as compared to the UNIV sample.

Perfectionism and criticism oriented towards the self were shown to be important factors in the eating disorders (e.g., Butterfield & Leclair, 1988; Frank, 1991; Hewitt et al., 1995; Lehman and Rodin, 1989). In the current study, it was hypothesized that self-criticism (SC) would be elevated in the ED sample as compared to the UNIV sample.

Consistent relationships between PC and PE and the symptoms of eating disorders have not been found. In the present study, a significant relationship with these variables was not expected. However, in an exploratory fashion, PC and PE were included in analyses because the relationship has not been extensively studied up to this point. These

variables were not hypothesized to be more elevated in the ED sample than the UNIV sample, however, in part because the mean age of the UNIV sample was predicted to be lower than the clinical groups and it was thought that parental effects in the student sample would be fairly strong due to developmental/maturational issues.

Hewitt and Flett's (1991) other-oriented perfectionism does not appear to be particularly relevant to the eating disorders (Mitzman, Slade, & Dewey, 1994). Likewise, Frost's (1990) organization does not appear to have much association with psychopathology (Enns & Cox, in press). These dimensions were not included in the hypotheses.

As discussed in the Introduction, studies investigating the Hewitt and Flett dimensions have shown SPP and SOP to be elevated in samples of depressed individuals and to have relatively high correlations with symptoms of depression in samples of undergraduate students (cf. Enns & Cox, 1999). For the most part, OOP has not been related significantly to depression. In the present study, it was expected that SPP and SOP would be higher in the MDD sample than in the non-clinical comparison group of university students.

The Frost dimensions which have been shown to have the strongest relationships with depression are DA and CM, while PS and O have shown weak or no relationships with depression (cf. Enns & Cox, 1999). DA and CM were hypothesized to be higher in the MDD sample as compared to the non-clinical sample; no differences between the MDD and UNIV samples were expected for PS and O. PC and PE have been less extensively studied in relation to depression and were not hypothesized to be more elevated in the depression sample as compared to the sample of university students. SC,

which has so often been found to be associated with depression (e.g., Enns & Cox, 1997), was also hypothesized to be higher in the MDD sample as compared to the non-clinical student sample.

It was also expected that, using normative data, mean scores for the two clinical groups on the aforementioned Frost et al. perfectionism dimensions would be at least one standard deviation higher than respective normed means for the reference group composed of university students (Parker & Adkins, 1995). Means for the UNIV sample were hypothesized to fall within the mean for the reference student group. Using norms for the Hewitt & Flett perfectionism dimensions (Hewitt et al., 1991), it was expected that the mean scores for the clinical samples would be within the mean range as compared to other clinical samples and, for the non-clinical sample, within the mean range of a community sample.

In Study 1, the perfectionism dimensions were subjected to a factor analysis to determine whether dimensions would load onto similar factors as had been found in previous research (Frost et al., 1993), namely adaptive and maladaptive groupings. Specifically, SPP, SOP, CM, DA, PC, PE, PS, O, SC were hypothesized to fall into two major groupings when factor analysed, an adaptive grouping (composed of PS, O, and SOP) and a maladaptive grouping (composed of CM, PC, PE, DA, SPP) as per Frost et al.'s 1993 findings). SC was also hypothesized to fall into the maladaptive grouping given its highly negative and maladaptive associations, as discussed above.

Having determined which perfectionism dimensions were relatively higher in the ED sample through examination of group differences, the second part of Study 1 investigated specificity of the perfectionism dimensions for eating disorders. The

objective was to examine specificity of perfectionism for eating disorders through a comparison of the perfectionism dimensions for the ED sample and the MDD sample. A sample of patients diagnosed with depression was chosen for comparison due to the preponderance of research implicating perfectionism in that particular disorder. This aspect of the study was exploratory in that research to date has not directly compared these two groups on perfectionism dimensions and has not been definitive in delineating specificity with these populations. Personal standards scores (hypothesized to fall within a grouping of “adaptive” perfectionism) were expected to be higher in the ED sample than in the MDD sample. With this construct theorized to represent higher drive for personal control and thus hypothesized to be more relevant to eating disorders, it was expected that adaptive perfectionism would be able to discriminate between the two clinical disorders (ED and MDD) in an incremental fashion over depression symptoms. A discriminant function analysis was conducted.

The objective of Study 2 was to investigate the prognostic significance of perfectionism for eating disorders. This was accomplished through a naturalistic clinical follow-up of participants with eating disorders over the course of their treatment. Data was gathered at Time 1 (initial visit to an eating disorders treatment program) and at Time 2 (6 months after the initial visit). I inspected for any changes in ED symptoms over time and investigated whether perfectionism dimensions predicted any such changes. Two main sets of analyses were conducted, one set to examine the predictive ability of baseline perfectionism dimensions for Time 2 eating disorder severity and the second set to examine the ability for perfectionism change scores to predict change in eating disorder symptoms. The perfectionism dimensions which were hypothesized to be

the best predictors in both sets of analyses were SPP, CM, DA, SC, SOP, and PS. In the first set of analyses, it was hypothesized that these Time 1 perfectionism scores would significantly predict more severe eating disorders at Time 2 (controlling for Time 1 eating disorder symptom severity and depression symptoms). In the second set of analyses, it was hypothesized that the change scores for these perfectionism dimensions would significantly predict reduction in eating disorder symptoms over the course of treatment. This second set of analyses investigated the process of change during treatment, and served as an advanced psychotherapy-process model of eating disorder symptom prediction.

Study 1

Method

Participants and Procedure

Study 1 compared three different groups, the sample of patients diagnosed with eating disorders, the sample of patients diagnosed with major depressive disorder, and the university student sample. Participants in the ED sample were 78 adult female outpatients who received treatment through the Eating Disorders Program (EDP) at the Health Sciences Centre (HSC) and provided informed consent for study participation at their initial visit to the EDP (see appendix D for copy of consent form). Participants were diagnosed with anorexia nervosa (AN), bulimia nervosa (BN), or eating disorder not otherwise specified (EDNOS), as determined by completion of the Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1995), Eating Disorder and Major Depressive Disorder sections. The SCID (First et al., 1995) was used to ensure reliable and valid diagnoses for these disorders and was administered by an experienced

HSC psychiatrist (the head of the EDP at the time of the study) and/or senior psychiatry residents.

The breakdown for diagnoses of patients in this sample was 36.4% anorexia nervosa, 36.4% bulimia nervosa, and 27.3% EDNOS. Participants diagnosed with EDNOS were individuals who, at the time of the study, failed to meet threshold on all necessary criteria for anorexia nervosa or bulimia nervosa, but who presented with most of the symptoms of one of these disorders to the extent that treatment was deemed by the EDP team to be appropriate and warranted. Typically, individuals diagnosed with EDNOS had received a diagnosis for either BN or AN at one point, but were “moving between” diagnoses and thus did not meet full DSM-IV criteria for either disorder at the time of the study. The study did not include patients who presented with what is informally known as binge-eating disorder (BED), disorders involving regurgitation or chewing (without swallowing) and spitting out of food, disordered eating due to a medical condition, or aspects of disordered eating that did not meet clinical significance.

As determined by SCID interview, 37.2% of eating disorder participants met criteria for current major depressive disorder and 7.7% met criteria for past major depressive disorder. These rates are close to, although somewhat lower than, the lifetime rates of comorbidity for eating disorders and major depressive disorders (Neilsen, 2001). All eating disorder participants were clinically determined to have an eating disorder as their primary diagnosis; when present, depression was a secondary diagnosis. The eating disorder sample of the current study is representative of eating disorder clients who typically experience depression or dysthymia at some point in their lives. Had a “pure eating disorders” sample without comorbid depression been used, results would not have

been generalizable to the larger population of eating disorder clients who present for treatment.

Prior to their treatment, participants in the eating disorder sample completed questionnaires on items concerned with perfectionism, eating disorder symptoms, and depression. Mean age of participants in the ED sample was 26.29 years ($SD = 8.1$).

The ED sample size originally proposed for this thesis was 40 participants, a sample size which fulfilled requirements as suggested by Tabachnik and Fidell (1989) of having at least 5 times as many cases than independent variables for regression analyses. The sample size would also have fulfilled requirements for the proposed analyses of variance at $\alpha = .05$, power = .80, and effect size = .40 (required sample size = 37 per group) (Cohen, 1969). Given prior research supporting a robust relationship between perfectionism and eating disorders (e.g., Joiner, Heatherton, Rudd, & Schmidt, 1997), a medium effect size was anticipated. Exceeding the sample size that was originally proposed, data was gathered for an additional period of time (approximately 1 year) in order to ensure that enough participants would provide data for follow-up (see Study 2). In total, data from 86 EDP participants were collected, with 78 participants meeting eating disorder diagnosis criteria and providing adequately completed questionnaires, and thus being included in the research sample.

Participants in the depression sample were 76 female adult outpatients from a larger study conducted at the Mood Disorders Clinic of the Health Sciences Centre/University of Manitoba. Participants received a primary diagnosis of major depressive disorder through the use of the SCID (First et al., 1995) as administered by an experienced HSC psychiatrist, (the head of the Mood Disorders Clinic of the Health

Sciences Centre/University of Manitoba) before receiving treatment for depression at the Mood Disorders Clinic. Individuals were excluded from this sample if they also met DSM-IV criteria for AN, BN, or EDNOS, as determined by structured clinical interview, in order to control for comorbidity with eating disorders. Ethics approval for involvement of these participants was obtained from the University of Manitoba Faculty of Medicine Committee on the Use of Human Participants in Research. Prior to treatment, participants in this sample provided informed consent for research participation and completed self-report questionnaires on items concerned with perfectionism and depression, as well as other constructs as reported elsewhere. Participants were matched on age as closely as possible to the participants in the eating disorder sample. Mean age for the depression sample was 31.13 years ($SD = 5.9$)

Participants in the university sample were 50 adult female University of Manitoba introductory psychology students. Out of an original 60 participants, several individuals were not included in the study: 5 participants did not fill out questionnaires according to directions; 4 participants were removed from the study as their scores on the Eating Disorder Inventory – 2, a measure of eating disorder symptomatology, fell within the range of clinical significance, suggesting the possible presence of an eating disorder or seriously disordered eating; and 1 participant demonstrated difficulty understanding the questions due to English being her second language. The proposed size of the university sample exceeded the initial proposed sample size of the ED sample by 20, with the rationale that should university participants need to be removed due to meeting criteria for possible eating disorders, there would nevertheless likely be enough participants

remaining to have equal sample sizes. The decision to continue gathering data for the ED sample was made subsequently to the gathering of UNIV sample data.

Participants in the student sample provided informed consent for study participation (see Appendix E) and received credits for their introductory psychology course. Attempts were made to recruit older female university students through recruiting at evening classes. University participants completed questionnaires on items concerned with perfectionism, eating disorders, and depression. Measures for the university sample were administered in a group format in classrooms on the University of Manitoba campus. Mean age for the university sample was 21.38 years ($SD = 5.9$).

Ethics approval from the Health Sciences Centre Committee on the Use of Human Subjects in Research and from the University of Manitoba Department of Psychology Human Ethics Committee was granted for the dissertation project as a whole.

Measures

Participants in each of the three samples completed the following measures, which were presented in counterbalanced fashion through the use of two forms with different order of measures:

1. *Multidimensional Perfectionism Scale* (MPS; Hewitt & Flett, 1991a; refer to Appendix F for sample items).

The MPS is a 45-item scale tapping directional components of perfectionism, with three 15-item subscales that measure self-oriented, other-oriented, and socially-prescribed perfectionism (SOP, OOP, and SPP, respectively). Participants respond on 7-point rating scales. Subscale scores can range from 15 to 105, with higher scores indicating greater perfectionism.

Several studies have demonstrated the reliability and validity of the MPS in student and clinical samples. Hewitt and Flett (1991a) reported adequate internal consistencies for their MPS, with alpha coefficients of .88 for the SOP subscale, .74 for the OOP subscale, and .81 for the SPP subscale in a psychiatric sample. As well, they reported test-retest reliabilities over 3 months as being .75, .65, and .78, respectively, for these subscales, tested with a patient sample. Using a student sample, Hewitt and Flett (1991a) found alpha coefficients of .86 for SOP, .82 for OOP, and .87 for SPP and three-month test-retest reliabilities of $r = .88, .85, \text{ and } .75$ for SOP, OOP, and SPP, respectively. Studies have also demonstrated that the MPS subscales possess adequate concurrent validity in clinical samples (Hewitt & Flett, 1991a; Hewitt, Flett, Turnbull-Donovan, & Mikail, 1990).

2. *Multidimensional Perfectionism Scale* (MPS; Frost et. al, 1990; refer to Appendix G for sample items).

The Frost MPS is a 35-item scale that also taps various components of perfectionism. It consists of six subscales, Concern Over Mistakes (CM), Personal Standards (PS), Parental Expectations (PE), Parental Criticism (PC), Doubts about Actions (DA), and Organization (O). Appendix I contains a description of and sample items for each subscale.

Frost et al. (1990) have found the internal consistencies of the subscales to range from .77 to .93 and the reliability of the total perfectionism scale to be .90. For the most part, the six subscales have been shown to be highly correlated with one another. However, the Organization subscale has shown the weakest intercorrelation with the

other subscales. A total perfectionism score, used in some studies, is obtained by adding together all subscale scores except for the Organization score.

As reported by Frost et al. (1990), alpha coefficients for the internal consistencies of the six subscales ranged from .77 to .93. Concurrent validity has been reported by Frost et al. (1990), with the MPS total perfectionism score being highly correlated with scores from other perfectionism instruments. Studies have also reported construct, convergent, and discriminant validity of the Frost MPS (Clavin, Clavin, Gaytor, & Broider, 1996; Frost et al., 1990).

3. *Depressive Experiences Questionnaire* (DEQ; Blatt, D'Afflitti, & Quinlan, 1976; revised version by Bagby et al., 1994; refer to Appendix H for sample items).

The original DEQ was constructed to tap the constructs of self-criticism and dependency. A reconstructed and validated version consisting of 19 items was found to be a better test of the two-factor model (Bagby et al., 1994) and was used in the current study. Test-retest reliabilities for both the Dependency (DEP) and Self-Criticism (SC) scales have shown excellent temporal stability (Bagby et al., 1994).

4. *Beck Depression Inventory* (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Appendix I contains sample items).

The BDI is a 21-item self-report inventory used to tap symptoms and features associated with depression. Items are rated on a four-point scale from 0 to 3, maximum score being 63 with higher scores indicating more severe depression. A meta-analysis of studies regarding the BDI's internal consistency has shown a range from .73 to .92 (mean = .86) (Beck, Steer, & Garbin, 1988). Test-retest reliabilities have ranged from .48 to .96 and split-half reliability has also been shown to be adequate (.93) (Beck et al., 1988).

Construct validity and convergent validity with respect to clinician ratings (.64-.75) and alternative standardized measures of depressive symptomatology (.66-.75) have also been supported (Faravelli, Albanesi, & Poli, 1986).

A revised version of the Beck Depression Inventory, the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996), is now available and has been psychometrically evaluated with different samples (e.g., Steer, Ball, Ranieri, & Beck, 1997; Steer & Clark, 1997). However, in order to maintain consistency with the depression sample that had been assessed with the earlier version, the BDI rather than the BDI-II was used in the dissertation studies for all samples. This allowed for direct comparison among the three different samples in Study 1.

Participants in the eating disorder sample and the university sample completed the *Eating Disorders Inventory-2* (EDI-2; Garner, 1991; see Appendix J for sample items). The EDI-2 is a revision of the Eating Disorder Inventory (EDI; Garner, Olmsted, & Polivy, 1983), a 64-item instrument. The EDI-2 is a 91-item self-report inventory that investigates the behavioural and psychological aspects of eating disorders. It consists of the following subscales: Body Dissatisfaction, Drive for Thinness, Bulimia, Ineffectiveness, Interpersonal Distrust, Perfectionism, Interoceptive Awareness, Maturity Fears. As well, it has the following three subscales that were not included in the original EDI: Ascetism, Impulse Regulation, and Social Insecurity. EDI-2 responses are based on a 6-point rating scale from "always" to "never".

The EDI-2 has been shown to have good internal consistency (Crowther, Lily, Crawford, & Shepherd, 1992; Garner 1991), test-retest reliability (Crowther et al., 1992)

and validity (Garner 1991). The original EDI was found to be sensitive to changes resulting from psychological treatment (Mitchell et al., 1990). However, some studies have also found that elevated scores on the EDI-P (perfectionism subscale) of the original EDI remain high after recovery from the eating disorder (Bastiani et al., 1995; Srinivasagam et al., 1995; Szabo & Blanche, 1997).

Results

To determine whether dimensions would load onto factors comprised of adaptive and maladaptive dimensions, as had been found by Frost et al. (1993), a factor analysis on the perfectionism dimensions was performed, conducted on the scale scores of the two MPS scales and the self-criticism (SC) subscale of the DEQ-R (not the individual items of the instruments). A direct oblimin principal component analysis with two factors specified was conducted, followed by a parallel analysis, a technique that reliably verified the appropriateness of extracting two factors from the data set. The following perfectionism variables were of interest due to the relationships that have been established in previous research (Enns & Cox, in press; Frost et al., 1993): self-oriented perfectionism (SOP), socially prescribed perfectionism (SPP), concern over mistakes (CM), personal standards (PS), parental expectations (PE), parental criticism (PC), doubts about actions (DA), organization (O), and self-criticism (SC).

Results of the factor analysis performed on the perfectionism dimensions are presented in Table 2. Two factors that seemed to represent adaptive and maladaptive perfectionism emerged, consistent with hypotheses and the findings of Frost et al. (1993). Factor 1, which could be construed as being composed of negative or maladaptive perfectionism dimensions, consisted of SPP, CM, PE, PC, DA, and SC. Factor 2, which

could be viewed as a more adaptive or positive grouping of perfectionism dimensions, was composed of SOP, PS, and O. The two factors were not significantly correlated with one another. Composite perfectionism scores representing the two factors (adaptive and maladaptive) were calculated by totalling the scores on respective dimensions and were used in subsequent analyses of group means.

Table 2

Summary of Factor Loadings for Oblimin Two-Factor Solution for the Perfectionism Dimensions

Perfectionism Dimension	Factor Loading	
	1	2
Self-Oriented Perfectionism	.29	.80
Socially-Prescribed Perfectionism	.74	.26
Concern over Mistakes	.72	.29
Personal Standards	.27	.77
Parental Expectations	.60	.11
Parental Criticism	.78	-.17
Doubts about Actions	.71	.13
Organization	-.19	.78
Self-Criticism	.81	-.22
Factor Correlations		
Factor 1	--	
Factor 2	.28	--

One-way analyses of variance (ANOVAs) were performed to determine differences among samples on age and BDI scores. Age of participants differed significantly among groups ($F = 31.26, p < 0.001$). In order to control for the variance in the perfectionism dimensions that was accounted for by age, multivariate analyses of covariance (MANCOVAs) were performed, with age as the covariate. To investigate

where group differences in perfectionism dimensions were, univariate ANOVAs with Tukey's post-hoc comparisons were conducted.

Significant group differences were found on the BDI ($F(2, 198) = 72.08, p < 0.001$). Tukey's post-hoc comparisons demonstrated that all three groups were significantly different. Extrapolating from norms and descriptors used with individual BDI scores (Groth-Marnat, 1997), the group BDI means are summarized as follows: scoring highest, the mean for the MDD group fell within the range of "severe depression"; scoring lowest, the UNIV sample's mean score was within the "no or minimal depression" category; and the ED group fell within the "moderate to severe depression" range.

Consulting the norms as provided by Parker & Adkins (1995), the mean organization score for the ED group was at least one standard deviation above the mean for the reference group which consisted of 278 students from two American universities who were described as having typical academic abilities (Table 3). Interestingly, when using norms gathered from a reference group of 41 women from an elite American university for which there were higher academic entry requirements (Frost et al., 1991), ED and MDD group means for concern over mistakes and doubts about actions were at least one standard deviation higher than the normed means, as hypothesized. Parental criticism was also higher in the clinical groups, a finding that was not expected based on ages of the respective groups. Personal standards had been expected to be above the normed mean for the ED group, however this was not found.

Norms from Hewitt et al. (1991) were consulted for comparison of the Hewitt et al. MPS dimensions (SPP and SOP). The ED and MDD samples were compared to a

psychiatric sample of female outpatients, while the UNIV sample was compared to a female community sample. As hypothesized, the respective means for the two clinical samples fell within the mean range of the clinical reference group; the UNIV sample's mean for socially prescribed perfectionism and self-oriented perfectionism fell within the normed average of the appropriate community sample. This verified that the samples in the present study had perfectionism scores consistent with relevant published reference groups, that is, that scores for the respective groups of the current study were within expected ranges.

Table 3

Means and Standard Deviations for Scores on Frost et al. (1991) Dimensions from Present Study and Published Norms

Variable	Group									
	ED		MDD		UNIV		Norms 1		Norms 2	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PS	25.15	5.97	22.04	6.32	22.24	5.31	20.0	6.2	25.9	5.3
O	24.49^a	5.03	20.78	5.55	21.86	6.20	16.4	6.9	23.2	5.6
CM	31.20^b	8.31	28.08^b	8.59	21.36	6.39	26.9	8.6	19.7	7.1
PE	15.12	5.54	13.72	6.13	14.92	4.59	15.0	3.9	14.7	4.5
PC	11.55^b	4.46	12.30^b	4.82	9.42	3.41	12.7	5.2	6.8	3.2
DA	13.62^b	3.77	12.80^b	3.97	11.10	3.49	11.8	3.5	9.4	3.0

Note: Norms 1 = normative data from Parker & Adkins (1995), p. 327

Norms 2 = normative data from Frost et al. (1991), p. 472

^a 1 standard deviation above the mean for the reference group of Norms 1

^b 1 standard deviation above the mean for the reference group of Norms 2

PS = personal standards; O = organization; CM = concern over mistakes; PE = parental expectations; PC = parental criticism; DA = doubts about actions.

Using age as a covariate, MANCOVAs were conducted for individual positive perfectionism dimensions and for individual negative perfectionism dimensions; an analysis of covariance (ANCOVA) was conducted for the perfectionism composites. Even after controlling for the effects of age, group differences were significant for each of the individual positive perfectionism dimensions, all of the individual negative perfectionism dimensions except parental expectations, and for both perfectionism composites (negative and positive). (Results are presented in Table 4.) The adaptive perfectionism dimensions of self-oriented perfectionism (SOP), personal standards (PS), and organization (O) were significantly higher in the sample of eating disorders patients than in the MDD sample or the UNIV sample. The same pattern held true for the composite score of adaptive perfectionism. The finding of SOP and PS being higher in the ED sample than in the UNIV sample had been expected. The observed higher PS in the ED sample compared to the other two samples had also been predicted. However, the observed difference in SOP between the two clinical groups had not been expected. Furthermore, the lack of a difference between the MDD and UNIV samples on adaptive dimensions of perfectionism was contrary to hypotheses.

The use of analysis of covariance (and, by extension, multivariate analysis of covariance) in psychopathology research has been considered to be problematic, according to Miller and Chapman (2001). These authors state that in clinical research where group membership cannot be randomly assigned, attempts to “control for” a potential covariate through the use of ANCOVA may result in the removal of too much

of the variance associated with the dependent variable or may lead to specification error wherein the estimate of the treatment effect becomes biased. In the current study, through the use of conventional procedures (MANCOVA/ANCOVA) regularly used in clinical research, age was treated as a covariate in an attempt to address any concerns that age difference might have an effect on dependent variables. The above comparisons were also conducted without age as a covariate (i.e., MANOVA/ANOVA) and identical results were found. The use of a covariate did not detrimentally affect the findings; however, for those concerned with age effects, the covariate analyses were presented.

Means and standard deviations for scores on relevant perfectionism dimensions, for the perfectionism composites as formulated according to the factor analysis, for BDI scores and for age are presented in Table 4.

Table 4

Means and Standard Deviations for Scores on Perfectionism Dimensions and Composites, BDI, and Age; Multivariate and Univariate Analyses of Covariance and Post-hoc Group Comparisons

Variable	Group						Analyses	
	ED Group		MDD Group		UNIV Group		MANCOVA <i>F</i> (df) <i>p</i> ≤	Group Comparisons
	(A)		(B)		(C)			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
(+) Perfectionism								
SOP	79.69	18.68	66.14	19.42	66.86	13.64	12.78(2,199)0.000	A>B***; A>C***
PS	25.15	5.97	22.04	6.32	22.24	5.31	5.92(2,199)0.005	A>B*; A>C**
O	24.49	5.03	20.78	5.55	21.86	6.20	12.06(2,199)0.000	A>B*; A>C***
(-) Perfectionism								
SPP	66.91	15.78	61.43	16.78	55.16	11.58	8.52(2,193)0.000	A>C***
CM	31.20	8.31	28.08	8.59	21.36	6.39	22.82(2,193)0.000	A>C***; B>C***
PE	15.12	5.54	13.72	6.13	14.92	4.59	.436(2,193)ns	
PC	11.55	4.46	12.30	4.82	9.42	3.41	5.44(2,193)0.005	A>C*; B>C***
DA	13.62	3.77	12.80	3.97	11.10	3.49	8.19(2,193)0.000	A>C***; B>C*
SC	47.77	8.35	49.46	8.68	32.46	9.74	52.10(2,193)0.000	A>C***; B>C***

Variable	Group						Analyses	
	ED Group		MDD Group		UNIV Group		ANCOVA <i>F(df)p</i> ≤	Group Comparisons
	(A)		(B)		(C)			
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Perf Composites								
Adaptive	129.25	25.91	108.96	27.24	110.96	22.01	13.72(2,199)0.000	A>B***; A>C***
Maladaptive	185.64	35.83	177.78	38.49	144.42	31.69	20.78(2,193)0.000	A>C***; B>C***
Other								
BDI	26.55	11.49	30.88	9.28	9.36	8.72		
Age	26.29	8.13	31.13	5.93	21.38	5.86		

Note: (+) Perfectionism = Individual positive perfectionism dimensions; (-) Perfectionism = Individual negative perfectionism dimensions; SOP = self-oriented perfectionism; PS = personal standards; O = organization; SPP = socially-prescribed perfectionism; CM = concern over mistakes; PE = parental expectations; PC = parental criticism; DA = doubts about actions; SC = self-criticism; Perf Composites = composite scores of perfectionism dimensions; Adaptive = composite score for adaptive perfectionism; Maladaptive = composite score for maladaptive perfectionism.

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

In examining the individual negative dimensions of perfectionism, many group differences were significant, even after controlling for the variance determined by age (see Table 4). As predicted, the two clinical groups had significantly higher means than the student sample on concern over mistakes, doubts about actions, and self-criticism. The same held true for the maladaptive perfectionism composite. Contrary to expectations, parental criticism was observed to be significantly higher in the clinical groups than in the non-clinical group. This finding reinforces the significance of maladaptive perfectionism dimensions for the clinical disorders. As expected, the ED sample scored significantly higher on socially prescribed perfectionism than the UNIV sample; however, contrary to hypotheses, there was no significant difference between the MDD sample and the UNIV sample in regard to this variable.

All maladaptive dimensions were significantly higher in the ED sample as compared to the non-clinical sample. Most of the maladaptive dimensions were significantly higher in the MDD sample than in the non-clinical sample. As predicted, there were no significant differences between the clinical samples on the maladaptive dimensions. Therefore, it seems that maladaptive dimensions are relevant for both eating disorders and major depressive disorder. It would follow that maladaptive perfectionism may lack specificity for the disorders and that, rather, this construct is one that may be more applicable to psychopathology in general. On the other hand, all those perfectionism dimensions considered to be adaptive (namely, self-oriented perfectionism, personal standards, and organization, as well as the composite adaptive score) were significantly higher in the ED sample than in the MDD sample, which seemed to suggest specificity for adaptive perfectionism in eating disorders.

In order to examine whether the two clinical groups could be significantly differentiated by perfectionism scores, over and above depression symptoms, discriminant function analyses were conducted. The first discriminant function analysis used the DEQ-R dependency score (DEP), which has been implicated in depression, and the BDI score, an indicator of the presence of depressive symptoms. The discriminant analysis was found to be statistically significant (Wilks' Lambda = .953, $\chi^2 = 6.69$, $df = 2$, $p < .05$). As illustrated in Table 5, 57.7% of individuals were correctly classified as belonging to the ED group or the MDD group. By knowing scores on depression-related constructs, the chance of accurately predicting group membership was just somewhat better than chance (50%).

Table 5

Classification Analysis for Clinical Group Membership by DEP and BDI Scores

		Predicted group membership			
		ED group		MDD group	
Actual group membership	<i>N</i>	<i>n</i>	%	<i>n</i>	%
ED group	70	38	54.3	32	45.7
MDD group	72	28	38.9	44	61.1

Note: Overall percentage of correctly classified cases = 57.7%.

To determine the extent to which the composite maladaptive and adaptive perfectionism scores alone could predict the probability of individuals in the clinical samples being identified in the respective patient grouping, a second discriminant

function analysis was conducted with these variables. The discriminant analysis was statistically significant (Wilks' Lambda = .862, $\chi^2 = 20.88$, $df = 2$, $p < .001$). As illustrated in Table 6, 67.4% of individuals were correctly classified as belonging to the ED group or the MDD group. Knowing scores on the perfectionism composites alone provided a considerably better chance of correctly predicting group membership in ED or MDD group.

Table 6

Classification Analysis for Clinical Group Membership by Composite Adaptive Score and Composite Maladaptive Score

Actual group membership	<i>N</i>	Predicted group membership			
		ED group		MDD group	
		<i>n</i>	%	<i>n</i>	%
ED group	70	48	68.6	22	31.4
MDD group	74	25	33.8	49	66.2

Note: Overall percentage of correctly classified cases = 67.4%.

Interestingly, when only the adaptive perfectionism composite was included in a discriminant function analysis to predict group membership, the overall accuracy rate was 65.3% (Wilks' Lambda = .871, $\chi^2 = 20.32$, $df = 1$, $p < .001$). When only the maladaptive perfectionism composite was included in a discriminant function analysis, the overall accuracy rate fell to 54.9% and the Wilks' Lambda was not significant (Wilks' Lambda = .989, $\chi^2 = 1.59$, $df = 1$, $p > .05$), indicating that the variance was explained by factors other than the difference between the means for the maladaptive composite. This is in

keeping with the group comparison findings (MANCOVA/ANCOVA) wherein, between the two clinical groups, there were differences in the adaptive dimensions, but not in the maladaptive dimensions.

To examine whether knowing depression features (BDI and DEP scores) in addition to perfectionism scores (maladaptive and adaptive composites) provided a better chance of accurate prediction for group membership, another discriminant function analysis was conducted which included these variables. The discriminant analysis was statistically significant (Wilks' Lambda = .779, $\chi^2 = 34.01$, $df = 4$, $p < .001$). As illustrated in Table 7, 70.7% of individuals were correctly classified as belonging to the respective clinical group. This was a slight increase over the accuracy rate when knowing only the perfectionism composite scores. Given that the actual features associated with depression were included in the analysis, one might expect that this last analysis would have provided a better chance of prediction.

Table 7

Classification Analysis for Clinical Group Membership by BDI, DEP, Composite Adaptive Score and Composite Maladaptive Score

		Predicted group membership			
		ED group		MDD group	
Actual group membership	<i>N</i>	<i>n</i>	%	<i>n</i>	%
ED group	70	53	75.7	17	24.3
MDD group	70	24	34.3	46	65.7

Note: Overall percentage of correctly classified cases = 70.7%.

Discussion

The following implications are indicated from the findings of the discriminant function analysis:

1. Key features associated with depression (symptoms, dependency) had low ability to discriminate between the ED group and the MDD group. This may be because of the high comorbidity rate of depression with eating disorders (Braun, Sunday, & Halmi, 1994; Herzog et al., 1996). Clearly, these depression features did not possess specificity for either disorder.
2. Perfectionism composites (alone) added considerably to prediction accuracy, highlighting the value of knowing perfectionism scores in order to assess to which clinical group an individual may belong.
3. Depression features barely improved the perfectionism model (that is, depression characteristics were not the missing information from the model that utilized perfectionism composites alone).
4. The analyses seemed to verify that adaptive perfectionism (but not maladaptive perfectionism) was more relevant for discriminating between the two clinical disorders. The adaptive scores of the MDD sample were not significantly different than the non-clinical sample, suggesting that they were not particularly relevant for the MDD sample. Adaptive perfectionism was highest in the ED sample. Therefore, the findings of the present study suggest that adaptive perfectionism possesses specificity for eating disorders (but not for major depressive disorder), consistent with the hypotheses.

Study 1 provided support regarding the significance of perfectionism in eating disorders. Previous conceptualizations of perfectionism dimensions as clustering into adaptive and maladaptive groups were supported. Both adaptive and maladaptive perfectionism were found to be elevated in the eating disorders sample, a finding similar to that of Davis (1997) wherein body esteem was at its lowest (i.e., poorest) when both normal and neurotic perfectionism were elevated. In the current study, adaptive perfectionism was highest in the eating disorders sample, not only compared to the student sample, but also in comparison to the depression sample. Furthermore, findings indicated that, as compared to another clinical disorder (depression), adaptive perfectionism was specific to eating disorders.

The descriptor “adaptive perfectionism” seems somewhat inappropriate given that this construct was elevated in a sample of individuals experiencing psychopathology (namely, eating disorders). Findings of the current study lend further support for the use of terms such as “positive achievement strivings” and “maladaptive evaluation concerns” (as per Frost et al., 1993) in place of adaptive perfectionism and maladaptive perfectionism, respectively, as more appropriate characterizations.

In their critique of current conceptualizations of perfectionism, Shafran et al. (2002) argued that a key element of clinically relevant perfectionism is its dysfunctional nature. They proposed a revised definition of perfectionism: “the overdependence of self-evaluation on the determined pursuit of personally demanding, self-imposed, standards in at least one highly salient domain, *despite adverse consequences* [italics added]” (Shafran et al., 2002, p. 773). Notably, the specifier regarding adverse consequences parallels the DSM-IV criterion that requires impairment in social, occupational, or other areas of

functioning to be present in many disorders in order for a diagnosis to be made. Shafran et al. stated that their definition of perfectionism makes a distinction between clinical perfectionism and “the ‘healthy pursuit of excellence’” (p. 778).

Conceptualizing adaptive perfectionism as positive achievement striving, the fact that the ED sample possessed the most elevated adaptive perfectionism scores, even more so than the UNIV sample, suggests that achievement strivings are extremely pertinent for this group. Indeed, much effort is invested in striving to attain or maintain a body size and shape that is often unrealistic; much energy is expended in engaging in the hallmark behaviours of eating disorders that are tools to achieve this end. It may be that these “adaptive” strivings have become maladaptive in individuals with eating disorders, either because the goals associated with them are unhealthy (extreme thinness, the “perfect body”) or because the mechanism itself has become altered in an unhealthy way.

Organization, a supposed adaptive perfectionism dimension, has not been found to be related to psychopathology (Shafran & Mansell, 2001). Elevated in an eating disorder sample (as in the current study), however, this construct may represent organization directed at unhealthy activities. The organization (O) subscale itself does not indicate the activities toward which organization is directed. As purported by Shafran et al. (2002), individuals with perfectionism hold high standards within those life domains that are personally significant to them. In the case of an individual with an eating disorder, because of eating disorder-specific attributes, the personally significant domain would typically involve the pursuit of thinness. Ostensibly, they would apply their organization skills to behaviours directed at that pursuit, behaviours that, at some point, become unhealthy and extreme. Conversely, it may be that individuals with eating

disorders apply their organization skills indiscriminately to all or most domains, with eating disorders being one in which they eventually encounter serious problems; however, this seems less likely.

Alternatively, these “adaptive” strivings may not manifest in a different way or have become associated with misdirected goals, but may, in this population, simply be too extreme given individuals’ resources for coping. For example, in the current study, the only “adaptive” dimension that was “extreme” in the ED sample was O, compared to published norms of a non-clinical sample. Even if some dimensions are not considered extreme, normatively-speaking, elevated levels of the so-called adaptive dimensions may, because of a particular vulnerability associated with eating disorders, be extreme in this group of individuals and thus associated with a deterioration in functioning.

When adaptive perfectionism is in fact more extreme in a specific sample compared to the norm, the adaptive aspect may be a matter of degree. When levels become too elevated, it may be that this construct loses its positive quality, becoming “too much of a good thing” and thereby harmful. In the case of adaptive perfectionism being highest in the present ED sample, it may be that after a certain point, this construct distorts and is no longer associated with positive properties but becomes associated with excessive and dangerous thinness-oriented behaviours.

In a related manner, another possible important aspect in understanding adaptive perfectionism is the ratio of “positive” and “negative” perfectionism that is present in an individual. Terry-Short et al. (1995) discussed such a ratio in their study comparing eating disorder patients, depression patients, athletes, and a non-patient comparison group. They placed importance on this ratio, using the example of the high ratio of

positive to negative perfectionism in athletes as opposed to the high positive to high negative ratio found in ED patients as providing insight into a comparison that could otherwise look similar on the surface. The problem with this argument is that it seems to suggest that by simply increasing one's positive or adaptive perfectionism to balance out elevated levels of negative perfectionism, a person can then become healthier. The mechanisms by which perfectionism operates appear to be much more complex than this.

According to Shafran et al. (2002), eating disorders “do not simply co-occur with clinical perfectionism but are in many cases the *expression of perfectionism* [italics added] in the domain of eating, shape, or weight control” (p. 783). One of their reasons for this statement is the demonstrated specific elevation of self-oriented perfectionism and personal standards in eating disorders, constructs which they consider to be the best definers of classical perfectionism. The current study, as well as previous studies (e.g., Bastiani et al., 1995; Srinivasagam et al., 1995), have found personal standards and self-oriented perfectionism to be elevated in eating disorders.

Shafran et al. suggest that a core component of their concept of perfectionism is the need to possess self-control. Personal standards and self-oriented perfectionism seem to go hand-in-hand with self-control. Self-control is highly associated with eating disorders, and in fact, is necessary to engage in the hallmark ED behaviours (e.g., restricting, compensatory behaviours such as excessive exercise). In contrast, self-control is not characteristically associated with depression. Depression is often associated with dependency, an interpersonal construct, and fear of negative evaluation. Building from the conceptualizations of positive achievement strivings and maladaptive evaluation concerns, perhaps a better way of distinguishing eating disorders from depression

involves thinking of the high personal control of eating disorders and the interpersonal pressure often associated with depression.

Interestingly, the high personal control and achievement strivings associated with eating disorders may explain the following observation commonly found in clinical settings. Once treatment has begun to progress, quite an accomplishment given the ego-syntonic nature of eating disorders, a client will often ruminate on their ambivalence that "I am getting better, but now I am a bad anorexic", indicating their sense of failure due to not succeeding in their eating disorder.

The lack of a difference in adaptive perfectionism between the UNIV sample and the MDD sample is somewhat surprising in that self-oriented perfectionism (one of the dimensions that makes up the adaptive cluster) has been shown to be associated with depression in prior studies (e.g., Hewitt & Flett, 1991b; Hewitt, Flett, & Ediger, 1996). However, one might presume comparatively healthy non-depressed students to have elevated overall scores on measures of adaptive ("healthier") perfectionism/positive achievement strivings relative to a depression sample and this may explain the findings. Moreover, although studies have shown depression patients to have tendencies toward perfectionism, including self-oriented perfectionism, it may be that the lack of energy, characteristic of major depressive disorder, is responsible for lower scores on dimensions related to achievement strivings. Theoretically, striving for achievement is dependent upon the presence of energy and vigour, something characteristically absent in the presentation of those diagnosed with depression.

Almost without exception, maladaptive perfectionism was higher in the clinical samples than in the student sample. Maladaptive dimensions seem to be relevant for both

eating disorders and major depressive disorder but lack specificity for the disorders. This construct appears to be more applicable to psychopathology in general.

Socially prescribed perfectionism (SPP) was not found to be elevated in the MDD sample of the current study as compared to the non-clinical sample, contrary to previous research findings (e.g., Hewitt et al., 1996) in which elevated SPP scores were present in depression samples. The use of published norms in the current study, however, indicated that socially-prescribed perfectionism was within the clinical range for the depression group. According to the present study's group comparisons, other maladaptive dimensions (concern over mistakes and doubts about actions) were certainly relevant to the MDD sample and may be explained by an experience of interpersonal pressure in this group. The clinically significant SPP scores in the MDD sample can also likely be accounted for by interpersonal pressure.

Self-criticism, considered a necessary component of clinical perfectionism by Shafran et al. (2002), was elevated in both eating disorders and depression. However, this construct likely manifests in different ways in the two disorders, (i) because different relevant life domains are involved (e.g., thinness in eating disorders, general unworthiness in depression) and (ii) due to the degree of action following self-criticism related to failure – in ED, failure to meet standards may result in intensifying efforts and actively working harder to achieve the goal, while in depression, self-criticism related to failure would likely manifest in vegetative symptoms (or non-directed nervous energy such as irritability and psychomotor agitation), passivity, and hopelessness (perhaps in the form of passive rumination and giving up).

This latter point may be related to the locus of control that is operating in each disorder. As discussed by Hewitt & Flett (1991a), perceptions of controllability are differentially related to the various perfectionism dimensions. For example, self-oriented perfectionism purportedly involves perfectionism that is under one's own control; relevant standards may be altered in a proactive fashion (cf. Hewitt & Flett, 1991a). Self-oriented perfectionism may be viewed as operating on an internal locus of control. Conversely, socially-prescribed perfectionism, having to do with the perception that others hold unrealistic standards for the individual, seems to involve an external locus of control and has been described as reactive, as opposed to proactive, and as being related to learned helplessness (Hewitt & Flett, 1991a). Hewitt and Flett (1991a) also suggested that differences in level and type of motivation may be associated with the various perfectionism dimensions (Hewitt & Flett, 1991a). Self-oriented perfectionism, then, has been posited to involve intrinsic motivation, while socially-prescribed perfectionism has been posited to be associated with extrinsic motivation and decreased levels of intrinsic motivation.

In eating disorders where high achievement striving is found, individuals likely possess an internal locus of control, feeling that they can affect change to reach their goals and, in essence, can do so in one of the most salient and direct ways – affecting change over their physical bodies. In depression, the locus of control is more likely to be external in that they feel less powerful to affect change and may withdraw rather than mobilize resources toward active striving for goals. This is borne out by the elevated maladaptive evaluation concerns (maladaptive perfectionism) observed in the MDD sample, and in fact in depression samples of many other studies. Maladaptive evaluation

concerns would seem to entail worry about things outside one's immediate control, such as what others think of an individual. In eating disorders, maladaptive evaluation concerns are also salient, however the particular combination of achievement strivings with the evaluation concerns seems to operate in a certain manner in order to be associated with the presentation of symptoms associated with disordered eating.

Study 2

Method

Participants and Procedure

The goal of Study 2 was to investigate the prognostic significance of perfectionism for eating disorders, that is, to what extent the various perfectionism dimensions predict the course of eating disorder symptomatology. This was accomplished through a naturalistic clinical follow-up of participants in the ED sample (as described above) over the course of their treatment for eating disorders. Through self-report assessment, data about eating disorder symptoms, depression, and perfectionistic tendencies were gathered at Time 1 (prior to treatment at the eating disorders treatment program) and at Time 2 (6 months after Time 1 data was gathered). As described in Study 1, participants were diagnosed prior to treatment with the SCID (Eating Disorder and Mood Disorder sections; First et al., 1995).

At the HSC Eating Disorders Program (EDP), length of time in therapy and composition of therapy program varies for individual eating disorder patients based on their specific needs. Treatment components generally include individual therapy with staff psychiatrist/clinic director or a nurse clinician, and may include a 6-week psychoeducational nutrition group, individualized sessions with the staff occupational

therapist focusing on issues such as self-esteem or stress management, participation in special interest groups (e.g., anger management), and/or a 10-week cognitive-behavioural therapy group. Most patients spend at least 6 months in treatment. A naturalistic follow-up design was chosen to accommodate the format of the EDP in which there is no uniform program for all patients. The benefits of a naturalistic treatment follow-up include flexibility of treatment to be based on individual needs and the opportunity to obtain information regarding progress of participants in a realistic framework (regarding timing and treatment components) rather than in a contrived standardized format, thereby gaining a more accurate impression of treatment response and action of predictors in actual clinical practice.

Participants provided informed consent for the study prior to their treatment. At that time, they were informed that they would be asked to complete measures again in six months. 78 participants completed study measures at Time 1 and were approached to complete measures for Time 2. Of these, 31 participants completed and returned study measures at Time 2, for a response rate of 39.7%. In advance of their personal Time 2 date, participants were contacted and reminded of the Time 2 measures. Time 2 measures were either mailed to their home addresses or given to them directly at the Eating Disorders Program (refer to Appendix K for Time 2 consent form). Upon completion of measures for Time 2, participants returned them through mail or in-person at the Eating Disorders Program. Analyses for Study 2 were conducted on the Time 1 and Time 2 data of these 31 participants. Mean age was 26.58 years ($SD = 7.48$). A retention analysis was conducted by comparing participants who completed both Time 1 and Time 2 measures with participants who only completed Time 1 measures. Comparisons were conducted on

the ED symptom measures, perfectionism measures, age, and BDI. There were no significant differences on these variables. Overall, it is likely prudent to assume that the research-completer group was representative of the larger sample of ED patients used in Study 1.

Measures

Participants completed the same eating disorder, depression, and perfectionism measures at Time 1 and Time 2. Perfectionism measures included the Multidimensional Perfectionism Scale (Hewitt & Flett, 1991a), the Multidimensional Perfectionism Scale (Frost et al., 1990), and the Depressive Experiences Questionnaire-Revised (Bagby et al., 1994). Participants also completed the Beck Depression Inventory (Beck et al., 1961). In order to assess a wide range of eating disorder symptoms, a variety of instruments were used. These eating disorder measures included the Eating Disorder Inventory-2 (EDI-2; Garner, 1991), in addition to the following instruments:

1. *Body Image Assessment procedure* (BIA; Williamson, 1990; Appendix L). The Body Image Assessment procedure measures one's perceptions of current and ideal body size. Participants were provided with nine silhouettes of female figures. Each silhouette was on a separate piece of paper and the figures ranged from thin to obese, scored 1 to 9, respectively. Participants were asked to pick the silhouette(s) that they felt/thought reflected their current size and their ideal body size. Discrepancy scores (real-ideal) were calculated and ranged from 0 to 8, with higher scores representing higher levels of dissatisfaction with current body size. For the purposes of this study, absolute values of scores were also calculated to aid in comparison between participants. Williamson, Davis, Bennett, Goreczny, and Gleaves (1989) reported

discriminant validity and test-retest reliability (current $r = .83$; ideal $r = .74$; discrepancy $r = .80$) of the BIA. The BIA's concurrent validity was demonstrated by associations between scores on eating disorder inventories and high current body size estimates (Keeton, Cash, & Brown, 1990).

2. *Multidimensional Body-Self Relations Questionnaire* (MBSRQ; Cash, Winstead, & Janga, 1986; Appendix M). The MBSRQ is a 69-item standardized, attitudinal measure of body image with the Appearance Evaluation subscale measuring evaluative attitudes about one's physical appearance and the Appearance Orientation subscale assessing the degree of importance one places on one's appearance and the attention paid to one's appearance (including behaviours focused on improving appearance). Scores can range from 1 to 35. Higher scores on the Appearance Evaluation and Appearance Orientation subscales in this study reflected lesser satisfaction with appearance and greater time spent on appearance, respectively. Test-retest reliability has been reported as $r = .90-.91$ for the subscales and internal consistency was reported with alpha coefficients ranging from $.85-.88$ (Cash et al., 1986).
3. *Questions regarding Frequency of Bingeing, Purging, and Exercise* (Author-written; Appendix N). Questions regarding how many days the participant has engaged in (i) bingeing behaviour and (ii) purging behaviour in the past seven days. Rossiter, Agras, Telch, and Bruce (1992) determined that recall for number of days of binge eating is more accurate than recall for discrete episodes of binge eating. Participants were also asked to indicate how many days and how many times they had exercised in the past seven days.

4. *Revised Restraint Scale* (Herman & Mack, 1975; Appendix O). The Revised Restraint Scale measures the extent to which a participant restricts his or her dietary intake. The instrument is scored from 10 to 50, higher scores representing greater dietary restraint. Evidence has shown adequate internal consistency (.78-.86; Allison, Kalinsky, & Gorma, 1992), test-retest reliability (.95; Laessle, Tuschl, Kotthaus, & Pirke, 1989) and construct validity (Ruderman, 1983).

Data Analysis

The first main set of analyses in Study 2 examined the ability of the perfectionism dimensions (the predictor or independent variables) to predict eating disorder symptom severity at Time 2 (the criterion or dependent variables). The purpose of the second set of analyses was to investigate mediation effects (cf. Rector et al., 2000), that is, the degree to which the perfectionism dimensions changed over time in treatment and then in turn produced change in levels of eating disorder symptoms. The predictor or independent variables were change scores of perfectionism dimensions, while the criterion or dependent variables were change scores for eating disorder symptoms. To accomplish these goals, hierarchical multiple regression analyses were conducted. This statistical method was chosen so that baseline (Time 1) severity of eating disorder and depression symptoms could be controlled.

First, scores of the eating disorder measures were added together into composite scores to be used as the criterion variables in the hierarchical regression analyses. In order to determine the suitability of a planned method of constructing composite scores for eating disorder symptomatology, a factor analysis of the scale scores (as opposed to individual items) of the eating disorder measures was conducted at the outset of Study 2

analyses. Factor analysis provided guidance for the construction of three latent composite eating disorder scores which closely matched the planned composite construction.

Results

An oblique factor analysis was conducted on the five measures of eating disorder symptoms at the scale level for all participants in Study 1 who had completed these measures ($n = 128$). Using both an eigenvalue-greater-than-1 criterion and parallel analysis at the mean and 95th percentile, a three-factor solution was indicated. Three latent composite scores for eating disorder symptoms were computed. The first eating disorder symptom composite (EDC psychological) was interpreted to represent psychological features of eating disorders, having to do with associated dysfunctional attitudes and perceptions. The second eating disorder symptom composite (EDC behavioural) was composed of behavioural features of eating disorders (e.g., active restraining, exercising, behaviours to enhance one's appearance). The third eating disorder symptom composite (EDC bulimia-related) was composed of bulimic behaviours (e.g., bingeing and purging).

Few studies in the area have looked at prediction of ED symptoms; rather, studies have generally involved cross-sectional comparisons on groups, that is, ED measures or clinical interviews have determined the groups but ED measures are not typically used to measure symptoms as a function of a predictor. Most studies that have measured ED symptoms (for prediction or other purposes) have used one or two measures of eating disorder symptoms (e.g., the bulimia subscale of the EDI as in Joiner, Heatherton, & Keel, 1997). Using a single or a couple of measures does not provide a comprehensive picture of ED symptoms. In the current study, several measures were used to tap eating

disorder symptoms in a comprehensive way with the intention of combining the subscale scores into composite scores. The aim had been to group scores based on the following categories of ED symptoms as outlined in the DSM-IV: dietary restraining/restricting food intake, bingeing and purging, excessive exercise and other compensatory behaviours, negative self-evaluation/dissatisfaction based on weight/shape. In order to determine the suitability of using categories such as these for construction of composite scores, the above factor analysis of the eating disorder measures was conducted. Results of this analysis provided guidance for the construction of three latent composite eating disorder scores which paralleled the planned composite construction. The factors that emerged fit well with the main symptom groupings as identified by the DSM-IV; namely, negative self-evaluation/intense fear of being fat (psychological features of eating disorders), refusal to maintain body weight/compensatory behaviours to prevent weight gain (behavioural features of eating disorders), and binge-eating/purging behaviours (e.g., as per types specified for AN and BN).

The sample used for this initial ED symptom factor analysis included all eligible Study 1 participants (i.e., ED sample and UNIV sample participants) in order to have an adequate sample size. In order to verify whether the same factor structure would apply when the ED sample alone was used, confirmatory factor analyses for ED symptoms were conducted on the larger ED sample size from Study 1 ($n = 78$) and the Study 2 ED participants (that is, only the research completers; $n = 31$). The latter sample size is particularly small for such a procedure; however, the procedure was only conducted as a check. The factors that emerged in the secondary analyses were almost identical to those from the original procedure. This does not provide a justification for using a small sample

size for factor analysis. However, it shows that it may be reasonable to conceptualize the various measures as clustering in the way described above. The alternative for obtaining a comprehensive representation of eating disorder symptoms would have been to somewhat arbitrarily sum together measures, which has not been suggested either in the literature or in manuals of measures.

Using the latent eating disorder composite scores, an examination of whether eating disorder symptomatology changed overall from Time 1 to Time 2 was conducted. This comparison was conducted using paired-samples t-tests. Each eating disorder symptom composite (EDC) changed significantly from Time 1 to Time 2: EDC psychological, $t(28) = 5.54, p < .001$; EDC behavioural, $t(26) = -4.19, p < .001$; EDC bulimia-related, $t(29) = 2.70, p < .01$. Both the psychological composite and the bulimia-related composite decreased significantly over time which indicated symptom improvement, while the behavioural composite showed a significant increase at Time 2. An examination of participant responses for this latter composite score indicated that individuals reported increased frequency of exercise at Time 2. This could signify worsening of symptoms in that individuals may have redoubled their weight-loss efforts by Time 2 by increasing exercise frequency. However, response examination indicated that most individuals were not engaging in excessive sessions of exercise on a weekly basis, and thus this finding might indicate that over the course of treatment people had decided to use more reasonable means (i.e., exercise) of managing weight or decreasing stress. Nevertheless, without information regarding such details as length, type, and intensity of exercise sessions, it is difficult to ascertain whether this finding indicates improvement or worsening of symptoms on this domain.

The latent perfectionism composite scores, as discussed in Study 1, were used to compare perfectionism at Time 1 and Time 2, through paired-samples t-tests. The maladaptive perfectionism composite significantly decreased over time ($t(28) = 2.90, p < .05$). However, the adaptive perfectionism composite score did not differ significantly from Time 1 to Time 2.

As indicated by Study 1, maladaptive perfectionism is present in both eating disorders and depression. The fact that maladaptive perfectionism decreased over time in Study 2 may have more to do with changes in depressed mood than changes in eating disorders symptoms. A paired-samples t-test comparing BDI scores over time was significant ($t(30) = 4.49, p < .001$), with BDI scores being lower at Time 2. It may be that a therapeutic component was associated with a lessening of depressed mood over time, leading to a reduction in maladaptive perfectionism.

Means and standard deviations of individual perfectionism dimensions, the two perfectionism composites, BDI, and the composite scores for eating disorder symptoms at both Time 1 and Time 2 are presented in Table 8.

Table 8

Means and Standard Deviations of Time 1 Individual Perfectionism Dimensions, Perfectionism Composites, BDI and Eating Disorder Symptom Composites at Time 1 and Time 2

Variable	<i>M</i>	<i>SD</i>
Time 1:		
Self-Oriented Perfectionism	81.55	16.75
Personal Standards	25.90	5.08
Organization	25.35	4.97
Adaptive Perfectionism	132.81	23.48
Socially-Prescribed Perfectionism	68.23	16.10
Concern Over Mistakes	32.90	7.34
Parental Expectations	15.94	5.22
Parental Criticism	11.65	4.18
Doubts About Actions	13.77	3.15
Self-Criticism	47.39	8.35
Maladaptive Perfectionism	189.87	33.51
Beck Depression Inventory score	25.97	12.23
Psychological ED Composite	103.69	39.35
Behavioural ED Composite	79.30	19.96
Bulimia-related ED Composite	12.63	10.61
Time 2:		
Self-Oriented Perfectionism	79.90	15.53
Personal Standards	24.52	4.59
Organization	24.31	5.41
Adaptive Perfectionism	129.62	21.61
Socially-Prescribed Perfectionism	65.65	14.98
Concern Over Mistakes	30.24	8.03
Parental Expectations	15.38	4.99
Parental Criticism	12.00	4.86
Doubts About Actions	12.90	4.12
Self-Criticism	43.29	11.31
Maladaptive Perfectionism	180.41	37.48
Beck Depression Inventory score	18.23	13.36
Psychological ED Composite	77.03	39.91
Behavioural ED Composite	95.34	28.38
Bulimia-related ED Composite	8.48	10.06

Prediction of ED Symptom Severity Over Time

For prediction of Time 2 ED symptom severity, a series of hierarchical multiple regression analyses were conducted. Time 1 severity of any disorder is generally the best predictor of the severity of that disorder at Time 2. Therefore, hierarchical regression analyses were chosen to account for baseline functioning with regard to eating disorder symptoms to help disentangle predictors of change from stability of symptoms. Furthermore, because of the link between depression and eating disorders, and the argument that depression may account for some of the symptoms observed in the course of eating disorders, baseline depression score was also accounted through the use of the hierarchical regression technique.

In the regression analyses, the perfectionism dimensions served as predictor variables; criterion variables were Time 2 eating disorder symptom composites (EDC's), namely, Time 2 EDC psychological, Time 2 EDC behavioural, and Time 2 EDC bulimia-related. Each analysis controlled for respective Time 1 EDC and Time 1 depressed mood state (BDI).

Analyses for Time 2 psychological eating disorder symptom composite (EDC psychological). Screening for inclusion in the multivariate analyses was based on the presence of significant univariate correlations between predictor and outcome variables. None of the adaptive perfectionism dimensions, nor the adaptive composite score, were significantly correlated with the Time 2 psychological eating disorder composite, and as such were excluded from further multivariate analysis. Table 9 presents the intercorrelations among Time 1 adaptive perfectionism dimensions and composite and the three Time 2 eating disorder symptom composites.

Table 9

Correlations Among Time 1 Adaptive Perfectionism Dimensions & Composite, and Time 2 Eating Disorder Symptom Composites

Construct	Variable	1	2	3	4
Time 2 Eating Disorder Composites	EDC Psychological	.20	.17	.13	.21
	EDC Behavioural	.21	.16	.30	.25
	EDC Bulimia-related	-.06	.10	.19	.02
Predictor Variables	1. Self-Oriented Perfectionism	--	.89**	.30	.97**
	2. Personal Standards		--	.37**	.93**
	3. Organization			--	.51**
	4. Adaptive Perfectionism				--

* $p < .05$ ** $p < .01$

Socially prescribed perfectionism (SPP), concern over mistakes (CM), doubts about actions (DA), and self-criticism (SC), in addition to the maladaptive perfectionism composite, were all significantly correlated with Time 2 EDC psychological, as was BDI. Table 10 presents the intercorrelations among Time 1 maladaptive perfectionism dimensions and composite and the three Time 2 eating disorder symptom composites. Of the significantly correlated variables, socially-prescribed perfectionism had the lowest correlation ($r = .42$) and was thus not included in the regression analyses in order to decrease the number of independent variables.

Table 10

Correlations Among Time 1 Maladaptive Perfectionism Dimensions & Composite, and Time 2 Eating Disorder Symptom Composites

Construct	Variable	1	2	3	4	5	6	7
Time 2 Eating Disorder Composite	EDC	.42*	.60**	-.03	.09	.52**	.60**	.54**
	Psychological EDC	.21	.47**	.03	.18	.19	.19	.30
	Behavioural EDC	.36*	.35	.24	.17	.12	.46**	.43*
	Bulimia- related							
Predictor Variables	1. Socially Prescribed	--	.55**	.57**	.42*	.32	.63**	.93**
	2. Concern ov Mistakes		--	.04	.08	.31	.63**	.69**
	3. Parental Expectations			--	.82**	-.03	.23	.60**
	4. Parental Criticism				--	.19	.24	.55**
	5. Doubts ab Action					--	.48**	.45*
	6. Self- Criticism						--	.80**
	7. Maladaptive Perfect'm							--

* $p < .05$ ** $p < .01$

Note: ov = Over; ab = About; Perfect'm = Perfectionism

Table 11 is composed of the intercorrelations among Time 1 depression scores (BDI) and the three Time 2 eating disorder symptom composites.

Table 11

Correlations Among Time 1 BDI and Time 2 Eating Disorder Symptom Composites

Criterion Variable	Beck Depression Inventory (Predictor)
Time 2 EDC Psychological	.78**
Time 2 EDC Behavioural	.42*
Time 2 EDC Bulimia-related	.39**

* $p < .05$ ** $p < .01$

An analysis was conducted wherein the first block of predictor variables, consisting of Time 1 EDC psychological and BDI score, were force-entered. In the second block of predictor variables, concern over mistakes (CM), doubts about actions (DA), and self-criticism (SC) were force-entered. Table 12 presents the results of this hierarchical regression analysis. The model was highly significant and accounted for 70% of the variance in Time 2 EDC psychological, $F(5, 23) = 10.82, p < .001, R^2 = 0.70$. The significant predictor in the final model was Time 1 CM. These findings suggest that, even after conservatively controlling for baseline depressed mood and eating disorder symptom severity (on the relevant composite), baseline CM accounted for significant amounts of variance in Time 2 EDC psychological; high levels of CM at pre-treatment were associated with EDC psychological symptom severity at Time 2, even after controlling for severity of depressed mood.

When a similar hierarchical multiple regression analysis force-entered the maladaptive perfectionism construct (instead of the individual maladaptive perfectionism dimensions) in the second step, the model was significant ($F(3, 25) = 14.01, p < .001, R^2 = 0.63$). However in the final model, none of the variables were significant predictors.

Table 12

Prediction of Time 2 Eating Disorder Symptom Composite (EDC) Psychological

Step and predictor variable	β	t-value	p-value	R^2	ΔR^2
Step 1				.63	
Time 1 EDC psychological	.42	1.49	n.s.		
Beck Depression Inventory	.39	1.41	n.s.		
Step 2				.70	.07
Time 1 EDC psychological	.52	1.84	n.s.		
Beck Depression Inventory	.17	.57	n.s.		
Concern over Mistakes	.32	2.12	.045		
Self-criticism	-.18	-.91	n.s.		
Doubts about Actions	.18	1.32	n.s.		

Note: n.s. = not significant.

Analyses for Time 2 behavioural eating disorder symptom composite (EDC behavioural). Hierarchical multiple regression analyses were conducted to examine predictive validity of perfection for Time 2 behavioural eating disorder symptoms. As for the Time 2 psychological eating disorder composite, the adaptive perfectionism dimensions and the adaptive composite score were not significantly correlated with Time 2 EDC behavioural. The only maladaptive construct that was significantly correlated with Time 2 EDC behavioural was concern over mistakes (CM). BDI was also significantly correlated. An analysis was conducted wherein the first block of predictor variables, consisting of Time 1 EDC behavioural and BDI score, were force-entered. In the second block of predictor variables, CM was force-entered. The results of this hierarchical

regression analysis are shown in Table 13. The model was highly significant and accounted for more than 60% of the variance in Time 2 EDC behavioural, $F(3, 23) = 15.92, p < .001, R^2 = 0.68$. The only significant predictor in the final model, however, was Time 1 EDC behavioural. In a similar analysis that did not control for Time 1 BDI, the model was significant at $p < .001$ and CM was a significant predictor ($\beta = .25, t\text{-value} = 2.06, p\text{-value} = .05$) (Time 1 EDC behavioural continued to be a significant predictor).

When baseline depressed mood and eating disorder symptom severity were controlled, perfectionism dimensions were not predictive of EDC behavioural symptom severity at Time 2. CM was able to predict behavioural eating disorder symptoms at Time 2, but was not able to demonstrate incremental validity over Time 1 depression scores when the more stringent approach of force-entering Time 1 BDI scores was used.

Table 13

Prediction of Time 2 Eating Disorder Symptom Composite (EDC) Behavioural

Step and predictor variable	β	t-value	p-value	R^2	ΔR^2
Step 1				.65	
Time 1 EDC behavioural	.72	5.70	.00		
Beck Depression Inventory	.20	1.59	n.s.		
Step 2				.68	.03
Time 1 EDC behavioural	.69	5.49	.001		
Beck Depression Inventory	.10	.72	n.s.		
Concern over Mistakes	.20	1.43	n.s.		

Note: n.s. = not significant.

Analyses for Time 2 bulimia-related eating disorder symptom composite (EDC bulimia-related). The final set of longitudinal analyses in this series of investigations focused on prediction of the severity of bulimia-related eating disorder symptoms. As was the case with the previous longitudinal analyses, the initial univariate screening suggested that the adaptive perfectionism dimensions and the adaptive composite score were not significantly correlated with the bulimia symptoms at follow-up. The following maladaptive constructs were significantly correlated with this ED symptom composite: socially prescribed perfectionism (SPP) and self-criticism (SC), as well as the maladaptive perfectionism composite. BDI was also significantly correlated. An analysis was conducted wherein the first block of predictor variables, consisting of Time 1 EDC bulimia-related and BDI score, were force-entered. In the second block of predictor variables, SPP and SC were force-entered. The results of this hierarchical regression analysis are exhibited in Table 14. The model was significant and accounted for more than 50% of the variance in Time 2 EDC bulimia-related, $F(4, 25) = 6.75, p < .01, R^2 = 0.52$. The only significant predictor in the final model, however, was Time 1 EDC bulimia-related. When a similar hierarchical multiple regression analysis force-entered the maladaptive perfectionism construct in the second step, the model was significant ($F(3, 26) = 9.19, p < .001, R^2 = 0.52$). However in the final model, once again Time 1 EDC bulimia-related was the only significant predictor. When Time 1 mood was not controlled and SPP dropped from the analysis, SC showed a trend towards explaining significant amounts of variance in Time 2 levels of bulimia-related eating disorder symptoms ($\beta = .28, t\text{-value} = 1.94, p\text{-value} = .06$). (Time 1 bulimia-related eating disorder symptoms continued to be a significant predictor).

These findings suggested that perfectionism variables were not predictive of Time 2 bulimia-related eating disorder symptoms. However, a larger sample size and longer period of time in treatment may have resulted in different findings. If the trend of SC towards predictive utility were examined under more ideal conditions, such as increased sample size and/or longer treatment period, this would be an important starting ground for looking at the importance of self-criticism in bulimia-specific ED symptoms.

Table 14

Prediction of Time 2 Eating Disorder Symptom Composite (EDC) Bulimia-related

Step and predictor variable	β	t-value	p-value	R^2	ΔR^2
Step 1				.51	
Time 1 EDC bulimia-related	.61	4.37	.0001		
Beck Depression Inventory	.26	1.84	n.s.		
Step 2				.52	.01
Time 1 EDC bulimia-related	.58	3.90	.001		
Beck Depression Inventory	.13	.62	n.s.		
Socially Prescribed Perfectionism	.03	.15	n.s.		
Self-criticism	.16	.69	n.s.		

Note: n.s. = not significant.

Prediction of Eating Disorder Symptom Change: Treatment Process and Mediator Effects

The purpose of the next set of analyses was to investigate mediation effects, that is, the degree to which the perfectionism dimensions changed over time in treatment and

then in turn produced change in levels of eating disorder symptoms. For prediction of changes in eating disorders symptoms, a series of hierarchical multiple regression analyses were conducted. Time 1 severity of ED symptoms were again force-entered into the regression analyses to account for severity of functioning at baseline. Change scores (deltas) for the three eating disorder symptom composites were calculated (Time 1 – Time 2) and served as the criterion (dependent) variables in the respective analyses. Predictor variables included change scores for relevant perfectionism dimensions and the depression score, as well as respective Time 1 scores of these perfectionism and depression variables to control for baseline functioning. Only those perfectionism variables that were demonstrated to significantly change from Time 1 to Time 2 were considered for inclusion as predictor variables. In order to determine whether perfectionism scores had changed significantly over time, paired samples t-tests were performed for each dimension (Time 1 and Time 2). The following two dimensions were the only perfectionism-related dimensions to significantly differ over time: concern over mistakes ($t(28) = 3.20, p < .05$) and self-criticism ($t(30) = 3.18, p < .05$). Scores on these two dimensions decreased from Time 1 to Time 2. As noted earlier, BDI scores also decreased significantly over time, as did the maladaptive perfectionism composite.

Analyses for change in psychological eating disorder symptoms (EDC psychological). Concern over mistakes at Time 1 and delta concern over mistakes were not significantly correlated with the delta score for the psychological ED symptom composite. Therefore, despite the fact that concern over mistakes significantly changed over time, this variable was not included in the analyses investigating change in psychological ED symptoms. Change in self-criticism was significantly correlated with

change in psychological ED symptoms ($r = .63, p < .01$) and thus served as a predictor variable in the following analysis.

For prediction of change (delta) in psychological eating disorder symptoms, the following hierarchical regression analysis was conducted. In the first block of predictor variables, baseline scores for depressed mood (BDI), self-criticism and the psychological eating disorder symptom composite (EDC psychological) were force-entered. In the second block of predictor variables, change scores in depressed mood and self-criticism were force-entered. Table 15 presents the results of this hierarchical regression analysis. The model was highly significant and accounted for more than 75% of the variance in the change score for psychological ED symptoms, ($F(5, 23) = 14.36, p < .001, R^2 = 0.76$). Change in BDI and change in self-criticism were significant predictors in the final model (as were baseline BDI and psychological ED symptom severity). These findings suggest that, even after conservatively controlling for baseline depressed mood and eating disorder symptom severity (on the relevant composite), change in self-criticism accounted for significant amounts of variance in the change score of the psychological ED symptom composite.

Table 15

Prediction of Change in Eating Disorder Symptom Composite (EDC) Psychological

Step and predictor variable	β	t-value	p-value	R ²	ΔR^2
Step 1 – Time 1 variables				.29	
EDC psychological	.87	1.95	n.s.		
Beck Depression Inventory	-.57	-1.32	n.s.		
Self-criticism	.19	-.06	n.s.		
Step 2 – Time 1 variables				.82	.53
EDC psychological	1.00	3.82	.001		
Beck Depression Inventory	-.67	-2.68	.01		
Self-criticism	-.06	-.34	n.s.		
Change scores					
Beck Depression Inventory	.38	2.63	.02		
Self-criticism	.51	3.18	.01		

Note: n.s. = not significant.

Change in maladaptive perfectionism was significantly correlated to change in the psychological ED composite. Therefore, a hierarchical regression analysis was performed wherein, in the first block of predictor variables, Time 1 scores for depressed mood (BDI), the maladaptive perfectionism composite and the psychological eating disorder symptom composite (EDC psychological) were force-entered. In the second block of predictor variables, change scores in depressed mood and the maladaptive composite were force-entered. The results for this analysis are presented in Table 16. The model was highly significant and accounted for 70% of the variance in the change score for

psychological ED symptoms, ($F(5, 21) = 9.62, p < .001, R^2 = 0.70$). Change in BDI and change in maladaptive perfectionism were significant predictors in the final model (as were baseline BDI and ED psychological symptom severity).

Table 16

Prediction of Change in Eating Disorder Symptom Composite (EDC) Psychological by Maladaptive Perfectionism Composite

Step and predictor variable	β	t-value	p-value	R^2	ΔR^2
Step 1 – Time 1 variables				.17	
EDC psychological	.88	1.98	n.s.		
Beck Depression Inventory	-.60	-1.31	n.s.		
Maladaptive Perfectionism	-.03	-.13	n.s.		
Step 2 – Time 1 variables				.70	.53
EDC psychological	.95	3.27	.001		
Beck Depression Inventory	-.80	-2.73	.01		
Maladaptive Perfectionism	-.03	-.19	n.s.		
Change scores					
Beck Depression Inventory	.59	4.11	.00		
Maladaptive Perfectionism	.31	2.15	.04		

Note: n.s. = not significant.

Analyses for change in behavioural eating disorder symptoms (EDC behavioural). Hierarchical multiple regression analyses were conducted to examine predictive validity of perfectionism change scores for change in behavioural eating disorder symptoms. Concern over mistakes had changed significantly over time and Time

1 concern over mistakes was significantly correlated with Time 2 behavioural ED symptoms and the change score for the behavioural composite. Therefore, concern over mistakes was investigated in this analysis set. Although self-criticism decreased significantly over time, this variable at Time 1, as well as its change score, were not included in this set of analyses because a significant correlation with the behavioural ED symptom construct was lacking. In the first block of predictor variables, baseline scores for depressed mood (BDI), concern over mistakes, and the behavioural eating disorder symptom composite (EDC behavioural) were force-entered. In the second block of predictor variables, change scores in depressed mood and concern over mistakes were force-entered. The model was not significant, indicating that changes in mood and concern over mistakes did not have a mediating effect on change in behavioural eating disorder symptoms.

Analyses for change in bulimia-related eating disorder symptoms (EDC bulimia-related). The last set of longitudinal analyses examined the predictive ability of perfectionism change scores for change in bulimia-related eating disorder symptoms. Concern over mistakes at Time 1 and delta concern over mistakes were not significantly correlated with the bulimia-related ED symptom Time 2 score or delta score. As such, the concern over mistakes construct was not included in the last set of regression equations. Change in self-criticism, however, was investigated as delta self-criticism was significantly correlated with delta EDC bulimia-related ($r = .51, p < .01$).

A hierarchical regression analysis was conducted wherein the first block of predictor variables, consisting of Time 1 EDC bulimia-related, BDI score, and self-criticism were force-entered. In the second block of predictor variables, delta BDI and

self-criticism were force-entered. The model was significant and accounted for more than 50% of the variance in the change score for bulimia-related ED symptoms, ($F(5, 24) = 4.97, p < .005, R^2 = 0.51$). The only significant predictor in the final model, however, was Time 1 bulimia-related symptoms, with change in self-criticism showing a trend for prediction at $p = .06$. A second hierarchical analysis was performed, this time excluding Time 1 and delta BDI scores, due to the fact that these variables were not significantly correlated with Time 1 and delta EDC bulimia-related. In this equation, the first block of force-entered predictor variables consisted of Time 1 EDC bulimia-related and self-criticism. The second block of predictor variables, consisting of change in self-criticism. The results of this hierarchical regression analysis are exhibited in Table 17. The model was significant and accounted for almost 50% of the variance in the change score for bulimia-related ED symptoms, ($F(3, 26) = 8.45, p < .001, R^2 = 0.49$). Along with Time 1 EDC bulimia-related, change in self-criticism was a significant predictor in the final model.

Table 17

Prediction of Change in Eating Disorder Symptom Composite (EDC) Bulimia-related

Step and predictor variable	β	t-value	p-value	R^2	ΔR^2
Step 1 – Time 1 variables				.30	
EDC bulimia-related	.55	3.24	.00		
Self-criticism	-.331	-1.94	n.s.		
Step 2 – Time 1 variables				.49	.19
EDC bulimia-related	.50	3.35	.002		
Self-criticism	-.29	-1.95	n.s.		
Change scores					
Self-criticism	.45	3.12	.004		

Note: n.s. = not significant.

The hypotheses set for the second set of regression analyses of Study 2 stated that change scores for socially-prescribed perfectionism, concern over mistakes, doubts about actions, self-criticism, self-oriented perfectionism, and personal standards would significantly predict reduction in eating disorder symptoms over the course of treatment. One aspect of this set was supported, with delta self-criticism being a significant predictor for psychological ED symptoms and serving as a significant predictor for bulimia-related symptoms only when depressed mood was not accounted for in the analysis.

Discussion

The objective of Study 2 was to investigate the extent to which the various perfectionism dimensions predicted eating disorder severity at Time 2. Although Time 1

self-oriented perfectionism and personal standards had been hypothesized to predict higher Time 2 eating disorder scores, findings of the current study did not support this relationship. Adaptive perfectionism dimensions did not demonstrate predictive value for eating disorder symptom severity over time, despite the relationship between adaptive perfectionism and eating disorders highlighted in the first study. Limitations of the study may have prevented significant findings from developing (e.g., small sample size, relatively brief time period). On the other hand, it may be that adaptive perfectionism is present in, and in fact specific to, eating disorders but that maladaptive perfectionism is more important for targeting in treatment, at least initially. If this is so, this may also fit well with the clinical experience of treating clients with eating disorders. As a construct requiring change and treatment focus, maladaptive perfectionism would likely have more face validity for therapy clients (“I need to work on changing my negative ways of thinking”) while adaptive perfectionism may seem to some clients like an advantageous quality (“I just have high standards”). As such, targeting adaptive perfectionism may require deeper level processing and may be best left to later in therapy.

Although the maladaptive perfectionism composite significantly decreased from Time 1 to Time 2, the adaptive perfectionism composite score did not differ significantly over time. It may be a poor sign for ED prognosis that adaptive perfectionism did not decrease over time in treatment. However, 6 months can be considered a relatively short period of time for entrenched attitudes or beliefs to change (particularly when they are not directly targeted in treatment). Furthermore, an examination of participants’ progress in therapy over an extended period of time may indicate that, in a developmental manner,

adaptive perfectionism changes (decreases) after modifications in maladaptive perfectionism occur.

The maladaptive constructs of socially prescribed perfectionism, concern over mistakes, doubts about actions, and self-criticism had been hypothesized to predict higher eating disorder scores at Time 2 (controlling for Time 1 eating disorder and depression scores). This hypotheses set was partially supported in the study. Concern over mistakes at baseline accounted for significant amounts of variance in the psychological eating disorders symptoms at Time 2, even after controlling for baseline psychological ED symptoms and depression symptoms. This finding suggested the importance of examining and targeting this construct in the treatment of eating disorders.

Concern over mistakes at baseline also predicted Time 2 behavioural eating disorder symptoms when baseline depression was not controlled. This finding may support the predictive value of concern over mistakes for the behavioural ED symptoms (e.g., time spent exercising, time and attention paid to enhancing one's appearance, and dieting behaviours) over time. In a larger sample size, CM may emerge as a predictor with incremental predictive ability over baseline depression for behavioural eating disorder symptoms over time.

The findings related to the construct of concern over mistakes highlight the significant role this maladaptive dimension plays in the prognosis of eating disorder symptoms, particularly those associated with eating- or shape-related dysfunctional attitudes and perceptions. When perfectionism is manifested by negative reactions to mistakes and the tendency to think that others will have less respect for a person following failure (the concern over mistakes construct), the prognosis is worse for those

eating disorder symptoms related to such dysfunctional attitudes as negative evaluation of one's own appearance and social insecurity related to social self-doubt (components of the psychological ED composite).

In discussions concerning the effect of ubiquitous cultural messages on the desirability of thinness in females, the question is often posed of why do only some women react to these messages in such a way that they develop eating disorders. Perhaps, part of the answer lies in a sensitivity to such societal messages held by people with high maladaptive evaluation concerns, particularly in the form of concern over mistakes. It may be that such individuals, concerned with evaluation by others, may be more conscious of others' opinions of them especially regarding appearance and thus are more vulnerable to the pervasive societal pressures to be thin.

Self-criticism at pre-treatment showed a trend towards possessing predictive value for bulimia-related ED symptoms. When baseline and change in depressed mood were not accounted for, change in self-criticism significantly predicted change in bulimia-related ED symptoms. Together, these findings suggest that self-criticism is particularly salient with regard to bingeing and purging symptoms. As stated, Shafran et al.'s (2002) model of perfectionism states that self-criticism results from perceived failure. The cycle of bingeing and purging has, by its very nature, failure as an inherent component. Fairburn (1995) describes the cycle as often involving the following elements: restricting (extreme dieting) → bingeing (failure at restriction and behaviour oriented towards thinness) → guilt → purging → restricting → cycle continues.

Escape theory is concerned with the notion that awareness of oneself is sometimes aversive so individuals seek to escape this self-awareness, often by focusing attention to

the present environment (Baumeister, 1990). In the case of binge eating, it has been suggested that the impetus for escape from self-awareness starts with failure to meet unrealistic high standards regarding appearance that the individual holds for him or herself or which the individual believes someone else holds for him or her (Heatherton & Baumeister, 1991). The painful self-awareness associated with failure to meet the standards is posited to lead to an escape response typified by disinhibition and subsequent bingeing. Interestingly, Ruderman (1986) found that individuals demonstrating BN behaviours showed a tendency to "avoid difficult situations and unpleasant tasks" (p. 196). Heatherton & Baumeister (1991) suggested that "binge eaters possess heightened self-awareness of how they are perceived and evaluated by others, but not of their intrapsychic experiences" (p. 89) and are seen as judging themselves negatively. The self-criticism construct seems to be pertinent to this conceptualization. According to this theory, failure to reach the self-imposed perfectionistic standard would seem to be comparable to a painful awareness of self and thus the beginning of the binge-eating cycle. Escape theory may elucidate the manner in which self-criticism and perfectionism operate in women with eating disorders.

Self-criticism played a major role in the findings of Study 2 in another way. Change in self-criticism was found to be a significant predictor of reduced psychological eating disorder symptoms over the course of treatment, even after several other variables (including depressed mood) were first entered into the hierarchical regression equation. Coupled with the demonstrated predictive ability of change in self-criticism for change in bulimia-related ED symptoms, this finding highlights the possibility that change in feelings about self-worth are related to a decrease in psychological and bulimia-related

behavioural eating disorder symptoms. In the case of the psychological ED symptoms, change in self-criticism contributed unique statistical significance even when change in mood was examined; the effects of self-criticism were not simply due to dysphoric mood or mood changes. This finding is particularly relevant to the therapy process, and the corresponding research method follows from a tradition of advanced psychotherapy research such as that conducted by Rector et al. (2000). The finding suggests that a change in self-criticism occurs while in treatment and that, possibly, it leads to a change in the manifestation of attitudinal eating disorder symptoms. Overall, the significance of self-criticism in the findings of the present study converge with those of Fairburn, Cooper, Doll, & Welch (1999) who assessed a broad range of risk factors for eating disorders and found that negative self-evaluation, as well as perfectionism, appeared to be characteristic antecedents of anorexia nervosa and bulimia nervosa.

The association between perfectionism-related change scores and the psychological eating disorder symptom change scores may be confounded by a shared method variance. Both perfectionism and the psychological ED symptoms are linked with negative affect and cognitive distortions. Findings connecting perfectionism changes with changes in the behavioural ED symptom composite would have strengthened the ability to make conclusions about perfectionism, however, no perfectionism change scores were found to predict change in this ED composite. Nevertheless, as discussed, significant predictive associations were found between perfectionism change scores and the bulimia-related eating disorder symptom change scores. The bulimia-related composite was strictly composed of behaviour measures for bingeing and purging. Thus, there were

findings regarding the process of change regarding self-criticism and both psychological and some behavioural ED symptoms.

Change in the maladaptive perfectionism composite was also found to predict change in psychological eating disorder symptoms. However, given that no individual perfectionism dimensions (other than self-criticism) played the same predictive role, it may be that self-criticism (a component of the maladaptive composite) contributed the most to this finding. Moreover, self-criticism had the highest factor loading (.81) on the maladaptive perfectionism composite and could be considered to be the marker variable for that construct. Self-criticism, then, contributes much to the maladaptive perfectionism composite and defines a good deal of the construct. Therefore, the finding regarding change in self-criticism is the more meaningful finding given that it provides more specific information regarding what actual changes occurred and were significant for prognosis.

The emergence of concern over mistakes (CM) and self-criticism (SC) as dimensions important to the prediction of eating disorders prognosis may be due to a relationship shared between these two variables. Concern over mistakes involves the propensity to view mistakes as being the equivalent of failure. If, as purported by Shafran et al. (2002), self-criticism results from perceived failure, then it would seem that the two constructs tap a common dimension, that of concern with failure. An examination of item content from the two scales bears out this theory while indicating a difference in scope between the two variables: CM is related to specific concern about making mistakes and, in many cases, worry about being seen as a failure, whereas SC is associated with a more general sense of the self as being successful/accomplished versus not being satisfied with

the self. (The SC subscale also contains less face valid items dealing with interpersonal relationships.) Overall, conceptualizing the maladaptive dimensions of CM and SC as representing negative evaluation concerns (as per Frost et al., 1993 and the earlier discussion of Study 1) is thus further supported by the findings of Study 2.

In the final models of the regression analyses dealing with prediction of Time 2 ED symptom severity from Time 1 perfectionism dimensions, baseline depression did not predict eating disorder severity at follow-up. Failure to find a significant relationship may indicate that in the present sample eating disorders were a separate diagnostic and clinical entity, that regardless of degree of baseline depression, ED symptom severity was determined by features specific to eating disorders. Conversely, this finding may be a reflection of using a single depression measure that taps mostly behavioural features of depression and that is not sensitive enough to the depressive experience of ED patients.

Study 1 indicated that maladaptive perfectionism (or negative evaluation concerns) is present in both eating disorders and depression. Maladaptive perfectionism decreased over time in Study 2, as did BDI scores. The reduction in maladaptive perfectionism may have been related to changes in depressed mood, with a therapeutic effect being associated with a lessening of depressed mood over time, leading to a reduction in maladaptive perfectionism. In contrast, treatment may have led to a lessening of maladaptive perfectionism, thereby leading to decreased report of depressed mood. Nevertheless, even though maladaptive perfectionism lacked specificity for eating disorders in Study 1, this construct was still shown to be relevant in eating disorders. A decrease in this construct is likely important for improvement in ED symptoms, especially over an extended period of time.

In summary, the main findings of Study 2 were: (a) baseline concern over mistakes had incremental predictive ability for Time 2 psychological ED symptoms and predicted Time 2 behavioural ED symptoms when depressed mood was not controlled; (b) a trend was shown for pre-treatment self-criticism to predict Time 2 bulimia-related ED symptoms; and (c) changes in self-criticism predicted changes in both psychological and bulimia-related symptoms, indicating the significance that self-critical thoughts play in the binge-purge cycle and in dysfunctional attitudes related to eating disorders. In all, concern over mistakes and self-criticism, as well as the process of self-critical thoughts reducing over time, warrant further investigation regarding their ability to predict eating disorders prognosis.

Due to the small sample size of Study 2, a cautionary tone must be used in discussing the results. This was the first study of its kind to investigate the significance of perfectionism dimensions over time in a clinical eating disorders sample and thus its purpose was exploratory. The findings, although tentative based on power considerations, are nevertheless useful for hypothesis generation for further study and indicate particular areas to be investigated in future research.

General Discussion

Overall Findings

Taken as a whole, the findings of Study 1 and Study 2 highlighted the importance that perfectionism features have for eating disorders. Both adaptive and maladaptive perfectionism were elevated in the ED sample of Study 1. Adaptive perfectionism showed specificity for eating disorders as compared to major depressive disorder. Adaptive perfectionism did not change over time in the ED sample of Study 2 and did not

predict Time 2 eating disorder symptoms or change in ED symptoms. Maladaptive perfectionism did change from Time 1 to Time 2 and was discussed in terms of its possible face validity as a target for change and its possible developmental course in treatment in that it may change before adaptive perfectionism does.

Concern over mistakes and self-criticism, two dimensions falling within the maladaptive perfectionism cluster, were shown to have predictive validity for various types of eating disorder symptoms. Perhaps most importantly, change in self-criticism predicted change in eating disorder symptoms over time, providing information regarding the mechanisms of change in treatment for eating disorders and suggesting that perhaps change in core beliefs regarding self-worth is associated with change in ED symptom severity. At the very least given power and sample size considerations, the findings regarding self-criticism suggest hypotheses for future research and warrant continued research into this area.

Reconceptualizing Perfectionism Terms: "Excessive Achievement Strivings and Maladaptive Evaluative Concerns"

Throughout the present study, support has been shown for conceptualizing the distinction between the perfectionism dimensions in terms of achievement strivings (in place of "adaptive perfectionism") and maladaptive evaluation concerns (in place of "maladaptive perfectionism"). Although Frost et al. (1993) used the term "positive" to describe the cluster of achievement strivings dimensions, the current study indicated that the achievement strivings may be more ambiguous, at times positive and at times excessive and unhealthy. The conceptualization of achievement strivings as ambiguous is in keeping with the findings of Burke and Haslam (2001) wherein a core autonomy

construct was composed of a subscale with pathological self-criticism features and one with “‘healthy’ efficacy-related” characteristics. (Autonomy has been related to the achieving of personal goals and standards [cf. Burke & Haslam, 2001].) The ambiguous nature of achievement strivings may be clarified by a review of the findings of Hewitt et al. (1996). In this study, self-oriented perfectionism (an achievement striving dimension) interacted with achievement stressors to predict depressive symptomatology over time, whereas socially-prescribed perfectionism (which falls under the category of maladaptive evaluation concerns) predicted depression as a main effect. It may be that achievement dimensions are adaptive under most circumstances but when paired with achievement stressors they manifest in the presentation of disordered behaviour. In the case of eating disorders, it may be that in the face of certain relevant stressors, otherwise “healthy” achievement strivings become excessive or directed towards unhealthy pursuits and thus eating disorder behaviours are manifested. Maladaptive evaluation concerns were, as discussed, found to be relevant to eating disorders. That self-criticism loaded so highly on the construct referred to as maladaptive perfectionism suggests that negative self-evaluation plays a large part in maladaptive evaluation concerns. Feelings of low self-worth, or perhaps self-loathing, are likely involved.

Proposed Model to Explain Mechanisms in Perfectionism at Work in Eating Disorders

Although the self-criticism construct has been linked to perfectionism, it is feasible that it may also be separate, in that an individual may possess low self-worth without the strivings to attain perfection; for example, an individual may demonstrate self-loathing but not the drive to better himself/herself or the active striving for success (e.g., as in depression). In the case of eating disorders, however, the combination of both

excessive achievement strivings and negative self-evaluation (perhaps in the form of self-loathing) appear to play an important role. Following from the tradition of research investigating specific vulnerability hypotheses in disorders such as depression (e.g., Hewitt et al., 1996), it may be that in eating disorders a salient environmental stressor interacts with achievement strivings and negative self-evaluation to result in disordered eating behaviours. Joiner, Heatherton & Keel (1997), Vohs et al. (1999) and Vohs et al. (2001) have shown that perfectionism and body/weight dissatisfaction interact to predict bulimic symptom development, with later studies showing a moderating effect by self-esteem.

Self-discrepancy theory has been used to explain the presence of eating disorder symptoms. This theory postulates that discomfort is associated with the experience of discrepancies between the *actual self* (one's representation of the attributes that he/she actually possesses) and the *ideal self* (one's representation of the attributes he/she should ideally possess) or the *ought self* (one's representation of the attributes that he/she ought to possess) (Higgins, 1987). Joiner, Heatherton, Rudd, & Schmidt (1997), for example, reported bulimic symptomatology in perfectionistic women whose standards regarding weight went unmet and their findings were consistent with this theory. In a study of body dissatisfaction and disordered eating in female undergraduates, Strauman, Vookles, Berenstein, Chaiken, and Higgins (1991) found support for the self-discrepancy model with actual:ought discrepancy being associated with restraining symptoms and actual:ideal discrepancy being related to symptoms of bingeing and purging. With eating disorders, the failure to meet an ideal regarding physical appearance is linked to a self-critical reaction and may thus be explained by the self-discrepancy model.

Based on previous research and the findings of the current study, the following model is proposed to explain the mechanisms at work in eating disorders:

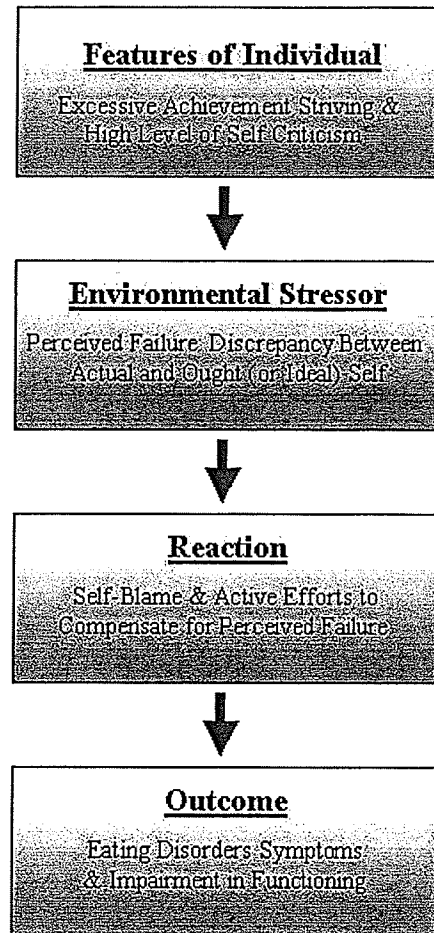


Figure 1. Proposed specific vulnerability model outlining the mechanisms in which perfectionism-related constructs may operate in eating disorders.

The Value of Prospective Studies in ED and Perfectionism Research

The proposed model may offer direction for future research. In any investigation of diathesis-stress models or specific vulnerability hypotheses, there are several potential problems. The very nature of specific vulnerability hypotheses involves conceptualizing

certain variables as antecedents to the disorder of interest. Antecedence, of course, is required to make causal inferences. However, rather than being an antecedent, a variable of interest may be a symptom or concomitant of the disorder under study (observable only when the disorder is present), or a consequence of the disorder (the presence of the variable persists past symptomatic recovery) (cf. Barnett & Gotlib, 1998).

There is a question about whether symptoms associated with eating disorders are factors that contribute to the pathogenesis of the disorders or if they are concomitants of the disorder, perhaps caused by compromised nutrition. Perfectionism appears to be independent of the state of nutrition in AN and has been shown to be present whether AN patients are underweight or whether they are studied after weight restoration (Srinivasagam et al., 1995; Szabo & Blanche, 1997). Interestingly, in a comparison of anorexia nervosa patients who had been recovered for a year and a healthy control group, the only EDI subscale that was significantly higher for the recovered group was the Perfectionism subscale (Srinivasagam et al., 1995). The recovered AN group also scored higher on all subscales of the Frost MPS. Although the persistence of perfectionism after recovery does suggest that perfectionism may be a trait that contributes to the pathogenesis of eating disorders, a scarring hypothesis has not been ruled out that would explain this persistence as being an after-effect of actually having experienced the disorder.

Over-reliance on cross-sectional research methods has been blamed for compounding the difficulty of demonstrating causal relationships in depression research (Stader & Hokanson, 1998) and the same can confidently be said for research into other psychopathologies. Cross-sectional research has been instrumental in finding differences

between various psychological disorders; however, without prospective research, one cannot confidently state that the traits in question were present prior to the development of the disorder and are, therefore, causal (cf. Barnett & Gotlib, 1988). For example, the variable in question (e.g., excessive achievement striving) may be caused by the experience of a stressor (e.g., being teased about weight and realizing that a discrepancy exists between actual body size and an ideal body size) or by the experience of disordered eating (e.g., disordered eating results in weight loss which is in turn reinforcing to the individual and leads to the adoption of excessive striving to maintain the weight loss results). The use of a prospective design, then, is invaluable for determining etiological significance of a particular variable.

Clinical Implications and Recommendations for Treatment

Based on the findings of the current study and the proposed theoretical model as described above, the following clinical implications are proposed. Change (i.e., reduction) in self-criticism was shown to predict reduction in eating disorder symptoms over time, and the maladaptive perfectionism construct (of which self-criticism was a part) decreased significantly over time in treatment. Targeting self-criticism in treatment may be an important strategy towards successful treatment and recovery from eating disorders. Additionally, within the eating disorder sample, the salience of possessing a combination of excessive achievement strivings and high level of self-criticism was demonstrated. It follows that treatment should likely include the modification of clients' evaluations of their performances/perceptions of their failures, with the eventual treatment goal being to enhance self-acceptance in the relevant life domains (e.g., body size). Because evaluations regarding performance and the attainment of goals has to do,

in part, with “achievement strivings”, it may be that (as discussed earlier) clients may be resistive to relinquishing their “high standards” or what they may regard as their “positive perfectionism”. Framing change in terms of letting go of the more “negative” aspects of perfectionism may be important in encouraging treatment compliance. Further study is required to determine the value of including such objectives in treatment and to determine how best to implement them into therapy to enhance the chance for successful recovery from eating disorders.

Limitations of the Current Study and Recommendations for Future Research

In future research to further the findings of the current study and/or investigate the proposed model, it would be important to control for higher-order, non-specific influences such as neuroticism, a variable that has been suggested to be one of the most universal and basic personality dimensions (H. J. Eysenck & M. W. Eysenck, 1985). Such a higher-order variable is associated with a host of related, lower-order factors (e.g., McRae & John, 1992). The implication for vulnerability research is that a researcher may assume that a specific psychosocial variable, such as perfectionism, accounts for the variance in the prediction of a disorder when, in fact, a more diffuse variable that is associated with a myriad of traits and characteristics (e.g., neuroticism) may actually be influencing the manifestation of the disorder. Perhaps a higher-order variable better explains the development of the disorder in question; it may be that a higher-order factor is actually the driving force in the development of the disorder, with the putative vulnerability factor only a concomitant of the higher-order factor. The present study did not include a measure of higher-order personality variables. Future research that could demonstrate that self-criticism or perfectionism dimensions possess incremental

predictive validity over a higher-order variable such as neuroticism would be a valuable contribution to the field.

Self-criticism was demonstrated in both Studies 1 and 2 to be important for eating disorders. Using a self-criticism subscale that consisted of only nine items, this construct was shown to be elevated in and a powerful predictor for eating disorders. As discussed, the exact nature of self-criticism is somewhat unclear and the use of different types of self-criticism measures may help elucidate the connection between eating disorders and this variable. Furthermore, rather than using self-report inventories of self-criticism, somewhat more behavioural measures such as records of self-statements and self-talk may further knowledge in this area. Incorporating experimental measures such as failure trials (e.g., a task is arranged such that a participant is assured to fail and reactions are recorded) may also add to the knowledge about eating disorders and self-criticism. Finally, future research investigating the origins of self-criticism (perhaps in different disorders) would also enhance understanding regarding the association of self-criticism and eating disorders.

As a whole, the current study is one of few studies to examine the role of multidimensional perfectionism in the eating disorders (most research has focused on the use of unidimensional constructs), to use multidimensional measures with a clinical sample, and to conduct such investigations over time. Study 2's inclusion of an investigation concerned with the predictive validity of perfectionism change scores has particular relevance for psychotherapy research, in that the process of change while in therapy was examined for the effect on treatment outcome/process. Research such as this has focused on depression (e.g., Rector et al., 2000) and social phobia (e.g., Cox, Walker,

Enns, & Karpinski, in press). However, the present study is the first of its kind to gather perfectionism scores over time and investigate the process of change regarding a construct such as perfectionism in eating disorders. Psychotherapy process research is valuable for clinical understanding and applications in the treatment of eating disorders.

The current study did not include an interim assessment of perfectionism-related and symptom variables. Ideally, one would like to demonstrate that change in self-criticism or perfectionism occurs before change in symptoms occurs. Such an observation would more closely mirror the actual process of change that is expected to happen in treatment, whereby change in self-criticism or perfectionism begins, over time becoming internalized, before actual changes in the symptoms of the disorder manifest.

Studies have examined how perfectionism impedes the successful treatment of depression (e.g., Blatt et al., 1995). The current study is the first to examine whether perfectionism impacts on the treatment of eating disorders. Should these findings be replicated and extended, a most important area of study for future research would involve the development and evaluation of treatment protocols targeting perfectionism in eating disorders. A cognitive-behavioural framework for the development and maintenance of perfectionism has been proposed by Shafran et al. (2002) and may provide guidance for the future development of such treatment.

In addition to those that have been discussed earlier, the current study has a number of limitations, such as the reliance on self-report measures. Structured clinical interviews have not been developed to assess perfectionism dimensions. However, structured clinical interviews could be used to better assess depression symptoms in detail. Another limitation of the study is that results cannot be generalized to males given

the study's focus on females. It may be that very different mechanisms regarding perfectionism and disordered eating operate in males as opposed to females. The difference in mean age among samples in the present study may also be considered a limitation. There may be other differences associated with age that account for the findings regarding perfectionism. Studies which more closely match comparison samples to clinical samples on variables such as age would be able to more definitively address any group differences found. As well, a longitudinal study with more participants and a longer time period for treatment, as well as a follow-up period of a year or more after treatment may find more significant results and may foster more confidence in the results found. Using longitudinal designs, Joiner, Vohs, and colleagues have made contributions regarding the interaction of perfectionism, body dissatisfaction, and eating disorder symptoms, however their studies have used non-clinical samples. Prospective studies of participants who present clinically with eating disorders, particularly studies examining the context of changes observed while in treatment, are recommended for future research. Furthermore, a longitudinal study of perfectionism dimensions and self-criticism in interaction with perceived failure (as in the proposed model outlined above) in young women who have not yet presented with eating disorders and who are then followed over a period of several years would enhance the ability to discuss predictive value of perfectionism and self-criticism for eating disorders.

Conclusion

Despite the limitations of the current study, several conclusions relevant to eating disorders and perfectionism were suggested by its findings. Findings supported the use of a multidimensional model of perfectionism and the conceptualization of the dimensions

as falling into two clusters (achievement strivings and maladaptive evaluation concerns). Evidence was provided for the significance of these two clusters in the presentation and prognosis of eating disorders. The results of the current study also suggested that achievement strivings are specific to eating disorders but not major depressive disorder. Concern over mistakes and self-criticism were demonstrated to possess predictive value for the prognosis of eating disorders. Finally, findings highlighted the significance of change in self-criticism over time as a predictor of improvement in eating disorder symptoms. In total, the findings indicate the importance of continued research regarding the role played by perfectionism dimensions in eating disorders and provide direction for hypothesis generation in future research.

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Appendix A

DSM-IV Diagnostic Criteria for Bulimia Nervosa

- A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
- (1) eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances
 - (2) a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating)
- B. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.
- C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for 3 months.
- D. Self-evaluation is unduly influenced by body shape and weight.
- E. The disturbance does not occur exclusively during episodes of Anorexia Nervosa.

Specify type:

Purging Type: during the current episode of Bulimia Nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas

Nonpurging Type: during the current episode of Bulimia Nervosa, the person has used other inappropriate compensatory, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas

(APA, 1994, pp. 549-550)

Appendix B

DSM-IV Diagnostic Criteria for Anorexia Nervosa

- A. Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).
- 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 on self-evaluation, or denial of the seriousness of the current low body weight.
- D. In postmenarcheal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration.)

Specify type:

Restricting Type: during the current episode of Anorexia Nervosa, the person has not regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

Binge-eating/Purging Type: during the current episode of Anorexia Nervosa, the person has regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

(APA, 1994, pp. 544-545)

Appendix C

DSM-IV Diagnostic Criteria for Eating Disorder Not Otherwise Specified

The Eating Disorder Not Otherwise Specified category is for disorders of eating that do not meet the criteria for any specific Eating Disorder. Examples include

1. For females, all of the criteria for Anorexia Nervosa are met except that the individual has regular menses.
2. All of the criteria for Anorexia Nervosa are met except that, despite significant weight loss, the individual's current weight is in the normal range.
3. All of the criteria for Bulimia Nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur at a frequency of less than twice a week or for a duration of less than 3 months.
4. The regular use of inappropriate compensatory behavior by an individual of normal body weight after eating small amounts of food (e.g., self-induced vomiting after the consumption of two cookies).
5. Repeatedly chewing and spitting out, but not swallowing, large amounts of food.
6. Binge-eating disorder: recurrent episodes of binge eating in the absence of the regular use of inappropriate compensatory behaviors characteristic of Bulimia Nervosa (see p. 729 of *DSM-IV* for suggested research criteria).

(APA, 1994, p. 550)

Appendix D

Patient Information and Consent Form

Personality Factors Related to Eating Disorders

You are being asked to participate in a research study about eating disorders. Before giving your consent to participate in the study, please read the following so that you understand what is involved in the study.

Nature and Purpose of the Study

This study is being conducted to learn more about the relationship between eating disorders and various styles of thinking and feeling about oneself and others. One of the questions that the study will answer is how these thoughts and feelings are related to specific eating disorder behaviour and will help to explain if certain factors are more or less important to look at in treatment.

Study Procedures

Your participation will involve filling out research-related questionnaires, in addition to the routine questionnaires that you fill out at the Eating Disorders Clinic (EDC). As part of your assessment at the EDC, you will be interviewed by the staff. The findings of that interview and the results from the routine EDC questionnaires will be used in this study. As you continue through therapy, there will be two other time points at which you will be asked to fill out some more questionnaires. These time points are three months after you started treatment at EDC and six months after you started treatment. The time requirement for completing the questionnaires will be approximately 60-75 minutes. Your participation is entirely voluntary and if you choose not to participate or continue in the study, your treatment at the EDC will not be affected.

Confidentiality

The information you provide will be strictly confidential and will be stored in a secure location at the Health Sciences Centre. Only authorized study personnel at the Health Sciences Centre and the University of Manitoba will have access to information obtained through the study. Each of these organizations follows strict policies about protecting confidentiality. Any publications which make use of this data will not identify you in any way.

Participation

Participation in the study is completely voluntary. You may refuse to participate and are free to withdraw from the study at any time. If you decide not to participate or to discontinue participating, you do not have to provide a reason and your future medical/health care will not be affected. There will be no financial remuneration

provided to participants. Signing of this document does not waive the legal rights of a participant.

Personality Factors Related to Eating Disorders

If Problems Arise

Should you have questions or concerns about the study, please leave a message for the principal researcher, Laura Campbell, at 787-3720.

CONSENT

I, _____, have been informed of the nature and purpose of the study. I have had an opportunity to ask questions about the study and have received satisfactory answers to my questions.

I give my voluntary and informed consent to participate in this study. I understand that I am free to withdraw my consent at any time. I have been given a copy of this consent form.

In addition to the questionnaires completed for this study, I also give permission to the researchers to obtain information from the routine EDC questionnaires and assessment interview. I understand that the information I provide will be treated in a confidential manner.

Participant Signature

Date

Witness Signature

Date

Appendix E

Consent Form for University Sample

The purpose of this study is to investigate personality characteristics in a university population. Participation in this study involves completion of various questionnaires. Participation in this study will earn me 2 credits for my introductory psychology course.

I understand that my decision to participate in this study is completely voluntary. I am free to not complete the questionnaires if I choose. I understand that the information I provide will remain strictly confidential. No identifying information is attached to the information I provide. My name and student number (provided below) will only be used for the purpose of administering course credit to me.

I have read this consent form and have had the opportunity to ask questions about the study. I consent to participating in this study.

Name (please print) _____

Date _____

Student number _____

Signature _____

Appendix F

Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991a) sample items

Perfectionism Dimension	Example of items
Self-Oriented Perfectionism	"One of my goals is to be perfect in everything I do"
Other-Oriented Perfectionism	"I have high expectations for the people who are important to me"
Socially Prescribed Perfectionism	"I feel that people are too demanding of me"

Appendix G

Description of subscales and sample items from the Multidimensional Perfectionism Scale (MPS; Frost et al., 1990)

- a. **Concern Over Mistakes (CM)** taps negative reactions to mistakes, the propensity to view mistakes as being the equivalent of failure, and the tendency to think that others will have less respect for a person following failure (e.g., "People will probably think less of me if I make a mistake")
- b. **Personal Standards (PS)** assesses whether one sets very high standards and how important these high standards are in self-evaluation (e.g., "If I do not set the highest standards for myself, I am likely to end up a second-rate person")
- c. **Parental Expectations (PE)** assesses the tendency to believe that one's parents hold very high standards for the individual (e.g., "My parents wanted me to be the best at everything")
- d. **Parental Criticism (PC)** assesses the tendency to believe that one's parents were (or are) extremely critical (e.g., "I never felt like I could meet my parents' standards")
- e. **Doubts about Actions (DA)** is composed of items from the doubting subscale of the Maudsley Obsessive-Compulsive Inventory (Rachman & Hodgson, 1980) and assesses the degree to which one doubts his or her ability to accomplish tasks (e.g., "Even when I do something very carefully, I often feel that it is not quite right")
- f. **Organization (O)** reflects extreme importance placed on order and organization (e.g., "Organization is very important to me").

Appendix H

Depressive Experiences Questionnaire (DEQ, revised version; Bagby et al., 1994)
sample items

Subscale	Example of items
Self-Criticism	"I often feel that I don't live up to my own standards or ideals"
	"I am very satisfied with myself and my accomplishments"
Dependency	"I constantly try, and very often go out of my way, to please or help others I am close to"
	"After an argument, I feel very lonely"

Appendix I

Beck Depression Inventory (BDI; Beck et al., 1961) sample items

- 0 I do not feel sad.
1 I feel sad.
2 I am sad all the time and I can't snap out of it.
3 I am so sad or unhappy that I can't stand it.
- 0 I have not lost interest in people.
1 I am less interested in other people than I used to be.
2 I have lost most of my interest in other people.
3 I have lost all of my interest in other people.
- 0 I can sleep as well as usual.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to and cannot get back to sleep.

Appendix J

Eating Disorder Inventory – 2 (EDI- 2; Garner, 1991) sample items

11. I feel extremely guilty after overeating.
15. I am open about my feelings.
26. I can clearly identify what emotion I am feeling.
28. I have gone on binges where I felt I could not stop.
32. I am preoccupied with the desire to be thinner.

Appendix K

Patient Information and Consent Form (Time 2)

Dear Ms. ,

The purpose of this letter is to follow up on the information you provided at the Eating Disorders program at Health Sciences Centre several months ago. At that time, you filled out some questionnaires and were informed that you would be asked to fill some more out several months later.

Before giving your consent to continue your participation in the study, please read the following so that you understand what is involved in the study. **If you consent to continue participating, please complete this consent form and the enclosed forms to the best of your ability (there are no wrong answers) and send them back in the addressed stamped envelope as soon as you can (preferably within a week or so). If you choose to participate, thank you very much for your involvement and for assisting us in learning more about the treatment of eating disorders.**

Personality Factors Related to Eating Disorders

Nature and Purpose of the Study

This study is being conducted to learn more about the relationship between eating disorders and various styles of thinking and feeling about oneself and others. One of the questions that the study will answer is how these thoughts and feelings are related to specific eating disorder behaviour and will help to explain if certain factors are more or less important to look at in treatment over time.

Study Procedures

Your participation will involve filling out research-related questionnaires and routine questionnaires that are part of follow-up for the Eating Disorders Program (EDP).

Even if you discontinued treatment early or were not fully satisfied with your program while in the Eating Disorders Program, your information will still be valuable. The time requirement for completing the questionnaires will be approximately 30 minutes. Your participation is entirely voluntary and if you choose not to participate or continue in the study, any future treatment at the EDP will not be affected.

Confidentiality

The information you provide will be strictly confidential and will be stored in a secure location at the Health Sciences Centre. Only authorized study personnel at the Health Sciences Centre and the University of Manitoba will have access to information obtained through the study. Each of these organizations follows strict policies about protecting confidentiality. Information you provide will not affect any future treatment you may pursue. Any publications which make use of this information will not identify you in any way.

Participation

Participation in the study is completely voluntary. You may refuse to participate and are free to withdraw from the study at any time. If you decide not to participate or to discontinue participating, you do not have to provide a reason and your future medical/health care will not be affected. There will be no financial remuneration provided to participants. Signing of this document does not waive the legal rights of a participant.

If Problems Arise

Should you have questions or concerns about the study, please leave a message for the principal researcher, Laura Campbell, at (204) 482-1658 or by email at umcamp81@cc.umanitoba.ca.

CONSENT

I, _____, have been informed of the nature and purpose of the study. I give my voluntary and informed consent to participate in this study. I understand that I am free to withdraw my consent at any time. I understand that the information I provide will be treated in a confidential manner.

Participant Signature

Date

Please keep one copy of this letter for yourself, then sign and return the second copy with your questionnaire package. Thank you!

Appendix L

Body Image Assessment (BIA) Procedure (Williamson, 1990) sample of silhouettes

Please look at the following silhouettes and choose (a) the silhouette that you feel/think is your **current** body size and (b) the silhouette that you feel/think is your **ideal** body size.

My **current** body size # _____

My **ideal** body size # _____

Appendix M

Multidimensional Body-Self Relations Questionnaire
(MBSRQ; Cash, Winstead, & Janga, 1986)

Subscale	Example of items
Appearance Evaluation	"I like the way I look without my clothes on" "I dislike my physique"
Appearance Orientation	"I am always trying to improve my physical appearance" "Before going out, I usually spend a lot of time getting ready"

Appendix N

Frequency of Bingeing and Purging

1. In the **past seven days**, how many **days** did you binge at least once? _____
days

2. In the **past seven days**, how many **days** did you purge (e.g., make yourself vomit; misuse laxatives, diuretics, or enemas) at least once? _____ days

3. In the **past seven days**, how many **days** have you exercised? _____ days

4. In the **past seven days**, approximately how many **times** have you exercised?
_____ times

Appendix O

*Revised Restraint Scale**(RRS; Herman & Mack, 1975; p. 653)*

Circle the answer that is true for you:

1. How often are you dieting?
 - a) never
 - b) rarely
 - c) sometimes
 - d) usually
 - e) always

2. What is the maximum amount of weight (in pounds) you have ever lost in one month?
 - a) 0-4 lbs
 - b) 5-9 lbs
 - c) 10-14 lbs
 - d) 15-19 lbs
 - e) +20 lbs

3. What is your maximum weight gain within a week?
 - a) 0 – 1 lbs
 - b) 1.1 – 2 lbs
 - c) 2.1 – 3 lbs
 - d) 3.1 – 5 lbs
 - e) + 5.1 lbs

4. In a typical week, how much does your weight fluctuate?
 - a) 0 – 4 lbs
 - b) 5 – 9 lbs
 - c) 10 – 14 lbs
 - d) 15 – 19 lbs
 - e) + 20 lbs

5. Would a weight fluctuation of 5 lbs. affect the way you live your life?
- a) not at all
 - b) slightly
 - c) moderately
 - d) very much
6. Do you eat sensibly in front of others and splurge alone?
- a) never
 - b) rarely
 - c) often
 - d) always
7. Do you give too much time and thought to food?
- a) never
 - b) rarely
 - c) often
 - d) always
8. Do you have feelings of guilt after overeating?
- a) never
 - b) rarely
 - c) often
 - d) always
9. How conscious are you of what you're eating?
- a) not at all
 - b) slightly
 - c) moderately
 - d) extremely
10. How many pounds over your desired weight were you at your maximum weight?
- a) 0
 - b) 1-5
 - c) 6-10
 - d) 11-20
 - e) +20