The Comorbidity of Eating and Substance Use Disorders in Women: Explorations of Childhood Maltreatment, Multidimensional Perfectionism and Shame

by

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A thesis submitted in conformity with the requirements for the degree of Master of Arts
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Abstract

This investigation examined multidimensional perfectionism, shame and maltreatment in 45 women with bulimia nervosa, 14 women with binge eating disorder and 26 women with anorexia nervosa, purging type, all of whom suffered from comorbid substance use disorders. Participants completed three perfectionism scales, one shame scale and one maltreatment scale. Results revealed that in the bulimia nervosa and binge eating disorder group, perfectionistic self-promotion and bodily shame were significant predictors of eating disorder severity while other-oriented perfectionism was a significant predictor of alcohol use severity. In the anorexia group, other-oriented perfectionism and bodily shame were significant predictors of eating disorder severity and nondisplay of imperfection was a significant predictor of drug use severity. All participants experienced elevated levels on all types of shame and maltreatment and on most perfectionism dimensions compared to normative samples. Findings should be utilized in developing treatment programs for those with comorbid eating and substance use disorders.
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Chapter 1

1 Introduction and Literature Review

1.1 Introduction

Research to date has documented high rates of comorbidity between eating disorders (EDs) and substance use disorders (SUDs) in treatment-seeking samples and in community and student samples. Although this comorbidity is often found in individuals with clinical and sub-clinical bulimia nervosa (BN), it has also been documented in individuals with clinical or subclinical anorexia nervosa (AN) and binge eating disorder (BED). Further, a variety of substances have been found to be abused by those with EDs. Recently, some research has found that specific types of ED behaviours might be related to specific substance categories. Numerous theories based on either a shared or causal etiology have been proposed to attempt to explain the relationship between these two disorders.

Although some theories have been proposed to explain the nature of the relationship between EDs and SUDs, these theories are not exhaustive and more research is needed on other possible contributing factors. Some insight into what factors should be further investigated comes from reviewing studies on EDs and SUDs separately in order to determine some common correlates of both disorders, which also overlap with each other. In summary, various studies have found that childhood maltreatment acts as a significant risk factor for both EDs and SUDs. However, outcomes for individuals with histories of childhood maltreatment are highly variable, suggesting that research on other factors is also needed. One personality trait that has been found to play an important role in the development of an ED or a SUD is perfectionism, which can simply be defined as a striving for flawlessness (Flett & Hewitt, 2002). However, recently perfectionism has been conceptualized as a complex multidimensional construct, which includes both personal and interpersonal aspects of perfectionism as well as trait perfectionism and perfectionism as a self-presentational style, so it would be important to study these dimensions of perfectionism in individuals with EDs and SUDs. One emotional experience that has been found to be common in individuals with an ED or SUD is shame, which can be defined as “an intense and incapacitating emotion involving feeling self-conscious, inferior and powerless, and a wish to hide oneself and one’s deficiencies” (Swan & Andrews, 2003). However, like perfectionism,
recently shame has been conceptualized by Swan and Andrews (2003) as a multidimensional construct, which includes three subtypes: shame about one’s character, shame of one’s behaviours and shame about one’s body. Not only have experiences of childhood maltreatment, perfectionism and shame been found in individuals with EDs or SUDs, but relationships have also been found between these variables in research studies.

Although maltreatment, perfectionism and shame have been found in individuals with EDs or SUDs, individuals with comorbid EDs and SUDs represent a unique group, so these experiences should be studied in such individuals to determine how such factors might contribute to such comorbidity. Initial research has suggested that women with comorbid EDs and SUDs have a profile characterized by “…. multiple psychiatric and personality problems and a history of interpersonal trauma” (Cohon & Gordon, 2009, p. 231). However, very few studies to date have specifically examined: Childhood maltreatment in individuals with comorbid EDs and SUDs; only one study has examined perfectionism in individuals with comorbid EDs and SUDs (and only utilized one perfectionism subscale and focused exclusively on individuals with comorbid EDs and alcohol use disorders) and no studies to date have examined shame in individuals who experience these two disorders concurrently. Furthermore, no investigations have examined all of the aforementioned variables together in the same study, let alone in a sample of individuals with concurrent EDs and SUDs.

In order to further our understanding of the complexities of the experiences of women with comorbid EDs and SUDs, the current study aimed to investigate experiences of childhood abuse, perfectionism and shame in a clinical sample of women with comorbid EDs and SUDs. Further, the study aimed to investigate the relationships among the aforementioned variables in this sample and to develop predictive models of eating disordered attitudes and behaviours and substance abuse. By undertaking such an investigation it was hoped that new understandings of the comorbidity of EDs and SUDs could be developed that could in turn help inform prevention programs and treatment.
1.2 Literature Review

1.2.1 Comorbid eating disorders and substance use disorders

1.2.1.1 Empirical research

1.2.1.1.1 Co-prevalence rates

Recently, the comorbidity of eating disorders (EDs) and substance use disorders (SUDs) has received increasing attention in the research literature. The comorbid relationship between these disorders has been most commonly found in women with bulimia nervosa (BN) and anorexia nervosa (AN) bingeing/purging type, as opposed to women with AN restricting type (Braun, Sunday & Halmi, 1994; Wonderlich & Mitchell, 1997).

Numerous studies have found high rates of SUDs in women seeking treatment for EDs. In a review of the literature from 1977 to 1992, Holderness, Brooks-Gun and Warren (1994) found that 20% to 25% of women with disordered eating also reported a history of drug or alcohol abuse. Another study by Braun et al. (1994) found that nearly 50% of an inpatient sample of women seeking treatment for eating disorders had histories of drug or alcohol dependence. A more recent study conducted in 2003, by the National Center on Addiction and Substance Abuse at Colombia University (CASA) found that between 30 to 50% of individuals with BN and between 12 to 18% of individuals with AN are dependent on alcohol or drugs, compared to 9% of the general population.

Numerous studies have also found high levels of eating disorders in women seeking treatment for substance related disorders. Goldbloom, Naranjo, Bremner and Hicks (1992) found that an eating disorder was diagnosed in approximately 30% of patients with an alcohol use disorder. Subsequently, Holderness et al. (1994) found that approximately 20% of women with substance abuse or dependence had a current or past history of BN or bulimic behaviours. Schuckit et al. (1996) conducted a study on 3000 patients suffering from alcohol abuse or dependence and found that 93% of these individuals also had a diagnosis of BN.

Less research on the issue has been conducted in non-clinical samples. However, the research that has been conducted demonstrates that the relationship between substance use and eating disorders is not limited to treatment seeking individuals (Bulik, 1987; Kendler et al., 1991). For example, in a nationally representative sample of adult Canadian women, Piran and Gadalla
(2006) found an association between eating disorder risk and lifetime alcohol dependence and alcohol interference in the past year. They also found an association between disordered eating and illicit drug abuse and dependence over the past year. Further, the number of types of drugs used was found to be related to severity of ED behaviours and attitudes.

In addition, investigations utilizing high school and college samples have found that subthreshold eating disorder symptomatology (i.e., bingeing, purging, restrained eating, and dysfunctional attitudes about weight and body shape) and substance use covary directly, so that as abnormal eating behavior increases, so does substance use (Killen et al., 1987; Krahn, Kurth, Demitrack & Drewnowski, 1992; Striegel-Moore & Huydic, 1993; Timmerman, Wells, & Chen, 1990).

### 1.2.1.1.2 Types of substances abused

Most studies in this area thus far have investigated only alcohol misuse or have combined several drugs into one category, rather than considering different drugs separately. Of the studies that have examined substances separately, there does not seem to be a pattern of substance abuse among individuals with EDs or vice versa (Calero-Elvira et al., 2009). One might assume that individuals with EDs are most likely to abuse appetite suppressant drugs and Bulik (1992) found that women with AN and BN abused drugs such as laxatives, diet pills, diuretics and emetics. However, a recent meta-analysis revealed that overall research does not demonstrate that individuals with EDs are more likely to abuse appetite suppressants as opposed to other types of drugs (Calero-Elvira et al., 2009). Lacey (1993) found that of a group of women seeking treatment for BN, 22% heavily abused alcohol, while 28% of these women reported using other drugs heavily, including amphetamines, marijuana and non-prescribed tranquilizers. Furthermore, high rates of cocaine and nicotine use have also been found in individuals with EDs (Hudson, Pope, Jonas, & Yurgelun-Todd, 1983; Lavik, Clausen, & Pedersen, 1991). As is evident, the research to date has found that numerous substances are abused in ED populations.

### 1.2.1.1.3 Behaviour specific approach

Much research examining the comorbidity of EDs and SUDs has examined specific types of EDs in relation to SUDs. However, in order to understand the co-occurrence better, some researchers favour a behaviour specific approach. This approach requires including a number of substances and examining specific types of eating disordered behaviours separately. For example, a five
year longitudinal study of U.S. women by Volgetanz-Holm et al. (2000) found that predictors of binge eating included: more occasions of drinking to intoxication in the past year, the occurrence of illicit substance abuse in the past year and an interaction between past binge eating and BMI. Predictors of dieting and weight concerns included: illicit drug abuse in the past year, being unmarried and having parents with more than a high school education. In a community sample of adult women in Toronto, Ontario, Piran and Robinson (2006a) found that specific ED behaviours were related to types of substances abused. Specifically, a significant relationship was found between severe bingeing and alcohol use and between dieting with purging and the use of stimulants/amphetamines and the abuse of sleeping pills. Further, in a sample of undergraduate students, Piran and Robinson (2006b) found an association between binge eating and severe levels of alcohol use, dieting with purging and the use of central nervous system stimulants, and bingeing with dieting and tobacco use and prescription medication abuse. Evidently these studies suggest an association between specific eating disordered behaviours and specific substance classes.

1.2.1.1.4 Temporal sequence of the disorders

In terms of the temporal sequence of these disorders, most research has found that individuals with comorbid EDs and SUDs usually have an initial diagnosis of an ED and subsequently develop an alcohol or drug use disorder (Higuchi, Suzuki, Yamada, Parish & Kono, 1993; Jones, Cheshire & Morrehouse, 1985; Lacey & Moureli, 1986; Newman & Gold, 1992). For example, Higuchi et al. (1993), found that the majority of their sample of female inpatient alcoholics developed problems with BN prior to their alcohol problems. In this sample, the mean age of onset of their ED was in their late teens, and these individuals progressed from habitual to problem drinking within approximately four years. In another study, Beary, Lacey and Merry (1986) compared a sample of women diagnosed with alcohol abuse to an age-matched sample of women diagnosed with BN and to an age-matched control group. Compared to the control women, 35% of the women diagnosed with alcohol abuse reported also having experienced an ED, primarily BN. Furthermore, 50% of the women diagnosed with BN reported having abused alcohol. In the majority of cases the alcohol abuse began a number of years following the onset of the ED. As the sample aged, more women with BN developed alcohol use disorders (AUDs). In another study of inpatient female cocaine abusers, Katzman and Marcus Strauss (1988) found that most of the patients reported that the onset of their ED predated their drug abuse or
developed at the same time. Some authors even suggest that having an ED may be a risk factor for the later development of an SUD (Beary et al., 1986; Higuchi et al., 1993). These findings point to the possibility that substance abuse might be a secondary diagnosis rather than an independent primary one, in some patients with eating disorders.

Although, the onset of an ED has most often been found to predate the onset of an SUD, some research has found that at times the opposite may occur, and there may be different patterns in the presentation of these disorders depending on their temporal sequence (Wiseman et al., 1999). For example, Wiseman et al. (1999) examined a clinical sample of inpatients and outpatients with BN and AN binge/purge subtype. Among the patients with an ED that predated the substance dependence disorder (SDD), the ED developed at approximately 15 years of age, while the substance dependence developed at approximately 21 years of age. On the other hand, among the patients with a SDD that predated the ED, the substance dependence developed at approximately 16 years of age, while the ED developed at approximately 21 years of age. They also found that patients with an ED that predated the SDD, were significantly more likely to be histrionic, narcissistic, borderline and anti-social, while patients with an SDD that predated the ED were significantly more likely to abuse more substances. In conclusion, for individuals with comorbid EDs and SUDs, it is more likely for the onset of the ED to predate the onset of the SUD. At this time however it remains unclear whether an ED acts as a risk factor for developing an SUD or whether the individual would have developed an SUD at some point regardless of whether or not he or she had an ED.

1.2.1.2 Theoretical formulations

Thus far the literature review has established the existence of a connection between eating disorders and substance use disorders. The remainder of this section will review some of the major theories that have been posited to explain this relationship. The theories that have been proposed can be distinguished in accordance with a shared or a causal etiological conceptualization (Wolfe & Maisto, 2000). Hypotheses based on a shared etiology view the relationship between eating disorders and substance use as consisting of a common predisposition for both forms of psychopathology. Hypotheses based on a causal relationship suggest that having problems in one area places an individual at risk for developing problems in another area. Furthermore, the majority of theories suggesting a causal relationship are based on
the initial presence of an eating disorder.

1.2.1.2.1 Explanations based on a shared etiology

1.2.1.2.1.1 The addictive personality hypothesis.

The addictive personality hypothesis has been proposed to explain the co-occurrence of eating disorders and substance use (Holderness et al., 1994). In other words, some individuals have personality traits that predispose them to becoming addicted to both food and alcohol or other drugs. Two assumptions are inherent here. The first is that eating disorders can be characterized as an addictive behavioural pattern. The second assumption is that personality traits can be identified in individuals with eating disorders and substance use problems that make them vulnerable to these addictions.

It has been suggested that binge eating can be viewed as an addictive behavior pattern, with food being the substance of addiction. The basic tenet of the addiction model of binge eating is that some individuals are physiologically vulnerable to specific foods and are incapable of controlling their consumption of these foods (Fairburn, 1995). It has also been noted that bulimia and substance use disorders share the following elements: progression of the addictive behaviour, loss of control over the behaviour, preoccupation with the addictive substance, health and family consequences due to the disorder, use of the substance to escape from negative emotions states (Lesieur & Blume, 1993), and immediate gratification followed by long-term harm (Das, 1990).

However, unlike individuals who abuse substances, many individuals with eating disorders do not find the experience of overeating satisfying, but rather have a strong desire to avoid food and caloric intake (Fairburn, 1995). In fact, for individuals with eating disorders, the “peak” experience has been associated with the purge after overeating. Another possibility then that has been proposed is that the addiction for individuals with EDs, may be the act of restriction, as mood elevation has been found to be associated with the hours of the day that the individual is restricting food intake and mood swings have been found to be associated with binge/purge episodes (Mitchell, Specker & de Zwaan 1991).

1.2.1.2.1.2 The impulsivity hypothesis

One possibility put forth by Wiseman et al. (1999) is that two subgroups of BN exist: one with “multi-impulsive” (Lacey, 1993) characteristics and the other with predominantly restrained
behaviour, similar to that seen in individuals with AN. Those individuals with the multi-impulsive form of BN are more likely to abuse substances. In order to meet criteria for the “multi-impulsive” form of BN individuals also have to present with at least one of the following additional problems: excessive alcohol abuse, illicit drug abuse, multiple overdoses, repeated self-damage, sexual disinhibition or shoplifting. The impulsive behaviours would also have to be connected with a sense of being out of control and depression or excessive anger would result from trying to control such behaviours (Lacey & Evans, 1986).

Many studies examining individuals with eating disorders have found that the majority of individuals who engage in concurrent alcohol or substance use often report a history of impulsive cognitive and behavioural styles and self-destructive behaviours (Fichter, Quadflieg & Rief, 1994; Lilenfeld et al., 1997; Rossotto, 1998; Welch & Fairburn, 1996; Wiederman & Pryor, 1996). Fichter et al. compared patients with the purging type of BN with other impulsive behaviours to patients with the purging type of BN without additional impulsive behaviours. Additional impulsive behaviours included three or more of the following: self-reported suicide attempt, self-harm, stealing, severe abuse or dependency of alcohol or drugs and promiscuity. For the multi-impulsive bulimics with substance related disorders, the lifetime comorbidity was 18% for alcohol dependence and 28% for abuse or dependence of substances other than alcohol. In contrast, the lifetime comorbidity for the non multi-impulsive bulimics was 4% and 14% respectively. In a later study, Lilenfeld et al. (1997) found that women with BN and comorbid substance dependence often displayed multi-impulsive behaviours that are characteristic of individuals with conduct disorder and cluster B and C personality disorders. However, they did not find this in individuals with BN without substance use disorders. Rosotto found that individuals with BN and a history of a SUDs used laxatives, diuretics, and diet pills significantly more than individuals with BN without a history of an SUD. Furthermore, individuals with BN and a history of a SUD were found to have more borderline and antisocial personality disorders, suicide attempts, hospitalization for psychiatric reasons and higher levels of impulsive behaviours, such as impulsive spending and dangerous driving. Lastly, the individuals with comorbid SUDs had a longer duration of illnesses and were more disabled by their BN than the individuals who did not additionally abuse substances.

Other research has shown that some ED and SU behaviours are more closely related to impulsive behaviours than others. For example, purging and illicit drug use have been associated with
more extreme and dangerous impulsive behaviours such as self mutilation and suicide attempts (Favaro & Santonastaso, 1997). Other research has found that teenagers who engage in extreme means of controlling their weight through vomiting or use of diet pills were at an increased risk for other health compromising behaviours such as substance abuse and suicide attempts than adolescents using less extreme methods of weight control (Neumark-Sztainer, Story, Dixon & Murray, 1998).

1.2.1.2.1.3 The role of endogenous opioids

Another shared etiology hypothesis based on the addiction conceptualization of eating disorders involves the physiology of addiction. The endogenous opioid system is activated in response to alcohol, heroin and morphine consumption (Feldman et al., 1997). The endogenous opioid system also been proposed to play a role in the etiology of bulimia, because some individuals become addicted to elevations in beta-endorphin levels that accompany bingeing and purging (Goldbloom, Garfinkel, & Shaw, 1991; Jonas & Gold, 1988). Drewnowski (1989) found that endogenous opioid levels are frequently elevated in patients with eating disorders. In addition, the opiate antagonist, naltrexone, has been used successfully to treat binge eating and reduce food consumption in bulimic women and to reduce alcohol consumption in individuals with alcohol dependence disorder (Feldman et al., 1997; Jonas & Gold, 1988). It is thought that the frequent co-existence of eating disorders and substance use may be explained by a shared vulnerability for addiction to exogenous substances and the endogenous opioids implicated in binge eating (Jonas & Gold, 1988).

1.2.1.2.1.4 A developmental perspective

Another shared etiology hypothesis suggests that some females may be particularly sensitive to cultural and social pressures to conform to a thin ideal and for experimenting with drugs that are common in adolescence, resulting in an increased vulnerability for eating disorders and substance use problems (Krahn et al., 1992). Stice (1994) noted that adolescent females may be particularly vulnerable to sociocultural glorification of a thin body image, because adolescence is a time of increased concern about appearance. Fisher, Schneider, Pegler, and Napolitano (1991) found an association between low self-esteem; high anxiety; dissatisfaction with weight; eating disorder psychopathology; and use of alcohol, cigarettes, and other drugs among a group of female adolescents.
1.2.1.2.2 Hypotheses based on a causal etiology

1.2.1.2.2.1 The self-medication hypothesis

This hypothesis posits that individuals with eating and substance use disorders use food or drugs to alleviate painful affect. From this perspective, bingeing, purging and substance abuse can be viewed as means for warding off excessive anxiety and depression and are seen as serving to compensate for and offset feelings of self-disgust, incompleteness and anger (Dunne, Feeney & Schipperheijn, 1991; Brisman & Siegel, 1984). This hypothesis has been applied to the substance use—eating disorder relationship based on the prevalence of depression (Bulik, 1987; Hatsukami, Eckert, Mitchell, & Pyle, 1984; Hudson, Pope, Yurgelun-Todd, Jonas, & Frankenburg, 1987; Kendler et al., 1991) and anxiety disorders (Kendler et al., 1991; Schwalberg, Barlow, Alger, & Howard, 1992) among individuals with eating disorders. Wiseman et al. (1999) proposed one possible explanation for this hypothesis that relates to the chronology of the disorders. They hypothesized that individuals who initially have an ED may start to abuse substances as an attempt to alleviate negative affect and anxiety that have thus far not been eliminated through bingeing and purging.

1.2.1.2.2.2 The food deprivation hypothesis

Another possible explanation for the association between eating disorders and substance abuse is that food deprivation increases the likelihood of substance abuse (Krahn, 1993). A large body of animal research indicates that food deprivation increases drug self-administration, including the self-administration of ethanol, cocaine, nicotine, amphetamine, phencyclidine, and etonitazene, an opioid substance (Carroll, France, & Meisch, 1979; Krahn). Additionally, the men who participated in the Minnesota experiment (Keys, Brozek, Henschel, Mickelsen, & Taylor, 1950) increased their consumption of tobacco and coffee, the only drugs available to them, during a period of semi-starvation.

A learning process has been proposed to explain the relationship between food deprivation and substance use. According to this view, the removal of a primary reinforcer (i.e., food) leads to increased reinforcement value for other available reinforcers (i.e., alcohol and other drugs). In addition, it has been suggested that the reinforcing properties of substances are increased in a deprivation state as a result of repeated pairings of internal hunger stimuli and drug reinforcement (Carroll et al., 1979).
1.2.2 Perfectionism

Simply, perfectionism can be defined as the striving for flawlessness. Research and theory on perfectionism has increased over the past two decades (Flett & Hewitt, 2002). Historically, perfectionism has been measured as a unidimensional trait, which has focused on cognitive factors including irrational beliefs (Ellis, 1962) or dysfunctional attitudes (Burns, 1980; Weissman & Beck, 1978), measuring only self-oriented perfectionism; perfectionism directed toward oneself. In the eating disorder literature a one-dimensional approach to measuring perfectionism has also been taken (Flett & Hewitt, 2002). The six-item perfectionism subscale of the Eating Disorder Inventory (EDI; Garner, Olmstead & Polivy, 1983) provides a single global measure of perfectionism.

Subsequent research has found that perfectionism is in fact a multidimensional, and not a unidimensional, construct. This discovery led to the advent of two multidimensional measures with the same name: the Multidimensional Perfectionism Scale (MPS; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). The Frost Multidimensional Perfectionism Scale (FMPS) assesses six dimensions of perfectionism: concern over mistakes, high personal standards, doubts about actions, organization, high parental expectations and high parental criticism (Frost et al., 1990). The Multidimensional Perfectionism Scale devised by Hewitt and Flett (H&F MPS; 1991) differs from the FMPS as it measures three different dimensions of perfectionism: self-oriented perfectionism (SOP): setting high standards for oneself; socially prescribed perfectionism (SPP): the perception that other people hold high standards for oneself, and other-oriented perfectionism (OOP): holding unrealistically high standards for significant others).

Further research by Frost et al. (1995) and Lombardi, Florentino, and Lombardi (1998) examined the fact that perfectionists are highly self-conscious and therefore want to conceal mistakes from others. More recent research by Hewitt et al. (2003) focused on this same idea, and on the possibility that there are stable individual differences associated with appearing to be perfect to others. Hewitt et al. termed this type of perfectionism, *Perfectionistic Self-Presentation*, and devised a new scale, the Perfectionistic Self-Presentation Scale (PSPS; Hewitt et al., 2003), to measure this construct. The PSPS measures three types of perfectionistic self-presentation: Perfectionistic self-promotion involves the individual attempting to look, demonstrate or behave
perfectly in front of others. This display allows the individual to gain a good reputation and be viewed as perfect. The second type of perfectionistic self-presentation, termed nondisplay of imperfection, involves refraining from displaying perceived imperfect actions or behaviours to others. The third facet of perfectionistic self-presentation, called nondisclosure of imperfection, involves avoidance of verbally disclosing to others any perceived personal imperfections (Hewitt et al., 2003). In the latter two types of PSPS the person believes that if he or she reveals his or her perceived flaws to others than they will view him or her as less than perfect.

Upon the presentation of empirical evidence in the remainder of the current literature review, perfectionism will be examined as a multidimensional construct, and not as a unidimensional one, unless research on multidimensional perfectionism with regards to a certain subject matter is lacking. Perfectionistic self-presentation will also be discussed in the context of the present subject matter, where relevant; however, at the present time, research on perfectionistic self-presentation and this area is in its early stages.

1.2.3 Perfectionism and eating disorders

1.2.3.1 Theoretical formulations

This section presents various theoretical perspectives regarding the role of perfectionism in the development of eating disorders.

1.2.3.1.1 Historical and religious perspectives

The striving for perfection and its ties to eating disorders dates back to female Catholic saints in medieval Europe (Brumberg, 1988). “In Catholicism in the thirteenth to sixteenth centuries...control of appetite was linked to piety and belief; through fasting, the medieval ascetic strove for perfection in the eyes of her God” (p. 46). Brumberg (1988) identified these cases as historical forms of eating disorders, distinct to its time and culture, and different from modern forms of anorexia and bulimia nervosa, albeit still linked with the pursuit of perfection.

Currently, people with eating disorders often hold values of purity, godliness and stoicism (Rampling, 1985). Foods that are high in fat are sometimes seen by those with eating disorders as toxins that must be avoided or purged (Goldner, Cockell & Srikameswaran, 2002). Some with eating disorders have a desire to attain an unearthly state in which they can rise above hunger and worldly needs (Goldner et al., 2002).
1.2.3.1.2 Psychodynamic and developmental models.

According to Hilde Bruch (1973, 1977, 1978), many female adolescents watch their weight, but those who eventually develop anorexia nervosa are more compliant, perfectionistic and approval-seeking than those who do not go on to develop the disorder. For these individuals, according to Bruch (1973), conforming to other’s expectations is a way for them to be seen as perfect and to gain approval. Bruch (1973, 1978) attributes the needs for control and perfection in these young women to a sense of ineffectiveness and a response to inner deficits arising from problems in their childhood development, particularly problems with separation and individuation.

Other theorists elaborated on Bruch’s work and using object relations and self-psychology perspectives proposed that people with eating disorders often develop a false self: a psychological mask that is put on when interacting with others (Goodsitt, 1997; Johnson & Connors, 1987; Sours, 1980; Striegel-Moore, Silberstein, & Rodin, 1993). The false self portrays a perfect individual who is capable, confident and never makes mistakes. Behind the mask, however, is a person who feels scared, empty and isolated by his or her false relationships. Psychodynamic models further link disordered eating and perfectionism as compensatory mechanisms that briefly obscure feelings of emptiness and self-deficits (Goldner et al., 2002).

1.2.3.1.3 Cognitive-behavioural models

Cognitive-behavioural models of eating disorders have described the importance of both cognitive and behavioural factors in the maintenance of these disorders (Fairburn, 1981; Fairburn, Shafran, & Cooper, 1999; Garner, Vitousek, & Pike, 1997; Vitousek, 1996). Garner (1986) emphasized that “relentless dieting is maintained by cognitive self-reinforcement from the sense of mastery, virtue, and self-control that it provides” (p. 303) in anorexia nervosa. Individuals with anorexia nervosa tend to make errors in reasoning, and two such errors, namely dichotomous thinking and overgeneralization are linked to perfectionism (Barrow & Moore, 1983). Firstly, dichotomous thinking involves thinking in all-or-nothing terms. For individuals with anorexia nervosa, eating anything beyond a set calorie limit is seen as a complete loss of control over eating. Secondly, overgeneralization involves applying the principle or outcome of one event to situations that are very different. Individuals with anorexia nervosa often make this error in reasoning, viewing any departure from a desired weight goal as evidence of complete failure as a person (Goldner et al., 2002). Hence, according to cognitive-behavioural models of
eating disorders, perfectionism appears to be linked to the development and maintenance of erroneous cognitions that reflect unrealistic standards regarding weight and shape, as well as to the interpretation of failures to achieve desired weight loss goals.

1.2.3.1.4 Psychobiological models

In the current literature, Strober’s theory is often proposed as an explanation for the connection between perfectionism and eating disorders. Strober (1991) proposed the existence of a genotypic foundation of various personality characteristics that act as predisposing traits in anorexia nervosa. Drawing on Cloninger’s (1987) psychobiological model of temperament and character, Strober suggested that three facets of personality form the core of eating disorder vulnerability: excessive harm avoidance, low novelty seeking, and high reward dependence.

*Harm avoidance* refers to the intensity of a response to uncertainty and threat. People possessing this trait demonstrate poor adaptability to change, extreme worry, and slow recovery from emotional upset. *Novelty seeking* refers to the intensity with which one responds to novel stimuli. People low on this trait prefer stable, invariant and emotionally neutral environments. *Reward dependence* refers to the degree to which a person conditions easily to signals of reinforcement. People extreme on this dimension are dependent on others for emotional support and are very sensitive to signals of approval and rejection.

Research has been conducted that lends support to Strober’s theory (Casper, 1990; Tozzi et al., 2005). Casper (1990) found that women who had recovered from the restrictive type of anorexia nervosa rated higher on harm avoidance and lower on novelty seeking than an age-matched psychiatric control group. Reward dependence was also elevated in the recovered anorexia nervosa group, but not significantly. The recovered anorexia nervosa women also had lower scores on novelty seeking than their biological siblings. Furthermore, Tozzi et al. (2005) found that a low level of novelty seeking was correlated with crossover from a diagnosis of bulimia nervosa to anorexia nervosa. Tozzi et al. explained that low levels of novelty seeking enable the maintenance of rigid dietary regimes in order to lose the amount of weight necessary for patients with anorexia nervosa. These findings provide some evidence for the theory that a temperamental disposition towards control and reserve (i.e., harm avoidance) and a preference for safe routine (i.e., low novelty seeking) may characterize those with restrictive anorexia nervosa.
Hewitt, Flett, and Ediger (1995) argued that various facets of perfectionism overlap with the personality variables in Strober’s (1991) psychobiological model. For example, the need to avoid appearing imperfect is similar to harm avoidance in the sense that perfectionistic individuals try to avoid negative censure by others. Perfectionism is linked to reward dependence because highly perfectionistic people tend to be dependent upon other’s approval. Finally, low levels of novelty seeking can be seen in perfectionism in the sense that few unfamiliar activities are engaged in, because the perfectionist has a fear of less than optimal performance.

Strober (1991) proposed that the personality traits in his model are hereditary. Since various facets of perfectionism overlap with the personality traits in Strober’s model, some theorists have postulated that various dimensions of perfectionism may be innate, and the inheritance of this trait may be a vulnerability factor leading to the later development of an eating disorder. Several studies provide support for the existence of a genetic foundation for various dimensions of perfectionism in individuals with anorexia nervosa (Bastiani, Rao, Weltzin, & Kaye, 1995; Bulik et al., 2003; Halmi et al., 2000) and bulimia nervosa (Bulik et al., 2003; Lilenfeld et al., 2000).

In support of the existence of a genetic foundation for perfectionism in females with anorexia nervosa, Bastiani et al. (2000) found that underweight and weight restored anorexics scored similarly on all aspects of both the Hewitt and Frost multidimensional perfectionism scales and both groups scored higher on EDI perfectionism relative to a control group. The findings from this study suggest that perfectionism is not a result of anorexia nervosa, but rather it may be an innate, persistent personality trait, existing both in a malnourished state and after nutritional rehabilitation.

In support of a predisposition model for facets of perfectionism in females with bulimia nervosa, Lilenfeld et al. (2000) found that the never ill relatives of bulimia nervosa patients had significantly higher scores on overall perfectionism, concern over mistakes and parental criticism, dimensions tapped by the Frost multidimensional perfectionism scale, than the never ill relatives of a control group.

Despite some support for a possible genetic foundation for perfectionism in individuals with eating disorders, one must be cautious when interpreting the findings of the above studies. In the study by Bastiani et al. (2000) for example, the fact that the participants in one group had
restored a normal body weight does not indicate that they had recovered from the psychological effects of their eating disorder. It is possible that once they had fully recovered, their perfectionistic tendencies may also have vanished. In the study by Lilenfeld et al. (2000), although they found that most types of perfectionism were elevated in the never ill relatives of patients with bulimia nervosa compared to the never ill relatives of a control group, they also found that relatives of bulimia nervosa patients who had previously had bulimia nervosa themselves scored higher on one facet of perfectionism, doubts about actions, than the never ill relatives of patients with bulimia nervosa. This finding suggests that rather than having a genetic component, some aspects of perfectionism may be long-term consequences of eating disorders.

1.2.3.1.5 Multifaceted models

Slade (1982) proposed a theoretical model to explain the development of anorexia nervosa. In his model, perfectionism interacts with life and self-dissatisfaction, to generate a need in the individual to completely control some aspect of his or her own life or to attain success in some area. Slade hypothesized that weight control, in modern society, is a way for women to fully control one aspect of their lives. Dieting may be initially be triggered by peer’s comments or by cultural pressures. Once dieting has begun, it is positively reinforced by feelings of success, and negatively reinforced through fear of weight gain and avoidance of other life stressors. This creates a pattern of dieting and weight loss that eventually leads to the development of anorexia nervosa.

Heatherton and Baumeister (1991) proposed a model to explain the development of binge eating in bulimia nervosa. In their model, binge eating offers individuals who have rigid expectations for thinness, high-self awareness and low self-esteem a way to reduce negative self-awareness. Beebe’s (1994) integrative model asserted that negative self-awareness triggers dieting. Dieting is usually unsuccessful however, because it increases negative self-awareness and affect. This leads to continued dieting and an increased sensitivity to factors that may stop the individual from dieting. Beebee suggests that perfectionism may the underlying cause of both negative self-awareness and dieting.

Joiner, Heatherton, Rudd and Schmidt (1997) proposed a diathesis-stress model to explain the relationship between perfectionism and bulimic symptoms. The diathesis-stress model posits that perfectionism is a risk factor for the development of bulimic symptoms, in the presence of
negative life stress. In this model, negative life stress refers to failed attempts to meet unrealistic shape and weight goals.

The literature in this section has presented various theoretical perspectives regarding the role of perfectionism in eating disorders. Psychodynamic and developmental theories, psychobiological models and cognitive-behavioural models can all be utilized to explain the connection between eating disorders and perfectionism. The most recent theoretical conceptualizations in this area have focused on the multifaceted nature of the relationship between perfectionism and eating disorders. The following section provides empirical research demonstrating a connection between various dimensions of perfectionism and eating disorders.

1.2.3.2 Empirical evidence

1.2.3.2.1 Anorexia nervosa and Hewitt and Flett Multidimensional Perfectionism Scale (H & F MPS)

Clinical observations of patients with AN suggest both the presence of self-oriented and socially prescribed perfectionism. Anorectics can be characterized by their rigid and harsh self-evaluations. Patients with AN have a tendency towards self-oriented perfectionism (Bruch, 1988). Self-oriented perfectionists have rigid and unrealistically high self-imposed standards in all areas of functioning, including appearance and eating (Geller, Cockell, Hewitt, Goldner, & Flett, 2000; Hewitt et al., 1995). In addition to being self-oriented perfectionists, AN patients are also socially prescribed perfectionists, believing that others expect them to be perfect (Bruch, 1978). They describe themselves as, “constantly concerned with being found wanting, not being good enough, not living up to ‘expectations’, in danger of losing their parents love and consideration” (Bruch, 1978, p.39). Based on clinical observations, it is evident that self-oriented and socially prescribed perfectionism is evident in individuals with AN.

Research findings utilizing clinical samples are consistent with the aforementioned clinical observations, that there is a link between both self-oriented and socially prescribed perfectionism and AN. Bastiani and colleagues (1995) found that underweight women with restrictive AN, had significantly higher levels of self-oriented and socially prescribed perfectionism than control women. However, in this study another group of women with AN, who had restored a normal body weight, only scored higher than the control group on self-oriented perfectionism, suggesting that perhaps only this type of perfectionism persists after weight restoration. Cockell,
Hewitt, Goldner, Srikameswaran, and Flett (1996) found that women with AN scored significantly higher on self-oriented and socially prescribed perfectionism than an aged matched control group. In a later study, Cockell and colleagues (2002) also found substantially elevated levels of self-oriented and socially prescribed perfectionism in individuals with AN, relative to a matched sample of women with mood disorders, after controlling for low self-esteem, depression and impaired functioning. On this basis, they concluded that perfectionism accounts for unique aspects of anorexic symptomology independent of other variables related to psychological disturbance.

The link between self-oriented and socially prescribed perfectionism and anorexic symptomology has also been found in non-clinical samples of women, albeit findings have been less consistent than in clinical samples. In a study examining the link between perfectionism and anorexic attitudes and behaviours, Hewitt, Flett and Ediger (1995) found that both self-oriented and socially prescribed perfectionism were linked with anorexic tendencies and attitudes in female university students. In another study of female university students, Bardone-Cone (2007) found that self-oriented perfectionism predicted a significant amount of variance in dieting. Those with high levels of dieting scored significantly higher on self-oriented perfectionism than those with low levels of dieting. In this study, socially prescribed perfectionism was not linked to dieting. This can perhaps be explained by the fact that this study was not measuring any other anorexic behaviours or attitudes, aside from dieting, as well as by the fact that the study participants consisted of university students, and not a clinical sample of AN patients.

Overall research on the relationship between self-oriented and socially prescribed perfectionism and anorexia nervosa in both clinical and non-clinical populations has established an association between these two types of perfectionism and anorectic symptomology (Geller et al., 2002, Pliner & Haddock, 1996). Self-oriented perfectionism may be specifically linked to dieting and concerns with being thinner, while some of the perfectionistic striving involved in EDs is motivated by strong needs to conform to an ideal of perfection that is perceived as demanded of the self by others (e.g., Bruch, 1973; Casper, 1983).
1.2.3.2.2 Anorexia nervosa and Frost Multidimensional Perfectionism Scale (FMPS)

The FMPS has also been used to assess multidimensional perfectionism in women with AN, albeit yielding less consistent findings than have been found with the H&F MPS. In their study, Bastiani and colleagues (1995) also used the FMPS to assess perfectionism in eleven women with restrictive AN who were underweight, eight women who formerly met criteria for restrictive AN who were no longer underweight, and ten women who were free of any psychiatric disorders. Findings revealed that underweight anorexics scored significantly higher than the control women on all subscales of the FMPS, except on the Parental Expectations subscale. Weight restored anorexic patients scored higher than control women on all subscales except for Parental Expectations, Personal Standards and Doubts about Actions. Underweight and weight restored anorexic patients scored similarly on all subscales of the FMPS.

In another study, Bulik and associates (2003) adapted the FMPS by using only items that measured individual perfectionistic characteristics, similar to self-oriented perfectionism. The three subscales examined in this study were concern over mistakes, doubts about actions and personal standards. Findings revealed that concern over mistakes and doubts about actions were each associated with a significantly elevated odds ratio for AN.

Halmi and colleagues (2000) attempted to answer the question of what differences, if any, exist in the perfectionistic tendencies of females with various subtypes of AN. In this study, 146 women were classified as being restrictive, 116 were classified as being of the purging subtype and 60 were classified as bingers and purgers. Furthermore, there were 44 women in a comparison control group. In comparison to all three AN subtypes, the control group scored significantly lower on all FMPS subscales, with the exception of organization on which they only scored lower than the purging subtype of AN women. The only significant difference in perfectionism between the AN subgroups was on parental criticism, on which those with the restricting subtype had experienced significantly lower scores than the purging sub-type.

It appears that results regarding which types of perfectionism are linked to anorexia nervosa, using the FMPS, are mixed. This may be attributed to the differences in each of the study designs, study participants and which categories of FMPS were assessed. Further research should be conducted in this area to clarify these inconsistencies.
1.2.3.2.3 Bulimia nervosa, binge eating disorder and H & F MPS

Less research has been conducted on H & F multidimensional perfectionism and bulimic symptomology than has been conducted on these dimensions and AN. Pratt and colleagues (2001), examined H & F MPS in women with BN, binge eating disorder (BED) and a control group of obese women with no eating disorder. Self-oriented perfectionism was significantly lower in the control group than in the other two groups, however scores on socially prescribed perfectionism and other oriented perfectionism were similar in all three groups. Furthermore, the BED and BN groups did not significantly differ on any of the H & F MPS dimensions.

In another study conducted by Hewitt, Flett and Ediger (1995) socially prescribed perfectionism was significantly correlated with bulimic tendencies and attitudes in female university students, but self-oriented perfectionism was not. In a similar study of university women by Bardone-Cone (2007), self-oriented and socially prescribed perfectionism were both found to be predictive of a significant amount of variance in bulimic symptoms. Individuals higher in bulimic symptomology scored significantly higher on self-oriented and socially prescribed perfectionism than those low in bulimic symptoms; however, the effect size was greater for socially prescribed perfectionism.

Recently, an interesting study by Tissot and Crowther (2008), that attempted to propose a model for BN, found that self-oriented perfectionism mediates the relationship between socially prescribed perfectionism and thin ideal internalization. These results suggest that having others set high standards for a woman (socially prescribed perfectionism) is not enough to make her vulnerable to internalizing a thin ideal, body dissatisfaction and the development of bulimia. Rather, the woman must also set high standards for herself (self-oriented perfectionism), while in the process internalizing the thin ideal and consequently experiencing dissatisfaction with her body and bulimia. Hence, results regarding which dimensions of H&F MPS are related to BN seem to be inconclusive at this point.

1.2.3.2.4 Bulimia nervosa and FMPS

In studying Frost’s dimensions of perfectionism and their relationships with BN, Bulik and colleagues (2003) found that concern over mistakes was highly associated with a significantly elevated odds ratio for BN and was a significant predictor of BN in a regression analysis. Doubts about actions was also significantly associated with BN, but personal standards was not.
Using a combined family study and recovered family study design, Lilenfeld and associates (2000) found that compared with control probands, currently ill and recovered BN probands had significant elevations on their overall FMPS scores and subscales of personal standards, concern over mistakes, parental criticism and doubts about actions. Parental expectations was only significantly elevated in currently ill BN probands compared to control probands, and there were no group differences on the organization subscale. Additionally, Kaye et al. (1998) found that recovered BN participants scored higher on the Frost MPS total than healthy controls.

Taking into consideration the changing nature of eating disorder diagnoses, some studies have examined perfectionism in this regard. Tozzi et al. (2005) compared individuals with restricting AN to those with an initial diagnosis of restricting AN who later developed BN. Logistic regression indicated that high parental criticism was significantly correlated with crossover from AN to BN, but the other perfectionism subscales were not. This finding is consistent with findings from previous research that found that families of individuals with BN tend to exhibit more conflict and disorganization and greater cohesion than families of individuals with AN (Kog & Vandereycken, 1985), mothers of individuals with BN are more domineering and have higher expectations of their daughters than mothers of controls (Sights & Richards, 1984), and reports from women with BN of maternal deficits in nurturance and empathy (Humphrey, 1986). In a later study, Bardone-Cone et al. (2008) examined the Frost MPS dimensions of concern over mistakes and high personal standards in two samples of women with BN: one with a history of AN and one without a history of AN. Surprisingly, no significant differences were found on these dimensions between the two groups. Given previous findings that individuals with AN tend to have higher levels of personal standards than those with BN, Bardone-Cone et al. explained the lack of a significant difference in the current study by speculating that perhaps levels of certain types of perfectionism change in transition from AN to BN. This may be due to transitioning from being closer to “perfection” in terms of behavioral goals (i.e., more severe restriction of calories) and lower weight to an eating disorder characterized by imperfections in terms of behavior (i.e., binge eating) and increased weight may be experienced as a “fall from grace”, with women feeling that their failure to meet perfectionistic standards related to weight and eating is reflective of a broader decrease in personal standards.

Findings in regards to which FMPS dimensions are connected to BN symptomology seem to be mixed. However, preliminary evidence points to a possible connection between concern over...
mistakes, doubts about actions and parental criticism and BN, while organization has not been found to be significantly related to BN in any studies. The findings in regards to connections between personal standards and parental expectations and BN are less straightforward and must be further examined.

1.2.3.2.5 Eating disorders and PSPS

There is a growing body of research demonstrating a relationship between perfectionistic self-presentation (PSP) and eating disorders. Recently investigators found that PSP predicted dietary restraint, and this relationship was mediated by an individual’s psychological commitment to exercise (McLaren, Gauvin & White, 2001). In a model, proposed and studied by McGee et al. (2005), all three dimensions of perfectionistic self-presentation were associated with eating disorder symptomology. Results also showed that perfectionistic self-presentation predicted eating disorder symptoms in women who were dissatisfied with their bodies, but that it did not predict eating problems in women who liked their bodies and felt there was little or no discrepancy between their actual and ideal appearances.

Hewitt et al. (1995) found that all three dimensions of PSPS were correlated with AN and BN symptoms, body image dissatisfaction and low appearance self-esteem. These findings were extended to a clinical sample by Cockell et al. (1996) who found that compared to women without eating disorders, those with AN and BN endorsed stronger needs to present an image of perfection to others, and to avoid displaying or disclosing imperfection. Cockell et al. also found that the need to avoid disclosure of imperfection was significantly related to purging behaviours, demonstrating that individuals who avoid discussing aspects of themselves that they view as imperfect tend to pursue weight loss by vomiting, abusing laxatives or exercising excessively.

In a follow up study examining the extent to which PSPS was related to AN, Cockell and colleagues (2001) found that PSPS was significantly elevated in women with AN as compared to women with mood disorders and control women with no psychiatric difficulties. However, after controlling for low self-esteem, depression and impaired functioning, the AN group scored significantly higher only on nondisclosure of imperfection compared to the psychiatric control group, but results were not statistically significant compared to the normal control group. The results of this study demonstrate that non-disclosure of imperfection is not simply a function of distress, but is specifically relevant to individuals with AN. Additional research on women with
AN has revealed that all three perfectionistic self-presentation components are associated with anorectic’s tendency to suppress negative feelings and to give priority to the feelings of others (Geller et al., 2000). Perfectionistic self-presentation may evolve from the “nonperfect” familial environment of women with AN, in which they have learned to maintain a façade of tranquility by promoting a picture of perfection and concealment of imperfection (Humphrey, 1992).

In summary, the empirical evidence points to a connection between eating disorders and both multidimensional perfectionism and perfectionistic self-presentation. Both self-oriented and socially prescribed perfectionism have been found to play a role in AN. At this point, results regarding which H&F MSP dimensions are related to BN are inconclusive, as some studies have found that either self-oriented or socially prescribed perfectionism play a role, while others have found that both types of perfectionism are related to bulimic symptoms. The findings regarding the Frost dimensions of perfectionism and eating disorders have thus far yielded inconsistent results. However, preliminary evidence points to a connection between some facets of perfectionism measured by the FMPS and both AN and BN. Preliminary research also reveals a link between PSPS, especially non-disclosure of imperfection, and eating disorder symptomology.

1.2.4 Perfectionism and substance use

Perfectionism is one trait that has received little attention in the substance use disorder literature. This is surprising given the abundance of research regarding the role of perfectionism in many of the other DSM-IV axis I disorders. Findings from some preliminary research, however, suggest a link between perfectionism and problematic substance and alcohol use in both non-clinical and clinical samples.

Several studies have found a link between perfectionism and substance use in non-clinical samples of youth and adolescents. In a study exploring the potential causes for distress in a sample of affluent sixth and seventh graders, Luthar and Becker (2002) found that maladaptive perfectionism, which consisted of the FMPS dimensions of concern over mistakes, doubts about actions, parental expectations and parental criticism, was significantly positively associated with substance use among boys, but not among girls. Another study utilizing a non-clinical sample of adolescents, however, failed to find any gender differences in perfectionism (Flett et al., 2008).
In a study by Flett and associates (2008) participants were divided into three groups: non binge-drinkers, those with one episode of binge drinking in the past month, and those with two or more binge drinking episodes in the past month. One result of this study revealed that non-binge drinkers had significantly higher levels of self-oriented perfectionism, as measured by the H & F MPS than the other two groups. The authors explain that self-oriented perfectionism is a form of conscientiousness, which has been found in previous research to be protective against excessive drinking (Bogg & Roberts, 2004). Furthermore, consistent with previous research documenting a negative relationship between achievement striving and binge drinking (Simons, Christopher & McLaury, 2005), self-oriented perfectionists may be less likely to engage in drinking behavior because it is not conducive to meeting their all-consuming goals. Another significant finding of this study was that the group with two or more binge-drinking episodes in the past month had significantly higher scores on parental criticism, but not on parental expectations, as measured by the FMPS, than the other two groups. This suggests that high parental criticism is more destructive than high parental expectations as it involves a form of harshness that may reflect maltreatment, if taken to an extreme.

Only one study to date has investigated the role of perfectionism in substance and alcohol abuse in a clinical sample. In a study by Hewitt and Flett (1991), self-oriented perfectionism was significantly positively related to drug and alcohol abuse, in males, but not in females. Other-oriented perfectionism was significantly positively correlated with drug abuse in both males and females, and socially prescribed perfectionism was significantly positively correlated with alcohol abuse for females but not for males. These findings demonstrate that alcohol abuse in men stems from high-self standards and self-critical reactions due to perceived failures to achieve perfection. This is consistent with self-focused attentional models of alcohol abuse (Hull, 1981) that postulate that excessive drinking is a way to alleviate the negative affect associated with discrepancies between the actual and ideal self. Alcohol abuse in women, on the other hand, may be a response to the perception of unrealistic social pressures imposed by significant others and society.

Perfectionism has also been found in recovering alcoholics. Flett and colleagues (2007), investigated a total of 80 male and female recovering alcoholics. Despite the fact that these individuals had been sober for an average of 28 months, all H & F MPS dimensions remained elevated in this sample relative to normative samples. This suggests that unresolved issues
involving perfectionistic tendencies remain apparent among patients recovering from alcoholism and should be addressed in treatment.

As is evident from the above literature review, a relationship exists between multidimensional perfectionism and drug and alcohol use and abuse, in both non-clinical and clinical samples. Most research that has thus far been conducted in this area, however, focuses on alcohol use disorders (AUDs) and not on other SUDs. Furthermore, much of the existing research in this area utilizes samples consisting of university students and recovering alcoholics, and combined samples of males and females. Hence, further investigation, focusing on the role of perfectionism in other SUDs in clinical samples of females is warranted.

1.2.5 Perfectionism and comorbid eating and alcohol use disorders

One study to date has attempted to explain the nature of comorbid eating disorders and alcohol use disorders, in females, by implicating the role of various personality traits, including Frost multidimensional perfectionism, in this relationship. After controlling for type of ED, the onset of AUD was first associated with parental criticism. Furthermore, those participants with a comorbid ED and AUD scored significantly higher on total FMPS perfectionism, concern over mistakes, doubts about actions, parental criticism and parental expectations than those with an ED without an AUD (Bulik et al., 2004).

1.2.6 Shame

Prior to discussing shame in the context of this paper, it is necessary to give a brief explanation of the concept and distinguish this emotion from guilt. Historically, the term “guilt” has been used to refer to aspects of both shame and guilt (Tangney, 1995), and the terms have often been used interchangeably. This may be because these two emotions share some main features. Both shame and guilt are self-conscious emotions: they involve self-referent processes that apply to some standard of the self or behavior (Lewis, 1992). Shame and guilt are also “negatively valanced emotions that typically arise in response to some personal failure or transgression” (Tangney, 1995, p. 115).

Recently, however, there has been a differentiation between these two emotions. Lewis (1971, 1987) proposed that the fundamental difference between shame and guilt centers on the role of the self. According to Lewis, shame arises from the self’s negative evaluation of the entire self;
that is, after painful self-scrutiny the self perceives itself to be inadequate in some manner. Guilt, on the other hand, arises from the self’s negative evaluation of its behaviour. In some situations, however, guilt and shame can co-occur. In a moral transgression, for example, people may feel guilty for violating a standard of behavior, and at the same time they may be ashamed of their personal deficiency.

Unlike guilt, however, shame can also be evoked by a non-moral situation such as failure or defeat. Guilt is often seen as the less problematic of the two emotions, because in guilt only a specific behaviour, and not the entire self is condemned, whereas shame strikes at the person’s core identity. Furthermore, guilt, unlike shame, allows the individual to experience remorse and to make apologies so, feelings of guilt are more easily resolved than are those of shame (Tangney, 1995). There is now a growing body of empirical support for the differentiation of shame and guilt (Ferguson & Stegge, 1995; Gilbert, Pehl, & Allan, 1994; Lindsay-Hartz, de Rivera, & Mascolo, 1995). Simply, shame can be defined as “an intense and incapacitating emotion involving feeling self-conscious, inferior and powerless, and a wish to hide oneself and one’s deficiencies” (Swan & Andrews, 2003, p. 367). Many measures of shame have been developed and utilized in the research literature. In the current study The Experience of Shame Scale (Andrews, Qian, and Valentine, 2002) will be utilized for two reasons. Firstly, it is a self-report measure, which is useful for gauging individuals true experiences of shame, because due to the nature of this emotion individuals high in shame may not want to verbally disclose their true experiences to an interviewer. By responding to questions about shame via a questionnaire, individuals are more likely to feel that their anonymity is being protected, and are therefore more likely to respond honestly. Secondly, this scale measures different categories of shame including: characterological, behavioural and bodily shame. More information about this scale is included in the Method’s chapter of this paper. Shame has been implicated in various forms of psychopathology including eating and substance use disorders. A discussion of shame and eating disorder symptomology will proceed, followed by a discussion of shame and substance use disorders.

1.2.7 Shame and eating disorders

1.2.7.1 Theoretical formulations

Shame has been posited to play a crucial role in eating disorders, albeit it remains unclear
whether it plays a role in the causation or as a consequence of these disorders (Sanftner, Barlow, Marschall, & Tangney, 1995). Various theories have been proposed to explain the role of shame in eating disorders. According to family systems theory, shame about one’s appetite, experienced by women with eating disorders, arises from the unempathetic, enmeshed family environments in which they were raised (Minuchin, Rosman & Baker, 1978). When family relationships are so enmeshed that the child is not recognized as autonomous, she does not receive empathic care. This is due to the fact that despite the appearance of closeness, she is simply fulfilling the parent’s needs and may therefore find it difficult to acknowledge that her own needs are not being met. Shame regarding hunger and appetite may symbolize the shame a young woman, raised in such a family environment, feels about herself, due to the neglect of her needs. This is reinforced by the view that food and eating often symbolize care and nurturance (Freud, 1965). Enmeshment and lack of empathy may become exacerbated when a young woman develops an eating disorder, provoking further intrusiveness by family members and therefore deepening the young woman’s shame about her needs, including appetite (Minuchin et al., 1978). Furthermore, in the context of such enmeshed family relationships in which the woman experiences herself as an extension of her parents, she loses contact with her own affective experiences (Bruch, 1973, 1978). Obsessional thinking and behaviour regarding food and eating serve to allow the avoidance of addressing deeper feelings of shame by women with eating disorders (Minuchin et al., 1978).

According to Fodor (1996) feelings of shame form the core of an anorexic’s sense of self. Eating disorder symptomology demonstrates that shame plays a role in such disorders. For example, an eating-disordered woman may feel ashamed of her desire for food, ashamed when she perceives herself as unacceptable or not meeting others’ expectations, and /or ashamed of her use of regurgitation to remain thin. Kaufman (1989) observed that the dynamics of shame are inevitably the dynamics of self-esteem. Deficits in self esteem are evident in at least three interrelated tendencies of anorexic patients: construing the self in terms of body shape, inflexibly tying self worth to external frames of reference, and experiencing the self as ineffective, incompetent, and susceptible to external control (Garfinkel, Garner, & Kennedy, 1985).

1.2.7.2 Empirical evidence

Given the theoretical and rational grounds for a link between eating disorders and shame, some
research has been conducted in this area. Johnson and Larson (1982) cite some self-report data to indicate that bulimic women experience high shame and guilt during binge episodes and extreme levels of these affects during purging. Shame and guilt were found to remain high after the binge–purge episode. It is difficult in this context to determine whether these emotions are a cause or an effect of the eating behaviours. In observing that shame was one of the predominant affects in their clinical sample of anorexic patients, Casper, Offer, and Ostrov (1981) argued that feelings of shame about the perceived shape and size of the body inspire the pursuit of a thin body. A more direct examination was undertaken by Sanftner and associates (1995), using a nonclinical sample of undergraduate women. In this study, shame proneness was positively related with severity of two ED symptoms: a drive for thinness and bulimia. However, the magnitude of the correlations, although statistically significant was modest. Another potential limitation of the study by Sanftner et al. (1995) is that the measure used to index proneness to shame, the Test of Self-Conscious Affect (TOSCA) (Tangney, Wagner, & Gramzow, 1989), provides a global assessment of proneness to self-conscious affects in everyday life and does not focus exclusively on shame associated with facets of eating disturbance.

In response to this problem, Frank (1991) developed a measure (1989/1990), the Shame and Guilt Eating Scale (SGES), comprising items on shame and guilt specifically in eating contexts. Frank (1991) used the measure in a study of eating disturbance in a sample of college students. He reported a significant group difference on a combined measure of shame and guilt around eating in students assigned to eating disordered, depressed and control groups. The ED group scored higher than the depressed group, who in turn scored higher than the normal group. Shame/guilt around eating was significantly correlated with depressive symptoms in the ED group, but the question of whether ED symptoms or depression accounted for the elevated shame/guilt in the ED group was not addressed. Furthermore, in this study, shame and guilt were investigated as a combined measure, despite aforementioned evidence that these two affects differ.

In a later investigation, Burney and Irwin (2000) considered the relative contributions of general and specific shame and guilt to ED symptoms in women recruited from colleges and fitness clubs. Shame around eating and bodily shame both made significant independent contributions to ED symptoms, whereas general shame did not. These studies of disordered eating in student samples demonstrate the importance of including specific assessments of bodily shame in
research involving clinical samples of ED patients. It would also be important to include assessments of shame related to behaviour and non-physical personal characteristics, as these shame aspects have been shown to relate to other disorders such as depression and post-traumatic stress disorder (see Andrews, 1998; Andrews, Brewin, Rose, & Kirk, 2000; Andrews & Hunter, 1997).

Taking the above considerations into account, two studies have been conducted on these matters. In a study conducted to investigate bodily shame in relation to clinically diagnosed BN, a strong association was found between an interview measure of bodily shame and bulimia in a community sample of 69 young women (Andrews, 1997). Andrews’ study demonstrated a significant effect of bodily shame even when controlling for bodily dissatisfaction. In a regression analysis, bodily shame, and not childhood abuse, was found to be a significant predictor of bulimia. On the basis of this evidence, it was suggested that shame may be the key element in associations between body attitudes and bulimia. To date, only one study has been conducted utilizing the Experience of Shame Scale, in a clinical sample of women with EDs (Swan & Andrews, 2003). The purpose of this study was to determine whether women with past and current EDs, including AN, BN and EDNOS, reported higher levels of bodily, behavioural and characterological shame and shame around eating than a control group of non-eating disordered women, after controlling for depressive symptoms. Results indicated that there was a significant interaction between ED status and shame type, suggesting that group differences varied as a function of type of shame. All groups significantly differed for characterological shame and for shame around eating wherein current and recovered ED groups scored significantly higher than controls, and the current ED group scored significantly higher than recovered ED group. The groups did not significantly differ from one another for behavioural shame. For bodily shame, however, the current and recovered ED groups did not differ significantly, but both reported higher bodily shame than the control group. However, the difference did not quite reach the .05 level of significance for the recovered/control group comparison. The finding that bodily shame did not differ significantly in recovered vs. currently symptomatic women suggests that shame may be long-lived and resistant to change in women with EDs. Given the interesting results of this study, but the fact that Swan and Andrews (2003) combined women who suffered from different types of EDs into the same samples, more studies must be conducted utilizing the Experience of Shame Scale with clinical samples of women with
different types of EDs.

1.2.8 Shame and substance use

Although shame has been implicated to play a role in various types of psychopathology, research on shame and substance use disorders is scarce. Previous research, however, has shown that one motive for drinking and drug use is in order to cope with negative emotions (Cooper, Frone, Russell, & Mudar, 1995; Stewart, Karp, Pihl, & Peterson, 1997) and shame is one such emotion. Some research suggests that individuals who use alcohol to cope with negative emotions consume more alcohol, have more alcohol-related problems (Holahan, Moos, Holahan, Cronkite, & Randall, 2001), and are at higher risk for developing alcohol dependence (Carpenter & Hasin, 1999).

Research has shown that females generally experience more shame than do males (Tangney & Dearing, 2002). This finding was further investigated with respect to gender differences in shame in recovering drug addicts (O’Conner et al., 1994). In this study, females indeed did score higher on proneness to shame, than did males. This difference can perhaps be accounted for by sexual abuse, as the females in this study reported significantly higher rates of childhood sexual abuse, than did the males, and sexual abuse was significantly independently related to shame. Finally, subjects were compared on all dimensions to non-drug addicted subjects obtained from a previous study. Comparisons for men and women were done separately. Scores for both men and women drug addicts were significantly higher on proneness to shame than non-drug addicted men and women.

In the other paper investigating the relationship between shame-proneness and addictive behaviours, Dearing, Stuewig and Tangney (2005), undertook three separate investigations utilizing different samples with varying levels of substance abuse, in order to assess for correlations between substance use and shame at both extremes of substance use. In the first of these studies, the sample consisted of 235 college undergraduates, of which the majority was female. Of these individuals, 7.3% had symptoms of an alcohol problem and 15.4% had symptoms of a drug problem. Alcohol problems were below scores for an outpatient clinical population with a range of diagnoses, but severity of drug problems did not significantly differ from the clinical population. Once guilt was factored out, results revealed that there was a significant positive correlation between shame and drug problems, but the correlation between
shame and alcohol problems was even stronger.

In the second study of 249 college undergraduates, the majority was also female. In this sample, 8.4% had symptoms of an alcohol problem and 4.4% had symptoms of a drug problem. Scores for drug and alcohol problems were significantly below the clinical standardization sample mean. Once guilt was again factored out, results revealed that shame proneness was positively related to drug and alcohol problems, but the correlation for alcohol problems did not quite reach the .05 level of significance. In the last study, participants consisted of 332 pre and post trial inmates in a metropolitan area jail, of which 90% were males. Results revealed that shame proneness was significantly positively correlated with all measures of alcohol and drug problem use, especially dependence, with the exception of frequency of marijuana and alcohol use.

Taking results of all three studies into account, the authors concluded that shame-proneness specifically relates to substance and alcohol use problems as opposed to predicting frequency of use. They also concluded that for shame-prone individuals, alcohol- or drug-related problems and the life problems that accompany substance misuse likely result in additional painful feelings of shame. This synergistic relationship between shame and substance problems may result in a vicious cycle. On the basis of this limited research, it appears that a relationship exists between shame and substance use, although more research is necessary in this area.

1.2.9 Shame and perfectionism

1.2.9.1 Theoretical formulations

According to one theoretical viewpoint, shame develops in childhood due to a failure to live up to the expectations of others and is closely related to the fear of showing one’s physical, intellectual or emotional defects to others (Jacobson, 1964; Sorotzkin, 1985). Perfectionism later develops in order to compensate for this underlying inferior sense of self and shame proneness (Miller, 1996).

According to a more popular theory, Tangney (2002) explained that theoretically the nature of perfectionism makes perfectionistic individuals vulnerable to the experience of self-evaluative emotions, and shame in particular. Although many people evaluate themselves at times, perfectionists do it full time. They set unusually high standards and invest a great deal of time and energy into self-evaluation. There are two reasons for this. Firstly, they are inclined to develop rigid, inflexible notions of success and failure. Success is thought of in all-or-nothing
terms. According to perfectionists a job must be done perfectly in all respects, so careful scrutiny is required. Evaluation must be comprehensive and complete. Secondly, perfectionists require superior performance in all domains. They demand perfection even in areas where the average person would be able to take a break from self-evaluation. As a consequence of this continuous self-evaluation, perfectionists are prone to self-evaluative emotions, of which shame is among them.

The idiosyncratic manner in which perfectionists evaluate and interpret their mistakes and failures would appear to lead them inevitably to experiences of shame. Since perfectionists engage in all-or-nothing thinking the product is either perfect in every detail, or is bad and a failure. Perfectionists tend to overgeneralize failures. From the perspective of a perfectionist, one failure in one domain indicates to them a more general pattern of failures across time and domain, and eventually from situation or behaviour to the person. As Hewitt, Flett and Ediger (1996) noted, perfectionists are inclined to equate “perfect” performance with self-worth. They are inclined to view less than perfect outcomes as signs of worthlessness.

Tangney (2002), speculated that self-oriented and socially prescribed perfectionists would both be especially vulnerable to negative self-evaluative emotions, specifically shame, because they evaluate themselves against unusually high, unrealistic standards. As a consequence, these types of perfectionists “fail” regularly. Such failures are seen as reflecting general flaws that reflect shamefully on the perfectionist him or herself.

The link between proneness to shame and perfectionism may be especially pronounced for socially-prescribed perfectionists because of their concerns with others’ evaluations. Phenomenological studies (Lewis, 1971; Lindsay-Hartz, 1984; Lindsay-Hartz, de Rivera, & Mascolo, 1995; Miller & Tangney, 1994) have indicated that shame is often associated with the imagery of an evaluating, disapproving other. In a shame experience people are concerned with others’ evaluations of themselves. Along the same lines as shame, socially prescribed perfectionism is steeped in a preoccupation with other people’s standards, opinions and evaluations. Hewitt and Flett (1991) found that socially prescribed perfectionism, but not self-oriented perfectionism, is related to fear of negative evaluation. The common focus on external evaluation suggests that socially prescribed perfectionism, even more than self-oriented perfectionism, should be associated with a vulnerability to shame experiences.
1.2.9.2 Empirical evidence

1.2.9.2.1 H & F MPS and shame

Various studies have been conducted attempting to explore the connection between multidimensional perfectionism and shame. Beginning with Hewitt and Flett’s (1991) validation studies of the MPS, they examined the relationship between perfectionism to differences in shame proneness. They found modest positive correlations between all three dimensions of perfectionism and shame, as assessed by Klass’s Problem Situation Questionnaire; however, the correlations were marginally lower than the magnitude needed to reach statistical significance.

Tangney (2002) conducted three independent studies on the associations between H & F MPS and shame, as assessed by the Test of Self-Conscious Affect (TOSCA), in college undergraduates. Results across all three studies revealed that, when guilt was factored out, a dispositional tendency to experience shame across a range of situations was significantly positively correlated to socially prescribed perfectionism, but was largely unrelated to self-oriented or other-oriented perfectionism. In another study of undergraduate students, Wyatt and Gilbert (1998) also found that socially prescribed perfectionism, but not self-oriented perfectionism, was significantly positively correlated with thoughts that others look down on one, which is a central feature of shame. In this study Wyatt and Gilbert utilized the Other as Shamer Scale (OASI), which examines global judgements of how people think others perceive them.

In a study examining the extent to which self-oriented and socially prescribed perfectionism could be differentiated by their correlations to adaptive or maladaptive constructs, Klibert, Langhinrichsen-Rohling, & Saito (2005) included shame as one of the maladaptive constructs. Results revealed that shame showed significant positive correlations with socially prescribed perfectionism. Furthermore, an ANOVA revealed that the group consisting of only individuals high in self-oriented perfectionism scored significantly lower on shame than the group consisting of only socially prescribed perfectionists and the group consisting of individuals who were both socially prescribed and self-oriented perfectionists. These results indicate that expending cognitive and emotional resources in an effort to satisfy externally imposed high standards, regardless of one’s level of self-imposed perfectionism, may be a risk factor for distress and potential psychopathology (Bieling et al., 2004).
In a recent intriguing investigation, Stoeber, Kempe, & Keogh (2008), examined how self-evaluative emotions, including shame, were related to multidimensional perfectionism, following an experimental manipulation of success and failure. Following suggestions by Campbell and Di Paula (2002), Stoeber et al. separated self-oriented and socially prescribed perfectionism each into two facets. Self-oriented perfectionism comprises the striving for perfection (perfectionistic striving) and the belief that being perfect is important (importance of being perfect), and socially prescribed perfectionism comprises the belief that others have high standards for oneself (others’ high standards) and that acceptance by others is conditional on fulfilling these high standards (conditional acceptance). Results revealed that all four facets of perfectionism were significantly positively correlated to shame after failure. However, a regression analysis indicated that of the four perfectionism facets, only conditional acceptance made a unique contribution to the prediction of shame and it predicted higher shame in the failure condition, but not in the success condition. While many other studies have also found relationships between socially prescribed perfectionism and shame, these results point to the possible complexity of this relationship. While perfectionism may be associated with a tendency to experience shame, this tendency may be restricted to situations of perceived failure and may be particularly related to the conditional acceptance facet of socially prescribed perfectionism.

1.2.9.2.2 FMPS and shame

Although not assessing shame directly, two studies by Frost et al. (1995, 1997) examined the dynamics, concerns and beliefs associated with the Concern Over Mistakes (CM) dimension of the FMPS. In both studies, Frost et al. found that compared with participants low in CM, participants high in CM were more likely to hide their mistakes from others, which is a tendency also related to shame. Evidence from Frost et al. (1997) suggested that the tendency towards concealment is rooted in self-evaluative, self-presentational concerns. Participants high in CM were more worried about others’ reactions to their mistakes, and this worry did not result from concerns about the welfare of others. High CM participants did not differ from low CM participants in the types of mistakes made or reported or in the degree to which they believed that their mistakes were harmful to others. Rather, the difference was, that those high in CM compared to those low in CM believed that their mistakes caused more harm to themselves, because of the negative evaluations that they anticipated from others. The pattern of egocentric concerns displayed by the high CM participants is consistent with the pattern experienced by
those in a shame experience (Tangney et al., 1994).

Clearly, there is theoretical and empirical evidence demonstrating a relationship between perfectionism and experiences of shame. However, this relationship has not been examined utilizing the Experience of Shame Scale to measure shame, nor has this relationship been examined in samples of women with an ED, SUD or both.

1.2.10 Childhood maltreatment and eating and substance use disorders

1.2.10.1 Theoretical formulations

Various theories have been proposed to seek to explain the relationship between childhood maltreatment and the later development of an eating or substance related disorder. One hypothesis posits that childhood maltreatment thwarts the child’s ability to learn how to manage strong affect and to develop the ability to express and distinguish his or her feelings, leading to the development of various problematic behaviours, including eating and substance use disorders (Rorty & Yager, 1993; Vanderkolk & Fisler, 1994). Another theory put forth by Mulvihill (2005) states that children who are raised in abusive environments may develop an elevated baseline of fear and physiological arousal, hence, never being able to fully naturally relax. Thus, in order to reach a state of complete relaxation these individuals may self-medicate or try to escape their aroused state through substance abuse or disordered eating. Other research has found that individuals who have been abused see the world as a dangerous place (Briere & Elliot, 1994) and describe their current attitude towards themselves, others and life as very negative (Teegen, 1999). This negativity can lead to depression, which has been found to be related to eating and substance use disorders (Measelle, Stice, & Hogansen, 2006).

Other research has suggested that CSA can cause dysregulation in a number of underlying cognitive behavioural mechanisms including impulsivity, which in turn may increase the risk of developing an ED, particularly, BN (Kent, Waller, & Dagnan, 1999; Wonderlich, Brewerton, Jocic, Dansky, & Abbott, 1997; Wonderlich, Klein, & Council, 1996) or a SUD (Zlotnick et al., 1997). Another related theory postulates that childhood abuse can cause psychobiological dysregulation, which may increase the risk of impulsive behaviours, including eating and substance related disturbances (Widom, 1994; Wonderlich et al., 2001). While it is possible that poor impulse control could be a sequela of an abusive history, an alternative possibility is that poor impulse control may be a trait that predates the onset of the abuse. Bulik and colleagues
(1997) found that subjects with BN and alcoholism had high rates of childhood conduct disorders. The diagnosis of conduct disorder, which predated the onset of an eating disorder or substance use problems, raises the possibility that this subgroup has a trait-related disturbance of impulse control. Therefore, it is possible that poor impulse control combined with the use of drugs or alcohol may place this subgroup (BN+SDD) at a high risk for traumatic sexual experiences.

1.2.10.2 Empirical evidence

1.2.10.2.1 Childhood maltreatment and eating disorders

The experiences of childhood physical, sexual and emotional abuse have been identified as risk factors for the later development of EDs. Most research to date in this area has focused on the role of childhood sexual abuse (CSA; Kent, Waller & Dagnan, 1997). In demonstrating that CSA plays a role in the development of eating pathology, Zlotnick et al. (1996) found that female psychiatric inpatients, without an ED diagnosis, with a history of CSA, scored similarly to individuals with a clinically diagnosed ED (BN or AN) on the following subscales of the EDI: Body Dissatisfaction, Ineffectiveness, Interpersonal Distrust, and Introceptive Awareness. In further support of an association between CSA and EDs, Wonderlich, Brewerton, Jocic, Dansky, and Abbott (1997) reviewed literature in this area and concluded that childhood sexual abuse is a risk factor for bulimia nervosa. They also found that the relationship between CSA and BN was stronger than the association between CSA and AN. Furthermore, Fosse and Holen (2006) found that a sample of female outpatients with BN scored significantly higher on childhood sexual abuse than did a control group. However, no significant differences were found on levels of CSA reported by female outpatients with AN and a control group. In another study, Garfinkel, Lin, Goering, Spegg, Goldbloom, Kennedy and colleagues (1995) found that women with both clinical and sub-clinical (two or more binge episodes per week for three months) BN were significantly more likely to have experienced childhood sexual abuse compared to a control group of women. Striegel-Moore, Dohm, Pike, Wilfley & Fairburn (2002) found that white women with BED reported significantly more CSA than a healthy comparison group, whereas black women with BED reported significantly more CSA than both a healthy comparison group and a psychiatric comparison group.

Childhood physical abuse (CPA) has also been found to play a role in the development of an ED,
although it has attracted substantially less attention in the ED literature than CSA. For example, Rorty, Yager, and Rossotto (1994) examined parental abuse in childhood, experienced by 80 women with a lifetime history of BN and by 40 healthy control women. The women with BN reported significantly more physical abuse in childhood by their parents. Stiegel-Moore et al. (2002) found that white and black women with BED scored significantly higher on all categories of childhood physical abuse, including: any physical abuse, repeated physical abuse, severe physical abuse and repeated severe physical abuse, than a control group. Overall, the studies that have been conducted in this area suggest that CPA may act as a nonspecific risk factor for EDs, particularly for BN (Folsom et al., 1993, Root & Fallon, 1988).

A few studies have jointly examined the roles of sexual and physical abuse in relation to eating psychopathology. In a nationally representative study of 6728 youth in grades 5-12, binge and purge behaviours were significantly associated with all types of abuse. Associations were strongest for those individuals who had experienced both physical and sexual. The relationship continued to be significant even after controlling for sociodemographic and anthropometric characteristics (Ackard, Neumark-Sztainer, Hannan, French, & Story, 2001). In another study, McCallum, Lock, Kulla, Rorty, and Wetzel (1992) found that 71% of their subjects with EDs met criteria for BN and 66% of their subjects with EDs reported a history of childhood trauma, such as physical or sexual abuse by adults.

Research on childhood emotional abuse (CEA) in the ED literature is currently scarce, despite the fact that in the broader literature, CEA is thought to be more prevalent than other abuse forms and has more potential for long-term damage (O’Hagan, 1993). In early eating disorder literature, the family environments of individuals with EDs have been described as being intrusive, overprotective, and controlling in anorexics, but chaotic and emotionally cold in bulimics (e.g., Bruch, 1973; Humphrey, 1983), however, these claims have been difficult to support with systematic research (Kent & Waller, 2000). In more recent systematic research, Stuart, Laraia, Ballenger, and Lydiard (1990) compared a sample of 30 women with BN to groups of 15 depressed and 100 nonpsychiatric controls on measures of early environment. Results indicated that bulimics were more likely to report feelings of rejection by their parents than either of the other groups. In addition, the bulimics reported having been raised in environments in which there were more threats, physically coercive behavior, and tension than either the depressed sample or the controls. Stuart et al. concluded that the profile of a typical
childhood environment of a bulimic individual is tense, emotionally cold, and intimidating.

Rorty and colleagues (1994) found that a sample of individuals with BN reported higher rates of childhood psychological abuse (i.e. emotional) than a control group. In a study by Kent, Waller and Dagnan (1999) they assessed the degree to which women without EDs had experienced emotional abuse, physical abuse, sexual abuse and neglect in order to determine whether abusive experiences were associated with unhealthy eating attitudes. Although all forms of abuse were related to eating psychopathology, emotional abuse was determined to be the central predictor of such psychopathology.

Another form of childhood abuse that has received little attention in the ED literature to date is bullying by peers. The research that has so far been conducted in this area points to a possible link between the experience of being bullied by peers in childhood and the later development of an ED. The School Health Promotion Study in Finland included 4453 adolescent female students (Kaltiala-Heino, Rissanen, Rimpela & Rantanen, 1999). In total, 1.8% of the adolescents met the criteria for bulimia, and 0.7% for anorexia. Findings revealed that females with BN often had been bullied by peers, while females with AN had not. In another study of 11 000 school children, Balding, Regis, Wise, Bish, and Muirden (1996) explored relations between fear of bullying and dietary problems. They found positive relationships between bullying by peers and the consumption of low-calorie drinks, chips, nuts, pizzas, and sausage rolls. The authors concluded that ‘snacking’ may be characteristic of those who fear bullying. In the study by Stiegel-Moore et al. (2002) they found that the subjects with BED reported higher rates of childhood bullying by peers than a healthy comparison group. Findings from a more recent study by Fosse and Holen (2006) found that female outpatients with BN reported significantly more childhood bullying by peers than a control group. Furthermore, in a logistic regression analysis, reports of bullying by peers was found to be a significant predictor of BN.

As is evident, the research to date demonstrates a possible connection between various forms of childhood maltreatment and the later development of an ED. All forms of childhood abuse appear to act as greater risk factors for the development of BN and BED than for AN.

1.2.10.2.2 Childhood maltreatment and substance use disorders

Experiences of various forms of childhood abuse are also prevalent in individuals with
substance related disorders. As in the literature on childhood maltreatment and EDs, much of the research in this area has focused on childhood experiences of sexual abuse. Various reviews of the literature have concluded that women with alcohol problems are much more likely than women in the general population to have been sexually abused as children (e.g., Arellano, 1996; Bollerud, 1990; Hurley, 1990; Miller & Downs, 1995). In another review Moncrieff and Farmer (1998) found evidence that more severe, earlier CSA, was particularly associated with the development of alcohol problems among women. In a more recent review, Simpson and Miller (2002) found that among female adults seeking treatment for substance abuse, rates of CSA were approximately 80% higher than rates of CSA in the general population. Furthermore, when studies that only inquired about incest were removed from the subsample of studies included, the figures did not change substantially. In their review, Simpson and Miller also found that across studies of adult women from the community, those reporting CSA were nearly two and a half times more likely than women in the general population to report a substance use problem and those reporting no CSA were about as likely as women in the general population to report a substance use problem.

A longitudinal study of Norwegian girls from the community (Pedersen & Skrondal, 1996) followed 249 girls from age 13 until age 19. Alcohol consumption and alcohol-related problems were assessed five different times as were sexual victimization status and parental alcohol and smoking behavior. CSA was not found to contribute unique variance to rates of alcohol consumption over time; while by contrast, CSA did contribute unique variance to the severity of alcohol-related problems. These results indicate that CSA may be more likely to be associated with how girls drink rather than with how much they drink.

Reported experiences of childhood physical abuse have also been found to be associated with the subsequent development of SUDs, however there is less research in this area than there is for CSA. In a literature review using only prospective or well designed cross-sectional studies, Langeland and Hartgers (1997) found associations between CPA and the development of later alcohol problems among females. In the literature review by Simpson and Miller, they found that among adult females who were seeking treatment for their SUD, the rate of CPA was almost 90% higher than general population rate of CPA found in a large Canadian sample (MacMillan et al., 1997). Furthermore, rates of CSA among adolescent females who were in treatment for their SUD, were over twice the general population rate reported by MacMillan et al., (1997).
Bennett and Kemper (1994) who recruited women when their children had doctors’ appointments found that having experienced CPA was a significant predictor of current substance abuse among these women.

Research on childhood emotional abuse and SUD is still in its early stages, however it likely plays a significant role in the later development of a SUD and also may have an impact on treatment outcome. Dube et al. (2003) demonstrated that in addition to CSA and CPA, CEA and emotional and physical neglect were all associated with a 2 to 4 fold increase in the likelihood of illicit substance use by the age of 14 and increased this risk into adulthood. In a pilot study, Pederson et al. (2008) demonstrated that the long-term effects of CEA may be as severe as those of CSA and CPA. Pederson et al. found that in a sample of adult females, significant associations were noted for reported sexual, physical, and emotional childhood abuse with use of nicotine, marijuana, and antidepressants in adulthood. Reported childhood physical and emotional abuse were also significantly associated with use of cocaine and anxiolytics, and only childhood emotional abuse was associated with the use of sleeping pills. Hyman et al. (2008) found that greater severity of CEA experienced by female cocaine abusers, was associated with an increased risk of relapse in these individuals after treatment. Clearly, the research to date demonstrates that childhood sexual, physical, and emotional maltreatment are associated with substance use disorders, albeit one cannot conclude that childhood abuse causes a SUD, as other factors may be present that perhaps mediate this relationship.

1.3 Abuse and Comorbid Eating and Substance Use Disorders

1.3.1 Empirical evidence

A number of studies to date have examined experiences of abuse in individuals with comorbid EDs and SUDs. A few studies have compared rates of substance use disorders among bulimic women with and without sexual abuse. Two such studies (Bulik, Sullivan, & Rorty, 1989; Rorty, Yager, & Rossoto, 1994) found higher rates of substance use disorders in bulimic women who had histories of sexual abuse. Another study to date compared sexual abuse in 26 women with the restrictive type of AN, to 47 with the purging type of BN of which 43% had a lifetime history of substance dependence disorder, and to a control group of women with no current or history of an ED or SUD (Deep, Lilenfeld, Plotnicov, Pollice, & Kaye, 1999). Sexual abuse was reported in 65% of the group of individuals with BN and a substance dependence disorder (SDD)
(BN+SDD), which was significantly higher than rates of sexual abuse found in the other three groups. Furthermore, 37% of individuals in the group with BN without a SDD (BN-SDD) reported a history of sexual abuse, which was significantly higher than rates of sexual abuse in the control group. Of the individuals in the AN group, 23% had experienced sexual abuse, which was significantly higher than rates found in the control group. Differences were also found in the predominant type of sexual abuse experienced by each group. Whereas rape was the predominant form of sexual abuse experienced by the BN+SDD group, incest was the most common form of sexual abuse experienced by the BN-SDD group. Furthermore, fondling by a nonfamily member was the most common form of abuse among AN subjects whereas fondling by a nonfamily member and incest were the types of abuse reported by our CW subjects. In regards to when sexual abuse was experienced, most subjects experienced it preceding their ED. AN subjects experienced sexual abuse approximately five years prior to onset of AN, individuals with BN-SDD experienced sexual abuse approximately three years prior to the onset of AN, and the BN+SDD group experienced SA approximately 1 year prior to onset of their ED. These findings suggest that the AN and BN-SDD women may have isolated experiences of sexual victimization (e.g., fondling, incest) during early puberty, yet do not develop a full spectrum of multi-impulsive traits. In contrast, the unwanted sexual experiences of the BN+SDD group often occurred later in adolescence than among the women with AN or BN−SDD and they do develop multi-impulsive traits. One potential limitation regarding the applicability of this study’s findings to the current one, is that the current study will be examining childhood abuse that was experienced prior to the age of 18, whereas this study did not limit the age of experienced abuse to 18. Furthermore, this study did not examine a group of individuals with comorbid AN and SDD or BED and SDD.

Another study by Gilchrist, Gruer and Atkinson (2007) found that in a sample of female drug users of which one third had a current or past ED, 43.5% had experienced childhood emotional abuse, 35.8% had experienced childhood physical abuse and 31.7% had experienced childhood sexual abuse. Lastly, Hodson, Newcomb, Locke & Goodyear (2006) found that in a young sample emotional and physical abuse predicted poly-substance use and weight concerns. Given the limited quantity of research on experiences of childhood abuse in clinical samples of women with a variety of current EDs and comorbid SUDs more research in this area is warranted.
1.4 Childhood Maltreatment and Perfectionism

1.4.1 Theoretical formulations

Two models have been proposed to explain the role of maltreatment in the development of perfectionism. Flett and colleagues (2002) proposed a model called the *social reaction model* which is premised on the idea that one avenue that can lead children to become perfectionistic is through exposure to a harsh environment. A harsh environment can occur in many forms such as physical abuse; psychological maltreatment, for example withdrawal of love or exposure to shame; or a chaotic family environment. The child may respond to such environments by becoming a perfectionist in hopes of escaping or minimizing future abuse, because the individual may believe that if he or she is perfect he or she will no longer be harmed.

Baumeister and Leary (1995) have proposed another model that can be utilized to explain the role of maltreatment in the development of perfectionism. According to these theorists the fundamental human motivator is the need to belong which motivates us to maintain a “minimum quantity of lasting, positive, and significant interpersonal relationships”. Rejection or lack of belongingness constitutes a severe human deprivation and a variety of ill effects, such as anxiety, depression, grief, interpersonal difficulties, and loneliness, result from the failure to meet the belongingness need (Baumeister and Leary, 1995; Baumeister and Tice, 1990). Due to the strong need to belong, victims of abuse may avoid confronting the perpetrator, leaving them to believe that they were the ones to do something wrong and consequently, striving never to do anything wrong; to be perfect, out of an intense fear of rejection.

1.4.2 Empirical evidence

The link between perfectionism and maltreatment has been identified in some case histories, in a paper by Lindberg and Distad (1985). A study by Frost, Lahart and Rosenblate (1991) revealed that parental harshness was associated with daughters’ overall perfectionism. Furthermore, daughters’ parental expectations and parental criticism subscales of the FMPS were associated with more harsh parental characteristics for both fathers and mothers. Concern over mistakes was also correlated with daughters' reports of both mothers' and fathers' harshness. Daughters' reports of fathers' harshness were also correlated with doubts about actions and personal standards. These findings demonstrate that some of the daughters in the study may have developed perfectionistic traits as a way of dealing with parental criticism and harshness.
A later study by Schaaf and McCanne (1994) examined levels of EDI perfectionism in three samples of college students: one group had been sexually abused, one group had been physically abused and the last group had not been abused at all. Scores on the perfectionism scale were elevated in both the abused groups as compared to the non-abused group; however, only the physically abused group had significantly higher perfectionism scores. Zlotnick, Hohlstein, Shea, Perlestein, Recupero and Bidadi (1996) also compared perfectionism as a unidimensional construct, utilizing the EDI, in female psychiatric inpatients: one group who had been sexually abused prior to age 16, and the other group had not. Findings from this study revealed that EDI perfectionism was significantly elevated in the group who had experienced sexual abuse as compared to the group who had not. Unfortunately, these studies were both limited, as they examined perfectionism as a unidimensional construct rather than a multidimensional construct.

One study specifically examined the role of childhood peer victimization in the development of H & F multidimensional perfectionism in a sample of female undergraduates (Miller & Vaillancourt, 2007). Results from three separate regression analyses revealed that indirect peer victimization was the only significant predictor of both socially prescribed perfectionism and self-oriented perfectionism, while indirect peer victimization as well as verbal peer victimization were both significantly predictive of other oriented perfectionism. Indirect peer victimization includes acts such as encouraging others to dislike a person, befriending another as a form of revenge, telling a person’s secrets to another, making insidious remarks about a person behind his or her back, and telling others to avoid a person, while verbal peer victimization involves acts such as being insulted by someone (Lagerspetz et al., 1988). Furthermore, while the relationships between indirect peer victimization and both self-oriented perfectionism and socially prescribed perfectionism were positive, the relationship between indirect peer victimization and other oriented perfectionism was negative suggesting that other-oriented perfectionism may reflect personality dimensions of indirectly aggressive females rather than victims. Despite these few findings, at present, there is a paucity of research on how a history of maltreatment relates to the various dimensions of perfectionism.

1.5 Shame and Childhood Maltreatment

1.5.1 Theoretical formulations

Various theories have been proposed to explain the connection between shame and maltreatment.
From a social-cognitive perspective, early representations of self and others are the result of experiences with primary attachment figures. According to attachment theory, such representations are integrated and form the basis of cognitive schema (Bowlby, 1977, 1980). Mental representations based on negative childhood experiences with caregivers lead to vulnerability in the face of subsequent hardship. It has been speculated that the representational model of the self constructed by individuals who have been abused in childhood is one who is responsible for and deserving of harsh treatment (Egeland, Jacobvitz, & Sroufe, 1988). Child sexual abuse may not necessarily be perceived as involving harsh treatment. Nevertheless, one of the earliest theories to incorporate a social-cognitive perspective in relation to the impact of abuse was that of Ferenczi (1932, 1949). Based on clinical observations of perpetrators and victims of abuse, Ferenczi proposed that experiences of physical and sexual abuse were harmful to later adult functioning. The experiences were distinct, but the affect or motivation of the actor, which was seen to be so damaging to the recipient, was the same. Both "passionate loving" and "passionate punishment" were accompanied by feelings of hatred and guilt toward the recipient, and the child internalized such feelings.

These insights relate to the traumatization model proposed by Finkelhor and Brown (1986). According to these authors, common patterns of reactions seen among adult victims of childhood sexual abuse are connected with four factors related to the initial experiences: traumatic sexualization, stigmatization, betrayal, and powerlessness. The factor identified as relevant to shame is stigmatization, which occurs when the perpetrator of the abuse and others blame the victim and demand that he or she keeps the abuse a secret. The child later grows up with feelings of shame, believing that he or she is damaged. While this model is claimed to be specific to child sexual abuse, stigmatization can also be seen as pertinent to early experiences of physical abuse.

From a biosocial perspective, Gilbert (1989, 1997) proposed that shame in humans is related to involuntary submissive behaviour. Shame is seen as being concerned with issues of defeat, intrusion and destruction of the self. It is therefore a likely response to physical and sexual abuse, as both have potential to reduce the victim to submission. Abusive experiences, from this perspective, are likely to be associated with later psychiatric problems, due to shame proneness.
1.5.2 Empirical evidence

A number of studies have investigated the relationships between childhood physical, sexual and emotional abuse and various types of shame. In an investigation of female adult survivors of childhood abuse, Andrews (1997) found significantly elevated bodily shame scores in women who had experienced sexual abuse compared to those who had not. Furthermore Andrews (1995) and Andrews and Hunter (1998) found significant relationships between bodily shame and sexual abuse. Furthermore, Murray & Waller (2002) found a relationship between unwanted sexual experience of any sort and internalized shame. Despite these findings, some other studies have failed to find a relationship between childhood sexual abuse and subsequent shame experiences. Neither Alessandri and Lewis (1996), using observational measures of shame, nor Stuewig and McCloskey (2005), using self-reports of shame-proneness, found a relationship between a history of sexual abuse and shame. However, both studies utilized small samples of sexually abused individuals. Another reason for the lack of significant findings may be that complex emotions surround not only the abusive act but also how one copes with the experience.

Using facial coding data for shame, Bonanno et al. (2002) found that individuals with a documented history of sexual abuse, who did not disclose the abuse in an interview, had higher levels of observed shame than those individuals who did disclose their sexual abuse history. There were no differences in shame between those who did disclose and a non-abused comparison group. In a follow-up study, Negrao et al. (2005), found that individuals who disclosed their abuse histories expressed more shame verbally, whereas those who did not disclose their abuse histories expressed more shame nonverbally, relative to control participants.

Findings regarding the relationship between physical abuse and shame have also been somewhat inconsistent. Studies by Andrews (1995,1997) and Andrews and Hunter (1997), found significant relationships between childhood physical abuse and bodily shame. Bennett et al. (2005) also reported an association between physical abuse and nonverbal shame, although there was no significant relationship for neglect in this study. Although Hoglund and Nicholas (1995) reported no relationship between a history of physical abuse and shame-proneness in adulthood in their study, they did find a link between shame-proneness in adulthood and a history of emotional abuse in childhood, by a parent. In this same vein, Gilbert et al. (1996) found that put-downs and shaming practices by parents were associated with adult children’s shame-proneness. Stuewig and McCloskey (2005) found a relationship between harsh parenting in childhood and
shame-proneness in adolescence, a relationship that was mediated by rejecting parenting practices also measured in adolescence. Webb and colleagues (2007) found that three forms of childhood emotional abuse by caregivers, namely: emotional neglect, hostile rejection and isolation, were significantly positively correlated with shame-proneness in adulthood. Shame-proneness has also been negatively correlated with positive reports of maternal and paternal caregiving in childhood (Lutwak & Ferrari, 1997). Overall, findings support the fact that negative or harsh parenting or any type of childhood abuse has been associated with the victim’s propensity to later experience shame (Alessandri & Lewis 1993, 1996; Mills 2003).

1.6 Shame, Maltreatment and Eating Disorders and Substance Use Disorders

Given previous findings that shame is related to abuse, as it may be an emotional response to the experience (Kaufman, 1992), and that shame may play a part in the development of both eating disorders and substance use disorders (See Above Sections), it seems plausible to suggest that shame may play a key role in the link between abuse and eating disorders and substance use disorders. Despite this, very few studies to date have been conducted on these matters.

Andrews (1997) attempted to examine whether or not bodily shame played a mediating role between childhood abuse and BN in a sample of community women. However, in this study, she failed to demonstrate a clear mediating role for bodily shame, as shame appeared to both follow abuse, but also to occur concurrently with the development of bulimic symptoms. Findings from a later similar study (Murray & Waller, 2002) appear to be more promising. Murray and Waller (2002) examined the potential mediating role of internalized shame between reported sexual abuse at any age, and bulimic attitudes and behaviours in a sample of non-clinical women. These authors found that internalized shame partially accounted for the relationship between any history of reported sexual abuse and bulimic attitudes, but entirely accounted for the link between intrafamilial abuse and bulimic attitudes. The inconsistency of findings from both of these studies, and the fact that both studies utilized non-clinical samples of women, warrants more research in this area.

There have also been few studies conducted on the relationships between shame, maltreatment and substance use disorders. Among a sample of 92 female inpatients in an alcohol treatment program, Playter (1990) found that a reported history of sexual abuse was associated with higher
levels of internalized shame. In another study of women in recovery for alcoholism Wiechelt and Sales (2001) failed to find higher levels of internalized shame in the women who had experienced childhood sexual abuse compared to women who had not. O’Conner (1994) found that female recovering drug addicts scored higher on proneness to shame, than did males. This may be explained by the fact that the females in this study reported significantly higher rates of childhood sexual abuse, than did the males, and sexual abuse was significantly independently related to shame, with those reporting abuse scoring significantly higher on shame than those who had not. Due to the inconsistent findings and the fact that all three studies utilized samples of individuals in recovery from forms of drug abuse, more research is needed in this area.

1.7 Summary and Limitations of Previous Research and Study Purpose

As is evident from the above literature review, experiences of childhood maltreatment, perfectionism and shame have been found in individuals with an ED or SUD and various theories have been proposed to explain this. The few studies that have investigated childhood maltreatment in women with comorbid EDs and SUDs, have found high rates of childhood maltreatment in such samples. Only one study to date has examined perfectionism in women with comorbid EDs and SUDs, and this study focused exclusively on alcohol use disorders and simply utilized one measure of perfectionism, the Frost MPS. No research to date has examined experiences of shame in individuals with comorbid EDs and SUDs. Further, relationships have been found between childhood maltreatment and perfectionism; childhood maltreatment and shame and perfectionism and shame in various samples, although the relationships among all of these variables have never been investigated in a sample of women with comorbid EDs and SUDs nor have predictive models been proposed to explain the nature of comorbid EDs and SUDs utilizing all of these variables together in the same study.

The current study aimed to investigate experiences of various forms of: childhood maltreatment, perfectionism and shame in a clinical sample of women with comorbid EDs (of different types) and SUDs. Specifically the current study aimed to answer the following research questions: 1. What relationships, if any, exist between dimensions of perfectionism, shame and maltreatment in a clinical sample of women with comorbid EDs and SUDs? 2. Which dimensions of perfectionism, shame and maltreatment are related to eating disordered behaviours and attitudes
and substance use severity among women with comorbid EDs and SUDs? Following from this question, the current study aimed to develop predictive models of: a. eating disordered behaviours and attitudes, b. drug use severity, c. alcohol use severity. 3. How does the current clinical sample compare to normative samples on eating and substance use disorder measures (EDE-Q and ASI)? 4. How does the current clinical sample compare to normative samples on experiences of perfectionism, shame and maltreatment?
Chapter 2

2  Method

2.1  Participants

Data were collected from 119 female participants with comorbid eating disorders and substance use disorders from the outpatient Eating Disorder and Addiction Clinic at the Centre for Addiction and Mental Health in Toronto. Upon intake to the clinic, all participants were assessed as having a co-morbid eating disorder and substance use disorder through completion of the SCID I and II, the Eating Disorder Examination (EDE), the Eating Disorder Examination Questionnaire Version 5.2 (EDE-Q 5.2) and the Addiction Severity Index (ASI). In the clinic, follow-up assessments based on the EDE, EDE-Q 5.2 and the ASI are administered once every three months during treatment, and once every three months for a year once treatment is complete. Of the original sample of 119 participants, data were excluded from 34 participants, for various reasons that will be addressed in the results section. Thus, the final sample consisted of 85 women.

2.2  Measures

2.2.1  Eating disorder

In order to reconfirm participants’ eating disorder diagnoses and for classification and statistical purposes, the study investigator examined participants’ subscale scores and responses to certain questions on the Eating Disorder Examination Questionnaire Version 5.2 (EDE-Q 5.2). Specifically, the investigator examined participants’ responses to questions 13 to 18, related to bulimic symptomotolgy and questions 29 to 33 related to body mass index and menstrual cycle regularity.

2.2.1.1  Eating Disorder Examination Questionnaire, Version 5.2 (EDE-Q 5.2; Fairburn & Beglin, 1994)

The EDE-Q 5.2 is a 33 item self-report questionnaire that was adapted from the Eating Disorder Examination (Fairburn & Cooper, 1993), a well-established, psychometrically sound, structured interview that assesses diagnostic criteria for anorexia nervosa, bulimia nervosa and binge eating
disorder. The EDE-Q is comprised of four subscales: dietary restraint; eating concern; shape concern and weight concern. A global score can also be calculated by summing the scores from the four subscales together, and dividing the resulting total by four (the total number of subscales). The EDE-Q assesses for disordered eating that has occurred in the past 28 days. In order to assess for disordered eating, most items on the EDE-Q contain a 7-point Likert like scale ranging from 0 (no days or not at all) to 6 (every day or markedly). However, two sections on the EDE-Q do not contain Likert scales and participants are free to write their own responses to questions in such sections. The sections include: one that assesses for bulimic symptomology (binge and purge behaviours) and another section that requests information about the participant’s height, weight and menstrual cycle.

The EDE-Q has been shown to possess good internal consistency in female university student samples with and without eating disorders. For example, in a student sample without eating disorders, Luce and Crowther (1999) found excellent internal consistency for the EDE-Q, with alpha levels for the various subscales ranging from .78 to .93. Two week test-retest reliabilities for the subscales was very good (restraint: r = .81; shape concern: r = .94; weight concern: r = .92; eating concern: r = .87) and reliability of questions measuring key behavioural symptoms of eating disorders was psychometrically sufficient (binge eating: r = .68; self-induced vomiting: r = .92; laxative misuse: r = .65; diuretic misuse: r = .54). Further, in a sample of female university students with bulimia nervosa and sub-threshold bulimia nervosa, Peterson et al. (2007) found acceptable internal consistency, with alpha levels for the various subscales ranging from .70 to .83, and an alpha level of .90 for the total scale. Information on the concurrent validity of the EDE-Q, in community and clinical samples, can be found in Fairburn and Beglin (1994) and information on the criterion validity can be found in Mond, Hay, Rodgers, Owen and Beumont (2004).

2.2.2 Substance use

In order to reconfirm participants’ problematic substance use and for statistical purposes, participants’ drug and alcohol composite scores on the Addiction Severity Index (ASI) were examined by the study investigator. Further, questions D1-D13, D23, D26-31 on the ASI were examined in order to assess for the percentage of participants who abused various substances in the past month.
2.2.2.1 Addiction Severity Index (ASI; McLellan et al., 1980, 1992).

The ASI is a 40 minute semi-structured interview that has been used in the substance abuse treatment and research field since 1980. This index assesses seven areas that are affected in substance users: medical status, employment, drug use, alcohol use, legal status, family/social status and psychiatric status. Each area is examined by collecting information about the frequency, duration and severity of problems that have occurred throughout the patient’s lifetime, and more recently in the past 30 days. The ASI provides a composite score for each of these seven areas indicating the severity of problems in each area over the past 30 days. The composite score values range from 0 (no problem) to 1.0 (extreme problem) (Weisner, McLellan & Hunkeler, 2000). There is also a section of the ASI on interviewer ratings of problem severity.

The ASI has shown good reliability in each of the seven problem areas. Internal consistency coefficients have ranged from .68-.87 and test-retest reliability coefficients over 3 days have ranged from .88-.99 among clients in treatment for opiate, alcohol and cocaine addictions (Alterman, Brown, Zaballero & McKay, 1994; McLellan, Luborsky, Cacciola & Griffith, 1985; McLellan et al., 1992). Through comparisons of the ASI severity ratings and composite scores with previously validated tests, the ASI has demonstrated evidence of concurrent and discriminant validity (McLellan et al., 1985).

2.2.3 Perfectionism

2.2.3.1 Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991)

The Hewitt and Flett MPS measures perfectionism traits by way of self-report. This scale is a 45-item questionnaire that is composed of three 15-item subscales measuring self-oriented (e.g., “When I am working on something I cannot relax until it is perfect”), other-oriented (e.g., “I have high expectations for people who are important to me”), and socially prescribed perfectionism (e.g., “I feel that people are too demanding of me”). Participants rate their level of agreement with each statement on a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The scoring for each subscale ranges from 15 to 105, with higher scores indicating greater levels of perfectionism. The scales in the MPS have been shown to be reliable and valid in community, student and clinical samples. In a patient sample, alpha coefficients were .88 for self-oriented perfectionism, .74 for other-oriented perfectionism, and .81 for socially
prescribed perfectionism, indicating high internal consistency (Hewitt & Flett, 1991a). Studies have also established the incremental, predictive, convergent and discriminant validity and multidimensionality of the MPS in students, community members and psychiatric patients (Hewitt et al., 1991; Hewitt and Flett 1991b).

2.2.3.2 Multidimensional Perfectionism Scale (MPS; Frost, Marten, Lahart & Rosenblate, 1990)

This is a 35-item self-report scale that measures perfectionism traits. This scale assesses six dimensions of perfectionism: concern over mistakes (e.g., “I should be upset if I make a mistake”), high personal standards (e.g., “I have extremely high goals”), doubts about actions (e.g., “Even when I do something very carefully, I often feel that it is not quite right”), organization (“I am a neat person”), high parental expectations (e.g., “my parents set very high standards for me”) and high parental criticism (e.g., “As a child I was punished for doing things less than perfect”). Each item is measured on a 5-point Likert scale, ranging from 1 (strong disagree) to 5 (strongly agree), with higher scores indicating higher levels of perfectionism. Coefficients of internal consistency for the MPS have ranged from .77 to .93 for the various subscales. Further, the reliability for the total perfectionism scale is about .90 (Frost, Marten, Lahart & Rosenblate, 1990). Evidence of the construct validity for the scale can be found in Frost et al. (1990) and Parker and Adkins (1995).

2.2.3.3 Perfectionistic Self-Presentation Scale (PSPS; Hewitt et al., 2003)

The PSPS is a 27-item self-report questionnaire that measures three areas of perfectionistic self-presentation. The three areas are: perfectionistic self-promotion (e.g., “I try always to present a picture of perfection”), non-display of imperfection (e.g., “I hate to make errors in public”) and nondisclosure of imperfection (e.g., “Admitting failure to others is the worst possible thing”). Subjects rate their agreement with each item on a 7-point Likert scale, with higher scores demonstrating greater perfectionistic self-presentation. Internal consistency of the PSPS has been shown to be high, with Chronbach’s alpha coefficients of .86, .83 and .78, respectively for perfectionistic self-promotion, non-display of imperfection and nondisclosure of imperfection. Further, test-retest reliability is also high, with test-retest correlations over 3 weeks of .83, .84 and .74, respectively for perfectionistic self-promotion, non-display of imperfection and nondisclosure of imperfection (Hewitt et al., 2003). Evidence of the construct and predictive
validity of the PSPS in clinical and student samples can be found in works by: Habke and colleagues (1999); Hewitt, Flett and Mikail (1995) and Hewitt and colleagues (2003).

2.2.4 Shame

2.2.4.1 Experience of Shame Scale (ESS; Andrews, Qian, & Valentine, 2002).

This is a 25-item self-report questionnaire measuring three dimensions of shame. It measures four categories of characterological shame. Shame of: personal habits, manner with others, sort of person one is and personal ability. The questionnaire also assesses three behavioural components of shame. Shame about: doing something wrong, saying something stupid and failure in competitive situations. Lastly, the questionnaire assesses feeling ashamed of one’s own body or any part of it. For each shame area there are three specific questions: The experiential component, in the way of a direct question about feeling shame (e.g., “have you felt ashamed of your personal habits?”), a cognitive component about concern over others’ opinions (e.g., “have you worried about what other people think of your personal habits?”), and a behavioural component about concealment or avoidance (e.g., “have you tried to cover up or conceal any of your personal habits?”). For bodily shame there is a question regarding avoidance of mirrors. Participants respond according to how they have felt in the past year on a scale of 1 (not at all) to 4 (very much), yielding total scores between 25-100, with higher scores indicating greater experiences of shame. A score for total shame can also be calculated by adding the scores for all the questions together.

The overall scale has shown high internal consistency (Cronbach’s alpha = .92), and the test-retest reliability over 11 weeks was .83. The coefficients of internal consistencies for characterological shame, behavioural shame and bodily shame were: .90, .87, and .86, respectively. The test-retest reliabilities over 11 weeks were .78, .74, and .82, respectively for characterological shame, behavioural shame and bodily shame. Evidence has been found to support the scale’s construct and discriminant validity (Andrews, Qian & Valentine, 2002).
2.2.5 Childhood maltreatment

2.2.5.1 Child Maltreatment History Self Report (CMHSR; MacMillan et al., 1997)

This self-report questionnaire is comprised of questions that were based on items from the Conflict Tactics Scale (Straus, 1990), and the National Population Survey (Badgley, 1984; Bagley 1983; 1989) and measures participants’ experiences of witnessed abuse among parents, physical abuse, emotional abuse and sexual abuse, before participants reached the age of 18. The first section contains 8 witnessed abuse scenarios (eg. ‘Did you ever see one of your parents: push, grab or shove the other’). The second section contains 8 physical abuse scenarios (eg. ‘How often has any adult 18 years of age or older: hit you with something’) followed by 7 emotional abuse scenarios (eg. ‘How often has any adult 18 years of age or older: embarrassed you in front of others’). The last section contains four sexual abuse scenarios (eg. ‘Has any adult 18 years of age or older: threatened to have sex with you or hurt you sexually?’). Respondents must rate each scenario on a 4-point scale, ranging from never (assigned a numerical value of 0) to often (assigned a numerical value of 3), depending on how often they experienced each scenario. Sections two and three also contain descriptive sections that provide 9 categories and ask participants to identify one or more categories that the perpetrator(s) fall(s) into in regards to his or her relationship to the participants (eg. “natural father, other female relative” etc.). The other descriptive component of sections two and three asks participants whether or not they sought medical or psychological treatment as a result of the experienced abuse. The section regarding witnessed abuse, and the descriptive components of the questionnaire, were not examined in the current study.

The CMHSR has shown 2-week test-retest reliability kappa’s of .75 for physical abuse and 1.0 for sexual abuse in a sample of 34 adolescents (MacMillan & Fleming, unpublished data as cited in MacMillan, Jamieson & Walsh, 2003). Other psychometric data for this scale is currently unavailable, but it has been used in various community based studies of abuse, which have been published in peer-reviewed journals (see MacMillan, Jamieson & Walsh, 2003; Mancini, Ameringen & MacMillan, 1995).
2.3 Procedure

Immediately following patients’ initial intake assessments or first follow-up assessments in the Eating Disorder and Addiction Clinic, they were approached by the study investigator or one of the therapists in the clinic and asked whether they wished to participate in the current study. Patients who expressed an interest in participating, filled out the consent form as well as a battery of five questionnaires (The Hewitt and Flett MPS, The Frost MPS, The PSPS, the ESS and the CMHSR). Study participation took approximately 30 to 45 minutes per person.

2.4 Data Analyses

2.4.1 Preliminary analyses

Before testing the hypotheses of the current study, preliminary analyses were conducted to check for the normality of the distributions for all variables in the study. In order to check for normality, skewness and kurtosis were divided by the standard error for each distribution. If the resulting value was greater than two, appropriate transformations were applied to normalize the distributions. In the analyses, the transformed variables were utilized except for when comparing the clinical sample to normative samples on various measures (see 2.4.4 for a detailed explanation). All of the distributions that would be retained in subsequent analyses were then checked for missing data, univariate outliers and any other abnormalities.

To control for the possibility of a Type I error, due to the large number of variables included in subsequent analyses, bonferroni corrections were used to adjust the alpha level when necessary, when evaluating results, except for the correlational analyses (see subsection 2.4.3 for an explanation). The specific alpha levels used to evaluate results differed for various analyses and are specified in each of the subsequent results sections.

2.4.2 Description of participants

Participants’ responses to questions 13-18 and 29-33 on the EDE-Q 5.2 were examined in order to classify these women according to eating disorder symptoms that they had experienced in the past month. Analysis of Variance (ANOVA) was then conducted to compare ED subgroups on average age. Following this, Multivariate Analysis of Covariance (MANCOVA) was conducted to assess for possible differences between the eating disorder subgroups on the various subscales of the EDEQ 5.2 while adjusting for differences on age, a possible confounding variable.
Multivariate Analyses of Covariance (MANCOVA) was also conducted to assess for possible differences between the eating disorder subgroups on drug and alcohol composite scores of the ASI, while adjusting for differences on age, a possible confounding variable. Next, participants’ responses to questions D1-D13, D23, D26-31 on the ASI were examined in order to assess for the percentage of participants in each eating disorder subgroup who abused various substances in the past month. In order to evaluate the relationship between the use of certain types of drugs (use in the past month or no use in the past month) and subgroup (BN, BED and purge) a number of contingency table analyses were conducted.

In order to compare eating disorder subgroups on dimensions of perfectionism, shame and maltreatment, five Multivariate Analyses of Covariance (MANCOVAs) were conducted, one for each scale, while adjusting for age, a possible confounding factor.

2.4.3 Correlations and regressions

In order to examine relationships between variables of interest in the study, Pearson, two tailed, correlations were conducted. Correlations were considered without Bonferroni corrections due to the small sample size of each ED group.

Further, in order to develop predictive models of EDE-Q and ASI composite scores, hierarchical regression analyses were performed. Following the guidelines set out by Stephens (1996), in order to maintain a power level of .8 with an alpha level of .05, a minimum of 15 subjects per predictor in each of the regression models had to be included.

2.4.4 Differences between groups

In order to test for differences on the: EDE-Q subscales, the ASI composite scores, the three perfectionism scales and the shame scale between groups in the comorbid sample and normative groups, independent samples t-tests were utilized. Although in the comorbid samples the original distributions were skewed for some variables, the decision was made to perform the comparisons between groups, using the original means and standard deviations; hence, violating the assumption of normality, for a number of reasons. Firstly, full data sets were unavailable for the normative samples and only the means, standard deviations and sample sizes were available. If transformations had simply been applied to the means and standard deviations for various variables for the normative samples this would have differed from applying the transformation to
the entire data sets and would have compromised accuracy. Secondly, independent samples t-tests are quite robust. Thirdly, by violating the normality assumption power is reduced, which means that there is less of a chance of detecting differences that truly exist. However, on the other hand, if the power is reduced and differences are found, these differences do in fact exist and can be trusted.
Chapter 3

3 Results

3.1 Preliminary Analyses

Before proceeding with the main analyses of the current study, all variable distributions were checked for normality. Distributions that were found to be skewed were then transformed using appropriate transformations. Information about which distributions were skewed and which transformations were applied can be found in appendices A and B. After applying the necessary transformations, most variable distributions were normalized except for the distributions for: The bodily shame subscale of the ESS, the sexual abuse subscale of the CMHSR, the EDE-Q shape concern subscale. Despite the fact that the aforementioned distributions remained skewed after applying necessary transformations, the decision was made to utilize parametric analyses for all variables in the current study for consistency purposes and due to the robustness of parametric tests.

After appropriate transformations were applied, data were checked for missing values, univariate outliers and any other abnormalities. Data were then excluded from 34 participants who originally completed the study, for the following reasons: There were missing data from one or more entire scales for 24 participants; three participants’ scores were outliers on the physical abuse subscale of the CMHSR; one participant’s score was an outlier on the bodily shame subscale of the ESS; one participant’s score was an outlier on the other oriented perfectionism subscale of the H & F MPS and five participants experienced solely restrictive eating disorder symptomatology.

3.2 Description of Participants

3.2.1 Group composition

The 85 participants in this study were on average 31.60 years of age (SD=11.00; range: 18-61). Seventy-nine (92.9%) of the participants participated at intake to the Eating Disorder and Addiction Clinic. The additional six participants (7.1%) participated at the time of their first
follow-up assessment, three months after beginning treatment in the Eating Disorder and Addiction clinic.

Of the 85 study participants: 45 (52.9%) suffered from a diagnosis of Bulimia Nervosa or an Eating Disorder Not Otherwise Specified with bulimic symptoms (BN group); 14 (16.5%) suffered from Binge Eating Disorder (BED group) and 26 (30.6%) suffered from Anorexia Nervosa purging type, or an Eating Disorder Not Otherwise Specified with purging symptoms and the absence of bingeing (Purge group). For simplicity purposes, each of the three aforementioned eating disorder groups will be referred to as: BN, BED and Purge groups for the remainder of this paper. Table 1 displays the means and standard deviations of the occurrence of various eating disorder behaviours over the past 28 days, in each eating disorder group.

Table 1

*Means and Standard Deviations of Eating Disordered Behaviours over the Past 28 Days*

<table>
<thead>
<tr>
<th>Measures</th>
<th>BN group (n=45)</th>
<th>BED group (n=14)</th>
<th>Purge group (n=26)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Times objective bingeing</td>
<td>21.53</td>
<td>22.86</td>
<td>0</td>
</tr>
<tr>
<td>Times loss of control AND objective bingeing</td>
<td>21.02</td>
<td>18.14</td>
<td>0</td>
</tr>
<tr>
<td>Days objective bingeing AND loss of control</td>
<td>14.49</td>
<td>13.14</td>
<td>0</td>
</tr>
<tr>
<td>Times vomiting</td>
<td>21.62</td>
<td>0</td>
<td>39.65</td>
</tr>
<tr>
<td>Times laxative use</td>
<td>3.27</td>
<td>0</td>
<td>1.27</td>
</tr>
<tr>
<td>Times compulsive exercise</td>
<td>5.76</td>
<td>0</td>
<td>7.77</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.36</td>
<td></td>
<td>24.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.09</td>
<td>17.92</td>
<td>9.45</td>
<td>39.65</td>
<td>94.68</td>
<td></td>
</tr>
<tr>
<td>8.86</td>
<td>7.44</td>
<td>3.98</td>
<td>1.27</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In order to determine whether there were significant age differences between the three eating disorder groups, a one-way Analysis of Variance (ANOVA) was conducted. ANOVA, $F(2, 82) = 7.93, p = .001$, revealed significant age differences between groups. Post hoc analyses using the Tukey test indicated that the mean age was significantly higher in the BED group ($M = 41.50, SD = 11.35$) than in the BN group ($M = 29.44, SD = 9.53$) or the Purge group ($M = 30.00, SD = 10.68$). Due to the significant age differences that were found, age was entered as a covariate in the analyses that compared the three groups on various measures.

### 3.2.2 Comparison of eating disorder groups

#### 3.2.2.1 Comparison of groups on EDE-Q subscales

In order to determine whether there were significant differences between eating disorder groups on the four EDE-Q subscales as well as the global score, a one-way Multivariate Analysis of Covariance (MANCOVA), with age entered as a covariate, was conducted. MANCOVA revealed that there were significant differences among the three eating disorder groups on EDE-Q subscales (the dependent measures), Wilks’ Lambda $= .73, F(10, 154) = 2.67, p = .005$. The multivariate partial $\eta^2$ based on Wilks’ Lambda was .15. The Box’s Multivariate Test for homogeneity of Variance-Covariance was significant, $p = .002$, suggesting that the assumption may have not been met. Therefore, the results of this analysis should be interpreted cautiously.

Table 2 provides the unadjusted means and standard deviations on EDE-Q subscales and the global score for the three eating disorder groups.

Analyses of covariance (ANCOVA) on each EDE-Q subscale and the global score, were conducted as follow-up tests to the MANCOVA. The ANCOVA on the EDE-Q restraint subscale was significant, $F(2, 81) = 4.37, p = .016$, partial $\eta^2 = .10$. None of the other ANCOVAs for the EDE-Q subscales or the global score reached statistical significance.

Pairwise Bonferroni comparisons revealed that the Purge group scored significantly higher than the BED group on EDE-Q restraint, $p = .013$. No significant differences were found between the Purge and BN groups or the BED and BN groups on EDE-Q restraint.
Table 2

*Unadjusted Means and Standard Deviations on the EDE-Q and ASI for All Three Groups*

<table>
<thead>
<tr>
<th>Measures</th>
<th>BN group (n=45)</th>
<th>BED group (n=14)</th>
<th>Purge group (n=26)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>EDE-Q</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restraint</td>
<td>3.17</td>
<td>1.06</td>
<td>2.09</td>
</tr>
<tr>
<td>Eating Concern</td>
<td>3.66</td>
<td>1.37</td>
<td>2.71</td>
</tr>
<tr>
<td>Shape Concern</td>
<td>4.18</td>
<td>0.90</td>
<td>4.05</td>
</tr>
<tr>
<td>Weight Concern</td>
<td>4.28</td>
<td>1.19</td>
<td>3.99</td>
</tr>
<tr>
<td>Global</td>
<td>3.82</td>
<td>0.94</td>
<td>3.21</td>
</tr>
<tr>
<td>ASI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug Composite</td>
<td>0.11</td>
<td>0.11</td>
<td>0.11</td>
</tr>
<tr>
<td>Alcohol Comp.</td>
<td>0.45</td>
<td>0.27</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Note. The following abbreviation was used: Alcohol Comp. (Alcohol Composite).

3.2.2.2 Comparison of groups on substance use

In order to determine whether there were significant differences between eating disorder groups on the drug and alcohol composite scores of the ASI, a one-way MANCOVA, with age entered as a covariate, was conducted. MANCOVA revealed that there were significant differences among the three eating disorder groups on ASI composite scores, Wilks’ Lambda = .84, $F$ (4, 160) = 3.59, $p = .008$. The multivariate partial $\eta^2$ based on Wilks’ Lambda was .08. The Box’s Multivariate Test for homogeneity of Variance-Covariance was non-significant, $p = .94$. Table 2 provides the unadjusted means and standard deviations on ASI composite scores for all three groups.
ANCOVA on both ASI composite scores were conducted as follow-up tests to the MANCOVA. The ANCOVA on the alcohol composite score was significant, $F(2, 81) = 6.74, p = .002$, partial $\eta^2 = .14$. The ANCOVA for the drug composite score was non-significant.

Pairwise Bonferonni comparisons for the alcohol composite score revealed that the BN group scored significantly higher than the BED group ($p = .001$) and the Purge group also scored significantly higher than the BED group ($p = .014$). However, there were no significant differences on the alcohol composite score between BN and Purge groups.

In order to determine whether there were significant differences in the types of drugs abused in the past month, in each eating disorder group, a number of three way contingency tables and chi-square analyses (one for each substance) were conducted. Results revealed that participants in the BN, BED and Purge groups had experienced similar rates of abuse of various substances in the past month. The only significant difference between these groups was for alcohol use to the point of intoxication, Pearson $\chi^2(2, N = 85) = 1.21, p = .002$, Cramer’s $V = .38$. The proportion of participants in the BN, BED and purge subgroups who used alcohol to the point of intoxication differed significantly ($P = .73, .21, \text{and} .58$ respectively). The percentage of participants in each ED group who abused various substances in the past month, as well as the chi square values, are displayed in Table 3.
### Table 3

**Percentage of Participants Reporting Use of Various Substances in the Past 30 Days**

<table>
<thead>
<tr>
<th>Substance</th>
<th>BN group (n=45)</th>
<th>BED group (n=14)</th>
<th>Purge group (n=26)</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>82.2</td>
<td>64.3</td>
<td>76.9</td>
<td>1.99</td>
</tr>
<tr>
<td>No</td>
<td>17.8</td>
<td>35.7</td>
<td>23.1</td>
<td></td>
</tr>
<tr>
<td>Alcohol to Intoxication</td>
<td></td>
<td></td>
<td></td>
<td>1.21 *</td>
</tr>
<tr>
<td>Yes</td>
<td>73.3</td>
<td>21.4</td>
<td>57.7</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>26.7</td>
<td>78.6</td>
<td>42.3</td>
<td></td>
</tr>
<tr>
<td>Heroin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0</td>
<td>0</td>
<td>3.8</td>
<td>2.30</td>
</tr>
<tr>
<td>No</td>
<td>100</td>
<td>100</td>
<td>96.2</td>
<td></td>
</tr>
<tr>
<td>Opiates or Analgesics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4.4</td>
<td>0</td>
<td>11.5</td>
<td>2.55</td>
</tr>
<tr>
<td>No</td>
<td>95.6</td>
<td>100</td>
<td>88.5</td>
<td></td>
</tr>
<tr>
<td>Barbiturates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0</td>
<td>0</td>
<td>3.8</td>
<td>2.30</td>
</tr>
<tr>
<td>No</td>
<td>100</td>
<td>100</td>
<td>96.2</td>
<td></td>
</tr>
<tr>
<td>Sedatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11.1</td>
<td>35.7</td>
<td>23.1</td>
<td>4.67</td>
</tr>
<tr>
<td>Substance</td>
<td>Yes</td>
<td>No</td>
<td><em>p</em></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Sedatives</td>
<td>11.1</td>
<td>88.9</td>
<td>23.1</td>
<td></td>
</tr>
<tr>
<td>Cocaine</td>
<td>17.8</td>
<td>82.2</td>
<td>11.5</td>
<td></td>
</tr>
<tr>
<td>Amphetamines</td>
<td>6.7</td>
<td>93.3</td>
<td>19.2</td>
<td></td>
</tr>
<tr>
<td>Cannabis</td>
<td>35.6</td>
<td>64.4</td>
<td>30.8</td>
<td></td>
</tr>
<tr>
<td>Hallucinogens</td>
<td>6.7</td>
<td>93.3</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>Inhalants</td>
<td>0</td>
<td>100</td>
<td>7.7</td>
<td></td>
</tr>
<tr>
<td>Tobacco</td>
<td>62.2</td>
<td>37.8</td>
<td>69.2</td>
<td></td>
</tr>
<tr>
<td>Polydrug</td>
<td>60</td>
<td>40</td>
<td>61.5</td>
<td></td>
</tr>
</tbody>
</table>

Note. The *df* = 2 for each comparison, *p* < .01.
3.2.2.3 Comparison of groups on perfectionism

In order to compare the three eating disorder groups on each of the three perfectionism scales in this study (H&F MPS; Frost MPS and PSPS) three one-way MANCOVAs, with age entered as a covariate, were conducted. Results revealed no significant differences between the three eating disordered groups on any of the perfectionism scales. For the H & F MPS: Wilks’ Lambda= .92, $F(6, 158) = 1.07$, $p = .38$. The multivariate partial $\eta^2$ based on Wilks’ Lambda was .04. For the Frost MPS: Wilks’ Lambda=.82, $F(12, 152) = 1.35$, $p = .20$. The multivariate partial $\eta^2$ based on Wilks’ Lambda was .10. For the PSPS: Wilks’ Lambda= .89, $F(6, 158) = 1.57$, $p = .16$. The multivariate partial $\eta^2$ based on Wilks’ Lambda was .06. Table 4 provides the unadjusted means and standard deviations on the three perfectionism scales for all three ED groups.

3.2.2.4 Comparison of groups on shame

In order to compare the three eating disorder groups on shame, a one-way MANCOVA, with age entered as a covariate, was conducted. Results revealed no significant differences between the three eating disorder groups on experiences of shame (measured by the ESS), Wilks’ Lambda= .87, $F(8, 156) = 1.47$, $p = .17$. The multivariate partial $\eta^2$ based on Wilks’ Lambda was .07. Table 5 provides the unadjusted means and standard deviations on shame for all three ED groups.

3.2.2.5 Comparison of groups on childhood maltreatment

In order to compare the three eating disorder groups on childhood maltreatment, a one-way MANCOVA, with age entered as a covariate, was conducted. Results revealed no significant differences between the three eating disorder groups on experiences of childhood maltreatment (as measured by the CMHSR), Wilks’ Lambda= .97, $F(6, 158) = .35$, $p = .90$. The multivariate partial $\eta^2$ based on Wilks’ Lambda was .01. Table 5 provides the unadjusted means and standard deviations on maltreatment, for the three ED groups.
Table 4

*Unadjusted Means and Standard Deviations on Perfectionism Scales for All Three Groups*

<table>
<thead>
<tr>
<th>Measures</th>
<th>BN group (n=45)</th>
<th>BED group (n=14)</th>
<th>Purge group (n=26)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(M)</td>
<td>(SD)</td>
<td>(M)</td>
</tr>
<tr>
<td>H &amp; F MPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Oriented</td>
<td>79.09</td>
<td>19.36</td>
<td>68.15</td>
</tr>
<tr>
<td>Other-Oriented</td>
<td>60.20</td>
<td>12.54</td>
<td>55.20</td>
</tr>
<tr>
<td>Socially</td>
<td>65.82</td>
<td>14.66</td>
<td>65.16</td>
</tr>
<tr>
<td>PSPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perf. Self-Promo.</td>
<td>53.16</td>
<td>12.02</td>
<td>38.22</td>
</tr>
<tr>
<td>Nondisplay</td>
<td>53.02</td>
<td>12.48</td>
<td>40.86</td>
</tr>
<tr>
<td>Nondisclosure</td>
<td>31.27</td>
<td>9.11</td>
<td>24.79</td>
</tr>
<tr>
<td>Frost MPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td>32.38</td>
<td>7.25</td>
<td>28.75</td>
</tr>
<tr>
<td>PS</td>
<td>25.96</td>
<td>6.42</td>
<td>22.43</td>
</tr>
<tr>
<td>PE</td>
<td>17.47</td>
<td>5.07</td>
<td>14.43</td>
</tr>
<tr>
<td>PC</td>
<td>12.93</td>
<td>4.52</td>
<td>11.79</td>
</tr>
<tr>
<td>Doubts</td>
<td>13.16</td>
<td>3.17</td>
<td>11.29</td>
</tr>
<tr>
<td>Organization</td>
<td>22.56</td>
<td>5.85</td>
<td>20.07</td>
</tr>
</tbody>
</table>

*Note. The following abbreviations were used: H&F MPS (Hewitt and Flett Multidimensional Perfectionism Scale), Self-Oriented (Self-Oriented Perfectionism), Other-Oriented (Other-Oriented Perfectionism), Socially (Socially Prescribed Perfectionism), PSPS (Perfectionistic Self-Presentation Scale), Perf. Self-Promo. (Perfectionistic Self-Promotion), Nondisplay (Nondisplay of Imperfection), Nondisclosure (Nondisclosure of Imperfection), Frost MPS (Frost Multidimensional Perfectionism Scale), COM (Concern Over Mistakes), PS (Personal Standards), PE (Parental Expectations), PC (Parental Criticism), Doubts (Doubts About Actions).*
Table 5

Unadjusted Means and Standard Deviations for Shame and Maltreatment for All Three Groups

<table>
<thead>
<tr>
<th>Measures</th>
<th>BN group</th>
<th>BED group</th>
<th>Purge group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=45)</td>
<td>(n=14)</td>
<td>(n=26)</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>ESS</td>
<td>81.18</td>
<td>12.33</td>
<td>73.29</td>
</tr>
<tr>
<td>Total Shame</td>
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<tr>
<td>Characterological</td>
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<tr>
<td>Behavioural</td>
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<td>Bodily</td>
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<tr>
<td>Physical</td>
<td>14.09</td>
<td>5.01</td>
<td>12.64</td>
</tr>
</tbody>
</table>

Note. The following abbreviations were used: ESS (Experience of Shame Scale), CMHSR (Child Maltreatment History Self-Report), Physical (Physical Abuse), Sexual (Sexual Abuse), Emotional (Emotional Abuse).

3.3 Correlations Between Variables Within Each Eating Disorder Group

Relationships among study variables were examined within each eating disorder group by means of Pearson correlation analyses. In this section, correlations were considered without Bonferonni corrections due to: the small sample size of each ED group and because the correlational analyses were simply an intermediate step in choosing predictor variables for predictive models of eating and substance use disorder severity (hierarchical regression analyses). Hence, the main conclusions of this study were not based on the results of the correlations in this section. When examining the relationships between various variables and the EDE-Q, the decision was made to solely examine the EDE-Q global score, as this score represents a combined measure of all of the
EDE-Q subscales. This decision can be statistically justified as the internal reliability of the four EDE-Q subscales was quite high, Cronbach’s Alpha = 0.74.

3.3.1 Correlations between dimensions of perfectionism with types of childhood maltreatment and eating disorder and substance use severity

Correlations between perfectionism dimensions and: a. maltreatment b. eating disorder and substance use severity were examined due to existing literature suggesting a relationship between these variables. Furthermore, by examining the correlations between perfectionism dimensions and eating disorder and substance use severity, a decision could subsequently be made about which dimensions of perfectionism, if any, should be included in predictive models of eating and substance use disorder severity.

Table 6 displays the correlations between perfectionism dimensions and: a. maltreatment b. eating disorder and substance use severity, in the BN group. The following is a brief description of the significant findings. Of the Hewitt and Flett MPS dimensions: Self-oriented perfectionism was significantly positively correlated with the global EDE-Q score and other-oriented perfectionism was significantly negatively correlated with the alcohol composite score of the ASI. Of the PSPS dimensions: Perfectionistic self-promotion, nondisclosure of imperfection and nondisplay of imperfection were significantly positively correlated with the global EDE-Q score and nondisclosure of imperfection was also significantly negatively correlated with sexual abuse. Of the Frost MPS dimensions: Parental expectations and parental criticism were both significantly positively correlated with emotional abuse, parental criticism was also significantly positively correlated with physical abuse and organization showed a significant positive correlation with the drug composite score of the ASI.

Table 7 presents the correlations between perfectionism dimensions and: a. maltreatment b. eating disorder and substance use severity, in the BED group. The following highlights the significant findings. Of the Hewitt and Flett MPS dimensions: Self-oriented perfectionism, other-oriented perfectionism and socially prescribed perfectionism all showed significant positive correlations with emotional abuse and other-oriented perfectionism was also significantly positively correlated with sexual and physical abuse. Of the PSPS dimensions: All three dimensions were significantly positively correlated with emotional abuse, while
perfectionistic self-promotion and nondisplay of imperfection were also significantly positively correlated with physical abuse. Of the Frost MPS dimensions: Concern over mistakes was significantly positively correlated with physical abuse, emotional abuse and with the EDE-Q global score; parental expectations was significantly positively correlated with emotional abuse; parental criticism was significantly positively correlated with all three forms of abuse and doubts about actions was significantly positively correlated with both physical and emotional abuse.

Table 8 provides the correlations between perfectionism dimensions and: a. maltreatment b. eating disorder and substance use severity, in the Purge group. The following provides a brief description of the significant findings. Of the Hewitt and Flett MPS dimensions: Other-oriented perfectionism was significantly positively correlated with the global EDE-Q score. Of the PSPS dimensions: Nondisplay of imperfection was significantly positively correlated with the drug composite score of the ASI. Of the Frost MPS dimensions: Parental expectations and doubts about actions were significantly positively correlated with emotional abuse; parental criticism was significantly positively correlated with all three forms of abuse and organization was significantly positively correlated with physical abuse.
Table 6

*Correlations between Perfectionism Dimensions and: 1. Maltreatment 2. EDE-Q Global and ASI Composite Scores for the BN Group*

<table>
<thead>
<tr>
<th>Perfectionism Dimensions</th>
<th>Maltreatment Type</th>
<th>ED and SUD Measures</th>
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</tr>
<tr>
<td>Nondisclosure</td>
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<td>-.03</td>
</tr>
<tr>
<td>Nondisplay</td>
<td>-.09</td>
<td>-.05</td>
</tr>
<tr>
<td>COM</td>
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<td>.03</td>
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<tr>
<td>Personal Standards</td>
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<td>PC</td>
<td>.31</td>
<td>.32 *</td>
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<td>Doubts</td>
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<td>-.10</td>
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<td>Organization</td>
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</table>

*Note.* *p < .05, **p < .01, ***p < .001, two-tailed. The following abbreviations were used: ASI Drug (ASI Drug Composite), ASI Alcohol (ASI Alcohol Composite), Self-Oriented (Self-Oriented Perfectionism), Other-Oriented (Other-Oriented Perfectionism), Socially Prescribed (Socially Prescribed Perfectionism), Perf. Self-Promo. (Perfectionistic Self-Presentation), Nondisclosure (Nondisclosure of Imperfection), Nondisplay (Nondisplay of Imperfection), COM (Concern Over Mistakes), PE (Parental Expectations), PC (Parental Criticism), Doubts (Doubts About Actions).
Table 7

*Correlations between Perfectionism Dimensions and: 1. Maltreatment 2. EDE-Q Global and ASI Composite Scores for the BED Group*

<table>
<thead>
<tr>
<th>Perfectionism Dimension</th>
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</tr>
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<td>Nondisclosure</td>
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<td>.69 **</td>
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<td>Nondisplay</td>
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<td>.57 *</td>
<td>.60 *</td>
</tr>
<tr>
<td>COM</td>
<td>.34</td>
<td>.60 *</td>
<td>.70 **</td>
</tr>
<tr>
<td>Personal Standards</td>
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<td>.13</td>
</tr>
<tr>
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<td>.49</td>
<td>.70 **</td>
</tr>
<tr>
<td>PC</td>
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*Note. *p < .05, **p < .01, ***p < .001, two-tailed. The following abbreviations were used: ASI Drug (ASI Drug Composite), ASI Alcohol (ASI Alcohol Composite), Self-Oriented (Self-Oriented Perfectionism), Other-Oriented (Other-Oriented Perfectionism), Socially Prescribed (Socially Prescribed Perfectionism), Perf. Self-Promo. (Perfectionistic Self-Presentation), Nondisclosure (Nondisclosure of Imperfection), Nondisplay (Nondisplay of Imperfection), COM (Concern Over Mistakes), PE (Parental Expectations), PC (Parental Criticism), Doubts (Doubts About Actions).*
Table 8

Correlations between Perfectionism Dimensions and: 1. Maltreatment 2. EDE-Q Global and ASI Composite Scores for the Purge Group

<table>
<thead>
<tr>
<th>Perfectionism Dimension</th>
<th>Maltreatment Type</th>
<th>ED and SUD Measures</th>
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</thead>
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<td></td>
<td>Sexual</td>
<td>Physical</td>
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<td>Self-Oriented</td>
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<td>.09</td>
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<td>Personal Standards</td>
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<td>.38</td>
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<tr>
<td>PE</td>
<td>.23</td>
<td>.34</td>
</tr>
<tr>
<td>PC</td>
<td>.40 *</td>
<td>.58 **</td>
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<td>Doubts</td>
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<td>.02</td>
</tr>
<tr>
<td>Organization</td>
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<td>.60 ***</td>
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</tbody>
</table>

Note. *p < .05, **p < .01, ***p < .001, two-tailed. The following abbreviations were used: ASI Drug (ASI Drug Composite), ASI Alcohol (ASI Alcohol Composite), Self-Oriented (Self-Oriented Perfectionism), Other-Oriented (Other-Oriented Perfectionism), Socially Prescribed (Socially Prescribed Perfectionism), Perf. Self-Promo. (Perfectionistic Self-Presentation), Nondisclosure (Nondisclosure of Imperfection), Nondisplay (Nondisplay of Imperfection), COM (Concern Over Mistakes), PE (Parental Expectations), PC (Parental Criticism), Doubts (Doubts About Actions).
3.3.2 Correlations between dimensions of shame with perfectionism dimensions and eating disorder and substance use severity

Correlations between dimensions of shame and: a. perfectionism b. eating disorder and substance use severity were examined due to existing literature documenting relationships between these variables. Furthermore, by examining the correlations between shame dimensions and eating and substance use disorder severity, a decision could subsequently be made about which dimensions of shame, if any, to include in predictive models of eating disorder and substance use severity.

Table 9 displays the correlations between shame dimensions and: a. perfectionism dimensions b. eating disorder and substance use severity, in the BN group. The following is a brief description of the significant findings. Total shame and behavioural shame were both significantly positively correlated with: All three dimensions of the PSPS (perfectionistic self-promotion, nondisclosure of imperfection and nondisplay of imperfection) and with the Frost MPS dimensions of concern over mistakes and doubts about actions. Total shame also showed a significant positive correlation with the EDE-Q global score. Characterological shame was significantly positively correlated with: The Hewitt and Flett MPS dimension of socially prescribed perfectionism; the PSPS dimension of nondisclosure of imperfection and the Frost MPS dimension of doubts about actions. Bodily shame showed significant positive correlations with: The PSPS dimension of nondisclosure of imperfection and with the global EDE-Q score.

Table 10 shows the correlations between shame dimensions and: a. perfectionism dimensions b. eating disorder and substance use severity, in the BED group. The following highlights the significant findings. Total shame, behavioural shame and characterological shame were all significantly positively correlated with: The PSPS dimensions of perfectionistic self-promotion and nondisclosure of imperfection. Characterological shame also showed significant positive correlations with the drug composite score of the ASI. Bodily shame was significantly positively correlated with the PSPS dimension of nondisclosure of imperfection.

Table 11 presents the correlations between shame dimensions and: a. perfectionism dimensions b. eating disorder and substance use severity, in the Purge group. The following provides a description of the significant findings. Total shame and characterological shame were both significantly positively correlated with the Hewitt and Flett MPS dimension of socially
prescribed perfectionism. Total shame, characterological shame, behavioural shame and bodily shame were all significantly positively correlated with: The PSPS dimension of nondisplay of imperfection and the Frost MPS dimensions of parental criticism and doubts about actions. Total shame, characterological shame and behavioural shame were significantly positively correlated with the Frost MPS dimension of concern over mistakes. Bodily shame was also significantly positively correlated with the global EDE-Q score.
Table 9

Correlations between Shame Dimensions and: 1. Perfectionism Dimensions 2. EDE-Q Global and ASI Composite Scores for the BN Group

<table>
<thead>
<tr>
<th>Perfectionism Dimensions</th>
<th>Total Shame</th>
<th>Behavioural Shame</th>
<th>Character Shame</th>
<th>Bodily Shame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Oriented</td>
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<td>.26</td>
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<td>.08</td>
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<td>Socially Prescribed</td>
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<td>.20</td>
<td>.36 *</td>
<td>.03</td>
</tr>
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<td>Perf. Self- Promotion</td>
<td>.31 *</td>
<td>.47 ***</td>
<td>.16</td>
<td>.07</td>
</tr>
<tr>
<td>Nondisclosure of Imper.</td>
<td>.48 ***</td>
<td>.46 *</td>
<td>.36 *</td>
<td>.30 *</td>
</tr>
<tr>
<td>Nondisplay of Imper.</td>
<td>.43 **</td>
<td>.61 ****</td>
<td>.25</td>
<td>.10</td>
</tr>
<tr>
<td>Concern Over Mistakes</td>
<td>.43 **</td>
<td>.56 ****</td>
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<td>.18</td>
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<td>Parental Criticism</td>
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<td>.05</td>
<td>.08</td>
<td>.12</td>
</tr>
<tr>
<td>Doubts About Actions</td>
<td>.42 **</td>
<td>.42 **</td>
<td>.31 *</td>
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<td>Organization</td>
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<td>.05</td>
<td>-.05</td>
<td>-.28</td>
</tr>
</tbody>
</table>

Eating & Drug

| EDE-Q Global             | .31 *       | .28              | .20            | .35 *       |
| ASI Drug                 | .02         | .05              | .01            | -.07        |
| ASI Alcohol              | .10         | -.06             | .26            | -.18        |

Note. *p < .05, **p < .01, ***p < .001, ****p < .0001, two-tailed. The following abbreviations were used: Character Shame (Characterological Shame), ASI Drug (ASI Drug Composite), ASI Alcohol (ASI Alcohol Composite), Self-Oriented (Self-Oriented Perfectionism), Other-Oriented (Other-Oriented Perfectionism), Socially Prescribed (Socially Prescribed Perfectionism), Perf. (Perfectionism) and Imper. (Imperfection).
Table 10

Correlations between Shame Dimensions and: 1. Perfectionism Dimensions 2. EDE-Q Global and ASI Composite Scores for the BED Group

<table>
<thead>
<tr>
<th>Shame Dimensions</th>
<th>Total Shame</th>
<th>Behavioural Shame</th>
<th>Character Shame</th>
<th>Bodily Shame</th>
</tr>
</thead>
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<td>Perfectionism Dimensions</td>
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<td>.57 *</td>
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<td>Nondisclosure of Imper.</td>
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<td>.60 *</td>
<td>.56 *</td>
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<td>Doubts About Actions</td>
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<td>Organization</td>
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Note. *p < .05, two-tailed. The following abbreviations were used: Character Shame (Characterological Shame), ASI Drug (ASI Drug Composite), ASI Alcohol (ASI Alcohol Composite), Self-Oriented (Self-Oriented Perfectionism), Other-Oriented (Other-Oriented Perfectionism), Socially Prescribed (Socially Prescribed Perfectionism), Perf. (Perfectionism) and Imper. (Imperfection).
Table 11

Correlations between Shame Dimensions and: 1. Perfectionism Dimensions 2. EDE-Q Global and ASI Composite Scores for the Purge Group

<table>
<thead>
<tr>
<th></th>
<th>Total Shame</th>
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<th>Character Shame</th>
<th>Bodily Shame</th>
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<td>.69 ****</td>
</tr>
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<td>Doubts About Actions</td>
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Eating & Drug

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<td>.32</td>
<td>.14</td>
<td>.31</td>
<td>.55 **</td>
</tr>
<tr>
<td>ASI Drug</td>
<td>.30</td>
<td>.27</td>
<td>.28</td>
<td>.22</td>
</tr>
<tr>
<td>ASI Alcohol</td>
<td>-.10</td>
<td>-.05</td>
<td>-.06</td>
<td>-.26</td>
</tr>
</tbody>
</table>

Note. *p < .05, **p < .01, ***p < .001, ****p < .0001, two-tailed. The following abbreviations were used: Character Shame (Characterological Shame), ASI Drug (ASI Drug Composite), ASI Alcohol (ASI Alcohol Composite), Self-Oriented (Self-Oriented Perfectionism), Other-Oriented (Other-Oriented Perfectionism), Socially Prescribed (Socially Prescribed Perfectionism), Perf. (Perfectionism) and Imper. (Imperfection).
3.3.3 Correlations between types of childhood maltreatment with dimensions of shame and eating disorder and substance use severity

Correlations between forms of childhood maltreatment and: a. dimensions of shame b. eating and substance use disorder severity were examined due to existing literature documenting relationships between such variables. Furthermore, by examining the correlations between forms of childhood maltreatment and eating disorder and substance use severity, a decision could be made about which types of maltreatment, if any, to include in subsequent predictive models of eating disorder and substance use severity.

Tables 12 and 13 display the correlations between types of childhood maltreatment and: a. dimensions of shame b. eating disorder and substance use severity, for the BN and BED groups respectively. As is evident, no significant correlations were found between any types of childhood maltreatment and any shame dimensions, or between any forms of childhood maltreatment and eating disorder or substance use severity.

Table 14 displays the correlations between types of childhood maltreatment and: a. dimensions of shame b. eating disorder and substance use severity, for the Purge group. It is evident that the only significant correlation in the table was between childhood emotional abuse and bodily shame.
Table 12

*Correlations between Childhood Maltreatment Types and: 1. Shame Dimensions 2. EDE-Q Global and ASI Composite Scores for the BN Group*

<table>
<thead>
<tr>
<th>Maltreatment Type</th>
<th>Sexual Abuse</th>
<th>Physical Abuse</th>
<th>Emotional Abuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shame Dimensions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Shame</td>
<td>-.16</td>
<td>-.20</td>
<td>-.18</td>
</tr>
<tr>
<td>Behavioural Shame</td>
<td>-.25</td>
<td>-.16</td>
<td>-.28</td>
</tr>
<tr>
<td>Characterological Shame</td>
<td>-.14</td>
<td>-.18</td>
<td>-.12</td>
</tr>
<tr>
<td>Bodily Shame</td>
<td>.19</td>
<td>-.10</td>
<td>.01</td>
</tr>
<tr>
<td>Eating &amp; Drug</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDE-Q Global</td>
<td>-.02</td>
<td>-.04</td>
<td>-.20</td>
</tr>
<tr>
<td>ASI Drug</td>
<td>.14</td>
<td>.06</td>
<td>.06</td>
</tr>
<tr>
<td>ASI Alcohol</td>
<td>.18</td>
<td>-.02</td>
<td>.08</td>
</tr>
</tbody>
</table>

*Note.* The following abbreviations were used: ASI Drug (ASI Drug Composite), ASI Alcohol (ASI Alcohol Composite).
Table 13

Correlations between Maltreatment Types and: 1. Shame Dimensions 2. EDE-Q Global and ASI Composite Scores for the BED Group

<table>
<thead>
<tr>
<th>Maltreatment Type</th>
<th>Sexual Abuse</th>
<th>Physical Abuse</th>
<th>Emotional Abuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shame Dimensions</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total Shame</td>
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<td>.13</td>
<td>.27</td>
</tr>
<tr>
<td>Behavioural Shame</td>
<td>-.13</td>
<td>.07</td>
<td>.15</td>
</tr>
<tr>
<td>Characterological Shame</td>
<td>-.09</td>
<td>.12</td>
<td>.30</td>
</tr>
<tr>
<td>Bodily Shame</td>
<td>.11</td>
<td>.29</td>
<td>.38</td>
</tr>
<tr>
<td>Eating &amp; Drug</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDE-Q Global</td>
<td>-.05</td>
<td>.41</td>
<td>.37</td>
</tr>
<tr>
<td>ASI Drug</td>
<td>-.26</td>
<td>-.00</td>
<td>-.09</td>
</tr>
<tr>
<td>ASI Alcohol</td>
<td>-.19</td>
<td>-.13</td>
<td>-.33</td>
</tr>
</tbody>
</table>

Note. The following abbreviations were used: ASI Drug (ASI Drug Composite), ASI Alcohol (ASI Alcohol Composite).
Table 14

*Correlations between Maltreatment Types and: 1. Shame Dimensions 2. EDE-Q Global and ASI Composite Scores for the Purge Group*

<table>
<thead>
<tr>
<th>Maltreatment Type</th>
<th>Sexual Abuse</th>
<th>Physical Abuse</th>
<th>Emotional Abuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shame Dimensions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Shame</td>
<td>.21</td>
<td>.14</td>
<td>.35</td>
</tr>
<tr>
<td>Behavioural Shame</td>
<td>.18</td>
<td>.26</td>
<td>.31</td>
</tr>
<tr>
<td>Characterological Shame</td>
<td>.18</td>
<td>.02</td>
<td>.24</td>
</tr>
<tr>
<td>Bodily Shame</td>
<td>.22</td>
<td>.22</td>
<td>.61 *</td>
</tr>
<tr>
<td>Eating &amp; Drug</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDE-Q Global</td>
<td>.10</td>
<td>-.14</td>
<td>.31</td>
</tr>
<tr>
<td>ASI Drug</td>
<td>.28</td>
<td>-.13</td>
<td>-.02</td>
</tr>
<tr>
<td>ASI Alcohol</td>
<td>.18</td>
<td>.05</td>
<td>-.18</td>
</tr>
</tbody>
</table>

*Note. *p < .001, two-tailed. The following abbreviations were used: ASI Drug (ASI Drug Composite), ASI Alcohol (ASI Alcohol Composite).*

### 3.4 Developing Predictive Models

In the current study, we wished to construct three predictive models to predict the following outcomes: 1. EDE-Q Global; 2. ASI drug composite; 3. ASI alcohol composite. In order to do so, correlations that were significant in the above section, between various dimensions of perfectionism and shame, with the three outcome measures were selected. Before performing the regression analyses a decision had to be made about whether to include separate models for each ED group with each outcome; one model for each outcome, combining all three ED groups or to divide the ED groups in another way. In order to come to the aforementioned decision, correlations between predictors and criteria were compared between ED groups, using statistical z-tests. The results of these comparisons are discussed in the following subsection.
3.4.1 Comparison of correlations between eating disorder groups

In order to determine whether the relationships between dimensions of perfectionism and shame (predictors) with criteria (EDE-Q global, ASI drug and alcohol), were similar in the three ED groups (BN, BED and Purge), statistically significant correlation coefficients were compared by means of Fisher r-to-z transformations for pairs of groups. If the resulting z score was non-significant ($p > .05$), that indicated that the pair of groups being compared was similar with respect to the relationship being examined. If the resulting z score was significant ($p < .05$), that indicated that the pair of groups being compared was different with respect to the relationship under examination. Table 15 displays all correlation coefficients that were statistically significant between predictors (dimensions of perfectionism and shame) and criteria (EDE-Q global, ASI drug and alcohol), in any of the three ED groups. Table 15 also shows the results of the z tests.

As is evident from Table 15, BN and Purge groups significantly differed with respect to the correlations in each group between EDE-Q global and the following predictors: The PSPS dimensions of perfectionistic self-promotion, nondisclosure of imperfection. Further, BED and Purge groups significantly differed with respect to the correlations in each group between EDE-Q global and the Frost MPS dimension of concern over mistakes. Since BN and BED groups did not significantly differ in terms of the correlations among EDE-Q global and any predictors, but the relationships between EDE-Q global and some predictors in both of these groups significantly differed from the Purge group, the decision was made to combine the BN and BED groups for the subsequent predictive model of EDE-Q global and to construct a separate predictive model of EDE-Q global for the Purge group.

As can be seen in Table 15, BN and Purge groups significantly differed with respect to the correlations in each group between ASI alcohol and other-oriented perfectionism. However, the relationship between ASI alcohol and other-oriented perfectionism did not significantly differ between BN and BED groups. Hence, the decision was made to construct two separate predictive models of ASI alcohol: One for the BN and BED groups and a separate model for the Purge group.
Table 15

**Correlation Coefficients and z Scores**

<table>
<thead>
<tr>
<th>Correlation Between</th>
<th>BN group</th>
<th>BED group</th>
<th>Purge group</th>
<th>BN vs. BED</th>
<th>BN vs. Purge</th>
<th>BED vs. Purge</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDE-Q Global &amp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Oriented</td>
<td>.33 **</td>
<td>.23</td>
<td>-.00</td>
<td>.03</td>
<td>1.32</td>
<td>.64</td>
</tr>
<tr>
<td>Other-Oriented</td>
<td>.24</td>
<td>.31</td>
<td>.46 *</td>
<td>-.22</td>
<td>-.97</td>
<td>-.48</td>
</tr>
<tr>
<td>Concern</td>
<td>.21</td>
<td>.63 *</td>
<td>.00</td>
<td>-1.56</td>
<td>.82</td>
<td>2.02 *</td>
</tr>
<tr>
<td>Perf. Self-Promo.</td>
<td>.43 **</td>
<td>.53</td>
<td>-.07</td>
<td>-.38</td>
<td>2.04 *</td>
<td>1.80</td>
</tr>
<tr>
<td>Nondisclosure</td>
<td>.46 **</td>
<td>.50</td>
<td>-.03</td>
<td>-.15</td>
<td>2.03 *</td>
<td>1.58</td>
</tr>
<tr>
<td>Nondisplay</td>
<td>.33 *</td>
<td>.50</td>
<td>.20</td>
<td>-.61</td>
<td>.54</td>
<td>.95</td>
</tr>
<tr>
<td>Total Shame</td>
<td>.31 *</td>
<td>.36</td>
<td>.32</td>
<td>-.17</td>
<td>-.04</td>
<td>.12</td>
</tr>
<tr>
<td>Bodily Shame</td>
<td>.35 *</td>
<td>.39</td>
<td>.55 **</td>
<td>-.14</td>
<td>-.98</td>
<td>-.56</td>
</tr>
<tr>
<td>ASI Drug &amp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nondisplay</td>
<td>-.06</td>
<td>.16</td>
<td>.44 *</td>
<td>-.65</td>
<td>-2.05 *</td>
<td>-.85</td>
</tr>
<tr>
<td>Organization</td>
<td>.31 *</td>
<td>.36</td>
<td>-.29</td>
<td>-.17</td>
<td>2.39 *</td>
<td>1.84</td>
</tr>
<tr>
<td>Character Shame</td>
<td>.01</td>
<td>.58 *</td>
<td>.28</td>
<td>-1.93 *</td>
<td>-1.07</td>
<td>1.02</td>
</tr>
<tr>
<td>ASI Alcohol &amp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other-Oriented</td>
<td>-.38 *</td>
<td>-.35</td>
<td>.12</td>
<td>-.10</td>
<td>-2.01 *</td>
<td>-1.33</td>
</tr>
</tbody>
</table>

*Note. *p < .05, **p < .01, two-tailed. The following abbreviations were used: Self-Oriented (Self-Oriented Perfectionism), Other-Oriented (Other-Oriented Perfectionism), Concern (Concern Over Mistakes), Perf. Self-Promo. (Perfectionistic Self-Promotion), Nondisclosure (Nondisclosure of Imperfection), Nondisplay (Nondisplay of Imperfection), ASI Drug (ASI Drug Composite), Character Shame (Characterological Shame), ASI Alcohol (ASI Alcohol Composite).
As is evident from the above table, BN and Purge groups significantly differed with respect to the correlations in each group between ASI drug and the following predictors: The PSPS dimension of non-display of imperfection and the Frost MPS dimension of organization. BN and BED groups significantly differed in terms of the relationships in each group between ASI drug and characterological shame. In order to maintain consistency in models of all three criteria (EDE-Q global, ASI alcohol and ASI drug), the decision was made to construct two separate predictive models of ASI drug: One for the BN and BED groups and a separate model for the Purge group. In order to take into account that the relationship between ASI drug and characterological shame differed for BN and BED groups, an interaction term was included in the predictive model of ASI drug composite for this group.

### 3.4.2 Correlations among predictors and outcomes in the two new eating disorder groups: 1. BN and BED group 2. Purge group

As explained in the previous section, the decision was made to construct two separate predictive models for each of the three outcome variables: One predictive model for the BN and BED groups combined (from hereon referred to as BN + BED group), n=59, and a separate predictive model for the Purge group, n=26. Before proceeding with the regression analyses, correlations among predictors and outcomes in the two new groups were examined in order to select predictors for each of the models. Those predictors with the strongest correlations with outcome measures and the weakest correlations with other predictors could then be selected for the regression analyses.

Correlations among various predictors and the EDE-Q global were examined in the BN+BED and Purge Groups. Tables 16 and 17 display these results for the BN+BED and Purge groups respectively. As is evident from Table 16, perfectionistic self-promotion and bodily shame were the two predictors that had the strongest significant correlations with EDE-Q global, and the weakest, non-significant correlation with each other. Hence, these two variables were selected for use in the predictive model of EDE-Q global, for the BN+BED group. As is evident from Table 17, other-oriented perfectionism and bodily shame were the two predictors with significant correlations with EDE-Q global, and weak, non-significant correlations with each other. Hence, these two variables were selected for use in the subsequent predictive model of EDE-Q global for the Purge group.
Table 16

*Correlations among Variables from Which Predictors Were Chosen for Regression Model of EDE-Q Global in the BN+BED Group*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. EDE-Q</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. SOP</td>
<td>.35 **</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. OOP</td>
<td>.29 *</td>
<td>.60 ****</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. COM</td>
<td>.34 **</td>
<td>.65 ****</td>
<td>.54 ****</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Perf. Self</td>
<td>.50 ****</td>
<td>.70 ****</td>
<td>.51 ****</td>
<td>.74 ****</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Nondisclosure</td>
<td>.50 ****</td>
<td>.49 ****</td>
<td>.40 **</td>
<td>.69 ****</td>
<td>.72 ****</td>
<td>.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Nondisplay</td>
<td>.42 ***</td>
<td>.52 ****</td>
<td>.34 **</td>
<td>.68 ****</td>
<td>.80 ****</td>
<td>.74 ****</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Total Shame</td>
<td>.35 **</td>
<td>.17</td>
<td>.08</td>
<td>.46 ****</td>
<td>.43 ***</td>
<td>.55 ****</td>
<td>.45 ****</td>
<td></td>
</tr>
<tr>
<td>9. Bodily Shame</td>
<td>.36 **</td>
<td>.05</td>
<td>.15</td>
<td>.24</td>
<td>.18</td>
<td>.37 **</td>
<td>.18</td>
<td>.56 ****</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, **p < .01, ***p < .001, ****p < .0001, two-tailed.* The following abbreviations were used: EDE-Q (EDE-Q Global), SOP (Self-Oriented Perfectionism), OOP (Other-Oriented Perfectionism), COM (Concern Over Mistakes), Perf Self (Perfectionistic Self-Promotion), Nondisclosure (Nondisclosure of Imperfection), Nondisplay (Nondisplay of Imperfection).
Table 17

*Correlations among Variables from Which Predictors Were Chosen for Regression Model of EDE-Q Global in the Purge Group*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. EDE-Q</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. SOP</td>
<td>-.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. OOP</td>
<td>.46*</td>
<td>.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. COM</td>
<td>.00</td>
<td>.56 **</td>
<td>.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Perf. Self</td>
<td>-.07</td>
<td>.68 ****</td>
<td>.09</td>
<td>.55 **</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Nondisclosure</td>
<td>-.03</td>
<td>.37</td>
<td>-.18</td>
<td>.33</td>
<td>.63 ***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Nondisplay</td>
<td>.20</td>
<td>.50 **</td>
<td>.18</td>
<td>.68 ****</td>
<td>.61 ***</td>
<td>.51 **</td>
<td>.33</td>
<td></td>
</tr>
<tr>
<td>8. Total Shame</td>
<td>.32</td>
<td>.02</td>
<td>-.20</td>
<td>.46 *</td>
<td>.21</td>
<td>.27</td>
<td>.58 **</td>
<td></td>
</tr>
<tr>
<td>9. Bodily Shame</td>
<td>.55 **</td>
<td>.10</td>
<td>.07</td>
<td>.27</td>
<td>.15</td>
<td>.29</td>
<td>.50 **</td>
<td>.72 ****</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, **p < .01, ***p < .001, ****p < .0001, two-tailed. The following abbreviations were used: EDE-Q (EDE-Q Global), SOP (Self-Oriented Perfectionism), OOP (Other-Oriented Perfectionism), COM (Concern Over Mistakes), Perf Self (Perfectionistic Self-Promotion), Nondisclosure (Nondisclosure of Imperfection), Nondisplay (Nondisplay of Imperfection).
Correlations among various predictors and the ASI drug composite score were examined in the BN+BED and Purge Groups. Tables 18 and 19 display these results for the BN+BED and Purge Groups respectively. As is evident from Table 18, characterological shame emerged as the only variable that was significantly correlated with outcome (ASI drug composite), for the BN+BED group. However, as mentioned in subsection 3.4.1, because BN and BED groups differed significantly in their relationships between characterological shame and ASI drug composite (see Table 15), an interaction term was included in the subsequent regression model. As can be seen in Table 19, the only variable that was significantly correlated with ASI drug composite for the Purge group was nondisplay of imperfection, which was the variable, selected for use in the subsequent predictive model of ASI drug composite for this group.

Table 18

| Correlations among Variables from Which Predictors Were Chosen for Regression Model of ASI Drug Composite in the BN+BED Group |
|---|---|---|
| 1. ASI Drug Composite | 2. Nondisplay of Imperfection | 3. Organization |
| 2. Nondisplay of Imperfection | .01 | |
| 3. Organization | .14 | .01 |
| 4. Characterological Shame | .20 | .32 * | -.09 |

Note. *p < .05, two-tailed.

The correlations between other-oriented perfectionism and ASI alcohol composite score were computed in BN+BED and Purge Groups, as this was the only variable that was significantly correlated with alcohol composite score. In the BN+BED group the correlation between other-oriented perfectionism and ASI alcohol composite was statistically significant, \( r = -.26, p < .05 \). Hence, other-oriented perfectionism was selected as a predictor in the subsequent predictive model of ASI alcohol composite, for the BN+BED group. In the Purge group the correlation between other-oriented perfectionism and alcohol composite score was not statistically significant, \( r = .12, p > .05 \). Since no variables were significantly correlated with ASI alcohol composite for the Purge group, no predictive model of ASI alcohol composite for this group could be developed.
Table 19

*Correlations among Variables from Which Predictors Were Chosen for Regression Model of ASI Drug Composite in the Purge Group*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ASI Drug Composite</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Nondisplay of Imperfection</td>
<td>.44 *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Organization</td>
<td>-.24</td>
<td>-.12</td>
<td></td>
</tr>
<tr>
<td>4. Characterological Shame</td>
<td>.28</td>
<td>.53 **</td>
<td>-.33</td>
</tr>
</tbody>
</table>

*Note.* *p* < .05, **p** < .01, two-tailed.

### 3.4.3 Regression analyses

The following subsections present the results of regression analyses that were performed to predict disordered eating behaviours and attitudes (EDE-Q global) and substance use severity (ASI drug and alcohol composites) that had occurred in both ED groups in the past month.

#### 3.4.3.1 Predictive models of EDE-Q global

In order to predict disordered eating behaviours and attitudes (as measured by EDE-Q global) that had occurred in the past 28 days in each of the two ED groups, hierarchical regression analyses were performed using the predictors that had been selected in the previous subsection (3.4.2).

In the BN+BED group, the PSPS dimension of perfectionistic self-promotion was entered as Step 1 in the equation. The results of this analysis indicated that perfectionistic self-promotion accounted for a significant amount of variability in EDE-Q global, $R^2 = .25$, adjusted $R^2 = .24$, $F(1, 57) = 19.32, p < .0001$. The ESS dimension of bodily shame was entered as Step 2 in the equation, and was found to increase the variance in EDE-Q global explained in Step 1 by approximately 8%, $R^2$ change = .08, $F(1, 56) = 6.26, p < .05$. The results of the regression with both variables as predictors indicated that the linear combination of perfectionistic self-promotion and bodily shame accounted for a significant amount of the variance in EDE-Q global, $R^2 = .33$, adjusted $R^2 = .30$, $F(2, 56) = 13.68, p < .0001$. 
In the Purge group, the MPS dimension of other-oriented perfectionism was entered as Step 1 in the equation. The results of this analysis indicated that other-oriented perfectionism accounted for a significant amount of the variability in EDE-Q global, $R^2 = .21$, adjusted $R^2 = .18$, $F(1, 24) = 6.42, p < .05$. The ESS dimension of bodily shame was entered as Step 2 in the equation, and was found to predict EDE-Q global over and above other-oriented perfectionism, $R^2$ change $= .27$, $F(1, 23) = 11.73, p < .01$. The results of the regression with both variables as predictors indicated that the linear combination of other-oriented perfectionism and bodily shame accounted for a significant amount of the variance in EDE-Q global, $R^2 = .48$, adjusted $R^2 = .43$, $F(2, 23) = 10.50, p < .001$.

3.4.3.2 Predictive models of ASI drug composite

In order to predict the severity of drug use in the past 30 days (as measured by ASI drug composite) in each of the two ED groups, regression analyses were performed using the predictors that had been selected in the previous subsection (3.4.2).

In the BN+BED group, a hierarchical regression analysis was performed to predict ASI drug composite. The ESS dimension of characterological shame was entered as Step 1 in the equation and failed to explain a significant amount of the variance in ASI drug composite, $R^2 = .04$, adjusted $R^2 = .02$, $F(1, 57) = 2.32, p = .13$. In order to take into account the fact that BN and BED groups experienced significantly differing relationships between characterological shame and ASI drug composite, dummy variables were constructed for BN and BED groups in order to compare them within the regression model. Accordingly, the dummy variable for the BED group and an interaction term to account for the interaction between characterological shame and group (BN or BED) were both included in Step 2 of the model. However, the interaction term and the dummy variable failed to significantly increase the prediction of the variance in ASI drug composite explained in Step 1, $R^2$ change $= .06$, $F(2, 55) = 1.76, p = .18$.

In the Purge group only one variable, the PSPS dimension of nondisplay of imperfection was significantly correlated with ASI drug composite. Hence, a bivariate linear regression analysis was performed. The regression was found to be significant, $R^2 = .20$, adjusted $R^2 = .16$, $F(1, 24) = 5.86, p < .05$. Thus, 16% of the variance in severity of drug use over the past 30 days (ASI drug composite) could be accounted for by nondisplay of imperfection.
3.4.3.3 Predictive models of ASI alcohol composite

In order to predict the severity of alcohol use over the past 30 days (as measured by ASI alcohol composite) in the BN+BED group a bivariate linear regression analysis was performed, as only one variable, the Hewitt and Flett MPS dimension of other-oriented perfectionism, was significantly negatively correlated with ASI alcohol composite. Other-oriented perfectionism accounted for approximately 5% of the variance in ASI alcohol composite, \( R^2 = .07 \), adjusted \( R^2 = .05 \), \( F(1, 57) = 4.14, p < .05 \).

Since, in the Purge group there were no significant correlations between any variables and ASI alcohol composite, no regression analysis could be performed in this group. Hence, none of the variables in this study could significantly predict ASI alcohol composite in the Purge group.

3.5 Differences Between the Current Samples and Normative Samples on Outcome Measures: Eating Disorder and Substance Use Severity

For consistency purposes, the BN+BED group were combined for the analyses in this section while the Purge group was considered separately. Due to the large number of comparisons to follow in this section, a Bonferonni correction (\( p = .05/7 \)) was applied and an alpha level of \( p < .007 \) was used to evaluate the results. Hence, any difference that was found to be significant between an alpha level of .05 and .007 was considered to be marginal.

3.5.1 Differences on EDE-Q subscales between the clinical samples (BN+BED and Purge groups) and a normative sample

Independent samples t-tests were conducted to assess whether there were significant differences on the four subscales of the EDE-Q and the global score between participants in the current clinical samples (BN+BED group and Purge group) compared to a normative sample. The normative sample was comprised of 241 females from the community, obtained from a study by Fairburn & Beglin (1994).

As is evident from Tables 20 and 21, all EDE-Q subscale scores as well as the global score were significantly elevated in the current samples (BN+BED and Purge groups) of female patients with comorbid EDs and SUDs (\( p < .0001 \)), as compared to community females without EDs or SUDs.
3.5.2 Differences on drug and alcohol composite scores of the ASI between the clinical samples (BN+BED and Purge groups) and a normative sample

Average scores on the ASI alcohol and drug composite scores for 4525 females from the community obtained from a study by Weisner, McLellan and Hunkeler (2000), and for BN+BED and Purge groups of participants are displayed in Tables 20 and 21. Independent samples t-tests revealed that alcohol and drug composite scores were significantly elevated in the current samples (BN+BED and Purge groups) of female patients with comorbid EDs and SUDs ($p < .0001$), as compared to female community members without EDs or SUDs.

Table 20

*T-Test Comparisons of Mean Differences for EDE-Q Subscales and ASI Composite Scores between the BN+BED Group and Normative Samples*

<table>
<thead>
<tr>
<th>Measures</th>
<th>BN+BED group</th>
<th>Normative Samples</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
<td>$t$ value</td>
</tr>
<tr>
<td>EDE-Q</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restraint</td>
<td>2.91</td>
<td>1.20</td>
<td>1.25</td>
<td>1.32</td>
<td>8.81</td>
</tr>
<tr>
<td>Eating Concern</td>
<td>3.43</td>
<td>1.55</td>
<td>0.62</td>
<td>0.86</td>
<td>18.76</td>
</tr>
<tr>
<td>Shape Concern</td>
<td>4.15</td>
<td>0.95</td>
<td>2.15</td>
<td>1.60</td>
<td>9.21</td>
</tr>
<tr>
<td>Weight Concern</td>
<td>4.21</td>
<td>1.13</td>
<td>1.59</td>
<td>1.37</td>
<td>13.60</td>
</tr>
<tr>
<td>Global</td>
<td>3.68</td>
<td>0.99</td>
<td>1.55</td>
<td>1.21</td>
<td>12.53</td>
</tr>
<tr>
<td>ASI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug Composite</td>
<td>0.11</td>
<td>0.11</td>
<td>0.01</td>
<td>0.03</td>
<td>27.62</td>
</tr>
<tr>
<td>Alcohol Composite</td>
<td>0.38</td>
<td>0.28</td>
<td>0.10</td>
<td>0.07</td>
<td>27.98</td>
</tr>
</tbody>
</table>

*Note. $p < .0001$. There were 59 female participants in the BN+BED group. The normative samples consisted of 241 young women from the community for the EDE-Q (see Fairburn & Beglin, 1994) and 4525 female community members for the ASI (see Weisner, McLellan & Hunkeler, 2000).*
Table 21

*T-Test Comparisons of Mean Differences for EDE-Q Subscales and ASI Composite Scores between the Purge Group and Normative Samples*

<table>
<thead>
<tr>
<th>Measures</th>
<th>Purge group</th>
<th>Normative Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>EDE-Q</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restraint</td>
<td>3.52</td>
<td>1.07</td>
</tr>
<tr>
<td>Eating Concern</td>
<td>3.13</td>
<td>1.34</td>
</tr>
<tr>
<td>Shape Concern</td>
<td>4.51</td>
<td>0.77</td>
</tr>
<tr>
<td>Weight Concern</td>
<td>4.45</td>
<td>0.95</td>
</tr>
<tr>
<td>Global</td>
<td>3.91</td>
<td>0.83</td>
</tr>
<tr>
<td>ASI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug Composite</td>
<td>0.13</td>
<td>0.12</td>
</tr>
<tr>
<td>Alcohol Composite</td>
<td>0.40</td>
<td>0.27</td>
</tr>
</tbody>
</table>

*Note.* $p < .0001$. There were 26 female participants in the Purge group. The normative samples consisted of 241 young women from the community for the EDE-Q (see Fairburn & Beglin, 1994) and 4525 female community members for the ASI (see Weisner, McLellan & Hunkeler, 2000).

3.6 Differences Between the Current Samples and Normative Samples on Predictors: Perfectionism, Shame and Childhood Maltreatment

For consistency purposes, the BN+BED group were combined for the analyses in this section while the Purge group was considered separately. Due to the large number of comparisons to follow in this section, a Bonferonni correction ($p = .05/16$) was applied and an alpha level of $p < .003$ was used to evaluate the results. Hence, any difference that was found to be significant between an alpha level of .05 and .003 was considered to be marginal.
3.6.1 Differences in perfectionism between the clinical samples (BN+BED and Purge groups) and normative samples

3.6.1.1 Differences on the Hewitt and Flett MPS

Independent samples t-tests were conducted to test whether there were significant differences on Hewitt and Flett multidimensional perfectionism between participants in the current clinical samples (BN+BED group and Purge group) compared to a normative sample. The normative sample was comprised of 1350 female community members who were on average 24.44 (SD = 10.41) years old. This data was obtained from the MPS manual (Hewitt & Flett, 2004).

As can be seen in Table 22, significant differences were found between the BN+BED group and the normative sample on self-oriented and socially prescribed perfectionism, with the comorbid group (BN+BED group) scoring significantly higher (p < .0001) than the normative sample on both of these dimensions of perfectionism. However, no significant differences were found between the two groups on other-oriented perfectionism.

As is displayed in Table 23, the Purge group experienced significantly higher levels of self-oriented (p < .001) and socially prescribed perfectionism (p < .0001) than the normative sample. However, no significant differences were found between these groups on other-oriented perfectionism.

3.6.1.2 Differences on the PSPS

Independent samples t-tests were conducted to evaluate whether there were significant differences on the dimensions of perfectionistic self-presentation, between participants in the current clinical samples (BN+BED group and Purge group) compared to a normative sample. The normative sample chosen for comparison purposes was comprised of 501 community participants (mean age = 29.14; SD = 10.37) obtained from a paper by Hewitt et al. (2003) that initially introduced and described the PSPS. The normative sample was comprised of males and females, and was selected for comparison purposes because of the lack of published norms for solely female community samples on this scale.

As can be seen in Tables 22 and 23, all three dimensions of perfectionistic self-presentation were significantly elevated (p < .0001) in the BN+BED group and the Purge group as compared to the normative sample.
3.6.1.3 Differences on the Frost MPS

Independent samples t-tests were conducted to evaluate whether there were significant differences on Frost multidimensional perfectionism between participants in the current clinical samples (BN+BED group and Purge group) compared to a normative sample. The normative sample was comprised of 261 university students (mean age = 19.1; range: 17-50), obtained from a study by Enns, Cox, Sareen and Freeman (2001), because unfortunately, in their original paper on the MPS, Frost et al. (1990) did not provide information about means. This sample of male and female students was chosen for comparison purposes due to a lack of published norms for the subscales of the Frost MPS for solely female or community samples.

As can be seen in Table 22, the BN+BED group experienced significantly higher levels of: concern over mistakes (p < .0001) and parental criticism (p < .0001) and marginally higher levels of: parental expectations (p < .01), personal standards (p < .05) and doubts about actions (p < .05) than the normative sample. However, no significant difference was found between the two groups on organization.

As is evident from Table 23, the Purge group experienced significantly higher levels of: concern over mistakes (p < .0001), parental criticism (p < .0001) and doubts about actions (p < .001) than the normative sample. However, there were no significant differences between the Purge group and the normative sample on personal standards, parental expectations or organization.

3.6.2 Differences in shame between the clinical samples (BN+BED and Purge groups) and a normative sample

Independent samples t-tests were conducted to evaluate whether there were significant differences on the three dimensions of shame and total shame (on the ESS) between participants in the current clinical samples (BN+BED group and Purge group) compared to a normative sample. The normative sample was comprised of 163 university students who were on average 23.9 (SD = 6.2; range: 19–48) years old, obtained from the paper by Andrews, Qian, & Valentine (2002), that originally described the ESS. This sample was comprised of male and female (although 82% were females) students and was chosen for comparison purposes because of the absence of published norms for solely female or community samples for this scale.
As is evident from Tables 22 and 23, compared to norms, the clinical samples (BN+BED group and Purge group) experienced significant elevations \((p < .0001)\) on all three dimensions of shame as well as on the total shame score.

### 3.6.3 Differences in childhood maltreatment between the clinical samples (BN+BED and Purge groups) and a normative sample

Since no comparable normative data were available regarding mean scores on the subscales of CMHSR, the following will just provide a description of the prevalence of each type of childhood abuse in the current samples (BN+BED group and Purge group) and in a sample of community women ranging in age from 25-44, obtained from the Ontario Health Supplement reported on by MacMillan et al. (1997) that originally described the CMHSR.

In the BN+BED group: 81.4% reported having experienced childhood physical abuse \((M = 5.08; SD = 5.39)\), 52.5% had experienced childhood sexual abuse \((M = 2.03; SD = 3.05)\) and 96.6% had experienced childhood emotional abuse \((M = 13.75; SD = 5.76)\). In the Purge group: 84.6% reported having experienced childhood physical abuse \((M = 5.50; SD = 5.55)\), 42.3% had experienced childhood sexual abuse \((M = 1.62; SD = 2.94)\) and 100% had experienced childhood emotional abuse \((M = 14.46; SD = 6.00)\).

In the comparison normative sample, 22.9% reported having experienced childhood physical abuse and 15.3% had experienced childhood sexual abuse. Information on the prevalence of emotional abuse was unavailable for the normative sample.
Table 22

*T-Test Comparisons of Mean Differences for Perfectionism and Shame between the BN+BED Group and Normative Samples*

<table>
<thead>
<tr>
<th>Measures</th>
<th>BN+BED group</th>
<th>Normative Samples</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>H &amp; F MPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Oriented</td>
<td>76.49</td>
<td>20.16</td>
<td>67.11</td>
</tr>
<tr>
<td>Other-Oriented</td>
<td>59.01</td>
<td>12.18</td>
<td>56.22</td>
</tr>
<tr>
<td>Socially Prescribed</td>
<td>65.66</td>
<td>14.98</td>
<td>53.73</td>
</tr>
<tr>
<td>PSPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perf. Self Promotion</td>
<td>49.61</td>
<td>14.24</td>
<td>38.86</td>
</tr>
<tr>
<td>Nondisplay of Imper.</td>
<td>50.14</td>
<td>15.02</td>
<td>41.31</td>
</tr>
<tr>
<td>Nondisclosure</td>
<td>29.73</td>
<td>10.25</td>
<td>22.41</td>
</tr>
<tr>
<td>Frost MPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td>31.52</td>
<td>8.31</td>
<td>22.10</td>
</tr>
<tr>
<td>PS</td>
<td>25.12</td>
<td>6.49</td>
<td>23.40</td>
</tr>
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<td>PE</td>
<td>16.75</td>
<td>5.49</td>
<td>14.90</td>
</tr>
<tr>
<td>PC</td>
<td>12.66</td>
<td>4.95</td>
<td>8.90</td>
</tr>
<tr>
<td>Doubts</td>
<td>12.71</td>
<td>3.68</td>
<td>11.50</td>
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<tr>
<td>Organization</td>
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<td>22.60</td>
</tr>
<tr>
<td>ESS</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total Shame</td>
<td>79.31</td>
<td>14.85</td>
<td>55.58</td>
</tr>
<tr>
<td>Characterological</td>
<td>36.14</td>
<td>9.16</td>
<td>24.43</td>
</tr>
<tr>
<td>Behavioural</td>
<td>29.19</td>
<td>5.66</td>
<td>21.25</td>
</tr>
<tr>
<td>Bodily</td>
<td>13.98</td>
<td>2.39</td>
<td>9.82</td>
</tr>
</tbody>
</table>

*Note. *p<.05, **p<.01, ***p<.001, ****p<.0001. However, with the Bonferroni correction the alpha level was .003, therefore anything found to be significant at a p< .05 or p<.01 level was*
considered marginal. Higher scores reflect greater perfectionism and shame. The normative samples were 1350 female community participants for the Hewitt and Flett MPS (see Hewitt & Flett, 2004, MPS manual), 501 community participants for the PSPS (from Hewitt et al., 2003), 261 university students for the Frost MPS (from Enns, Cox, Sareen, & Freeman, 2001), and 163 university students for the Experience of Shame Scale (from Andrews, Qian, & Valentine, 2002). The following abbreviations were used: Self-Oriented (Self-Oriented Perfectionism), Other-Oriented (Other-Oriented Perfectionism), Socially Prescribed (Socially Prescribed Perfectionism), Perf. (Perfectionistic), Imper. (Imperfection), Nondisclosure (Nondisclosure of Imperfection), COM (Concern Over Mistakes), PS (Personal Standards), PE (Parental Expectations), PC (Parental Criticism), Doubts (Doubts About Actions).
Table 23
*T-Test Comparisons of Mean Differences for Perfectionism and Shame between the Purge Group and Normative Samples*

<table>
<thead>
<tr>
<th>Measures</th>
<th>Purge group</th>
<th>Normative Samples</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>H &amp; F MPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Oriented</td>
<td>77.13</td>
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<td>67.11</td>
</tr>
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<td>Other-Oriented</td>
<td>55.50</td>
<td>11.63</td>
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<td>Socially Prescribed</td>
<td>66.85</td>
<td>14.56</td>
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<tr>
<td>Perf. Self Promotion</td>
<td>52.50</td>
<td>10.78</td>
<td>38.86</td>
</tr>
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<td>Nondisplay of Imper.</td>
<td>51.95</td>
<td>11.39</td>
<td>41.31</td>
</tr>
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<td>Nondisclosure</td>
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<td>Frost MPS</td>
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</tr>
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<td>COM</td>
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<td>5.93</td>
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<td>Doubts</td>
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<td>Organization</td>
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<tr>
<td>Total Shame</td>
<td>83.31</td>
<td>13.10</td>
<td>55.58</td>
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<tr>
<td>Characterological</td>
<td>38.46</td>
<td>7.85</td>
<td>24.43</td>
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<tr>
<td>Behavioural</td>
<td>30.73</td>
<td>4.61</td>
<td>21.25</td>
</tr>
<tr>
<td>Bodily</td>
<td>14.12</td>
<td>2.05</td>
<td>9.82</td>
</tr>
</tbody>
</table>

*Note. *p* <.05, **p** <.01, ***p*** <.001, ****p*** <.0001. However, with the Bonferroni correction the alpha level was .003, therefore anything found to be significant at a *p* < .05 or *p* < .01 level was
considered marginal. Higher scores reflect greater perfectionism and shame. The normative samples were 1350 female community participants for the Hewitt and Flett MPS (see Hewitt & Flett, 2004, MPS manual), 501 community participants for the PSPS (from Hewitt et al., 2003), 261 university students for the Frost MPS (from Enns, Cox, Sareen, & Freeman, 2001), and 163 university students for the Experience of Shame Scale (from Andrews, Qian, & Valentine, 2002). The following abbreviations were used: Self-Oriented (Self-Oriented Perfectionism), Other-Oriented (Other-Oriented Perfectionism), Socially Prescribed (Socially Prescribed Perfectionism), Perf. (Perfectionistic), Imper. (Imperfection), Nondisclosure (Nondisclosure of Imperfection), COM (Concern Over Mistakes), PS (Personal Standards), PE (Parental Expectations), PC (Parental Criticism), Doubts (Doubts About Actions).
Chapter 4

4 Discussion

Existing research has documented high rates of comorbidity between eating and substance use disorders and various theories have been proposed to explain the nature of this relationship. However, the current study is the first, to our knowledge, to attempt to understand the nature of comorbid eating and substance use disorders by examining experiences of childhood maltreatment, perfectionism and shame as possible contributing factors, together in the same study. The current study attempted to answer the following research questions: 1. What relationships, if any, exist between dimensions of perfectionism, shame and maltreatment in a clinical sample of women with comorbid EDs and SUDs? 2. Which dimensions of perfectionism, shame and maltreatment are related to eating disordered behaviours and attitudes and substance use severity among women with comorbid EDs and SUDs? Following from this question, the current study aimed to develop predictive models of: a. eating disordered behaviours and attitudes, b. drug use severity, c. alcohol use severity. 3. How does the current clinical sample compare to normative samples on eating and substance use disorder measures (EDE-Q and ASI)? 4. How does the current clinical sample compare to normative samples on experiences of perfectionism, shame and maltreatment? In this section understandings and explanations of the findings will be discussed.

4.1 Description of Participants

4.1.1 Group composition

Upon exploring the specific EDs experienced by study participants, it was found that more than half of the participants suffered from a diagnosis of Bulimia Nervosa (BN) or an Eating Disorder Not Otherwise Specified (EDNOS) with bulimic symptoms. Nearly one third of the sample suffered from Anorexia Nervosa (AN), purging type. The remainder of study participants suffered from Binge Eating Disorder (BED). The findings are in line with research suggesting that alcohol abuse and illicit drug use are particularly common in those with BN (CASA, 2003) and with research suggesting strong associations with substance abuse in those with BN and those with AN, binge eating/purging type (Braun et al., 1994; Wonderlich & Mitchell, 1997).
Less is known about the relationship between BED and SUDs, although some studies have found that a diagnosis of EDNOS, including BED, was more likely to be made in those with SUDs compared to those without SUDs (Grilo, Sinha & O’Malley, 2002).

4.1.2 Comparison of groups on eating disordered behaviours and attitudes and substance use

In regards to comparisons on eating disordered behaviours and attitudes that had been experienced in the past 28 days in each of the three ED groups, results revealed that the Purge group had experienced a significantly greater degree of restraint, as measured by the EDE-Q restraint subscale, than the BED group. Although the BN group also scored higher than the BED group on restraint, this difference did not reach the level necessary for statistical significance. The finding that the BED group scored lower on restraint than the other two groups is consistent with literature that has found lower levels of dietary restraint in those with BED (Marcus, 1997). BN and Purge groups did not significantly differ on restraint. Further, the three ED groups did not significantly differ in terms of average scores on the other EDE-Q subscales (eating, weight and shape concern) or on the EDE-Q global score, which makes sense given that common features of BN, AN and BED include extreme concerns about eating, body shape and body weight (Cohon & Gordon, 2009).

In comparing the three ED groups on substance use, two analyses were conducted. The first analysis compared the groups on the types of substances that had been used in the past 30 days. The only significant difference between the groups was in terms of alcohol use to the point of intoxication, with women in the BN and Purge groups having used more alcohol to the point of intoxication than women in the BED group. The second analysis compared ASI drug and alcohol composite scores between the groups and results of this analysis were in line with results from the first. No significant differences were found in terms of the drug composite score; however, significant differences were found for the alcohol composite score, with women in the BN and Purge groups scoring significantly higher on the alcohol composite than women in the BED group. The finding that the BN group scored high on alcohol use is in line with findings that those with BN often abuse alcohol (CASA, 2003; Dansky et al., 2000). However, the finding that the BN and Purge groups scored similarly and significantly higher than the BED group in terms of alcohol use is surprising given findings from past research that indicate an
association between bingeing and alcohol use (Piran & Robinson, 2006a, 2006b), and that a high level of drinking to intoxication is a predictor of binge eating (Vogeltanz-Holm et al., 2000). Further, results from past research indicate that purging is associated with high levels of stimulant use (Piran & Robinson, 2006a, 2006b). Hence, based on past research one would have expected BN and BED groups to score similarly on alcohol use to the point of intoxication and on the ASI alcohol composite score, and significantly higher than the Purge group on both of these measures. One would also have expected the Purge group to score significantly higher on stimulant use and amphetamine use in particular than the other two groups. Perhaps these contradictory results can be explained by the fact that past studies have examined community-based samples, and the current study investigated a clinical sample of women.

4.1.3 Comparison of eating disorder groups on perfectionism

In comparing ED groups on the three perfectionism scales (H&F MPS; Frost MPS and PSPS) no significant differences were found between BN, BED or Purge groups. This finding is in line with previous research that has found similar levels of H&F MPS subscales (self-oriented, socially prescribed and other oriented perfectionism) in women with BN and BED (Pratt et al., 2001) and in women with AN, BN and EDNOS (Davis, 1996). In regards to the Frost MPS, to our knowledge, no previous studies have compared the dimensions of perfectionism from this scale between the same ED groups that were present in this study. However, one study comparing the Frost MPS dimensions between those with purging AN and those with binge eating and purging AN (which can be seen as similar to BN) found no significant differences between these groups on any Frost MPS dimensions (Halmi et al., 2000). To our knowledge, the current study is the first to date to compare ED groups on the PSPS. The current study highlights the fact that individuals with differing ED diagnoses and comorbid SUDs score similarly on many dimensions of perfectionism.

4.1.4 Comparison of eating disorder groups on shame and maltreatment

In the current investigation, no significant differences were found between the three ED groups on levels of various shame dimensions (as measured by the ESS) or on levels of childhood maltreatment (as measured by the CMHSR). To our knowledge, no other studies to date have compared ED groups on levels of shame, probably due to the fact that the majority of research to date on disordered eating and shame has been conducted on female student samples (Swan &
Andrews, 2003). However, in the few studies on EDs and shame in clinical samples, it is evident that shame is a relevant experience across ED types (Andrews, 1997; Swan & Andrews, 2003). Given these findings it makes sense that all three ED groups in our sample scored similarly on levels of shame.

In regards to childhood maltreatment, the only research to date that has compared maltreatment levels between ED groups has examined differences between BN and AN restrictive type, which was not relevant to the current study. However, the finding that all three ED groups scored similarly on levels of childhood maltreatment fits with previous research documenting the fact that abuse is often experienced by those with various types of EDs (Garfinkel et al., 1995; Rorty et al., 1994; Striegel-Moore et al., 2002) and in those with comorbid EDs and SUDs (Deep et al., 1999).

4.2 What Relationships, If Any, Exist Between Dimensions of Perfectionism, Shame and Maltreatment in this Sample?

In order to answer this research question, relationships between perfectionism, shame and maltreatment were examined within each ED group.

4.2.1 Relationships between types of childhood maltreatment and dimensions of perfectionism

In the BN group, the Frost MPS dimensions of parental expectations and parental criticism were both significantly positively correlated with emotional abuse, while parental criticism was also significantly positively correlated with physical abuse. Further, the PSPS dimension of nondisclosure of imperfection was significantly negatively correlated with sexual abuse.

In the BED group, all three Hewitt and Flett MPS dimensions (self-oriented, other-oriented and socially prescribed perfectionism) were significantly positively correlated with emotional abuse. Further, other-oriented perfectionism was also significantly positively correlated with physical and sexual abuse. All three PSPS dimensions (perfectionistic self-promotion, nondisclosure of imperfection and nondisplay of imperfection) were significantly positively correlated with emotional abuse. Additionally, perfectionistic self-promotion and nondisplay of imperfection were also significantly positively correlated with physical abuse. The Frost MPS dimensions of concern over mistakes, doubts about actions and parental criticism were all significantly
positively related to both emotional and physical abuse, while parental criticism was also significantly positively correlated with sexual abuse. Parental expectations was significantly positively correlated with emotional abuse within this group.

Lastly, in the Purge group, there were no significant correlations between any Hewitt and Flett MPS or PSPS dimensions and childhood maltreatment. However, there were some significant correlations between some of the Frost MPS dimensions and types of childhood maltreatment. Namely, parental expectations, parental criticism and doubts about actions were all significantly positively correlated with emotional abuse. Further, parental criticism was also significantly positively correlated with physical and sexual abuse and organization was significantly positively correlated with physical abuse.

What is evident from these findings is that some differential relationships existed in the three ED groups between childhood maltreatment histories and dimensions of perfectionism. In all ED groups, the majority of the significant relationships that were found between childhood maltreatment and perfectionism dimensions were positive ones; however, what is interesting is that there was one exception in the BN group. In the BN group a significant negative relationship was found between childhood sexual abuse and the PSPS dimension of nondisclosure of imperfection, indicating that in individuals with BN those who had experienced higher levels of sexual abuse during childhood were more likely to verbally reveal their perceived shortcomings in adulthood. No other research to date, to our knowledge, has examined the relationship between childhood abuse and perfectionistic self-presentation. Hence, the aforementioned finding can possibly be explained by the fact that the women in the current sample, of whom many had been sexually abused during childhood, were in treatment at the time that they completed the study and hence were possibly quite likely to disclose perceived imperfections to a therapist.

One of the robust findings emerging from this investigation was the strong positive correlation, in each of the three ED groups, between the Frost MPS dimension of parental criticism and emotional abuse during childhood. This pattern of findings is quite revealing because conceptualizations of familial pressures to be perfect have not considered the possibility that extreme levels of parental criticism may actually get to the point where they seemingly reflect emotional abuse. However, in a study by Moore and Pepler (2006), the harsh insults that
mothers directed toward their children were characterized as being a destructive form of emotional abuse. Thus, reports of extreme parental criticism and excessive parental standards may actually reflect experiences of abuse by the children. Respondents with high scores on the Frost et al. measure of parental criticism should perhaps be evaluated further to determine whether maltreatment is taking place or has already occurred.

To date, there is a scarcity of research on how childhood maltreatment histories relate to the various dimensions of perfectionism examined in this study. However, some studies have examined perfectionism unidimensionally (trait perfectionism) and have found a link between perfectionism and maltreatment. For example, Frost, Lahart and Rosenblate (1991) found that parental harshness was associated with daughters’ perfectionism, as some of the daughters in the study may have developed perfectionistic traits as a way of dealing with parental cruelty. Most of the other research documenting a connection between maltreatment and perfectionism is in the form of case studies (Lindberg & Distad, 1985). Despite the lack of empirical research in this area, the findings from this study that various dimensions of perfectionism were in fact related to various types of childhood maltreatment are in line with two models that were initially described in Chapter 1: The social reaction model (Flett et al., 2002) and a belongingness model proposed by Baumeister and Leary (1995). The social reaction model postulates that perfectionism develops as a coping mechanism to childhood abuse, because the child believes that if he or she becomes perfect he or she will no longer be harmed (Flett et al., 2002). The belongingness model explains that one of the fundamental human motivators is the need to belong. Hence, due to the strong need to belong, victims of abuse may avoid confronting the perpetrator, leaving them to believe that they were the ones to do something wrong and consequently striving never to do anything wrong; to be perfect, out of fear of rejection (Baumeister & Leary, 1995).

The current study is unique as it is the first to examine the links between maltreatment and perfectionism as multidimensional constructs. It is certainly the first study to examine the connections between these multidimensional constructs in samples of patients with comorbid eating and substance use disorders. The current study has extended work in this area by documenting the relationships that exist in three samples of women with concurrent EDs and SUDs, between various forms of childhood maltreatment, and perfectionism from a multidimensional perspective that includes: personal and interpersonal aspects of perfectionism as well as trait perfectionism and perfectionism as a self-presentational style.
4.2.2 Relationships between dimensions of shame and dimensions of perfectionism

In the BN group, the Hewitt and Flett MPS dimension of socially prescribed perfectionism was significantly positively correlated with characterological shame. The PSPS dimensions of perfectionistic self-promotion and nondisplay of imperfection were significantly positively correlated with behavioural shame and total shame, and the PSPS dimension of nondisclosure of imperfection was significantly positively correlated with all three shame dimensions as well as total shame. Further, the Frost MPS dimensions of concern over mistakes and doubts about actions were significantly positively correlated with behavioural and total shame, while doubts about actions was also significantly positively correlated with characterological shame.

In the BED group, none of the Hewitt and Flett or Frost MPS dimensions showed significant correlations with any shame dimensions. However, the PSPS dimensions of perfectionistic self-promotion and nondisclosure of imperfection were significantly positively correlated with behavioural, characterological and total shame. Nondisclosure of imperfection was additionally positively correlated with bodily shame.

In the Purge group, the Hewitt and Flett dimension of socially prescribed perfectionism was significantly positively correlated with characterological and total shame. The PSPS dimension of nondisplay of imperfection was significantly positively correlated with all three types of shame and total shame. Further, the Frost MPS dimensions of parental criticism, concern over mistakes and doubts about actions were all significantly correlated with behavioural, characterological and total shame. Further, parental criticism and doubts about actions were also significantly positively correlated with bodily shame.

No research to date, to our knowledge, has explored the relationships between multidimensional perfectionism and multidimensional shame, as measures by the ESS. However, some research to date has explored relationships between the same perfectionism dimensions that were examined in the current study and shame, as measured by other scales. The findings from the current investigation of significant positive associations between socially prescribed perfectionism and various shame dimensions in the BN and Purge groups, and a positive association between shame dimensions and socially prescribed perfectionism in the BED group (that did not quite reach statistical significance due to the small sample size of this group), are in line with previous
research that has consistently found a link between socially prescribed perfectionism and shame, in college students (Tangney, 2002; Klibert et al., 2005). One reason for this consistent link may be that in a shame experience people are concerned with others’ evaluations of themselves. Along the same lines as shame, socially prescribed perfectionism is steeped in a preoccupation with other people’s standards, opinions and evaluations. The common focus on external evaluation suggests that socially prescribed perfectionism should be associated with a vulnerability to shame experiences. (Lewis, 1971; Lindsay-Hartz, 1984; Lindsay-Hartz, de Rivera, & Mascolo, 1995; Miller & Tangney, 1994).

The findings in the current study that the Frost MPS dimension of concern over mistakes was significantly positively associated with various shame dimensions in the BN and Purge groups, and marginally positively associated with various shame dimensions in the BED group are in line with research documenting the fact that individuals who are high in the Frost dimension of concern over mistakes tend to conceal mistakes from others, which is a shame related tendency (Frost et al., 1995; 1997).

Frost and colleagues (1997) concluded that concealment, a shame related tendency, is rooted in self-evaluative, self-presentational concerns. This conclusion lends support to the findings of the current investigation of significant positive correlations between types of PSP and shame dimensions, in all three ED groups. Further, from the aforementioned finding one can conclude that to some extent, attempts for individuals with comorbid EDs and SUDs to try to portray themselves as perfect can probably be traced to a personal sense of inferiority (shame). It is noteworthy that this inferiority reflects not only their actions (i.e., behavioural shame) but also feelings of inferiority about their bodies (i.e., bodily shame) and about a relatively permanent and pervasive aspect of themselves (i.e., characterological shame).

The findings from the current investigation that there were positive associations, in each ED group, between dimensions of perfectionism and shame are in line with a theory proposed by Tangney (2002) who explained that the idiosyncratic manner in which perfectionists evaluate and interpret their mistakes and failures would appear to lead them inevitably to experience shame. The present study extends knowledge in this area by demonstrating which facets of shame and perfectionism might be correlated in large-scale groups of patients with SUDs and various types of co-occurring EDs.
4.2.3 Relationships between dimensions of shame and types of childhood maltreatment

The only significant relationship that was found between childhood maltreatment and shame in any ED group in this study was a significant positive relationship between childhood emotional abuse and bodily shame, in the Purge group. Although no studies to date have examined childhood emotional abuse and its relationship with dimensions of shame that are tapped by the Experience of Shame Scale, significant relationships have consistently been found between childhood emotional abuse and shame (measured by other scales), in non-clinical samples. For example, Hoglund & Nicholas (1995) found a link between shame-proneness in adulthood and a history of emotional abuse in childhood, by a parent. Gilbert et al. (1996) found that put-downs and shaming practices by parents were associated with adult children’s shame-proneness. Webb and colleagues (2007) found that three forms of childhood emotional abuse by caregivers, were significantly positively correlated with shame-proneness in adulthood. Shame-proneness has also been negatively correlated with positive reports of maternal and paternal care giving in childhood (Lutwak & Ferrari, 1997). The current findings add to this literature by documenting a relationship between childhood emotional abuse and subsequent shame about one’s body, in individuals who suffer from AN purging type and a co-occurring SUD. Given previous consistent findings regarding the relationships between childhood emotional abuse and shame, it is surprising that none of the other shame dimensions were significantly correlated with childhood emotional abuse in any of the three ED groups in the current investigation. Perhaps the current findings differ from previous ones due to the nature of the disorders experienced in the current samples, or perhaps because of differences in the shame and maltreatment measures that were used in the current study compared with previous ones.

Although theoretically significant relationships should exist between experiences of childhood sexual and physical abuse and subsequent feelings of shame, (Ferenczi, 1932, 1949; Finkelhor & Brown, 1986; Gilbert, 1989, 1997), the fact that no significant relationships were found between shame and childhood physical or sexual maltreatment in any of the ED groups in this study mirrors the inconsistencies that exist in the research in this area to date in non-clinical samples and in clinical samples of women with an ED or SUD. For example, while some studies have found significant relationships between childhood sexual and physical abuse and experiences of shame (Andrews, 1995; Andrews & Hunter, 1998; Bennett, 2005; Playter, 1990), others have
failed to find significant relationships (Alessandri & Lewis, 1996; Hoglund & Nicholas, 1995; Stuewig & McCloskey, 2005; Wiechelt & Sales, 2001).

Due to inconsistent findings to date regarding the relationships between maltreatment and shame, more research in this area is warranted, especially research that will examine these relationships in individuals with EDs and SUDs.

4.3 Which Dimensions of Perfectionism, Shame and Maltreatment are Related to Eating Disordered Behaviours and Attitudes and Substance Use Severity Among Women with Comorbid EDs and SUDs?

In order to answer this research question, relationships between dimensions of perfectionism, shame and maltreatment and eating disorder and substance use severity measures were examined within each ED group. As mentioned previously, to measure the level of eating disordered behaviours and attitudes the current study utilized the global score of the EDE-Q, and to measure substance use severity the current study utilized the alcohol and drug composite scores of the ASI.

4.3.1 Relationships between dimensions of perfectionism and eating disordered behaviours and attitudes

In the BN group, the EDE-Q global score was significantly positively correlated with: the MPS dimension of self-oriented perfectionism, and with the three PSPS dimensions. In the BED group, EDE-Q global was significantly positively correlated with the Frost MPS dimension of concern over mistakes. EDE-Q was also positively correlated with the three PSPS dimensions, but due to the small sample size of this group, these correlations did not quite reach the level necessary for statistical significance. In the Purge group EDE-Q global was significantly positively correlated with the Hewitt and Flett MPS dimension of other-oriented perfectionism.

The finding that in the BN group, self-oriented perfectionism was significantly related to eating disordered behaviours and attitudes is in line with previous research documenting high levels of self-oriented perfectionism in those with BN and correlations between self-oriented perfectionism and bulimic symptoms (Bardone Cone, 2007, Pratt et al., 2001). Findings to date regarding socially prescribed perfectionism and BN are mixed. For example, while Pratt and
colleagues (2001) found no differences in socially prescribed perfectionism between a sample of women with BN and a control group, Hewitt, Flett and Ediger (1995) found significant correlations between socially prescribed perfectionism and bulimic tendencies and attitudes in university students and Bardone-Cone (2007) found significant correlations between socially prescribed perfectionism and bulimic symptoms in university students. Perhaps these differential results can be attributed to the fact that while the study by Pratt and colleagues (2001) utilized a sample of women with BN, the other two studies utilized samples of university students. Hence, in the current investigation the result that socially prescribed perfectionism was not significantly related to eating disordered behaviours and attitudes in the BN group may have to do with the fact that the current study utilized a clinical sample of women. However, more research is warranted in this area, given the lack of research specifically examining the relationships between eating disordered behaviours and attitudes and socially prescribed perfectionism in women with BN.

Further, the findings that all three facets of perfectionistic self-presentation were related to eating disordered behaviours and attitudes in the BN group are in accordance with the growing body of research in this area. For example, in previous research on non-clinical samples, PSP dimensions have been found to be related to eating disorder symptomology (McGee et al., 2005). Further, perfectionistic self-promotion and nondisplay of imperfection were found to be related to the bulimia subscale of the EAT in another study (Hewitt et al., 1995). In the only study to our knowledge to examine PSP in a clinical sample of women with EDs, Cockell et al. (1996) found that purging behaviours were significantly related to nondisclosure of imperfection. The relationships between PSP and eating disturbances in this group make sense given that denial and secrecy are characteristics of individuals with eating disorders, which suggests an unwillingness to admit to problems and display shortcomings to others and to themselves (Hewitt et al., 1995). The current study has extended work in this area to a clinical sample of women with BN and a comorbid SUD, indicating that at least part of the disordered eating behaviours and attitudes in this group are related to self-imposed standards of perfection, promoting a perfect image and concealing perceived imperfections, but not to perceived expectations from others.

There is a scarcity of previous research examining multidimensional perfectionism in women with BED. The one study to our knowledge that has been carried out in this area examined H & F MPS dimensions in a sample of women with BED and found elevations on self-oriented
perfectionism compared to those without an ED (Pratt et al., 2001). The failure of the current study to find a significant relationship between self-oriented perfectionism and EDE-Q global in the BED group may have to do with the small sample size of the BED group, or due to the fact that participants in the current investigation also suffered from a co-occurring SUD. The finding that in the current BED group with a co-occurring SUD, concern over mistakes was significantly related to eating disordered behaviours and attitudes is similar to previous research that has found relationships between concern over mistakes and BN (Bulik et al., 2003; Lilenfeld et al., 2000). To our knowledge, the present investigation is the first to examine the Frost MPS and PSPS dimensions in a clinical sample of women with BED and a co-occurring SUD.

Only three studies to date, to our knowledge, have examined the Hewitt and Flett MPS in women with AN (Bastiani et al., 1995; Cockell et al., 1996, 2002), while the rest of the research in this area has utilized samples of university students. The studies on women with AN have documented high levels of self-oriented and socially prescribed perfectionism in these women compared to control groups (Bastiani et al., 1995; Cockell et al., 1996, 2002), but failed to find the connection found in the Purge group in the current investigation between other-oriented perfectionism and AN. The differing results of the current investigation can possibly be explained by differing group compositions of the AN groups in the previous studies compared to the current one. In the study by Bastiani and colleagues (1995), the AN sample consisted of women with only the restrictive subtype of AN, but none binged or purged. In the studies by Cockell and colleagues (1996, 2002), information was not provided regarding the specific subtypes of AN experienced by study participants; hence, it is quite possible that study participants experienced only restrictive AN or a variety of subtypes of AN. Findings by Halmi and colleagues (2000) point to the fact that individuals with differing subtypes of AN experience different types of perfectionism. Halmi and colleagues (2000), found that those with purging AN scored significantly higher than those with restricting AN on the Frost MPS dimension of parental criticism. Although the study by Halmi and colleagues (2000) did not utilize the Hewitt and Flett MPS, their finding points to the fact that there might be some unique aspects in the role of perfectionism in those with AN, purging type. Further, the current sample of women with purging AN also suffered from a comorbid SUD, and other-oriented perfectionism has been found in individuals with SUDs (Flett et al., 2007, Hewitt & Flett, 1991).
4.3.2 Relationships between dimensions of perfectionism and substance use severity

In the BN group, the H&F MPS dimension of other-oriented perfectionism was significantly negatively correlated with alcohol use severity (ASI alcohol composite) and the Frost MPS dimension of organization was significantly positively correlated with drug use severity (ASI drug composite). In the BED group, none of the perfectionism dimensions were significantly correlated with alcohol or drug use severity, perhaps due in part to the small sample size of this group. In the Purge group, the PSPS dimension of nondisplay of imperfection was significantly positively correlated with drug use severity, but none of the perfectionism dimensions were significantly correlated with alcohol use severity.

Other research has found a relationship between other-oriented perfectionism and drug (but not alcohol) use, and this relationship was a positive one (Hewitt & Flett, 1991), contrary to the present investigation where the relationship in the BN group between other-oriented perfectionism and alcohol abuse was negative. This finding indicates that in individuals with BN and a co-occurring SUD, holding low expectations for significant others is related to more severe levels of alcohol use. Perhaps significant others in these women’s lives were not good role models while these women were growing up because they also abused alcohol. Perhaps as a result of this, these women now hold low expectations for significant others and currently abuse alcohol themselves. Research has in fact demonstrated that exposure to alcohol by parents’ increases children’s chance of drinking (Hawkins et al., 1997). Further, there is evidence suggesting a genetic predisposition for alcohol use. For example, children of problem drinkers have been shown to have higher than expected rates of alcohol abuse and dependence (Chassin, Pitts, DeLucia & Todd, 1999).

The finding that organization was significantly positively related to severity of alcohol use in the current sample of those with BN and a co-occurring SUD is contrary to the finding from the one other study to date that explored the relationships between the Frost MPS dimensions and drug use (including alcohol) and failed to find such a connection (Luthar & Becker, 2002). Furthermore, organization has often been viewed as an adaptive form of perfectionism (Luthar & Becker, 2002), so in light of this, the current finding is quite surprising and warrants the need for further investigation.
No other research to date has investigated PSP in a sample of individuals with SUDs, let alone in a sample of women with comorbid EDs and SUDs. The finding that in the Purge group, avoiding displays of perceived behavioural imperfections (nondisplay of imperfection), was significantly positively related to severity of drug use can perhaps be attributed to the fact that because these women avoid displaying difficulties in their experiences to others, they in turn must find other ways to cope with their underlying feelings. Hence, they may resort to more severe drug abuse as a means of managing such feelings. Given the lack of research in this area to date, the relationships between dimensions of perfectionistic self-presentation and drug use should be further investigated in those with AN purging type and a comorbid SUD.

4.3.3 Relationships between dimensions of shame and eating disordered behaviours and attitudes

In the BN group, total shame and bodily shame were both significantly positively correlated with disordered eating behaviours and attitudes. In the BED group, the relationships between shame dimensions and EDE-Q global did not quite reach the level necessary for statistical significance. In the Purge group, bodily shame was significantly positively correlated with disordered eating behaviours and attitudes.

The findings of the current study are in accord with past research that has consistently documented a relationship between shame and ED symptoms in nonclinical samples of women (Burney & Irwin, 2000; Sanftner et al., 1995). Further, in investigations of bodily shame in regards to clinically diagnosed EDs, Andrews (1997) found that bodily shame was strongly related to BN and Casper, and colleagues (1981) observed that in those with AN, bodily shame was related to the pursuit of a thin body. The current findings also lend support to theories on the relationship between shame and EDs proposed by Minuchin and colleagues (1978) and Fodor (1996) (see Chapter 1).

4.3.4 Relationships between dimensions of shame and substance use severity

In the BED group, a significant positive correlation was found between characterological shame and drug use severity. However, in the BN and Purge groups, no significant relationships were found between any of the shame dimensions with either drug or alcohol use severity.
There is a scarcity of research to date regarding the relationships between shame and drug and alcohol use severity in clinical samples of individuals with an SUD, let alone in those with an ED and a co-occurring SUD. However, the finding that characterological shame was significantly correlated with drug use in the BED group is in accordance with findings from three investigations by Dearing, Stuewig and Tangney (2005), that found associations between shame and drug and alcohol problems in two student samples and one sample of jail inmates. However, unlike the study by Dearing et al. (2005), shame was not significantly related to alcohol use in any of the three ED groups in the current investigation.

From the findings of the present investigation, one can conclude that perhaps one motive for those with BED and a co-occurring SUD to abuse drugs is in order to cope with feelings of shame about a stable aspect of themselves (i.e. characterological shame). However, experiences of shame appeared to be largely unrelated to severity of alcohol use in any of the three ED groups in this study, and experiences of shame also seemed to be unrelated to severity of drug use for those with BN or AN purging type and a co-occurring SUD.

4.3.5 Relationships between childhood maltreatment and eating disordered behaviours and attitudes

No significant relationships were found between any types of childhood maltreatment and disordered eating behaviours and attitudes in any of the three ED groups. Previous studies documenting a relationship between eating disordered behaviours and childhood sexual, physical or emotional maltreatment have either compared clinical or non-clinical ED subjects to control groups (e.g. Rorty, Yager & Rossotto, 1994; Striegel-Moore et al., 2002), have compared the degree of bulimic behaviours or BN in those with experiences of childhood abuse to those without childhood abusive histories (Wonderlich et al., 1996) or have utilized larger community or student samples of individuals with varying degrees of eating pathology and childhood abusive experiences (e.g. Ackard, et al., 2001; Kent et al. 1999). For example, Fosse and Hollen found that a sample of female outpatients with BN scored significantly higher on childhood sexual abuse than did a control group. In another study, Kent and colleagues (1999) studied a sample of 236 healthy adult women and found that though physical, sexual and emotional abuse were all related to unhealthy attitudes towards eating only emotional abuse emerged as a significant predictor of this pathology. Since the current study only utilized subjects with clinically diagnosed EDs and high rates of abuse, it was not expected that significant correlations
between severity scores on the EDE-Q and maltreatment would be found, due to the restricted range of experiences in the three ED groups.

4.3.6 Relationships between childhood maltreatment and substance use severity

Similar to findings in subsection 4.3.5, no significant relationships were found between any forms of childhood maltreatment and either drug or alcohol use severity in any of the three ED groups in the present investigation. Previous research in this area has documented relationships between forms of childhood abuse and substance use; however, these studies have either been longitudinal (e.g. Pedersen & Skrondal, 1996), have compared rates of childhood abuse in those with SUDs to those without SUDs (e.g. Simpson & Miller, 2002), have compared those with experiences of childhood abuse to those without experiences of childhood abuse on adult substance use (Simpson & Miller, 2002), or have examined student or community samples of women with varying degrees of substance use problems and childhood abusive experiences (e.g. Bennett and Kemper, 1994). For example, in their review of the literature, Simpson and Miller (2002) found that among female adults seeking treatment for substance abuse, rates of childhood sexual abuse were approximately 80% higher than rates of childhood sexual abuse in the general population. In another study of adult women, Pederson et al. (2008) found significant associations for reported sexual, physical, and emotional childhood abuse with the use of nicotine, marijuana, and antidepressants in adulthood. Reports of childhood physical and emotional abuse were also significantly associated with use of cocaine and anxiolytics, and childhood emotional abuse was also associated with the use of sleeping pills. Since the current study only utilized subjects with clinically diagnosed SUDs and high rates of abuse, there was a restricted range of experiences in this group, so it was not expected that significant correlations between the substance abuse severity scores and the EDE-Q would be found.

4.4 Predictive Models of Eating Disordered Behaviours and Attitudes and Substance Use Severity in the BN+BED and Purge groups

Due to findings of significant differences between BN and Purge groups in the correlations between: the ASI drug score and nondisplay of imperfection and organization, between the ASI alcohol score and other-oriented perfectionism and between EDE-Q global and perfectionistic
self-promotion and nondisplay of imperfection; and of significant difference between BED and Purge groups in the correlations between EDE-Q global and concern over mistakes, the decision was made to combine BN and BED groups for the predictive models and to examine the Purge group separately.

4.4.1 Predictive models of eating disordered behaviours and attitudes in the BN+BED group

In the BN+BED group, perfectionistic self-promotion and bodily shame accounted for a sizeable proportion of the variance in EDE-Q global (approximately 30%). The finding that perfectionistic self-promotion was a predictor of eating disturbances in this group is in line with findings reported in subsection 4.3.1, by McGee and colleagues (2005) and with findings by Hewitt and colleagues (1995). Further, the finding that bodily shame emerged as a significant predictor of ED behaviours and attitudes in this group is consistent with research by Andrews (1997) that found that bodily shame was a significant predictor of BN in a community sample of young women. One must be cautious when interpreting the finding about bodily shame, because as Andrews (1997) suggested, it is possible that the measure of bodily shame might simply be tapping into a main component of these EDs. However, on the other hand shame has not been recognized as a diagnostic criterion for EDs. The current findings add to existing literature in this area, because to date, perfectionistic self-presentation and bodily shame have not been examined in those with BED. Further, these findings add to the current understanding of what factors may contribute to disordered eating behaviours and attitudes in women with BN or BED and a comorbid SUD.

4.4.2 Predictive models of eating disordered behaviours and attitudes in the Purge group

In the group of women with AN purging type, or an EDNOS with purging and the absence of bingeing, other-oriented perfectionism and bodily shame emerged as significant predictors of eating disordered behaviours and attitudes and together could predict approximately 40% of the variance in EDE-Q global. As mentioned in subsection 4.3.1 the finding that other-oriented perfectionism was predictive of eating disturbances is inconsistent with previous research in this area. Various speculations of processes that may underlie this result are laid out in subsection 4.3.1. The finding that bodily shame emerged as a significant predictor of eating disordered actions and attitudes in this group, is in line with some observational data by Casper and
colleagues (1981) who reported that in patients with AN, experiences of shame about the size and shape of their bodies subsequently led to the quest for thinner bodies. The current findings indicate that holding high expectations for significant others and experiencing shame about one’s body may contribute to the disordered eating behaviours and attitudes found in women with AN purging type, or an EDNOS with primarily purging behaviours, and a co-occurring SUD.

4.4.3 Predictive models of substance use severity in the BN+BED group

In the BN+BED group, there were no significant predictors of drug use severity. However, other-oriented perfectionism emerged as a significant negative predictor of alcohol use severity. No other research to date has found a link between other-oriented perfectionism and alcohol use. This may simply be due to the lack of research in this area to date or due to the fact that no other research to date has examined predictors of alcohol use in a sample of women with comorbid EDs and SUDs. Perhaps the current finding has to do with other underlying factors that are at play. Please refer to subsection 4.3.2 for a discussion of the possible underlying factors. The current finding indicates that holding low expectations for significant others may contribute to alcohol use severity in those with BN or BED and a co-occurring SUD. However, none of the perfectionism, shame or maltreatment dimensions that were examined in this study could account for severity of drug use in women with comorbid BN or BED and a comorbid SUD.

4.4.4 Predictive models of substance use severity in the Purge group

In the Purge group, non-display of imperfection was found to be a significant predictor of drug use severity (refer to subsection 4.3.2 for a discussion of possible underlying factors). However, none of the variables examined in the current study emerged as significant predictors of alcohol use severity in this group. As previously mentioned, no other research to date has examined the role of perfectionistic self-presentation in individuals with substance use disorders, so more research is needed on this subject.

4.5 How Does the Current Sample Compare to Normative Samples on Measures of Disordered Eating and Substance Use?

In both BN+BED and Purge groups, average scores on all EDE-Q subscales (i.e. restraint, eating concern, shape concern, weight concern) and the EDE-Q global score were significantly higher
than in a normative sample of young women reported on by Fairburn and Beglin (1994). Further, the mean ASI drug and alcohol composite scores were also significantly elevated in the current samples compared to a sample of females from the community, obtained from a study by Weisner and colleagues (2000).

The mean levels of the EDE-Q subscales and the global score found in BN+BED and Purge groups in the current study were similar to levels for another sample of women with comorbid EDs and SUDs, reported on in a dissertation by Robinson (2007). However, there was one significant difference on the EDE-Q restraint subscale between the current sample and the sample reported on by Robinson. The current BN+BED group scored significantly lower than Robinson’s sample on dietary restraint (2.91 vs. 3.46). It appears that the low restraint score of the BED group alone (2.09) was bringing down the average restraint score for the BN+BED group, because upon comparing the average restraint score of the BN group alone (3.17) to the average restraint score obtained in Robinson’s sample, there was no significant difference. Because Robinson did not report on the specific types of EDs experienced by her participants, one can make an informed guess that her sample did not consist of many, if any, individuals with BED, as restraint has been found to be lower in individuals with BED than in those with AN or BN (Marcus, 1997).

Since no studies to date, to our knowledge, have presented ASI composite scores for individuals with comorbid EDs and SUDs, here we will simply discuss comparisons on ASI composite scores between the current samples and a clinical sample of 128 females in treatment for substance abuse. In a study by Weisner and colleagues (2000), the average ASI alcohol composite score for a clinical sample of female substance abusers was .38 and the average ASI drug composite score was .11. The aforementioned mean scores were the same as the mean scores obtained in the BN+BED group in the current study and were very similar to the mean scores obtained in the current study for the Purge group, .40 and .13, respectively for mean alcohol and drug composite scores. All of the aforementioned findings reconfirm the fact that the women in the current study suffered from comorbid eating and substance use disorders.
4.6 How Does the Current Sample Compare to Normative Samples on Experiences of Perfectionism, Shame and Maltreatment?

4.6.1 Comparisons on perfectionism

4.6.1.1 Hewitt and Flett MPS

In the current study, the Purge and BN+BED groups scored significantly higher than a normative sample of community females on self-oriented and socially prescribed perfectionism, but not on other-oriented perfectionism. In accordance with the current findings, research on H&F multidimensional perfectionism in clinical samples of females with AN to date have consistently shown elevated levels of self-oriented and socially prescribed perfectionism compared with control groups (Bastiani et al., 1995; Cockell et al., 1996; Cockell et al., 2002). Furthermore, Cockell and colleagues (2002) also found that women with AN had higher levels of self-oriented and socially prescribed perfectionism than a sample of women with mood disorders. However, previous studies on the H&F MPS dimensions in patients with AN have examined patients with restrictive AN or have combined subtypes of AN into one group. The current study extends research in this area, as it is the first to our knowledge to examine H&F MPS in patients with the purging type of AN, or an EDNOS with AN purging symptomology, and a co-occurring SUD.

Less research to date has compared levels of H&F perfectionism in clinical samples of women with BN and BED to levels in control groups. One study by Pratt and colleagues (2001) found that women with BN and BED scored significantly higher than a control group on self-oriented, but not on socially prescribed perfectionism. Due to the scarcity of research on H&F perfectionism in clinical samples, we look to some research on non-clinical samples. For example, a study by Bardone-Cone (2007) found that in university women, those higher in bulimic symptomology scored higher than those low in bulimic symptomology on both self-oriented and socially prescribed perfectionism.

Very few studies to date have compared mean levels of perfectionism in clinical samples of substance abusers, let alone in clinical samples of female substance abusers, to normative samples. The one study that did so compared a sample of male and female recovering alcoholics to previously established MPS norms and found that all dimensions of the MPS remained elevated in these individuals (Flett et al., 2007).
The findings from the current study shed light on the fact that self-oriented and socially prescribed perfectionism might be elevated in populations of women with BN, BED or AN purging type and a co-occurring SUD.

4.6.1.2 Frost MPS

The BN+BED group experienced significantly higher levels of concern over mistakes and parental criticism and marginally higher levels of parental expectations, personal standards and doubts about actions than the normative sample of university students who were chosen for comparison purposes. However, no significant difference was found between the two groups on organization. Compared to the normative sample, the Purge group experienced significantly higher levels of: concern over mistakes, parental criticism and doubts about actions. However, there were no significant differences between the Purge group and the normative sample on personal standards, parental expectations or organization. Although the BN+BED and Purge groups exhibited slightly different trends in comparison to the control group, as previously mentioned the original three groups in the current study (BN, BED and Purge) did not differ significantly from one other in average levels of Frost MPS dimensions.

To date, research regarding which of Frost’s MPS dimensions are elevated in women with AN and BN compared to control groups have yielded inconsistent results. Further, no studies to date have explored the Frost MPS in women with BED. In a study that examined various subtypes of AN, Halmi and colleagues (2000) found that the purging group in their study scored significantly higher than a control group on all dimensions of the FMPS. Other research on individuals with AN and the Frost MPS has examined individuals with the restrictive type of AN. For example, Bastiani and colleagues (1995) found that underweight anorexics scored significantly higher than control women on all subscales of the FMPS, except for on the parental expectations subscale. Further, weight restored anorexic patients scored higher than control women on all subscales except for on parental expectations, personal standards and doubts about actions. In regards to comparisons of women with BN to a control group, Lilenfeld and associates (2000) found that compared with control probands, currently ill women with BN had significant elevations on personal standards, concern over mistakes, parental criticism, doubts about actions and parental expectations. No other studies to date have compared currently ill women with BN to a control group of healthy individuals.
The Frost MPS dimensions have not been examined in clinical samples of individuals who suffer from SUDs alone; however, one study to date examined the Frost MPS dimensions in women with a comorbid ED (BN, AN, those with a history of both AN and BN) and alcohol use disorder (AUD). This study controlled for ED diagnosis in the analyses. Although this study did not compare the FMPS in those with a comorbid ED and AUD to a healthy control group, the study did compare the Frost dimensions in those with a comorbid ED and AUD to women who suffered from an ED alone. The results indicated that compared to women with an ED alone those participants with a comorbid ED and AUD scored significantly higher on total FMPS perfectionism, concern over mistakes, doubts about actions, parental criticism and parental expectations (Bulik et al., 2004).

It is interesting to note that there were no significant differences in terms of higher levels of personal standards (except for a marginal elevation in the BN+BED group) in the current clinical samples compared to the control group, while elevated levels of self-oriented perfectionism were found in the current clinical samples. Despite the fact that these two measures are often seen as similar because they share a focus on perfectionistic personal standards, the aforementioned findings point to the fact that there may be some subtle but important differences between measures that purport to measure the same aspect of perfectionism.

The current study adds to existing research by demonstrating which of Frost’s perfectionism dimensions might be elevated in women with comorbid EDs (BN, BED or purging AN) and SUDs. The findings in the current investigation of the elevated levels of internal and external perfectionism dimensions (on the Frost MPS and on the H&F MPS) in the BN+BED and Purge groups “… mirror[s] the clinical observation of both overcontrol and dyscontrol in individuals with comorbid EDs and [SUDs]” (Bulik et al., 2004, p. 1005).

4.6.1.3 Hewitt and Flett PSPS

All dimensions of perfectionistic self-presentation were significantly elevated in the BN+BED and Purge groups compared to a normative sample. To date, there is a scarcity of research on perfectionistic self-presentation in clinical samples of women with EDs. Cockell and colleagues (1996) found that compared to a healthy group of control women, those with EDs (AN and BN) scored higher on all dimensions of PSP (perfectionistic self-promotion, non-disclosure of imperfection and non-display of imperfection). In a follow up study by Cockell and colleagues
(2002) they found that after controlling for low self-esteem, depression and impaired functioning, a group of women with AN scored significantly higher on nondisclosure of imperfection compared to the psychiatric control group, but results were not statistically significant compared to the normal control group. Upon examination of the PSP means of Cockell’s psychiatric control group of women with mood disorders, it is evident that the means of the BN+BED and Purge groups in the current study were substantially higher across all three PSP subscales.

Unfortunately, no research to date, to our knowledge, has examined perfectionistic self-presentation in women with SUDs. The current study adds to knowledge in this area by demonstrating that the need to present an image of perfection to others, and to avoid displaying or disclosing imperfections are relevant in women with comorbid EDs (BN, BED, AN purging type) and SUDs.

The discovery of elevated perfectionism levels in the current samples of patients with comorbid EDs and SUDs, is consistent with previous research by Bieling and colleagues (2004), that found that co-morbidity was associated with elevated levels of multidimensional perfectionism.

### 4.6.2 Comparisons on shame

In both of the samples in the current study levels of all shame dimensions were significantly elevated compared to a normative sample.

There is a scarcity of research comparing shame in clinical samples of women with EDs with normative samples. The one study that has been conducted in this area by Swan and Andrews (2003) yielded similar results to the current study. Swan and Andrews found that their samples of females with past and current EDs (AN, BN, EDNOS), scored higher than control women on characterological and bodily shame, but unlike the current study, Swan and Andrews’ sample of past and current eating disordered women did not score higher than the control group on behavioural shame. Perhaps the differing results between the studies in regards to behavioural shame can be attributed to the fact that the current samples also suffered from SUDs. In fact some preliminary research has shown that experiences of shame are common in those with SUDs. One study to date compared a clinical sample of female recovering drug addicts to a normative sample on levels of shame and found that the recovering drug addicts had elevated
levels of proneness to shame compared to non-drug addicted individuals (O’Conner et al., 1994).

It is important to note that no studies to date have utilized the Experience of Shame Scale with individuals with SUDs. Furthermore, no previous studies have examined shame in individuals with comorbid EDs and SUDs, so the current study is significant in that it demonstrates that shame about one’s character, one’s behaviour and one’s body are all relevant experiences in women with comorbid EDs and SUDs.

4.6.3 Comparisons on maltreatment

The maltreatment rates in this study were strikingly high, and in retrospect, this may be one of the salient findings that emerged from this investigation. Rates for emotional abuse were extremely high, as all the participants in the Purge group and almost 97% of participants in the BN+BED group reported suffering from some form of childhood emotional abuse. In regards to childhood physical abuse, 84.6% of the Purge group and 81.4% of the BN+BED group reported it. Furthermore, childhood sexual abuse was experienced by 42.3% of the Purge group and 52.5% of the BN+BED group. The rates of childhood physical and sexual abuse were higher than the rates reported for community females in the Ontario Health Supplement (Macmillan et al., 1997); however, as mentioned in the results section, the Ontario Health Supplement did not report on rates of childhood emotional abuse.

Much literature to date attests to the possibility that experiences of childhood sexual, physical or emotional abuse may be risk factors for the subsequent development of EDs (Folsom et al., 1993; Kent, Waller and Dagnan, 1999; Root & Fallon, 1988; Wonderlich et al., 1997) or SUDs (Dube et al., 2003; Simpson and Miller, 2002). Furthermore, high rates of childhood abuse have been documented in samples of females with EDs or SUDs. For example, in a review of the substance use literature, Simpson and Miller found that across studies, average rates of childhood sexual and physical abuse for adult females in treatment for SUDs was 44.5% and 38.7% respectively. Although the prevalence rate of childhood sexual abuse is quite similar in the present study with the rate in Simpson and Miller’s review, the prevalence of physical abuse in the current study is substantially higher. To our knowledge, no research to date has reported on specific rates of childhood emotional abuse experienced by female adults in treatment for SUDs.

In a review of the eating disorder literature, Connors and Morse (1993) found that approximately 30% of women with EDs (across various types) had childhood histories of sexual abuse. In
another study, Treuer, Koperdak, Rozsa and Furedi (2005) found that in their total sample of female patients with EDs, childhood sexual abuse had been experienced by 29% and childhood physical abuse had been experienced by 46%. However, in patients with the binge eating/purging type of AN, experiences of childhood physical abuse were substantially higher, with a prevalence rate of 92%. Lastly, Rorty and colleagues (1994) found that in their sample of currently ill and recovered bulimic women, 28.8% had experiences childhood sexual abuse, 17.5% had experienced childhood physical abuse and 76.3% had experienced childhood emotional abuse by a parent. Clearly the rates of childhood abuse reported on in the literature on women with only EDs are lower than in the current sample. Hence, we turn to the results of the limited studies that have examined experiences of abuse in women with comorbid EDs and SUDs.

Several studies have been conducted on abuse in females with comorbid EDs and SUDs. A study by Gilchrist and colleagues (2007) found that in a sample of female drug users of which one third had a current or past ED, 43.5% had experienced childhood emotional abuse, 35.8% had experienced childhood physical abuse and 31.7% had experienced childhood sexual abuse. The lower rates reported by Gilchrist and colleagues (2007) can perhaps be attributed to the fact that only one third of Gilchrist’s sample reported experiencing a past or current ED. So, in order to attempt to compare the current sample to one in which all participants suffered from an ED and SUD, we look to a study by Deep and colleagues (1999). Deep and colleagues found that in a sample of women with comorbid BN and a substance dependence disorder, 65% had a history of sexual abuse. This rate of 65% is higher than the prevalence of sexual abuse in the current samples; however, the reason for this is probably due to the fact that Deep and colleagues (1999) did not limit their study of sexual abuse to experiences of childhood sexual abuse. Unfortunately, Deep and colleagues did not examine experiences of other types of abuse in their sample. Given the lack of research on childhood abuse in females with comorbid EDs and SUDs, and the high rates found in the current sample, more research in this area is needed.

4.7 Practical Implications

The current study has a number of practical implications. Firstly, due to high prevalence rates of comorbid eating and substance use disorders in female samples, effective treatment is crucial. To date, the development of integrated treatment programs to treat comorbid EDs and SUDs are
lacking and there is a lack of consensus about the treatment of comorbid EDs and SUDs among practitioners. Oftentimes patients with comorbid EDs and SUDs are placed in either substance abuse treatment or eating disorder treatment, both of which are often ill equipped to treat the other disorder. Sometimes treatment of only one of the co-occurring disorders can lead to the exacerbation of the other disorder (CASA, 2003), can cause individuals with comorbid symptomologies to go to and from different treatment programs and to remain inadequately treated. The few psychological treatments that have been developed to treat both of these disorders concurrently have either been based on the dominant theories of comorbidity, such as the impulsivity hypothesis (Lacey & Evans, 1986) or the addictive personality hypothesis (Gold, Frost-Pineda & Jacobs, 2003) or have been adapted from treatment approaches designed to treat either EDs or SUDs (Conason, Brunstein Klomek & Sher 2006; Sinha & O’Malley, 2000). Hence, findings from the current study point to the fact that targeting experiences of childhood maltreatment, shame and perfectionism should be incorporated into treatment for such women. Further, the finding in the current study that BN and BED groups were similar in terms of the predictors of their disordered eating and substance use, but that the Purge group was quite different points to the fact that one treatment for all individuals with EDs and SUDs would not be able to sufficiently address the unique needs of individuals with different ED diagnoses. Hence, these differences should be attended to in designing treatment models.

Further, the high rates of abuse in the current samples point to the fact that many individuals with comorbid EDs and SUDs have histories of trauma. However, to our knowledge, treatment programs for EDs, SUDs or comorbid EDs and SUDs do not often incorporate any forms of therapy for trauma/abuse. Even if a lengthy therapy for trauma cannot be incorporated into these time limited treatment programs, the fact that many of these patients have such histories should suggest the importance of addressing issues of trauma in a planned, though limited way. For example, addressing challenges associated with exposure to trauma in relation to safety and self-care can provide individuals with a history of trauma with some tools to start to address the aftereffects of trauma (Herman, 1992).

Although the current study was conducted on females in treatment for concurrent EDs and SUDs, so perhaps shame and perfectionism develop as consequences of such disorders, it is also possible that shame and perfectionism are risk factors for developing concurrent EDs and SUDs. The findings from the current study could then be taken into account by parents, educators and
mentors in an attempt to prevent female youth from subsequently developing concurrent EDs and SUDs. For example, parents, educators and mentors should be made aware of the fact that if female youth have experienced childhood abuse, demonstrate feelings of shame and perfectionistic tendencies, this might place them at greater risk, than those without such experiences, for the subsequent development of concurrent EDs and SUDs. Preventative programs based on these findings should be developed in schools and perhaps if female youth are distraught by such experiences they should attend therapy early on, in an attempt to prevent the development of psychopathology.

4.8 Limitations and Future Directions

There were a number of limitations in the present study, some of which can be rectified with future research. One limitation includes the social desirability bias that often occurs with self-report measures. Due to the high level of perfectionistic-self presentation found in the study participants, there may also be a high level of social desirability, especially when filling out questionnaires in the presence of a therapist or member of the clinic staff. On a related note, the current study was based on retrospective accounts of maltreatment during childhood. Hence, in future research it would be important to examine the veridicality of these reports by examining information from key informants, as long as confidentiality issues were respected.

Another limitation of the current study includes its cross-sectional design and correlational analyses. Hence, the current study could not address causality. It is possible that the causes of comorbid EDs and SUDs are different from the factors that serve to maintain them once they have already begun. Therefore, future research utilizing a prospective design could be conducted to determine whether the relationships found in the current investigation are causal.

Another limitation of the current study was the lack of clinical comparison groups: One with eating disorders alone and another with substance use disorders alone. The inclusion of such groups could assist in furthering our understanding of which types of perfectionism, shame and maltreatment are more relevant to either eating or substance use disorders. Similarly, the current study did not include a psychiatric comparison group to assist in establishing a link between various dimensions of perfectionism, maltreatment and shame and comorbid EDs and SUDs, as perhaps experiences of maltreatment, shame and perfectionism are simply related to general psychological distress and comorbidity. Further, no matched normative comparison group was
included in the current study. However, the current study did compare participants’ scores to those of normal controls in previous studies, and overall levels of maltreatment, perfectionism and shame were significantly higher in the current clinical sample. The inclusion of such comparison groups would be important in future research in this area.

Lastly, the samples sizes of the ED groups in the current study were quite small: Specifically, the sample sizes of the BED and Purge groups. Because of the small sample sizes, it is possible that some significant correlations may have been found that otherwise would not have been found if larger samples had been utilized. On the other hand, more findings might have attained statistical significance with larger samples. Due to the unique nature of BED and AN purging type and the lack of research to date on these specific types of EDs in relation to the variables investigated in this study, larger sample sizes should be utilized in future investigations.
References


## Appendix A

### Variable Transformations for Predictor Variables

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<th>Variable</th>
<th>Distribution</th>
<th>Transformation</th>
<th>Fixed After Transformation?</th>
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## Appendix B
### Variable Transformations for Outcome Variables

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