Eating Disorder Risk in Postsecondary Students: Assessing Perceptions of Health as a Function of Social Support

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Abstract

Eating disorders (EDs) are complex mental illnesses characterized by disturbances in eating behaviours, involving damaging associations with food, eating, exercise, body image, and weight. In Canada, the estimated prevalence rate is between 2% to 3% of the general population, with more than 1.7 million Canadians suffering an ED. The prevalence of EDs is greater among university students, which occurs at a time when they typically face a variety of other unique life challenges, and mental health issues that may compromise positive mental health (PMH). Among a variety of factors, social support holds much promise for scientific inquiry with respect to the degree that it might predict such things as ED risk, symptoms, behaviors, and recovery. Data associated with a sample of 2,293 Canadian university students collected in the National College Health Assessment survey were analyzed. Overall, 4.9% of the sample were diagnosed with an ED while approximately 25% of the entire sample were deemed at ED risk. Two-factor chi-square tests revealed that those in ED risk sample were more likely to report poorer academic performance, problems with family and peer relationships, and significantly less likely to report a sense of connection to community compared to the non-risk sample. A hierarchical regression revealed that the Social Provision Scale subscales of social integration and reassurance accounted for 26.2% of additional variance in PMH after controlling for age, GPA, family income, international student status, and sex. These results are discussed in terms of their clinical relevance in the psychological treatment and understanding of EDs.

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Chapter 1: Literature Review

1.1 Foreword

Although eating disorder (ED) research dates back to the 1970s, some have argued that it has paled in comparison to investigations into other mental health illnesses, particularly mood and anxiety disorders (e.g., Agras & Robinson, 2008). In Canada, this is evident in levels of federal research funding directed toward ED studies. For example, the Social Sciences and Humanities Research Council of Canada (SSHRC) reported that financial support for ED research awarded between 2014 and 2019 was $0.08 per diagnosed individual, while the Canadian Institute of Health Research (CIHR) reported approximately $0.61 per diagnosed individual during 2019 (Stone et al., 2021). During the same year, CIHR revealed that research funding for other psychiatric disorders was notably higher (e.g., roughly $47.01 per affected individual for schizophrenia, and $7.78 per affected individual for bipolar disorder) (Stone et al., 2021).

Additionally, it would appear that the scope and focus of investigations into EDs are also restricted since the majority of articles centre almost exclusively on three of the most commonly diagnosed types, i.e., anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorder (BED; Agras & Robinson, 2008). Although these ED diagnoses are most prevalent, there are many individuals involved in harmful eating behaviours who do not clearly meet criteria for them and may instead be given a more generic diagnosis (e.g., ‘eating disorder not otherwise specified’ [EDNOS; e.g., Le Grange et al., 2013]). Such lack of precision in ED diagnosis means that it is essential to understand the full spectrum of ED threat and symptomology, particularly for ‘subthreshold individuals’ who are at risk for EDs (Le Grange et al., 2013).

In terms of potential consequences, while the risk of compromised physical and mental health has been clearly linked to EDs (e.g., Hambleton et al., 2022), it is also important to investigate factors that may promote instances of thriving or resilience that encourage optimal mental health in order to establish practical objectives for recovery. However, despite the fact that numerous studies have explored ‘resilience factors’ in other mental illnesses such as depression, anxiety, schizophrenia, and bipolar disorder (Echezarraga et al., 2017; Min et al., 2012; Min et al., 2015; Torgalsbøen, 2012), there remains a lack of research investigating plausible ‘ED resilience factors’ that might mitigate or reduce symptoms and serve to improve positive mental health (PMH) in individuals with EDs (Calvete et al., 2018).

Moreover, among a variety of factors that may correlate with ED recovery and resilience such as eating behaviours and body image, and emotional regulation (e.g., Noordenbos & Seubring, 2006), social support holds much promise for scientific inquiry with respect to whether social support might predict ED risk, symptoms, behaviors, and recovery (Jackson et al., 2005; Long et al., 1993). However, the potential salutary impact of social support is admittedly complex. For example, even though individuals with EDs often report more limited, and less satisfaction with support systems in comparison to normative groups (e.g., Limbert, 2010; Marcos & Cantero, 2009; Tiller et al., 1997), pervasive messages about dieting and weight loss are often triggering for individuals with EDs, and these topics tend to be the dominant within the typical social discourse, especially among North America women (Blackburn et al., 1989). Fundamentally, those in ED recovery reporting ample social support may be subjected to a ‘social paradox’ whereby social support, while essential for recovery, may involve extensive dialog about such things as eating behaviour and body weight, which may be incredibly precarious. This paradox may explain the difficulties individuals in ED recovery might experience despite reported high levels of social support (Blackburn et al., 1989). Therefore, it is important to assess the specific subtypes of social support to determine if particular social factors that have a salutary impact.

In terms of demographic propensity, EDs usually emerge during adolescence and young adulthood (e.g., Volpe et al., 2016; Ward et al., 2019) with estimations of over 100,000 Canadians between the ages of 15-24 years old being diagnosed with an ED by a health professional within a 12-month period (e.g., CCHS-MH, 2013). Since college and university students typically fall within this demographic, they also embody a higher risk prevalence (e.g., Arnett, 2000; Slade et al 2009). Coupled with ED risk, postsecondary students typically face a variety of other salient and distinct challenges during this transitional stage of life, and hence, mental health issues are typically more frequent (Arnett, 2000). Thus, an exploration of factors contributing to the development of EDs in postsecondary students may be an important piece of the puzzle in resolving issues such as how comorbid mental health challenges might operate with ED risk. This will provide a more acute understanding of potential protective factors, and how best to align formal and informal intervention resources.

Based on the preceding, the present study was designed to a) establish ED risk among postsecondary students, b) profile those deemed at risk in terms of self-rated health status, body weight, academic performance, social relationships, and sense of institutional belongingness/support, c) explore whether students with an ED risk differ from those deemed not at risk with respect to PMH and social support (overall and by subtype), and d) establish whether social support subtypes predict the PMH of students at risk for an ED.

1.2 Defining EDs

Often a consequence of an intense fear of gaining weight, as well as marked disturbances in the perception of body weight or shape, AN is a disorder characterized by substantial and prolonged food intake restriction, resulting in considerably low body weight (often measured via body mass index (BMI)), which often leads to markedly compromised physical health (APA, 2013). The International Classification of Diseases 11th Revision (ICD-11) (WHO, 2019) categorizes significantly low body weight as a BMI less than 18.5 kg/m2 in adults, and a BMI-for-age under the 5th percentile in children and adolescents, and notes that rapid weight loss (e.g., more than 20 percent of total body weight within six months) may replace the low body weight guideline when all other diagnostic requirements are met.

In addition, there is a persistent pattern of behaviours that would prevent the maintenance of a healthy weight including significantly reduced food intake, increased energy expenditure, or purging behaviours and/or laxative usage (APA, 2013). Consequently, such behaviors make up two distinct subtypes of AN specified by the Diagnostic and Statistical Manual of Mental Disorder 5th Edition (*DSM*-5) (APA, 2013); i.e., the ‘restricting type’ is characterized by weight loss through dieting, fasting, and/or excessive exercise, while the ‘binge-eating/purging type’ is characterized by recurrent episodes of binge-eating or purging behavior (i.e., self-induced vomiting, laxatives, diuretics, or enemas) alongside intake restriction (APA, 2013).

BN is another form of ED characterized primarily by repeated episodes of binge-eating (i.e., the consumption of considerably higher volumes of food within a specific period of time), a lack of control over the experience of eating during the episode, and recurrent inappropriate compensatory behaviors aimed at preventing weight gain (e.g., self-induced vomiting, misuse of laxatives, diuretics or other medications, fasting, or excessive exercise). Similar to BN, BED is also characterized by recurrent episodes of binge-eating, but it is also associated with three or more of the following: a) rapid consumption, b) eating until feeling uncomfortably full, c) consuming large amounts of food in the absence of hunger, d) eating alone due to embarrassment or shame about the volume of food consumed, or e) feeling disgusted with oneself, depressed, or guilty after a binge-eating episode. Unlike BN, individuals with BED do not typically engage in compensatory behaviours. Binge-eating episodes cause intrusive distress, and generally must occur at least once a week for at least three months to qualify for a full diagnosis (APA, 2013).

As previously noted, despite the dominance of these specific ED diagnoses, there are many individuals with unhealthy eating patterns who may be diagnosed with having an ‘eating disorder not otherwise specified’ (EDNOS) (e.g., Le Grange et al., 2013), or ‘other specified feeding and eating disorder’ OSFED (including those who have atypical AN, BED or BN of low frequency and/or limited duration, purging disorder, and night eating syndrome) (APA, 2013). Further, the fifth edition of the *DSM* documents the first time that ‘avoidant-restrictive food intake disorder’ (ARFID) was introduced which includes symptoms such as food avoidance, decreased appetite, abdominal pain, and fear of vomiting (Nicely et al., 2014).

1.3 ED Prevalence and Economic Burden

In the US, it has been projected that 30 million people will experience an ED at some point during their lifetime (Wade et al., 2011), with 0.3–0.4 percent of young women, and 0.1 percent of young men developing AN (Keski-Rahkonen et al., 2007), 1.0 percent diagnosed with BN, and 3.5 percent of women and 2.0 percent of men with BED during their lifetime (Hudson et al., 2007). In Canada, the estimated ED prevalence rate is between 2 and 3 percent of the general population (Statistics Canada, 2016), with more than 1.7 million Canadians suffering from an ED at any given time (Galmiche et al., 2019). Moreover, the lifetime prevalence rates of EDs in

Canada are estimated as 8.4 percent for females and 2.2 percent for males (Galmiche et al., 2019).

Health care costs, lost productivity, and reductions in health-related quality of life (HRQOL) associated with mental health illness in Canada have been estimated to be over 50 billion dollars (Lim et al., 2008; Smetanin et al., 2011), with EDs being the most prevalent and serious of all psychiatric illnesses and having one of the highest mortality rates as a consequence of the wide range of associated medical complications (Keski-Rahkonen & Mustelin, 2016; O'Brien et al., 2017; Vall & Wade, 2015). Aside from deaths due to secondary complications of an ED, it is estimated that approximately 1000 to 1500 individuals die from AN or BN each year, with the ED being the primary cause of death (Woodside, 2013).

In terms of ED's financial burden and treatment costs, a recent report in the U.S. estimates that approximately 9 percent of the U.S. population (or 28.8 million Americans) will have an ED during their lifetime, with an associated annual cost of $64.7 billion, with additional costs of associated health status deterioration estimated at $326.5 billion per year (Deloitte Access Economics, 2020). Canadian ED statistics suggest similarly impactful economic effects. A 2003 study conducted in British Columbia, for instance, assessed that the long-term disability expenses for someone living with AN may range between $2.5 and $101.7 million per year (Stone et al., 2021; Su & Birmingham, 2003). Further, the Canadian Institute of Health Information (CIHI, 2020) proposed that in 2017/2018, an average of $24,017 per individual diagnosed with an ED was spent on hospital services alone, without considering other expenses related to treatment (Stone et al., 2021). Additionally, this dollar amount was assessed to be 1.79 times higher than expenditures for the inpatient treatment of individuals with schizophrenia during the same reporting year (CIHI, 2020; Stone et al., 2021).

As previously noted, EDs have one of the highest mortality rates of any mental disorder, with mortality rates estimated at approximately 4 percent for AN, 3.9 percent for BN, and 2.9 percent for BED (Fichter et al., 2008). Moreover, complications from EDs can be quite severe, long-lasting, and difficult to treat (Crow & Nyman, 2004). Current research, for example, suggests that the average illness duration is between 5 to 15 years, depending on ED type (Keel & Mitchell, 1997; Uher et al., 2003), with modest response and remission rates based on current best practice treatment approaches ranging between 35-50 percent (Carter et al., 2004; Keel et al., 2005; Olmsted et al., 1994; Pike et al., 2003; Walsh et al., 2006).

1.4 ED Comorbidities and Risk Factors

Implied in the salient ED mortality risk are a range of complex, persistent, and potentially severe comorbid medical problems (Hambleton et al., 2022), with the most common associated with AN being bradycardia, hypotension, lanugo hair, delayed gastric emptying, amenorrhea, osteoporosis, and hypoglycemia (Gibson et al., 2019; Leonard & Mehler, 2001). Moreover, starvation and malnutrition from AN can also cause atrophy of all major organ systems, including the heart, brain, liver, intestines, kidneys, and muscles (Gibson et al., 2019). In terms of BN, comorbid physical problems are typically related to laxatives and/or diuretics abuse, coupled with repetitive self-induced vomiting, such as esophageal tears and ruptures, gastroesophageal reflux (GERD), electrolyte imbalances and numerous cardiac complications such as arrhythmias (Gibson et al., 2019). In addition, a heightened risk of cardiac complications can also result in fainting, heart palpitations, respiratory distress, and increased risk of miscarriages (Mehler & Rylander, 2015). With respect to comorbid health conditions and BED, obesity, typically deemed one of society's most salient public health concerns (Pawaskar et al., 2017; Wassenaar et al. 2019), is highly correlated and hence predictive of various secondary risks including type 2 diabetes, cardiovascular disease, non-alcoholic fatty liver disease, gastrointestinal issues such as acid reflux, respiratory illnesses, certain types of cancer and reproductive concerns (Bulik & Kendler 2002; da Luz et al 2018; Wassenaar et al., 2019).

Individuals experiencing EDs also present with a myriad of comorbid psychological, social, and functional challenges (e.g., Hambleton et al., 2022). For instance, individuals suffering an ED are typically at an increased risk of psychiatric disorder comorbidities (Hudson et al., 2007; Udo & Grilo, 2019), with evidence suggesting between 55 and 95 percent condition co-occurrence (Hudson et al., 2007; Udo & Grilo, 2019). Furthermore, Hambleton et al.'s (2022) recent review of 202 relevant studies found that the most common comorbid psychiatric conditions included anxiety disorders (up to 62 percent), mood disorders, such as major depressive disorder (up to 54 percent), substance use, and post-traumatic stress (PTSD) disorders (with similar rates up to 27 percent) (Hambleton et al., 2022). Other notable associations were also found with personality disorders (e.g., Borderline Personality Disorder, Obsessive Compulsive Personality Disorder), sexual dysfunction, non-suicidal self-injury, and suicide ideation (Hambleton et al., 2022).

Typically, ED correlational studies tend to focus on acknowledged predictive risk factors (e.g., Steck et al., 2004) which may include environmental hardships or salient negative experiences such as peer victimization and childhood sexual abuse (Kaltiala-Heino et al., 2000; Wonderlich et al. 1997), or genetic factors (Bulik et al., 2019), along with other more perceptual/psychological ED risk characteristics such as body dissatisfaction, perfectionism, drive for thinness, weight/shape concerns, and negative affect (Stice & Whitenton, 2002; Striegel-Moore & Bulik, 2007). Individuals who score high on measures of such risk characteristics (i.e., on measures of body dissatisfaction, drive for thinness, and weight/shape concerns, etc.) are more likely to engage in disordered eating behaviours, and are at high risk for development of an ED (Keel & Forney, 2013).

Similar observations are evident in perhaps the most recent study assessing commonly reported ED correlates (i.e., Barakat et al., 2023) designed to assist the Australian government in developing evidence based, early intervention programs for individuals who could be deemed at risk for ED. Recurrent risk factors observed in this review of 284 studies included 1) genetic predisposition, 2) gastrointestinal microbiota and autoimmune reactions, 3) childhood and early adolescent exposures to ED behaviours, 4) personality traits and comorbid mental health conditions, 5) gender (females more often than males), 6) socioeconomic status, 7) ethnic minority, 8) body image and social influence, and 9) participation in elite sports (Barakat et al., 2023).

1.5 ED and Issues of Recovery

There appears to be a lack of consensus among mental health and health care professionals as to what might constitute the definition of ED recovery (Björk & Ahlström, 2008; Noordenbos, 2011; Pettersen & Rosenvinge, 2002; Vanderlinden et al., 2007). For instance, some professionals are of the belief that an individual with an ED may be considered ‘recovered’ only when they no longer meet the *DSM* diagnostic criteria for the diagnosis, and/or are no longer engaging in disordered eating behaviours (Noordenbos, 2011). As previously mentioned however, this definition does not take into consideration those individuals who suffer from and engage in disordered eating behaviours who may not have fully met the criteria. It also does not consider individuals who may be contending with an ED or ED behaviours, but whose quality of life, or PMH may have significantly improved through treatment.

Consequently, many professionals believe that ED recovery may be less of a ‘black and white outcome’, conceiving of it as involving, for example, comprehensive changes in lifestyle, and the reporting of enhanced quality of life (Noordenbos, 2011). Moreover, indications of a better quality of life would, in turn, suggest that ED recovery should promote improvements in ‘resiliency factors’, as there are many that believe, for instance, that advances in emotion regulation, coping skills, self-esteem, and positive body image are critical to long-term recovery from EDs and may have a longer lasting impact compared to only looking at whether individuals have merely terminated ED behaviours (Calvete et al., 2018).

In terms of specific research assessing conceptualizations of ED recovery, Noordenbos and Seubring (2006) surveyed therapist and convalesced ED patient perspectives, particularly focusing on factors deemed essential in the process. It was observed that *both* therapists and recovered patients identified several salient and common themes relating to recovery, including ‘eating behaviours’, ‘body image and experience’, ‘physical recovery’, ‘psychological improvement’, ‘emotional regulation’, and most pertinent to the current study, ‘social contact and connection’ (Noordenbos & Seubring, 2006).

1.6 Defining Social Support

Social support may be illustrated by the extensiveness of various social relationships (e.g., friends, family members, significant others, colleagues, community members, etc.), or the types of social provisions (e.g., of friendship, intimacy and attachment), which may serve to, among many things, contribute to an individual’s identity formation (e.g., Bullock, 2004), and/or mitigate life stressors (e.g., Karren et al., 2014). As such, the concept of social support may be quite complex and multifaceted, such that early definitions were quite vague based on a belief that a solitary definition might not be appropriate or even conceivable (e.g., Hupcey, 1990).

However, literature from the past several decades provides an immense range of descriptions, which may include (but are not limited to) network resources, incidences of support, supportive behaviors, appraisals of support, and subtypes of support (Cutrona & Russell, 1987; Karren et al., 2014; Lakey & Cohen, 2000; Shumaker & Brownell, 1984). Shumaker and Brownell (1984), for example, proposed a conceptualization of social support which emphasized the interpersonal exchange of resources, defined as either 'emotional' (e.g., empathy, encouragement, concern), 'informational' (e.g., advice, feedback, assistance solving problems), or 'instrumental' (e.g., practical help and tangible resources).

The influence of social support may also be determined by the perceived significance of one's relationships and connections, as well as the depth within which an individual is integrated within their social networks (e.g., Bullock, 2004; Leonidas & Dos Santos, 2014; Uchino, 2006). Furthermore, some social support literature has noted a distinction between *received* and *perceived* social support as received social support is *actual* support provided by a support network at any particular time, while perceived social support is an individual's subjective belief that support *can or will be provided when needed* (Cohen & Wills, 1985; Steine et al., 2020). Scholars seem to favour a global perception of 'available social support' as a better predictor of outcome variables (e.g., a salutary influence) than that which is actually received (Cohen, 2004; Cohen & Wills, 1985; Steine et al., 2020; Wethington & Kessler, 1986). That is, the perception of available social support is reasoned to have a more significant impact on perceived well-being (e.g., via reduced stress levels) than the actual availability of social support (e.g. Cohen & Wills, 1985; Sarason et al., 1994).

1.6.1 Social support subtypes

As noted above, the concept of social support is thought to encompass various subtypes. Weiss (1974), for example, proposed six provisions of social relationships, which when combined, are often used in the literature to measure overall social support. Specifically, these provisions consist of ‘’attachment’, ‘social integration’, ‘reliable alliance’, ‘guidance’, ‘reassurance of worth’, and ‘opportunity for nurturance’ (Weiss, 1974). Attachment and social integration both can fit the definition of emotional support as they both provide a sense of safety, comfort and belonging, however there are some differences. Attachment is directly related to emotional closeness and the sense of security one gains from that closeness (Cutrona et al., 1986). This is typically provided by a spouse or a close family member or friend. Social integration on the other hand involves a sense of belonging to groups with mutual interests and typically is gained from friendships (Cutrona et al., 1986).

In terms of other distinct social support subtypes, while reliable alliance and guidance both involve problem solving when an individual is dealing with stressful and challenging situations, reliable alliance is the knowledge that one can rely on close personal relationships, such as a family member or spouse to provide tangible support (Cutrona et al., 1986), while guidance takes the form of informational support or advice that is provided by teachers, parents or other mentors (Cutrona et al., 1986). Finally, reassurance of worth represents a situation whereby an individual receives positive feedback about their skills, competence, and value to others, which can fall under the category of appraisal support, while opportunity for nurturance involves feeling needed by others in a social network (Cutrona et al., 1986). Although there is some debate around whether this can be considered social support since it actually involves offering support rather than receiving it. Weiss (1974) did, however, suggest that opportunity for nurturance is an essential interpersonal relationship component and it is based on the Weiss (1974) theoretical framework that Cutrona et al. (1986) developed the Social Provisions Scale (SPS), whereby Caron (2013) demonstrated that both the original SPS and the short-form (i.e., 10 item or SPS-10) are valid and reliable psychometric measures of social support.

1.7 Social Support and EDs

Overall, there has been considerable interest in the potential salutary influence of social support on general health (e.g., Cacioppo & Cacioppo, 2018; Cohen, 2004; DiMatteo, 2004; Leonidas & dos Santos, 2014; Uchino et al., 1996) as evidenced in assessments of well-being, life expectancy, general life satisfaction, incidence of illness (Leonidas & dos Santos, 2014), general psychological health (e.g., Karren et al., 2014), and psychological distress (e.g., Kawachi & Berkman, 2001; Khan & Husain, 2010). For individuals living with chronic illness, in particular, social support is often seen as a contributing element to life satisfaction (e.g., Heckman, 2003), as well as a primary factor in the facilitation of recovery from, and/or effective management of a number of persistent health conditions (e.g., Jones et al., 2013).

Within the specific context of EDs, there have also been numerous diverse studies assessing the link between social support and EDs (e.g., Leonidas & Dos Santos, 2014). Moreover, based on a recent literature review, it seems evident that the objectives may be categorized into several aims, i.e., to 1) explore levels of satisfaction reported by ED sufferers, 2) assess the association between social support and various ED risk factors, 3) examine how social supports might relate to ED symptoms and behavior within the context of severity and impairment, and 4) investigate how social support might predict ED recovery.

1.7.1 Perceived social support satisfaction and EDs

In terms of research exploring satisfaction with social support, Tiller et al. (1997) examined a clinical sample of individuals with EDs and observed that those with BN generally expressed strong levels of dissatisfaction with support, while those with AN exhibited more satisfaction. Comparable to other studies, the observed differences between the EDs tended to reflect varying levels of *perceived* social support, as opposed to *actual* differences in the amount of support that was available to each group (Tiller et al., 1997). Similarly, Limbert (2010) investigated the relationship between social support and ED characteristics in a non-clinical sample to determine whether trends exhibited by a clinical sample might be mapped onto those who have a higher-than-average ED-specific characteristic presentations. Although Limbert et al. were not able to replicate all results of past studies with clinical samples, there was concurrence whereby participants who scored highest on the BN subscale of the Eating Disorder Inventory (EDI) reported lower levels of satisfaction with social support. It is important to note, however, that levels of social support satisfaction in this study suggest that even participants reporting bulimic symptoms were reasonably satisfied (Limbert, 2010).

Geller et al. (2017) also examined social support satisfaction in adults with EDs, observing that respondent distress and interpersonal difficulties were negatively associated with support satisfaction. However, it was also revealed that younger ED adults were more satisfied with the offering of a *concerned attitude* by their social supporters with expressions of care and worry *without* encouragement to change behaviour. Alternatively, older ED adults were more satisfied when their supporters refrained from offering advice or negative appraisal of behaviour, unless they were asked to do so (Geller et al., 2017).

1.7.2 Social support and ED risk factors

As previously noted, other studies have explored potential associations with attitudes and perceptions within the context of EDs. Birmachu et al. (2019), for example, observed a connection between perceived social support, rumination, and ED attitudes and behaviors, whereby greater social support was significantly predictive of less risky ED attitudes and behaviors. Interestingly, a difference in the perceived benefit of social support was also discovered in that positive social support from family and friends (as opposed to significant others) predicted lower ED symptom scores. Further, while women might report positive support from same-sex friendships, Birmachu et al. (2019) advised that discussions of body image and eating behaviors among groups could foster unhealthy habits such as body comparison. Thus, self-reported measures of social support may not be intuitive enough to expose potential influences of this type of 'precarious support' on ED development.

As another study within the realm of potential social support influence, Matos et al. (2015) examined early shame experiences and their relation to self-identity in EDs to further elucidate how early such memories involving attachment figures and other individuals from the wider social network (e.g., peers) might impact social comparison based on physical appearance and severity of ED pathology. Matos et al. (2015) observed that participants most frequently reported shame experiences where they were criticized, teased, or rejected, and disclosed events where an aspect related to their weight, body, or physical appearance was negatively commented on or criticized by others (Matos et al., 2015).

1.7.3 Social support and ED symptoms and behavior

EDs have a high likelihood for comorbid anxiety (e.g., generalized anxiety and social anxiety disorder), mood, and substance use disorders (e.g., Hambleton et al., 2022), which has important implications in terms of investigations into social support. Wonderlich-Tierney and Vandel Wal (2010), for example, hypothesized that social support and coping may moderate and/or mediate the relationship between social anxiety and ED symptoms. Using a small non-clinical university sample of 169 female undergraduates, participants completed measures of social support, coping, social anxiety, fear of negative evaluation, and disordered eating attitudes and behaviors, with results indicating that higher levels of social support predicted a weaker association between social anxiety and ED symptomatology (Wonderlich-Tierney & Vandel Wal, 2010). These particular findings seem to suggest that a strong fear of negative evaluation might contribute to disordered eating, and that higher levels of perceived social support may help play a role in alleviating that fear. These results also appear to corroborate findings from a study by Kwan and Gordon (2016) which suggest that lower levels of social support tend to predict higher levels of stress among ED participants, which may serve to facilitate binge and purge behaviours.

1.7.4 Social support and ED recovery

Numerous studies have also examined social support within the context of ED recovery. Cockell et al. (2004), for example, investigated potentially supportive and obstructive factors and found that the maintenance of meaningful and salutary alliances with family members, friends, and professionals following treatment was critical in preserving gains realized during ED treatment. Conversely, if participants were wary about potential social disconnect and loss, as well as feelings of isolation and lack of support following discharge from ED treatment, recovery could be threatened (Cockell et al., 2004). Specifically, it was reasoned that a lack of social support established through the formation of connections and relationships, particularly with a mutual appreciation of ED recovery, could compromise resolve and motivation in fighting the disorder.

Similarly, in a qualitative study, Linville et al. (2012) examined the impact of social support on the process of ED recovery, suggesting that continued contact during treatment, as well as re-establishing relationships afterwards were essential for an optimal response. Additionally, in their study, participants also described a desire to restore relationships negatively influenced by the consequences of the ED as a motivating factor contributing to a desire for recovery. In terms of the potential impact of social support quality, participants reported less shame and isolation, and were more comfortable confiding about their ED when family members were supportive and validating (Linville et al., 2012). Likewise, participants indicated appreciation for more compassionate, non-judgemental care providers, who communicated care and concern, all expressions believed to make a positive difference in recovery (Linville et al., 2012). Conversely, circumstances whereby participants described the discounting or minimizing of the ED by loved ones and/or providers resulted in a higher likelihood of isolation and shame, as well as instances of feeling patronized, judged, and/or criticized which ultimately led to a sense of disempowerment. Participants also found it harmful when support would focus exclusively on their weight, or specifically provided feedback about their weight (Linville et al., 2012).

The findings of both Cockell et al. (2004) and Linville et al. (2012) concerning the importance of social support in ED recovery appear to be consistent with a number of studies (e.g., Beresin et al., 1989; Peters & Fallon, 1994; Pettersen & Rosenvinge, 2002) observing several themes, i.e., 1) high levels of *perceived* social support appear to matter more than actual received social support, 2) satisfaction with the type and levels of social support can have significant impact on ED behaviours and recovery outcomes, 3) social support may be a mediator and/or moderator of the relationship between EDs and other comorbid disorders, and 4) the nature of the individuals who provide social support, as well as the subtypes of social support, may make a significant difference in impact on ED behaviour. Of great importance also appears to be the ability of individuals with EDs to maintain strong social connections, and to be able to openly express thoughts and feelings, and subsequently, receive validation and acceptance from those supports (e.g., Cockell et al., 2004).

1.8 Resilience, Positive Mental Health and EDs

The evolution of ‘mental health’ conceptually has been notable, moving from a fairly rudimentary notion based on either the presence or absence mental illness, to characteristics involving the degree that individuals may thrive and adapt in response to various mental health experiences. For example, the World Health Organization (WHO, 2001) currently defines mental health as a state of wellness defined by positive coping with life stressors, efficacious involvement in work and society, and an acute appreciation of one’s potential (WHO, 2001). Similarly, the Public Health Agency of Canada (PHAC; 2006) also describes mental health as an ability to effectively manage life challenges, enjoy life, and experience continuous emotional, spiritual, and social well-being. Implied in such definitions is the concept of resilience, which the American Psychological Association (APA, 2022) defines as the “process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioral flexibility and adjustment to external and internal demands.” In conceptualizing resilience, it has been conceived of as an asset acquired via dynamic, social interactions among individual, family, and cultural factors, despite adverse life experiences (Fonagy et al., 1994; Luthar et al., 2000; Pan & Chan, 2007). In this view, adaptively managing situations that could place a person at a high-risk of developing psychopathy serves to foster the development of resilience (Luthar et al., 2000).

Theoretically, resilience has been compared with the concept of PMH (Collishaw et al., 2007; Srivastava, 2011) whereby Masten and Obradović (2007), define resilience as “positive patterns of adaptation in the context of adversity” (p. 14) with PMH representing an “individual’s ability to enjoy life, and create a balance between life activities and efforts to achieve psychological resilience” [40, p. 75]. Like the WHO and PHAC definitions of mental health, PMH has been defined as the degree to which individuals feel a sense of control over their life, self-esteem, perceptions of personal acceptance, as well as an ability to cope with challenges (Masten & Obradović, 2007).

In terms of research, measures of resilience such as PMH have been observed to be inversely associated with several physical and mental health outcomes (Robert et al., 2022). For instance, studies report that individuals with higher levels of resilience have a decreased risk of developing cancer (Kennedy et al., 2017) and heart disease (Bergh et al., 2015), as well as a lower risk for anxiety and depression (Elliot et al., 2014; Lebrague & De Los Santos, 2020). However, there have been very few studies that have specifically examined resilience within the context of EDs, with most based solely on clinical samples, with little to no research exploring resilience and EDs in the general population. Nonetheless, Tsigkaropoulou et al. (2021) did report that resilience was lower in a clinical sample of individuals diagnosed with AN or BN, when compared to a healthy sample, while Thurston et al. (2018) found lower levels of resilience in individuals diagnosed with BED.

1.9 Postsecondary Students – A Vulnerable ED Risk Group

While the threat of EDs can exist across the lifespan, they typically surface during adolescence and young adulthood (e.g., Volpe et al., 2016; Ward et al., 2019). Based on data extracted from Statistics Canada's Mental Health Profile of the Canadian Community Health Survey (CCHS-MH, 2013), estimates suggest that over 113,000 Canadians between the ages of 15-24 report being given an ED diagnosis by a health professional. As college and university students typically fall within this age range, they represent a population who are at higher risk for an ED (e.g., Arnett, 2000; Slade et al., 2009). Eisenberg et al. (2011) found that the estimated ED incidences ranged between 7 and 8 percent for college and university students when compared to general population estimates of between 0.5 and 4.5 percent.

According to World Health Organization, college transition also represents a 'peak period' for the onset of mental health disorders whereby novel challenges are likely to present such as increased responsibilities, changes in finances and interpersonal relationships (Darling et al., 2007), and academic overload (Pozos-Radillo et al., 2014). Indeed, anxiety and depression are the most common mental health disorders for college students (APA, 2013), with prevalence rates at roughly 27 percent for anxiety, 34 percent for depression and depressive symptoms, and 11 percent for suicidal ideation (Ibrahim et al., 2013; Tung et al., 2018).

Along with increasing an individual's risk for mental illness, transition to college may also compromise social support which may be essential for coping and the promotion of psychological well-being (Feeny & Collins, 2015; Wood et al., 2018). There is much empirical evidence revealing positive associations between perceived social support and well-being outcomes among college students, including improved social adjustment (Rosenthal & Schreiner, 2000; Swenson et al., 2008) and greater life satisfaction (Siedlecki et al., 2014).

There have been numerous studies assessing the social support networks of first-year college students, observing that those satisfied with their support networks report higher levels of life satisfaction (Demakis & McAdams, 1994), lower levels of homesickness (Newland & Furnham, 1999), and greater psychosocial and academic adjustment (Halamandaris & Power, 1999). Similarly, Coffman and Gilligan (2003) found that stress and social support accounted for 41 percent of the variance in life satisfaction of college students, with social support providing the largest contribution. Conversely, insufficient levels of social support can predict a variety of psychosocial and academic factors related to adjustment to college life. According to Chao (2012), college students with lower levels of social support are more likely to experience heightened stress as well as lack appropriate coping skills. Students with lower levels of reported social support are also more likely to engage in unhealthy, negative activities and habits, such as alcohol abuse, insomnia, and isolation than students who report higher levels of social support (Chao, 2012). Furthermore, college students who perceive their levels of social support to be insufficient, are more likely to report higher levels of life dissatisfaction and have increased thoughts of suicidal ideation (Arria et al., 2009).

1.10 Study Objectives

In light of the preceding, the primary aims of the present study were to 1) establish a current estimate of ED risk among postsecondary students, 2) determine whether the frequency of a variety of factors (e.g., reported health status, body weight, academic performance, social relationships, and sense of institutional belongingness/support) is dependent on whether students are at ED risk, 3) explore whether students at risk of an ED differ from those deemed *not* at risk in terms of PMH and social support, and 4) explore whether particular social support subscales predict the PMH of ED risk students after controlling for sex, age, family income, and academic performance.

Chapter 2: Methods

2.1 Data Collection Method

Data for the present study were obtained from the NCHA – Third Edition (NCHA-III) a research survey designed and disseminated by the American College Health Association (ACHA) to assist college health service providers, health educators, counselors, and administrators in collecting data about their students' habits and behaviors on the most prevalent health topics (ACHA, 2021). ACHA initiated the original NCHA survey in 2000 with a revised survey, the ACHA-NCHA-II, used for the Fall 2008 to Spring 2019 data collection periods. The survey was completely re-written and redesigned, with NCHA-III data collection beginning during Fall 2019.

The NCHA-III survey gathers data associated with a range of topics such as substance use, sexual health, perceived body weight, nutrition, exercise, mental health, and personal safety and violence. Moreover, it includes a number of behavioural and psychometric scales such as Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), the Connor-Davison Resilience Scale (CD-RISC2), the Diener Flourishing Scale – Psychological Well-Being (PWB), USDA ERS Food Security 6-Item Short Form, the Kessler 6 (K6) – screening for serious mental illness, the UCLA Three-Item Loneliness Scale (Hughes et al., 2004), and the Suicide Behaviors Questionnaire – Revised (SBQ-R). The NCHA-III takes approximately 20-30 minutes to complete and does not need to be finished in one sitting.

2.2 Study Participants

During the 2021 spring/summer semester, the NCHA-III Survey was distributed to all students enrolled at Memorial University of Newfoundland (MUN). In partnership with Memorial's Office of the Registrar, 10,858 potential participants were identified for the sampling frame, and sent email correspondence inviting NCHA-III survey participation. As incentive, participating students were given opportunities to have their names drawn to win laptops, or campus parking permits.

The resulting sample consisted of 2293 students (a 21.1 percent response rate) with 1499 (65.3 percent) self-identified as female and 795 (i.e., 34.7 percent) self-identified as male. Genders other than male or female were excluded from this data set. The respondent mean age was 26.0 years (*SD* = 7.742), with 1592 (i.e., 69.6 percent) indicating that they were domestic students and 695 (i.e., 30.4 percent) indicating that they were international students from outside Canada. Ethics approval for the administration of the NCHA-III survey was obtained through the Newfoundland and Labrador Health Research Ethics Board (HREB).

2.3 Study Measures

2.3.1 ED Measure

SCOFF. The SCOFF is designed to screen for *DSM*-5 EDs, including AN, BN, and BED, was used to identify ED risk among student respondents. The SCOFF questionnaire is a brief tool developed by Morgan, Reid, and Lacey from Saint Georges Hospital Medical School (2000) in order to detect potential EDs and aid medical professionals in treatment (Luck et al., 2002). The SCOFF consists of five questions that address core features of AN and BN and was developed from using focus groups of patients who had been diagnosed with EDs, as well as specialists who treat them (Morgan et al., 2000). The acronym SCOFF was derived from each of the five questions listed in the questionnaire, i.e.;

S – Do you make yourself **S**ick because you feel uncomfortably full?

C – Do you worry you have lost **C**ontrol over how much you eat?

O – Have you recently lost more than **O**ne stone (6.35 kg) in a three-month period?

F – Do you believe yourself to be **F**at when others say you are too thin?

F – Would you say **F**ood dominates your life?

Participants provide a binary ‘yes/no’ response to each of five questions, with two or more ‘yes’ responses indicating a potential ED risk. The SCOFF shows 78 percent sensitivity and 88 percent specificity in comparison with the Questionnaire for ED Diagnoses (Q-EDD) which is a more extensive measure (Eisenberg et al., 2011). It showed excellent validity in a clinical population (Morgan et al., 2000) as well as good reliability in a student population (Perry et al., 2002). More specifically, the SCOFF is a highly sensitive measure for detecting AN and BN in adolescent women. However, sensitivity is lower when studying men, individuals with binge eating disorder, and when studying a larger community sample (Kutz et al., 2020).

2.3.2 Social Support Measure

Social Provisions Scale (SPS-10). The NCHA-III assessed perceived social support using the Social Provisions Scale – 10 Items (SPS-10), a 10-item instrument with five separate domains; i.e., ‘attachment’ (i.e., ‘emotional closeness’); ‘guidance’ (i.e., ‘advice or information’); ‘reliable alliance’ (i.e., ‘assurance that others can be counted on in times of stress’); ‘social integration’ (i.e., ‘a sense of belonging to a group of friends’); and ‘reassurance of worth’ (i.e., ‘recognition of one’s competence’). Each item was coded on a scale ranging from

1 - ‘strongly agree’ to 4 - ‘strongly disagree’, with an overall SPS-10 value derived with the summation of responses, yielding potential values ranging from 0 to 40, with higher scores representing more overall social support (Caron, 2013; Statistics Canada, 2013). Administrations of this instrument have revealed excellent internal reliability and construct validity (Caron, 2013).

2.3.3 Positive Mental Health Measure

Mental Health Continuum – Short Form (MHC-SF). Positive mental health was examined using the Mental Health Continuum – Short Form (MHC-SF) (Keyes, 1998). The instrument includes 14 questions, six questions derived from Ryff’s model of psychological well-being (e.g., “confident to think or express your own ideas and opinions”), five questions derived from Keyes’ (1998) model of social well-being (e.g., “that you belonged to a community”), along with three questions assessing subjective/emotional well-being (i.e., “satisfied with life”). The instrument includes three subscales: emotional well-being, social well-being, and psychological well-being. Each item asks, “During the past month, how often did you feel…”, with responses on a six-point scale ranging from 1 (everyday) to 6 (never). Items were reversed coded and then a value of one was subtracted from each value in that “never” was given a value of 0 and “everyday” was given a value of 5. An overall score of PMH is created using the sum of the questions, with total PMH scores ranging from 0 to 70 (higher scores indicate better PMH).

2.3.4 Study Variables

Self-reported health and wellness. Students’ overall sense of wellness was assessed with the question “How would you describe your overall health?” with responses ranging among ‘Excellent’, ‘Very Good’, ‘Good’, ‘Fair’, or ‘Poor’.

Self-described weight. Students were asked “How would you describe your weight?” with responses with response options including ‘Very Underweight’, ‘Slightly Underweight’, ‘About the Right Weight’, ‘Slightly Overweight’, ‘Overweight’.

Body Mass Index (BMI) Categories. BMI was calculated for each student based on reported height and body weight using the computational formula (kg)/ [height (m)]^2, and was subsequently used to establish several discrete categories, i.e., ‘BMI <18.5 Underweight’; ‘BMI 18.5-24.9 Healthy Weight’; ‘BMI 25-29.9 Overweight’; ‘BMI 30-34.5 Class I Obesity’; ‘BMI 35-39.9 Class II Obesity’; and ‘BMI ≥ 40 Class III Obesity’.

Measures to change weight. As an indicator of body weight regulation, students were asked whether they were actively trying to alter their weight with the question “Are you trying to do any of the following about your weight?” with associated response categories including ‘I am not trying to do anything about my weight’, ‘Stay the same weight’, ‘Lose weight’, or ‘Gain weight.’

Self-Reported Eating Disorders (AN, BN, or BED). To investigate whether students have a variety of medical/psychiatric diagnoses, the NCHA-III captures whether students were “… ever diagnosed by a healthcare or mental health professional with any … chronic conditions?” Among the chronic conditions included, students were specifically asked whether they had been diagnosed with an Eating Disorder (e.g., AN, BN, or BED) by a health professional, with a binary response (i.e., ‘No’ or ‘Yes’).

Indicators of Academic Performance. There were several items on the NCHA-III designed to gauge academic performance and perspectives. In terms of academic standing, respondents were simply asked to “Provide their approximate grade point average (GPA) with alternatives ranging between ‘A’ and ‘D’ (with ‘+ and –‘ subcategories; e.g., ‘A+’ or ‘A-‘), as well as ‘F.’’ As a note, ‘A’ GPAs were coded with a value of 1, ‘B’ GPAs were coded with a value of 2, and so on.

In terms of the existence of potential academic issues or challenges, students were asked “Within the last 12 months have you had problems or challenges with…’ ‘Academics?’ with ‘No’ or ‘Yes’ being the response alternatives. Students were subsequently asked to identify factors among a list believed to influence academic performance via the question, ‘Within the last 12 months, have any of the following affected your academic performance?’ For the purposes of the present study, ‘Academic performance impacted by eating disorder or eating problems’ was included with the following potential alternatives; a) ‘I did not experience this issue/not applicable’ b) ‘I have experienced this issue but my academics have not been affected’, c) ‘I have experienced this issue and it negatively affected my performance in a class’, and d) ‘I have experienced this issue and it delayed progress toward my degree’.

Problems and Challenges with Family, Peers and Intimate Partners. To assess perceived problems with various social relationships, students were asked ‘Within the last 12 months have you had problems or challenges with…’ ‘Family?”, ‘Peers?’ and ‘Intimate Partners?’ with ‘No’ or ‘Yes’ responses being the response alternatives for each relationship type.

Social Connections and Sense of Belonging to College or University. In order to determine the degree to which students felt a sense of connection with their learning institution, respondents were asked to provide their level of agreement with two particular statements: i.e., ‘I feel that I belong at my college/university;’ and ‘At my college/university we are a campus where we look out for each other' with alternatives ranging among 'Strongly Disagree,' 'Disagree,' 'Somewhat Disagree,' 'Somewhat Agree,' 'Agree,' and 'Strongly Agree.'

2.4 Data Analyses

All data analyses were performed using SPSS (Statistical Package for the Social Sciences) software version 27. In a preliminary descriptive assessment, a series of two-factor chi-square tests were performed to determine whether responses on several categorical variables was dependent on whether the student was or was not a risk for an ED based on responses to the SCOFF (i.e., students with scores equal to, or greater than a value of 2 were deemed at risk). The specific variables included reported health status, body weight, BMI categorization, measures to change weight, diagnosis of an ED by a health professional, academic performance, problems and challenges with family, peers and intimate partners in past 12 months, and social connections and sense of belonging to college or university. Secondly, a series of independent sample t-tests were conducted to compare students deemed at risk for an ED with those not at risk in terms of the average PMH (i.e., MHC-SF), and the total score from the SPS-10 as well at scores for each of its subscales (i.e., attachment, guidance, reliable alliance, social integration, and reassurance of worth). Finally, a hierarchical regression analyses was carried out to explore whether, and the degree that social support subscales (i.e., attachment, guidance, reliable alliance, social integration, and reassurance of worth) predicted PMH for the ED risk group after controlling for age, sex, GPA, international student status, as well as family income.

Chapter 3: Results

3.1 Prevalence of ED Risk

Of the 2,297 Memorial University students who completed the NCHA-III (2021) survey, 4.9 percent of the sample indicated that they were diagnosed with an eating disorder (e.g., AN, BN, or BED) by a health professional (6.5 percent for females and 1.5 percent male). In terms of ED risk as determined by SCOFF scores with values of 2 or greater revealed that 576 individuals, approximately 25 percent of all respondents were deemed at an ED risk (28.7 percent female, and 18.6 percent male). Moreover, 10.0 percent of the ED risk group were first-year undergraduate students, 15.7 percent second-year undergraduates, 18.0 percent third-year undergraduates, 16.4 percent fourth-year undergraduate students, and 7.6 percent fifth-year (or beyond) undergraduates. Further, 21.4 percent were master's students, while 8.5 percent were doctorate students.

3.2 Reported health status, body weight, BMI category, measures to change weight, and diagnosis of an ED by a health professional as a function of ED risk

A summary of percentages and frequencies, as well as chi-square, p, and Cramer's *V* values are presented in Table 1 for the ED risk and non-risk samples in terms of reported health status, body weight, BMI category, measures to change weight, and diagnosis of an ED by a health professional. As the table shows, there was a significant relationship between ED risk and perceived health ($\chi2$ (4) = 98.5 $p < .001$, $V = .214$) whereby students in the ED-risk sample were more likely to rate overall health as 'poor' (i.e., 11.2 vs. 4.3 percent), and less likely to rate it as 'excellent' (i.e., 6.9 vs. 16.0 percent). A significant relationship was also observed for perceptions of body weight with ED risk students more likely to describe themselves as 'slightly overweight' (i.e., 42.5 vs. 32.8 percent) or 'very overweight' (i.e., 15.8 vs. 3.9 percent) ($\chi2$ (4) = 133.3, $p < .001$, $V = .243$), and significantly less likely to report being in the 'desired weight' category (i.e., 39.3 vs. 51.4 percent). Similarly, there was a significant relationship between ED risk and BMI classification as students in the ED risk sample were more likely to be classified within ‘obese class I’ (i.e., 16.8 vs. 9.6 percent), ‘obese class II’ (i.e., 7.4 vs. 3.9 percent), and ‘obese class III’ (i.e., 6.1 vs. 2.0 percent) ($\chi 2$ (5) = 70.9, *p* < .001, *V* = .180). In terms of measures to change weight, Table 1 reveals a significant relationship with ED risk as those at risk were more likely to report ‘trying to lose weight’ (i.e., 73.3 vs. 44.1 percent) ($\chi 2$ (3) = 145.0, p < .001, *V* = .257). Moreover, a two-factor Chi Square test also revealed that reports of ‘ever being diagnosed with an ED (e.g., AN, BN, BED) by a health professional’ were significantly more likely among students in the ED risk sample (i.e., 12.6 vs. 2.2 percent) ($\chi 2$ (1) = 100.9, *p* < .0001, *V* = .213).

3.3 Approximate GPA, challenges with academics in past 12 months, and academic performance impacted by eating disorder or eating problems as a function of ED risk

To examine whether reported GPA was dependent on ED risk, a two-factor chi-square test revealed a significant relationship in that those in the ED sample were more likely to report a poorer academic performance ($\chi 2$ (13) = 23.7, *p* =.032, *V* = .103). For instance, 54.8 percent of ED risk respondents reported a GPA of ’A+’, ‘A’, or ‘A-‘, compared to 59.4 percent of non ED-risk respondents. Conversely, 7.4 percent among the ED risk sample reported a GPA of ‘C+’, ‘C’, or ‘C’ compared to 4.7 of the non-ED risk group (See Table 2).

In terms of ‘academic problems/challenges in academics in past 12 months’, a significant relationship with ED risk was observed with students at risk more likely to report challenges (i.e., 62.5 vs 48.7 percent) ($\chi 2$ (1) = 32.3, *p* < .001, *V* = .121). Moreover, when questioned whether academic performance was directly impacted by an ED or eating problems, another significant chi-square test was observed ($\chi 2$ (3) = 253.1, p < .001, *V* = .337) indicating that those at risk were more likely to indicate agreement, i.e.; ‘Yes but academics not affected’ (i.e., 19.8

vs. 4.7 percent), ‘class performance negatively impacted’ (i.e., 8.4 vs 1.0 percent) and ‘degree progress negatively impacted’ (i.e., 2.3 vs. 0.1 percent) (See Table 2).

3.4 Problems and challenges with family, peers and intimate partners in past 12 months, social connections and sense of belonging to college or university as a function of ED risk

To explore whether ‘self-reported family problems or challenges in the past 12 months’ varied as a function of ED risk, Table 3 reveals a significant Chi Square test as students at risk for an ED were more likely to indicate agreement compared with those in the non-risk group (i.e., 56.7 vs. 37.3 percent; $\chi 2$ (1) = 65.1, $p < .001$, $V = .170$). A significant relationship was also observed between ED risk and self-reported problems or challenges with peers in the past 12 months (See Table 3). More specifically, students within the ED risk sample were more likely to report problems or challenges (i.e., 36.7 vs. 22.1 percent) ($\chi 2$ (1) = 47.4, $p < .001$, $V = .144$). Similarly, reported problems or challenges with intimate relationships was observed to vary significantly with ED risk with those at risk more likely to demonstrate agreement (i.e., 52.8 vs. 36.5 percent) ($\chi 2$ (1) = 47.4, $p < .001$, $V = .146$) (See Table 3).

Table 3 also presents items indicating a students’ sense of connection to their academic institution as a function of ED risk. Specifically, a chi-square test revealed that students within the ED risk sample were significantly less likely to report belongingness to their college/university compared with those not at risk (i.e., 83.8 vs. 89.7 percent indicating agreement) ($\chi 2$ (5) = 35.9, $p < .001$, $V = .127$). Similarly, a significant relationship was also observed between ED risk and whether students felt that their college/university ‘look(ed) out for one another’, with those at risk less likely to report agreement (i.e., 73.4 vs. 80.5 percent) ($\chi 2$ (5) = 17.0, $p = .004$, $V = .087$) (See Table 3).

3.5 Positive Mental Health (PMH) and Social Provision Scale – 10 Item (SPS-10) Comparisons between student at risk, and not at risk for an ED

To compare Positive Mental Health (PMH) and Social Provision Scale–10 Item (SPS-10) means between students at risk, and not at risk for an ED, a series of independent sample *t*-tests were conducted. As presented in Table 4, PMH mean for students in the ED risk sample (i.e., $M = 35.65$; $SD = 15.02$) was significantly lower than that of the non-risk sample ($M = 42.94$; $SD = 14.27$), $t(2187) = 10.17$, $p < .001$; $d = .501$. The table also reveals a significantly lower overall SPS-10 mean for the ED Risk group (i.e., $M = 33.80$; $SD = 5.02$) compared with the non-ED risk group (i.e., $M = 35.35$; $SD = 4.64$) $t(2044) = 6.33$, $p < .001$; $d = .327$. Additionally, each SPS-10 subscale mean for the ED risk group was significantly lower than the non-ED risk group; i.e., attachment ($M = 6.77$; $SD = 1.14$ vs. $M=7.06$; $SD = 1.10$) $t(2147) = 5.18$, $p < .001$; $d = .160$; guidance ($M = 6.90$; $SD = 1.14$ vs. $M = 7.18$; $SD = 1.08$) $t(2183) = 5.15$, $p < .001$ $d = .254$; reliable alliance ($M = 6.93$; $SD = 1.07$ vs. $M = 7.23$; $SD = 0.98$) $t(2183) = 6.01$, $p < .001$; $d = .297$; social integration ($M = 6.40$; $SD = 1.23$ vs. $M = 6.77$; $SD = 1.15$) $t(2124) = 6.30$, $p < .001$; $d = .317$; and reassurance of worth ($M = 6.52$; $SD = 1.24$ vs. $M = 6.90$; $SD = 1.12$) $t(2175) = 6.68$, $p <.001$; $d =.331$.

3.6 Predicting PMH with SPS-10 Subdomains for Student at ED Risk

A hierarchical regression analysis was conducted to determine whether, and the degree to which specific SPS-10 subscales predicted PMH for students at risk for ED in block 2, after controlling for age, GPA, family income, international student status and sex in block 1. As indicated in Table 5, ‘A’ GPA values significantly predicted higher PMH scores in block 1, accounting for 2.8 percent of the variance ($F(5, 472) = 3.72$, $p = .003$), while two SPS-10 subscales (i.e., ‘social integration’ and ‘reassurance of worth’) positively predicted PMH in block 2, accounting for an additional 26.2 percent of variance ($F(10, 472) = 20.30, p < .001$).

Chapter 4: Discussion

4.1 Summary of Findings

4.1.1 ED risk amongst postsecondary students

Based on the National College Health Assessment (NCHA-III) survey administered to Canadian postsecondary students during 2021, the current study revealed several findings that add to the limited existing research into aspects of ED risk for this particular demographic. As previously noted, the estimated ED prevalence rate in Canada is between 2% and 3% of the general population (Statistics Canada, 2016), with the lifetime prevalence rates of EDs estimated between 8.4% in females and 2.2% in males (Galmiche et al., 2019). This current study revealed a comparable prevalence rate with 4.9% of postsecondary students reporting being diagnosed with an ED (e.g., AN, BN, or BED) by a health professional, with 6.5% being female and 1.5% being male. However, it is important to note that studies on prevalence rates merely capture a percentage of individuals who have been formally diagnosed with an ED. In fact, the number of individuals who fall short of *DSM-5* diagnostic criteria, yet exhibit characteristics and risk factors predicting an ED, is estimated to be much larger (Stice et al., 2009). This current study supports the notion that a large proportion of college students with significant ED related pathology exist, yet are not identified or treated. ED risk among the current sample of postsecondary students, as identified by the SCOFF, was observed to be 25.2%. When compared to the 4.9% of individuals who reported being diagnosed with an ED by a health professional, this suggests that those individuals reporting a formal diagnosis of an ED represent the tip of the iceberg when it comes to disordered eating. This is consistent with several studies that have found widespread eating pathology among non-clinical college students, particularly females (e.g., Lipson & Sonneville, 2017; Prouty et al., 2002; Wells et al., 2015). By utilizing the SCOFF questionnaire to flag potential ED risk, this study was able to capture a broader picture of disordered eating behaviours, and a greater ED threat among postsecondary students. As noted by Eisenberg et al. (2011), many university students experiencing ED symptoms are not being identified and treated, so the SCOFF may be useful for disordered eating detection in this population.

It is also important to acknowledge that the ED risk identified by the SCOFF in the current study (i.e., 25.2%) was higher to that reported in studies exploring ED risk in other universities using the same screening tool (e.g., Eisenberg et al., 2011). Eisenberg et al. (2011) reported a positive screen rate of 13.5% for females and 3.6% for males. It is noteworthy that other studies such as Eisenberg et al. (2011) employed a more conservative approach for defining ED risk with the SCOFF with three or more ‘Yes’ responses being used to flag an individual as being at risk of an ED. The current study used a criterion of two or more "Yes" responses for participants to be considered at risk of an ED. Although Eisenberg et al. (2011) propose that the use of three rather than two symptoms as the threshold for a positive screen aids in avoiding false positives, one could argue that identifying individuals who may be at risk with two identified symptoms produces a more sensitive measure of ED threat, and yields a more immediate assessment of disordered eating behaviours, generating information that may greatly improve the chances of successful early intervention.

It is noteworthy that the NCHA-III survey was administered to students during the Spring/Summer semester of 2021, approximately one year into the COVID-19 pandemic. Moreover, a salient reality of the pandemic was a public health directive for individuals to socially isolate/distance in order to prevent virus transmission (Hwang et al., 2020). While such quarantine and social distancing strategies were necessary, particularly before effective vaccines were developed and widely distributed, the probable reduction in social supports and community connectedness likely served to increase a sense of loneliness and social isolation, resulting in deleterious mental health consequences (e.g., Jeste et al., 2020). It could be reasoned, therefore, that postsecondary students were among many who experienced relatively high levels of social isolation during this period, leading to stressors which may have intensified ED-related triggers, and/or presented additional challenges leading to problematic eating, particularly for individuals with AN, BN or BED (Hensley, 2020; McMenemy, 2020). Thus, it is conceivable that the relatively high ED risk identified by the SCOFF in the current study may be partly a function of increased psychosocial costs resulting from realities of the COVID-19 pandemic.

4.1.2 ED risk and health status, body weight, and motives to change

The current study found that postsecondary students deemed to be at risk for ED were significantly more likely to rate their overall health as being poorer (i.e., “fair” or “poor”) than those not at risk. Such observations seem feasible since research suggests that ED behaviours can be associated with a range of complicated, persistent, and potentially severe comorbid medical problems ranging from general malaise to gastrointestinal or respiratory issues, to even cardiac complications (e.g., Gibson et al., 2019; Mehler & Rylander, 2015). Moreover, results from Eisenberg et al. (2011) also indicate that students at risk for an ED are also significantly more likely to experience co-occurring symptoms of psychopathology, for example, at risk scores on the SCOFF questionnaire were associated with reported depression and anxiety, as well as suicidal ideation.

Indeed, ample research reveals that EDs have one of the highest mortality rates of any mental health disorder, with suicide completion being a leading cause of death among individuals with EDs (e.g., Pedram et al., 2021; Preti et al., 2011). Such complex comorbidities further highlight the importance of early detection and intervention for those with ED risk, as both physical and mental health problems are likely to become more detrimental and complex over time (Eisenberg et al., 2011).

It is also noteworthy that there was a significant relationship observed between ED risk and BMI obese classifications and students' motivation to lose weight with those in the ED risk sample more likely to be classified within 'obese class I', 'obese class II', and 'obese class III', and more likely to report 'trying to lose weight.' Although body weights associated with AN and BN in particular, often range between low and normal levels, EDs and obesity can correlate significantly as well, as in the case of BED (Haines & Neumark-Sztainer, 2006). In fact, among adolescents, being overweight/obese has been linked with developing an ED later in life (Babio et al. 2009; Veses et al., 2011). The co-occurrence of obesity and ED can exacerbate both physical and psychological health issues (Adelantado-Renau et al., 2018). Moreover, well-established ED risk factors, including body dissatisfaction, poor self-esteem, depression, and engaging in dieting behaviors are also commonly reported by adolescents with obesity (Jebeile et al., 2021), suggesting that overweight/obese adolescents may have a higher-than-average vulnerability to developing an ED (e.g., Jebeile et al., 2021), a theoretical speculation that appears consistent with the findings of the current study.

4.1.3 ED risk and academic performance

In terms of academic performance, it was found that those deemed at risk for an ED were more likely to report that problematic eating behaviours negatively influenced both their performance in class, as well as progress towards their degree. There are several significant physical and psychological comorbid factors with ED behaviours (Eisenberg et al., 2011; Hambleton et al., 2022) that could predict deteriorated academic performance (Claydon & Zullig, 2020; Frank, 2015). For instance, while a direct link has not been firmly established, malnutrition could conceivably account for educational challenges due to resulting linguistic and cognitive deficits (Sawaya, 2006). Given the high prevalence of obesity and body-image dissatisfaction in adolescents, as well as the relationship between obesity and ED risk, there is some evidence to suggest that ED and obesity may specifically predict academic performance deficits. Adelantado-Renau et al. (2018), conducted a 3-year longitudinal study which explored an association between ED risk and academic performance in healthy adolescents, considering body weight. BMI was calculated for 261 male and female adolescents with a portion of the SCOFF being used to assess ED risk, while academic performance was assessed by recording final individual academic grades and GPA from the first year of secondary school, as well as scores on the Spanish version of the Science Research Associates Test of Academic Abilities (Adelantado-Renau et al., 2018). The primary findings from this research suggest that the risk of an ED (as indicated by the SCOFF) is positively associated with weight status and negatively associated with academic grades and with verbal and numeric abilities (Adelantado-Renau et al., 2018).

Although observations from previous studies suggest that cognitive deficits pre-exist and underlie the etiology of ED in adolescents (e.g., Lena et al., 2004) and strong academic performance may function as a protective factor (Croll et al., 2002), evidence linking ED risk and academic performance is limited and inconclusive in postsecondary students. However, among the research that does exist, a study assessing a medical student sample (*N* = 315) observed 1.6% of individuals self-reporting an ED stated that it influenced their academic performance, while 29.1% of individuals self-reporting an ED listed it as one of their most challenging academic performance hindrances (Kernan et al., 2008). Similarly, Claydon (2019) reported a complex association between the diagnosis and treatment of AN and BN and academic performance, as indicated by cumulative GPA in a large, postsecondary sample (N = 223,887) using the NCHA. More specifically, all students diagnosed with (but not treated for) AN did *not* significantly differ in GPA compared to students not diagnosed with AN, but those students diagnosed with AN (and treated with medication and psychotherapy) were more likely to report a higher GPA than those *not* diagnosed with AN (Clayton, 2019). Similarly, while all students diagnosed with (but not treated for) BN did not differ in GPA compared to students not diagnosed with BN, those diagnosed with BN (and treated with both psychotherapy and medication) were more likely to report a higher GPA than those not diagnosed with BN (Clayton, 2019). Overall, results from the Clayton (2019) study, combined with the results of the current study, add to the limited research on EDs and academic performance in college students. Taken together, results indicate the need to improve medical and psychosocial outcomes and help understand and support academic performance issues. Moreover, the current study also highlights the importance of future ED research to clearly examine the link between obesity and academic performance among college students.

4.1.4 ED risk and family, peer, and intimate partner relationships, and sense of belonging to postsecondary institution

In terms of perceived relationship quality, results from the current study suggest that postsecondary students at risk for an ED were significantly more likely to report problems or challenges with family members, peers, and intimate partners within the previous 12 months.

Since ED onset typically occurs during adolescence and young adulthood (Volpe et al., 2016; Ward et al., 2019) when cohabitation with parents, caregivers, and/or siblings is most likely, potential family conflict is somewhat intuitive as family members are often a primary support resource, with the value of this dynamic having direct implications for the ED behaviour and severity. For instance, Dimitropoulus et al. (2008) examined functioning dynamics in terms of the presence of AN in the family unit, observing that strong support predicted better general functioning, while lower levels of support predicted greater family dysfunction as evidenced by a heightened sense of ED burden, family conflict, and stigma. Similarly, other studies have observed that problematic familial qualities such as poor unity, low affective expression, and excessive interpersonal dependence predict higher risk of developing pathological eating behavior (Erriu et al., 2020; Goosens et al., 2012; Lyke & Matsen, 2013; Steinhausen et al., 2005), with other research suggesting that adolescents with an ED tend to report high levels of family dissatisfaction (Schuetzmann et al., 2008). Particularly, adolescents with EDs were found to experience unsatisfactory family relationships, characterized by poor parental acceptance (i.e., family warmth, empathy, emotional support) and limited independence among members (Schuetzmann et al., 2008).

In terms of origin, some research suggests that social integration deficits within the context of EDs may be traceable to early development. For instance, studies assessing memories of childhood experiences and perceptions reported in AN clinical cases often reveal limited peer associations (Cardi et al., 2018; Westwood et al., 2016) and a tendency toward introverted, unsocial behaviours (Krug et al., 2013) as well as reported distress about being accepted by others. Although such memories may be subject to recall biases, problems with social relationships and a lack of social integration were frequently substantiated by parents (Rhind et al., 2014). Furthermore, longitudinal cohort studies on adolescents have suggested that early aversive experiences within social networks (particularly family members and peers) may increase the risk for developing symptoms of ED (Cardi et al., 2018).

The fact that those at risk for an ED are more likely to report problems/challenges with social others, and a tendency to be socially disconnected, it was not surprising that students at risk for an ED in the current study were also significantly less likely to report belongingness to their college/university and to believe their institution ‘look(ed) out for one another’ compared with those deemed not at risk. The lack of connection with one’s academic institution, and reduced belief that it has students’ best interest at heart may be reflected in this study’s finding that those deemed at risk for an ED were more likely to report poorer performance in class, as well as slower progress towards their degree was partly a function of problematic eating behaviours.

In any event, given the transition to postsecondary learning is a ‘peak period’ for mental health disorder onset which may be further exacerbated by such things as novel life responsibilities, financial issues, interpersonal relationships (Darling et al., 2007), and academic overload (Pozos-Radillo et al., 2014), the quality and extent of social relationships are vital factors to assess particularly given much empirical evidence observing the salutary benefit of perceived social support and well-being outcomes among college students, including improved social adjustment (Rosenthal & Schreiner, 2000; Swenson et al., 2008) and greater life satisfaction (Siedlecki et al., 2014).

4.1.5 ED Risk, Social Support and Positive Mental Health

Following initial descriptive analyses which estimated overall ED risk within the current postsecondary sample, and whether health status, body weight, academic performance, social relationship quality, and sense of institutional belongingness/support varied based on student ED risk, the analytic focus shifted to determine whether, and the degree to which students at risk of an ED risk differed from those deemed not at risk in terms of PMH and social support (overall and by subtype). It was subsequently found that those in the ED risk sample had significantly lower levels of PMH and perceived social support, overall, and by each subtype (i.e., attachment, guidance, reliable alliance, social integration, and reassurance of worth).

A novelty of the present study involved an assessment of PMH as a measure of resilience, and while consistent with previous studies (e.g., Thurston et al., 2018; Tsigkaropoulou et al., 2021), the finding that a sense of resilience was lower among students at risk of an ED also suggests that the degree to which individuals may thrive, adapt or cope in response to their ED may also be compromised. A broader definition of mental health includes positive coping with life stressors, efficacious involvement in work and society, and an acute appreciation of one's potential (e.g., WHO, 2001), factors that are captured with the PMH variable (i.e., the degree to which individuals feel a sense of control over their life, self-esteem, perceptions of personal acceptance, as well as an ability to cope with challenges (Masten & Obradović, 2007). With such a multidimensional construct, aspects of PMH may be further explored in order to more deeply appreciate factors essential for recovery/thriving (e.g., control, self-esteem, personal appreciation), and those that predict their likelihood (e.g., types of social support) despite the daily challenges of the ED and associated unhealthy behaviours.

In terms of social support, the observations that the overall SPS-10 total score was significantly lower among the ED risk sample is consistent with previous research whereby individuals diagnosed with EDs tend to report smaller support systems, and less satisfaction with social relationships in comparison to normative groups (e.g., Grisset & Norvell, 1992; Limbert, 2010; Marcos & Cantero, 2009; Rorty et al., 1999) Tiller et al., 1997). However, since previous research assessing social support subtypes within the context of EDs does not exist, no predictions were proposed in terms of the kinds of social support that might likely be deficient among those at risk of an ED. Nonetheless, in the present case, it would appear that those at risk for an ED are relatively deficient in *every* social support subtype, lacking, for instance, in a) emotional closeness and the sense of security (as indicated in attachment), b) a sense of belonging to/ acceptance from groups (as indicated in social integration), c) advice or counsel for problem solving when an one is dealing with stressful and challenging situations (as indicated in guidance), d) reliance on close personal relationships provide tangible/material support (as indicated in reliance alliance), and e) positive feedback about one's skills, competence, and value to others (as indicated in reassurance of worth) (Cutrona et al., 1986).

In terms of whether, and the extent to which social support subtypes might predict PMH for students at risk for an ED, a hierarchical regression found that both social integration, and reassurance of worth were positively associated with PMH after controlling for sex, age, GPA, international student status and family income. Since the reassurance of worth subscale assesses the degree to which respondents feel that others acknowledge their competence, abilities, and worth (Cutrona et al., 1986) , and since low self-esteem and low perceived social support from the family have been identified as risk factors for ED development in young women (Ghaderi, 2003), ED intervention programs might specifically target family relations to focus on and improve this particular form of social support, as well as the social support offered from friends and colleagues to promote recovery from ED (e.g., Leonidas & Santos, 2014). The current study also observed a potential benefit of greater perceived levels of social integration in promoting PMH in individuals at risk for an ED, a subscale that captures a sense of belonging to or acceptance in a group (Cutrona et al., 1986). Social isolation is common in individuals experiencing EDs, particularly AN, whereby social relationships can become strained as the ED progresses (Allison et al., 2014). Even when attempting to incorporate friendship into recovery, relationships with others in ED group therapy can lead to highly competitive and even pro-anorexia communities. However, since patients with pro-recovery friendship groups may see better results in maintaining a social life while recovering from an ED (Allison et al., 2014), promoting greater social integration or group acceptance might result in more optimal recovery outcomes.

Research has specifically shown that postsecondary students who feel a sense of fulfillment within their social support networks (e.g., feel a sense of belonging and acceptance) will also have higher levels of overall life satisfaction (Mahanta & Aggarwal, 2013). It must be stated however, that the most beneficial social support types can also vary from one individual to another based on a variety of factors; including personality traits, coping skills, rumination, and self-esteem. Nolen-Hoeksema and Davis (1999) looked specifically at whether individuals ruminate on their ability to cope with difficult experiences (Nolen-Hoeksema, 1999) and noted that individuals who are more self-critical and tend to ruminate for longer periods may frequently seek out social support from others who eventually become annoyed or critical of them (Nolen-Hoeksema, 1999). This results in a cycle of unhappiness for both the person seeking support and their support figures. Future studies could incorporate the role of rumination in the mediation of PMH by SPS-10 subscale scores in individuals at risk of an ED.

4.2 Methodological Considerations: Strengths and Limitations

It is important to mention the limitations of the present study. One limitation includes the fact that this research was correlational. Although significant relationships were observed between ED risk and the health and wellness variable, academic performance and social connections and sense of belonging variables, causality cannot be established. Indeed, it cannot be claimed that ED risk caused any of the outcomes studied. The correlational nature of the present study allows only for associations among variables to be drawn. Moreover, directionality of the associations among ED risk and some variables examined in the present study is open to interpretation. Subsequently, while the relationship between ED risk and PMH was significant, it cannot be concluded that in fact ED risk causes lower levels of PMH or that certain types of social support cause higher levels of PMH.

A second limitation of the present study involves issues intrinsic to self-reporting measures. Concerns such as response bias, respondent honesty, understanding of the items, and social desirability may have affected responses provided by participants. Given the sensitive and often secretive nature of EDs, it is possible that some participants may have denied experiencing disordered eating behaviours or simply omitted items on the NCHA-III pertaining to EDs and as such would have been improperly excluded from the ED risk group. Related to this issue is the topic of self-reported ED diagnosis. In this study 4.9% of individuals who answered “yes” to the questions which asked whether respondents had ever received an ED diagnosis at some point in their lives. None of the self-reported ED diagnoses were confirmed for the purposes of this study, and we also do not know if any individuals were in treatment or in remission for their ED. Thus, we have no way of knowing what stages of the potential EDs the participants were in. In addition, we also do not know what type of professionals (e.g., psychologist, physician, etc.) gave any of the self-reported ED diagnosis. Different professionals use different diagnostic tools, thus potentially impacting diagnostic accuracy.

4.3 Implications for Clinical Practice

The results of the current study warrant further attention as they have implications for clinical practice. Establishing a current and representative prevalence rate for ED risk among postsecondary students helps to highlight the all-too-common nature of EDs and the need for increased preventative interventions, early detection, screening, and evidence-based treatment.

Collectively, these findings highlight the potential effectiveness of a broad, preventive approach to EDs in college settings. Firstly, utilizing the SCOFF screening tool as a way to identify subclinical ED symptoms as well as profiles of individuals at risk for ED, has the potential to limit the progression of ED symptoms and possibly prevent more serious cases. In turn, by preventing more serious cases of ED, there is the potential to reduce the psychosocial and academic struggles that are associated with subclinical ED concerns. A possible strategy to assist in implementing this approach was discussed in Eisenberg et al. (2011). They suggested that colleges and universities could incorporate a brief screen, such as the SCOFF, into routine primary care visits to reach a larger number of students. In addition, it could benefit both colleges/universities as well as new students, to include brief mental health screening tools upon admission to school, to highlight students who may need additional support systems and preventative intervention (Eisenberg et al., 2011).

The current study also suggests that utilizing comprehensive screening measures, such as the NCHA-III, holds promise in identifying students who screen positive for ED risk and, who have not been receiving treatment. Online screening programs might also be linked to online prevention programs, which have been shown in randomized studies to reduce concerns about eating and body image (Taylor et al., 2006).

Results from the current study, especially when combined with previous research (e.g., Birmachu et al., 2019; Jackson et al., 2005) suggest that unhealthy relationships, and/or the lack of positive social interactions and support correlate significantly with ED symptomatology. Moreover, the current results suggest that there are specific subtypes of social support that may have particular salutary benefit, significantly predicting PMH in postsecondary students at risk for an ED. Therefore, by better understanding such intricacies of social support, researchers may be able to identify relationship-specific intervention strategies that may help improve levels of social support in this population. Specifically, strategies that focus to bolster protective social factors may prevent individuals at risk for an ED from ever reaching clinical threshold. In keeping with the theme of incorporating mental health screening tools on campus, colleges/universities may also benefit from incorporating screening tools to identify additional factors contributing to higher levels of PMH in students.

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***Table 1** – Percentages and Frequencies, and Chi Square, p, and Cramer's V Values for Self-Reported Health & Wellness, Self-Described Weight, Body Mass Index (BMI) Categories, Measures to Change Weight, and Ever Diagnosed with Eating Disorder for Student At Risk and Not At Risk of Developing Eating Disorders – NCHA-III (2021)*

	Percentage (*n*)				
	At Risk for ED (*n* = 565)	Not At Risk for ED (*n* = 1680)			*Cramer's V*
Self-reported health & wellness			98.5	<.001	.214
Excellent	6.9 (37)	16.0 (258))			
Very Good	31.5 (168)	42.5 (686)			
Good	10.9 (80)	3.4 (1243)			
Fair	5.2 (38)	1.4 (516)			
Poor	11.2 (78)	4.3 (1546)			
Self-described weight			133.3	<.001	.243
Very underweight	0.2 (1)	0.5 (9)			
Slightly underweight	5.8 (33)	8.5 (144)			
About right weight	35.8 (202)	54.3 (915)			
Slightly overweight	42.5 (240)	32.8 (552)			
Very overweight	15.8 (89)	3.9 (65)			
Body Mass Index (BMI)			70.9	<.001	.180
Underweight	3.2 (18)	6.2 (99)			
Desired weight	39.3 (218)	51.4 (823)			
Overweight	27.2 (151)	26.9 (430)			
Class I obese	16.8 (93)	9.6 (153)			
Cass II obese	7.4 (41)	3.9 (63)			
Class III obese	6.1 (34)	2.0 (32)			
Measures to change weight			145.0	< .001	.257
Not doing anything	11.3 (64)	22.5 (379)			
Trying to stay the same weight	12.0 (68)	24.9 (419)			
Trying to lose weight	73.3 (414)	44.1 (742)			
Trying to gain weight	3.4 (19)	8.6 (144)			
Ever diagnosed with eating disorder (e.g. AN, BN, BED)			100.9	< .001	.213
No	87.4 (492)	97.8 (1635)			
Yes	12.6 (71)	2.2 (36)			

***Table 2** – Percentages and Frequencies, and Chi Square, p, and Cramer's V Values for Approximate GPA, Challenges with Academics in Past 12 Months, Academic Performance Impacted by Eating Disorder or Eating Problems for Students At Risk and Not At Risk of Developing Eating Disorders - NCHA-III (2021)*

	Percentage (*n*) NCHA-III 2021 At Risk for ED (*n* = 565)	Not At Risk for ED (*n* = 1680)	$\chi 2$	*p*	*Cramer's V*
Approximate GPA			23.7	< .032	.103
A+, A, A-	54.8	59.4 (1000)			
B+, B, B-	33.4	30.4 (510)			
C+, C, C-	7.4 (42)	4.7 (80)			
D+, D, D-	1.0 (6)	0.7 (11)			
F	0.2 (1)	0 (0)			
Problems/challenges in academics in past 12 months			32.3	< .001	.121
No	37.5 (212)	51.3 (864)			
Yes	62.5	48.7 (819)			
Academic performance impacted by eating disorder or eating problems			253.1	< .001	.337
I did not experience this	69.5 (390)	94.2 (1574)			
Yes, but academics not affected	19.8	4.7 (79)			
Yes, performance neg. impacted	8.4 (47)	1.0 (16)			
Yes degree progress neg. impacted	2.3 (13)	0.1 (2)			

***Table 3** – Percentages and Frequencies, and Chi Square, p, and Cramer's V values for Problems and Challenges with Family, Peers and Intimate Partners in Past 12 Months, and Sense of Belonging to College or University for students At Risk and Not At Risk of Developing Eating Disorders – NCHA-III (2021)*

	Percentage (*n*) NCHA-III 2021				
	At Risk for ED (*n* = 565)	Not At Risk for ED (*n* = 1680)	*χ2*	*p*	Cramer's *V*
Problems/challenges with family in past 12 months			65.1	< .001	.170
No	43.3 (244)	62.7(1052)			
Yes	56.7 (320)	37.3 (627)			
Problems/challenges with peers in past 12 months			47.4	< .001	.144
No	63.3 (355)	78.0 (1302)			
Yes	36.7 (206)	22.1 (368)			
Problems/challenges with intimate relationships in past 12 months			46.6	< .001	.146
No	47.2 (268)	63.5 (1061)			
Yes	52.8 (297)	36.5 (610)			
I feel I belong at my college/ university			35.9	< .001	.127
Strongly disagree	1.4 (8)	1.2 (21)			
Disagree	5.7 (32)	2.8 (47)			
Somewhat disagree	9.0 (51)	6.4 (107)			
Somewhat agree	31.4 (178)	23.9 (401)			
Agree	36.0 (204)	44.0 (739)			
Strongly agree	16.4 (93)	21.8 (366)			
At my college/university we look out for each other			17.0	< .004	.087
Strongly disagree	4.3 (24)	2.5 (42)			
Disagree	7.8 (44)	5.9 (99)			
Somewhat disagree	14.6 (82)	11.2 (186)			
Somewhat agree	39.1 (220)	38.5 (642)			
Agree	25.4 (143)	30.5 (508)			
Strongly agree	8.9 (50)	11.5 (191)			

Table 4 – *Mean, Standard Deviation, p, and Cohen's d Values for Positive Mental Health (PMH), and Social Provision Scale 10-Item (SPS-10) Overall and Subtype Scale Scores for Students At Risk and Not At Risk for an Eating Disorder - NCHA-III (2021)*

	Non-ED Risk Sample (*n* = 1680)		ED Risk Sample (*n* = 576)			
	M	*SD*	*M*	*SD*	*p*	*Cohen's d*
Positive Mental Health	42.94	14.27	35.65	15.02	*	.501
Overall SPS	35.35	4.64	33.80	5.02	*	.327
Attachment	7.06	1.10	6.77	1.14	*	.160
Guidance	7.18	1.08	6.90	1.14	*	.254
Reliable alliance	7.23	0.98	6.93	1.07	*	.297
Social integration	6.77	1.15	6.40	1.23	*	.317
Reassurance of worth	6.90	1.12	6.52	1.24	*	.331

Note. *$p < .001$

Table 5 – *Summary of Hierarchical Regression Analysis for Variables Predicting Positive Mental Health in Students At Risk for Eating Disorder – NCHA-III (2021)*

	Block 1			Block 2		
Predictor Variable	*B*	*SE*	*β*	*B*	*SE*	*β*
Age	0.189	0.109	0.083	0.125	0.094	0.055
GPA	-0.909	0.251	-0.167*	-0.613	0.216	-0.112*
Total family income	0.454	0.258	0.084	0.199	0.222	0.037
International student	-1.077	1.607	-0.034	-2.623	1.386	-0.082
Sex	-0.228	1.635	-0.007	1.486	1.411	0.044
Attachment				1.388	0.986	0.110
Guidance				-0.075	0.981	-0.006
Reliable Alliance				-0.898	0.947	-0.066
Social Integration				2.952	0.695	0.249*
Reassurance of Worth				3.378	0.747	0.290*
Adjusted R^2		.028			.290	
F for R^2 change		3.72			20.30	

*Note. * p < .001*