THE LIGHT AND DARK SIDES OF PERFECTIONISM

Implications for Health and Well-Being

by

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Abstract

The present work presents two studies that examined the association of perfectionism, operationally defined by Hewitt and Flett's (1991) multidimensional model of perfectionism, with health and subjective well-being (SWB). The underlying question of this research was whether perfectionism could be beneficial as well as detrimental to health and well-being, as this is one of the most highly debated questions in the current literature. In samples of relatively healthy university students (n = 538) and community adults suffering from various chronic illnesses (n = 772), results from Study One indicated that socially prescribed perfectionism (SPP) is directly associated with poorer health and well-being. Results further showed from a person-centered perspective that there is a large group of individuals with high levels of SPP and that it is indeed these individuals who reported the poorest health and lowest levels of well-being. Other-oriented perfectionism was found to be unrelated to health and SWB. Findings revealed that when perfectionism is self-imposed (i.e., self-oriented perfectionism; SOP), it is neither healthy nor unhealthy in an absolute sense. From the variable-centered perspective, this conclusion was supported by the fact that SOP was associated with both positive (e.g., better mental health and higher levels of SWB in the student sample), and negative correlates (e.g., higher levels of negative affect, stress, and neuroticism in both samples). Evidence from the chronically-ill sample further substantiated this conclusion by showing that there may be an optimal level of SOP, because moderate levels of SOP were found to be associated with better health and higher levels of SWB, whereas levels that were too low or too high were found to be associated with poorer health and lower levels of SWB. Findings from the person-centered approach were particularly informative, in that they not only demonstrated that unique profiles of

Dedication

I dedicate this to my Nana, who was my friend and my constant advisor. You were so much more than a grandmother to me. I would not be here without your support, love, and of course your swift kick in the butt early in my university career. I love you always!

perfectionism exist within individuals, but that the relative healthiness of SOP varies as a function of the other dimensions of perfectionism included, such that SOP did not appear to be associated with poorer health or well-being unless it was combined with high levels of SPP. All of these relationships held after accounting for broader personality traits that have been shown to be related to perfectionism, health, and well-being, speaking to the incremental predictive utility of perfectionism with regard to health and SWB. A theoretically-based five-pathway model which links perfectionism to health and well-being was tested in Study Two. The five mediating pathways that were examined were stress, perceived social support, socioeconomic status, health-promotion, and health-risk behaviours. The importance of examining indirect pathways from perfectionism to health was underscored, because the complex relationship between SOP and health would have been completely overlooked if only direct associations between perfectionism and health had been examined. Findings from Study Two highlighted the significance of the stress and social support pathways when understanding the relationship between perfectionism and health, as the relationship between SPP and health was completely mediated by these processes, and SOP was indirectly related to indices of health and well-being via the stress and social support pathways. In sum, while results clearly supported that SPP is detrimental for health and well-being, the findings concerning SOP and health were complicated and suggest that researchers need to move beyond studying simple bivariate correlations and move to more complex models that account for different levels of SOP, suppression, and possible intervening variables. Implications of the current work and possible avenues for future research are discussed.

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CHAPTER 1

General Introduction

In an effort to stimulate empirical research in the area of perfectionism, Hollender (1978) published a paper in which he cogently argued that perfectionism was a neglected personality trait, despite its significance, and called for more research on the topic. Hollender was successful in his efforts, in that research in the field of perfectionism has exploded over the past two decades. Paradoxically, increasing knowledge on the subject has led to greater confusion regarding its definition and its desirability, because efforts are now being directed toward demonstrating that perfectionism can be *both* adaptive and maladaptive, rather than strictly pathological (Slade & Owens, 1998; Terry-Short, Owens, Slade, & Dewey, 1995). While evidence has been accumulating, to suggest that different forms of perfectionism may exist and be differentially related to both desirable and undesirable outcomes, the literature has become quite convoluted as researchers use different terms to refer to these forms of perfectionism (e.g., 'normal' versus 'neurotic' perfectionists, Hamachek, 1978; 'positive' versus 'negative' perfectionism, Terry-Short et al., 1995; 'passive' versus 'active' perfectionism, Adkins & Parker, 1996; 'adaptive' versus 'maladaptive' perfectionism, Rice, Ashby, & Slaney, 1998; 'personal standards' versus 'maladaptive evaluation concerns' perfectionism, Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; 'healthy' versus 'dysfunctional' perfectionism, Parker & Stumpf, 1995; 'healthy' versus 'unhealthy' perfectionism, Stumpf & Parker, 2000; 'personal standards' versus 'self-critical' perfectionism', Dunkley, Zuroff, & Blankstein, 2003; and 'positive achievement striving' versus 'maladaptive evaluative concerns' perfectionism, DiBartolo, Yen Li, & Frost, 2008) and use different operational definitions of perfectionism to

assess each form. Most pertinent to the current program of research, is the fact that most researchers have largely ignored how these various forms of perfectionism are related to health. This is problematic given that some directly refer to the different forms of perfectionism as 'healthy' versus 'unhealthy' without directly assessing health and well-being (e.g., Stumpf & Parker, 2000). Thus, the purpose of the current program of research was to test the notion that perfectionism, operationally defined for the purposes of the current research in terms of Hewitt and Flett's (1991b) model of perfectionism, has both beneficial and detrimental features for individuals' health and well-being.

Not only is perfectionism important to study from a theoretical perspective, but it has also been shown to have important clinical implications. Most strikingly, perfectionism has been found to be a significant vulnerability factor for an extensive array of psychopathologies. For instance, a wealth of literature suggests that perfectionism is positively related to depression (Flett, Besser, Davis, & Hewitt, 2003; Flett, Hewitt, Blankstein, & Mosher, 1991a; Flett, Hewitt, Blankstein, & O'Brien, 1991b; Frost, Benton, & Dowrick, 1990b; Hewitt & Flett, 1991a, 1993; Hewitt, Flett, & Ediger, 1996; Rice et al., 1998), anxiety (Alden, Bieling, & Wallace, 1994; Antony, Purdon, Huta, & Swinson, 1998; Flett, Hewitt, Endler, & Tassone, 1995; Flett, Madorsky, Hewitt, & Heisel, 2002; Kawamura, Hunt, Frost, & DiBartolo, 2001), eating disorders (Lilienfeld, Wonderlich, Riso, Crosby, & Mitchell, 2006; Sutandar-Pinnock, Woodside, Carter, Olmsted, & Kaplan, 2003), suicidal ideation (Adkins & Parker, 1996; Hewitt, Flett, & Turnbull-Donovan, 1992; Hewitt, Flett, & Weber, 1994), personality disorders (Broday, 1988; Huprich, Porcerelli, Keaschuk, Binienda, & Engle, 2008) and obsessive-compulsive

disorder (Frost, Marten, Lahart, & Rosenblate, 1990a; Antony et al., 1998; Frost & Steketee, 1997; Rheaume, Ladouceur, & Freeston, 2000).

Other important clinical implications have also been noted. While perfectionism itself is not a clinical diagnosis, it is apparent from the aforementioned studies that perfectionism is highly related to many psychological disorders, such as depression, eating disorders, and anxiety disorders. It not only co-occurs with many of these disorders, but also has been postulated to be a maintaining factor for these disorders. For instance, in their work on eating disorders, Fairburn, Cooper, and Shafran (2003) have suggested that perfectionism is a 'transdiagnostic' mechanism that is involved in the perseverance of many psychological problems, and not limited to particular diagnostic categories. In addition, Barlow's (2002) cognitive-behavioural models of anxiety include perfectionism as a maintenance factor.

Perfectionism also interferes with the efficacy of many psychological treatments. Using data from the National Institute of Mental Health Treatment of Depression Collaborative Research Project, Blatt, Quinlan, Pilkonis, and Shea (1995) compared the effectiveness of pharmacotherapy versus a brief 16-week psychotherapy that included either interpersonal or cognitive-behavioural therapy. They found that higher levels of perfectionism (as measured by the Dysfunctional Attitudes Scale (DAS); Weissman & Beck, 1978) had a negative relationship with therapeutic outcome post-treatment, whether the treatment modality was pharmacotherapy or psychotherapy. Furthermore, Blatt, Zuroff, Bondi, Sanislow, and Pilkonis (1998) replicated this finding at the 18-month follow-up assessment.

Considerable empirical evidence indicates that perfectionism is related to problems with establishing an effective working relationship between the client and the therapist and to a poor

response to treatment (see Blatt & Zuroff, 2002). One potential barrier to treatment for perfectionists is that they often resist treatment because of the perceived rewards (e.g., success, greater productivity) that they associate with their perfectionism. This is not surprising, given that perfectionistic attitudes are quite prevalent among individuals and are reinforced by our culture, which promotes maxims such as 'Never accept second best'. Moreover, it has been observed that perfectionists often direct their perfectionism toward the therapeutic process itself, resulting in clients either trying to be the 'perfect patients,' (Sorotzkin, 1998) or directing hostility toward the therapist, (Flett & Hewitt, 2002) which invariably undermines their recovery. Adding even greater complexity to the issue are findings suggesting that perfectionism may also have components that are positive (Stoeber & Otto, 2006). If this is the case, then it would be important to know exactly which components of perfectionism are healthy and which are unhealthy so that therapists can enhance the facets that are beneficial to individuals' health and well-being while treating the facets of perfectionism that are detrimental to their health and well-being. In summary, given that perfectionism has such strong theoretical and clinical implications, it is imperative to gain a greater understanding of the construct itself, especially with regard to a person's overall state of health and well-being.

Historical Conceptualizations of Perfectionism

Originally, there was a general consensus regarding the essence of perfectionism and no question concerning its desirability, as these early writers were quite explicit in describing perfectionism as being pathological. The French physician, Pierre Janet (1898), described perfectionists as having "ideés fixés" (fixed ideas), suggesting that the central feature of perfectionism was rigidity. Freud (1926/1959) argued that perfectionism was a frequent

symptom of obsessional neurosis, resulting from a punitive and harsh superego that insisted on superior conduct and achievement in all domains of life. He also understood perfectionism to be a part of narcissism, a maladaptive personality style. Lion (1942), in his delineation of anancastic depression also saw perfectionism as a maladaptive facet of personality and associated it with rigidity of ideas, painstaking attention to detail, and morbid doubts. Alfred Adler (1926/1927) proposed that striving for perfection was a common manifestation of an inferiority complex, whereby the individual would compensate for his or her feelings of inadequacy by "moving toward a feeling of superiority." However, while Adler (1927) stated that striving for superiority was a common human response to feelings of inferiority, he pointed out that "it is only the neurotic person who looks at the goal he has set for himself and says, 'I must have this or nothing'" (p.60), suggesting that dichotomous thinking is a critical characteristic of perfectionism.

Horney (1950), who also followed the psychoanalytic tradition, proposed that perfectionism was a form of neurosis that resulted from the drive to become one's "idealized self" and described perfectionism as the "tyranny of the shoulds" (p. 65). She argued cogently that an inner narrative consisting of everything the individual should be able to accomplish, feel and know, along with taboos on what the individual should not think, feel, and do, initiate and maintain the drive toward perfection. This was made clear when she stated,

> He holds before his soul his image of perfection and unconsciously tells himself: Forget about the disgraceful creature you actually are; this is how you should be; and to be this idealized self is all that matters. You should be able to endure everything, to understand everything, to like everybody, to always be productive." (p. 65)

Horney (1950) also described three characteristics of these inner narratives that she believed to be central features of perfectionism. The first characteristic was the *"disregard for feasibility"* (Horney, 1950, p.66). That is, the perfectionist often places demands on him or herself or sets excessively high standards that are impossible to reach, such as striving to be an expert in *every* area of life. Horney referred to the second characteristic as *"disregard for the conditions under which they [demands, high standards] could be fulfilled"* (Horney, 1950, p.66). For example, a perfectionist will fail to take into account external conditions that would prevent him or her from reaching his or her goal. Horney referred to the third characteristic as *"disregard for the person's own psychic condition-for what he can feel or do as he is in the present"* (Horney, 1950, p.67). That is, perfectionists will fail to take into account internal factors that would prevent them from attaining their goals. Horney used the example of the perfectionist having the goal of never getting hurt, and ignoring the fact that everyone has vulnerabilities, thus rendering the goal impossible to reach, as an example to illustrate her point.

Thus, according to Horney (1950) the central features of perfectionism were setting extraordinarily high standards and having an inner dialogue that was fraught with cognitive errors. Furthermore, she argued that perfectionism was driven by self-hate and poor self-esteem, rather than a drive for superiority. Horney clearly believed that perfectionism was maladaptive; as she argued that it would not only inevitably lead to immense stress and restrictions in the ability to experience spontaneous emotions, but would also contribute to disparities in relationships because the inner dictates would lead the perfectionist to be hypersensitive to criticism or would render the perfectionist overly critical of others.

Albert Ellis was the first cognitive behavioural psychologist to discuss perfectionism and has clearly delineated it as one of the twelve fundamental "irrational, self-defeating beliefs" that lead to emotional and behavioural disturbance (Ellis, 2002). Ellis described the irrational belief underlying perfectionism as follows,

> A person should be thoroughly competent, adequate, talented, and intelligent in all possible respects; the main goal and purpose of life is achievement and success; incompetence in anything whatsoever is an indication that a person is inadequate or valueless (Ellis, 1962, p.89).

Ellis further articulated that trying to reach excessively high standards is a central feature of perfectionism that leads to poor outcomes when he stated "For perfection does not exist, and excessive striving for it leads to disillusionment, heartache, and self-hatred" (p.66). According to Ellis, other key factors of perfectionism are hypercompetitiveness (i.e., I must be better than everyone else), a lack of unconditional self-acceptance (i.e., I am only a good person if I achieve great things) and dichotomous thinking (i.e., I must succeed or I am an utter failure). Ellis (2002) also emphasized rigidity as an important facet of perfectionism, when he stated in a rather terse manner that "perfectionists are more rigid and persistent in their irrational beliefs than what I call the 'nice neurotics'" (p.228). These notions of perfectionism were analogous to Beck's (1976) delineation of perfectionism as a dysfunctional cognitive style designated by overgeneralization and dichotomous thinking. Thus, these early cognitive behaviourists clearly considered perfectionism to be maladaptive and unhealthy.

In the area of psychiatry, Missildine (1963) too, has argued that perfectionism is deleterious. Missildine characterized perfectionists as follows,

If you are a perfectionist...you demand perfection of yourself, perhaps others too, and exert arduous effort to achieve it...you pursue your work methodically, systematically and strenuously, with meticulous attention to detail, often to the point of exhaustion...yet these strenuous efforts and often genuine accomplishments bring [you] no lasting satisfaction. He [the perfectionist] is miserable in spite of his success and must strive to do still better underrating whatever he has accomplished. (p.86)

From this description, it is clear that Missildine has identified striving to achieve excessively high standards as a cardinal feature of perfectionism as well as an inability to gain satisfaction from one's accomplishments. He referred to perfectionists as "successful failures" to highlight the latter point and argued that "...the perfectionist constantly feels that he has not succeeded-despite his obvious success" (p.93). Weisinger and Lobsenz (1981) also echoed the idea that perfectionists lack the ability to experience satisfaction from their successes when they wrote, "The need to be perfect places a person in a self-destructive double bind. If one fails to meet the unrealistic expectation, one has failed; but if one *does* meet it, one feels no glow of achievement for one has only done what was expected" (p.237). Finally, analogous to the psychoanalysts, Missildine (1963) proposed that perfectionism was driven by self-belittlement and poor self-esteem, rather than a yearning for mastery over his or her environment.

Burns (1980) discussed perfectionism in terms of dysfunctional attitudes and described perfectionists as "those whose standards are high beyond reach or reason, people who strain compulsively and unremittingly toward impossible goals and who measure their own worth entirely in terms of productivity and accomplishment" (p.34). In concert with Ellis (1962) and Beck (1976), Burns also delineated perfectionism in terms of a set of cognitive distortions. He

observed that perfectionists often use "all or nothing" thinking, such that the middle of the continuum does not exist for the perfectionist (e.g., I am a success or a complete failure). He also noted that perfectionists tend to use what Beck (1976) referred to as overgeneralization, such that they often "tend to jump to the dogmatic conclusion that a negative event will be repeated endlessly" (p.38). Finally, in agreement with Horney (1950), Burns also recognized that perfectionists often place punishing demands on themselves in the form of 'should statements' (e.g., I should be better than that) resulting in negative consequences for the perfectionist.

Based on their clinical observations and research, Pacht (1984) and Blatt (1995) argued that perfectionism was driven by a fear of failure, extreme self-scrutiny, and self-criticism. They underscored the notion that perfectionism is unhealthy by highlighting research findings demonstrating that perfectionism is related to a variety of disorders and illnesses, such as migraines, irritable bowel syndrome, erectile dysfunction, ulcerative colitis, depression, anxiety, and eating disorders. Blatt (1995) further highlighted the destructiveness of perfectionism by framing his discussion of the topic around three people who were presumed to be perfectionists and who had committed suicide.

A seminal paper by Hamachek (1978) is now commonly viewed as igniting the debate over the definition and the desirability of perfectionism. In stark contrast to the previous theorists who supported the notion that perfectionism was a unidimensional construct and maladaptive, Hamachek (1978) postulated that there are two distinct types of perfectionism; normal and neurotic. He delineated 'normal perfectionists' as "those who derive a very real sense of pleasure from the labors of a painstaking effort and who feel free to be less precise as the situation permits" (p.27). Conversely, he described neurotic perfectionists as "the sort of people whose

efforts - even their best ones - never seem quite good enough, at least in their own eyes. It always seems to these persons that they could - and should - do better...they are unable to feel satisfaction because in their own eyes they never seem to do things good enough to warrant the feeling" (p.27). Thus, the first characteristic that differentiates neurotic perfectionists from normal perfectionists is their inability to experience satisfaction when they have performed well.

Hamachek (1978) also distinguished normal perfectionists from neurotic perfectionists on the basis of their attitudes towards completing a task and how they think about the work that needs to be completed. For instance, he stated that normal perfectionists tend to have an attitude toward work that is "relaxed and careful" and tend to feel "excited, clear about what needs to be done and emotionally-charged" before they begin a new task, whereas neurotic perfectionists tend to have an attitude that is "tense and deliberate" and feel "anxious, confused and emotionally-drained" before they begin a new endeavor "(p.28). In terms of motivation, Hamachek argued that normal perfectionists are motivated toward achieving a goal and focus on their strengths, while neurotic perfectionists are motivated by a fear of failure and worry about their deficiencies. The final distinction that Hamachek made between normal and neurotic perfectionists was in terms of the standards that they impose on themselves. Normal perfectionists were postulated to have high standards, but also be able to enact clear and realistic performance boundaries, whereas neurotic perfectionists were thought to have exorbitantly high standards, making success quite unlikely.

The early descriptions of perfectionism were overwhelmingly negative, treating perfectionism as a unidimensional personality trait and as a form of psychopathology. It is also apparent from the previous discussion that commonalities exist in how each of the above

theorists conceptualized perfectionism: The key components of perfectionism are having excessively high standards, equating self-worth with success, high levels of self-scrutiny, fear of failure, poor self-esteem when standards are perceived to have not been met, and an inability to experience satisfaction even when successful. However, Hamachek (1978) clearly laid the foundation for the current debate surrounding the definition and desirability of perfectionism by suggesting that perfectionism is not a unidimensional construct and that it encompasses both adaptive and maladaptive features.

Multidimensional Models of Perfectionism and Their Assessment

      The MPS-F. Two of the most popular measures of perfectionism share the same name, the Multidimensional Perfectionism Scale (MPS), despite having been developed by separate research groups and based on different theoretical conceptualizations of perfectionism (MPS-F; Frost et al., 1990a and MPS-HF; Hewitt & Flett, 1991b). Based on their review of the literature, Frost and colleagues (1990a) theorized that the following characteristics were critical to the construct of perfectionism; having excessively high personal standards, having doubts about one's actions, experiencing excessive concern over one's mistakes, having a preoccupation with order and organization, and perceiving high expectations and critical evaluations from one's parents. Frost et al. (1990a) constructed their scale by deriving items that fit their theoretical conceptualization of perfectionism and by acquiring items that were related to perfectionism found in instruments that assess psychopathology, such as inventories that measure eating disorders and obsessive compulsive disorder. They also included items from previous perfectionism scales, such as the Burns Perfectionism Scale (BPS; Burns, 1980).

With a sample of undergraduate students, Frost et al. (1990a) reduced their original 67 item measure down to 35 items based on factor analytic techniques and assessments of reliability. The final six subscales of the MPS-F were: personal standards (PS; 7 items, e.g., "I set higher goals than most people"), concern over mistakes (CM; 9 items, e.g., "If I fail at work/school, I am a failure as a person"), organization (O; 6 items, e.g., "Organization is very important to me"), parental expectations (PE; 5 items, e.g., "My parents set very high standards for me"), parental criticism (PC; 4 items, e.g., "As a child I was punished for doing things less than perfect"), and doubt about actions (DA; 4 items, e.g., "I usually have doubts about the simple everyday things I do").

Frost et al. (1990a) found that the internal consistency of the total perfectionism scale was .90 and that the internal consistencies of the six dimensions ranged from .77 to .93, demonstrating adequate reliability. However, they concluded that the organization component was not central to the construct of perfectionism and did not use it in the computation of the overall perfectionism score, as it had the weakest relationship with the other subscales and the total perfectionism score when all of the other subscales were summated.

In a confirmatory factor analysis of the MPS-F with a sample of gifted sixth-grade children, Parker and Stumpf (1995) found support for Frost et al.'s (1990a) factor structure and reported internal consistencies ranging from .67 to .90 for the MPS-F subscales. Parker and Adkins (1995) also demonstrated support for Frost et al.'s (1990a) factor structure of the MPS-F with a sample of male and female undergraduate students, despite finding that the mean scores for their sample were substantially different from those reported in the Frost et al. (1990) study, which only included female students.

While the MPS-F has been shown to have good psychometric properties and has been widely used in both clinical and nonclinical samples (Frost & DiBartolo, 2002), it has also drawn criticism on both empirical and conceptual grounds. First, the stability of Frost et al.'s (1990a) factor structure has come into question. For instance, while Purdon, Antony and Swinson (1999) demonstrated that Frost et al.'s six-factor solution was viable in a clinical sample of individuals with anxiety disorders, they also demonstrated that a three-factor solution provided a better fit to the data. Further, Purdon and colleagues were able to show that their three factors (i.e., Fear of Mistakes, Goal/Achievement Orientation, and Perceived Parental Pressure for Perfection) could discriminate among diagnostic groups in a manner analogous to Frost et al.'s (1990a) six factors. Thus, Purdon and colleagues argued in favour of the more parsimonious three-factor solution compared to Frost et al.'s (1990a) six-factor solution of the MPS-F. In a similar vein, Stöber (1998) also found evidence that Frost et al. (1990a) may have over-extracted MPS-F factors. Using factor-analytic techniques on the MPS-F with a sample of male and female university students, Stöber (1998) found that only four factors emerged (i.e., concern over mistakes and doubt about actions; organization; personal standards; and parental expectations and parental criticism). Moreover, Stöber (1998) was able to replicate the findings of Frost et al. (1990a) with his four-factor solution of the MPS-F. Therefore, based on his findings, Stöber (1998) argued that only four factors should be extracted from the MPS-F.

On conceptual grounds, the MPS-F has received two primary criticisms. First, some have questioned the validity of the MPS-F on the basis that some of the subscales tap measures of psychopathology that are seen as correlates or outcomes of perfectionism rather than perfectionism per se. For instance, Shafran and Mansell (2001) claimed that the doubt about

actions subscale of the MPS-F assesses checking symptoms of Obsessive Compulsive Disorder (OCD), rather than the perfectionism itself; a criticism that may have validity, as this subscale consists primarily of items taken from the MOCI, (Hodgson & Rachman, 1977) which measures OCD symptoms.

Second, the MPS-F has been challenged on the basis that the parental expectations and parental criticism subscales confound etiological factors with the core components of perfectionism. For instance, Rheaume et al. (2000) pointed out that "the inclusion of developmental aspects of perfectionism makes it difficult to interpret results and understand perfectionism itself" (p.120). This criticism has merit given that parental factors have been given the greatest emphasis regarding the etiology of perfectionism.

The MPS-HF. The MPS-HF (Hewitt & Flett, 1991b) is a 45-item measure that was developed from a different perspective than the MPS-F (Frost et al., 1990a). Based on their review of the literature and clinical observations, Hewitt and Flett (1991b) argued that perfectionism includes interpersonal as well as intrapersonal aspects and asserted that perfectionism should be conceptualized as three dimensions centered on interpersonal source and direction: Self-oriented perfectionism (SOP, the setting of excessively high personal standards, accompanied by strict guidelines and evaluations of personal behaviour); other-oriented perfectionism (OOP, the tendency to hold exceedingly high standards for other people); and socially prescribed perfectionism (SPP, the need to attain standards perceived to be imposed by significant others) (Flett & Hewitt, 2002). Thus, whereas the MPS-F treats perfectionism primarily as a self-focused construct, the MPS-HF places equal emphasis on both the personal and social aspects of perfectionism (Parker & Adkins, 1995b). Factor analyses with both clinical

and sub-clinical samples have supported the three-factor solution proposed by Hewitt and Flett (1991b) and the reliability and validity of the MPS-HF have been shown to be quite impressive (Hewitt, Flett, Turnbull-Donovan, & Mikail, 1991).

SOP is intrapersonal in nature, as its dimensions originate within, and are directed toward, the self (Flett & Hewitt, 2002). SOP involves a strong desire to be perfect, a strict self-evaluation style, which tends to focus on one's faults, and the preservation of unrealistic self-expectations, even when experiencing failure (Flett & Hewitt, 2002). Moreover, these behaviours are believed to generalize across life domains. Theoretically, SOP should be associated with distress and disorders that involve the self-concept.

Indeed, research has supported this premise. For instance, Hewitt, Flett, and Weber (1994) found that higher levels of SOP were associated with higher levels of suicidal ideation in both student and psychiatric samples. Other studies have shown that SOP is positively related to depression (Hewitt & Flett, 1993). Hewitt and Flett (1991a), for example, compared three groups of individuals, patients with anxiety disorders, patients with unipolar depression, and a nonclinical comparison group, and found that patients diagnosed with unipolar depression reported higher levels of SOP compared to individuals in the control group.

Irrational thinking, which has been shown to be related to various forms of psychopathology, such as depression and anxiety (Malouff, Schutte, & McClelland, 1992; Muran & Motta, 1993), has also been shown to be a feature of SOP, as individuals who report higher levels of SOP manifest greater frustration reactivity, engage in more absolute 'should' statements (e.g., I shouldn't fail), and report greater demands for social approval (Flett, Hewitt, Blankstein, & Koledin, 1991c). Further, according to Blatt and Zuroff (1992) self-oriented perfectionists are

overly critical of themselves, and tend to spend a great deal of time trying to convince themselves that they are worthy of love, approval, and acceptance. Finally, SOP has been negatively related to performance satisfaction (Flynn, Hewitt, Flett, & Weinberg, 2001, as cited in Flett & Hewitt, 2002). Mor, Day, Flett, and Hewitt (1995) found in their study of accomplished performers that higher levels of SOP were related to lower levels of performance satisfaction, a finding echoed by Enns, Cox, Sareen, and Freeman (2001) in their study of medical students and performance satisfaction. Thus, as Missildine (1963) postulated, even when self-oriented perfectionists achieve apparent success, they cannot enjoy it.

However, challenging the notion that SOP is maladaptive are studies that provide evidence demonstrating that SOP may be beneficial in some ways. These studies are in line with seminal theories of perfectionism, which indicate that self-focused perfectionism is beneficial in moderation (Adler, 1956). Blankstein and Dunkley (2002), for example, found that self-oriented perfectionists express high levels of motivation for learning, adapting, and self-actualizing; processes associated with positive outcomes. Furthermore, SOP has been associated with a host of adaptive outcomes such as achievement striving, goal-oriented and resourceful behaviour, assertiveness, higher levels of positive affect, and better self-rated health (Blankstein & Dunkley, 2002; Flett, Hewitt, Blankstein, & O'Brien, 1991b; Frost et al., 1993; Molnar, Reker, Culp, Sadava, & DeCourville, 2006). Clearly, these studies support the notion that SOP has adaptive potential and exemplifies elements of Hamachek's (1978) 'normal' perfectionism (Frost et al., 1993; Slaney et al., 1995).

Research findings with regard to the Five-Factor Model (FFM) of personality (see McCrae & John, 1992) further suggest that SOP incorporates some healthy components of

perfectionism. In an undergraduate student sample, Hill et al. (1997) observed that SOP was positively correlated with conscientiousness, with the facets of dutifulness and achievement striving primarily driving the relationship. Yet, they also found that SOP was negatively associated with agreeableness and positively associated with the angry-hostility facet of neuroticism. Hill and colleagues (1997) interpreted these findings as indicating that SOP is adaptive such that people who have high levels of SOP are resilient, have altruistic attitudes, are able to control their anger and are confident in their ability to cope with stress. However, their interpretation of the data seems to contradict their actual results. In their discussion section, Hill et al. (1997) speak of a positive relationship between SOP and agreeableness, but their data clearly indicate a negative relationship. Thus, based on the data one can conclude that while SOP may have some adaptive components (e.g., conscientiousness), it may also be indicative of an interpersonal style characterized by hostility. In sum, it appears that the evidence is mixed with regard to the desirability of SOP.

Researchers have tried to clarify the nature of SOP in one of two ways. Consistent with past theorists, Hewitt and Flett contend that all forms of perfectionism are maladaptive. In an effort to understand the inconsistent findings regarding the relationship between SOP and depression, Hewitt and Flett (1993) put forth the specific vulnerability hypothesis. From a diathesis-stress approach, they hypothesized that SOP may act as a vulnerability factor for depression during times of stress or hardship. In other words, self-oriented perfectionists may appear to be doing well when things are going well, but they will be less able to adapt when they experience failure or other negative life-events. While there have been some null findings, overall the evidence appears to support their hypothesis, as research has documented that SOP is

associated with depression and negative affect when negative events have been experienced (e.g., achievement stressors) and higher levels of anxiety symptomatology when ego-involving situations that threaten the self are introduced (Flett, Hewitt, Blankstein, & Mosher, 1995a; Flett, Hewitt, Endler, & Tassone, 1994-1995; Hewitt & Flett, 1993; Hewitt, Flett, & Ediger, 1996). Thus, these findings indicate that SOP may appear to be healthy under favourable conditions, but is a vulnerability factor for psychopathology when stressors are introduced.

Others believe that these inconsistent findings reflect measurement issues. These researchers postulate that the dimension of SOP is not homogeneous, but consists of distinct facets, which have differential relationships with various outcomes (Campbell & Di Paula, 2002; Stoeber, Kempe, & Keogh, 2008; Trumpeter, Watson, & O'Leary, 2006; Van Yperen, 2006). Using factor analytic techniques, Campbell and Di Paula (2002) found support for their contention that the MPS-HF SOP dimension was composed of two separate facets reflecting two types of self-beliefs: The belief that it is important to be perfect (e.g., I do not have to be the best at whatever I am doing, reversed keyed) and the belief that one actively strives for perfection (e.g., I strive to be the best at everything I do). Their results also indicated that while the total scale score for SOP was not significantly related to any of their adjustment or individual difference measures (except for conscientiousness), the two subscales were differentially related to their outcome measures. Specifically, Perfectionistic Striving was associated with positive adjustment, as it was positively correlated with positive affect, self-esteem, extraversion, and the ability to sustain goal-directed behaviour. Thus, akin to Frost's dimension of personal standards, Perfectionistic Striving seems to tap the adaptive components of perfectionism. In contrast, the Importance of Being Perfect facet was generally related to poorer adjustment, as it was related to

lower levels of self-esteem and the inability to sustain goal-directed behaviour when faced with failure and unrelated to their other measures (except for its positive relationship with conscientiousness). Consistent with these findings, Stoeber et al. (2008) found that Perfectionistic Striving was related to feelings of pride after experiencing success, whereas the Importance of Being Perfect was not.

On conceptual grounds, these results support Lundh's (2004) perfectionism-acceptance theory, such that striving for perfection is not unhealthy per se, but becomes unhealthy when it develops into a need to be perfect, which Lundh defined as the inability to accept anything less than perfection. However, these findings should be interpreted with caution. First, comparative studies have not been conducted, so there is no clear evidence that Campbell and Di Paula's two-factor solution of SOP is superior to the original one-factor solution. Second, all of the items that constitute the SOP dimension of the MPS-HF were not used due to high cross-loadings between the two proposed facets of SOP, suggesting that these facets are not truly independent. Third, all of the aforementioned studies relied on convenience samples, consisting of undergraduate students. Thus, the generalizability of the proposed two-factor solution of SOP remains questionable. Finally, and most importantly, these analyses were ad hoc and were not predicated on existing theory. Hewitt and Flett's model of perfectionism clearly has motivational and behavioural components that are neglected in Campbell and Di Paula's two-factor solution which treats SOP as a purely cognitive construct. Thus, based on the literature, it appears that the most viable explanation for the differential relationship between SOP and adjustment (or maladjustment) is the specific-vulnerability hypothesis posited by Hewitt and Flett, as it is

generally supported in the literature and is theoretically consistent with the perfectionism literature.

In contrast to the intrapersonal nature of SOP, OOP is primarily interpersonal (Flett & Hewitt, 2002). Here perfectionism originates in the self, but is directed toward others. Specifically, OOP is typified by an intense need for others to be perfect, which is accompanied by exceedingly high expectations of others, and a highly critical evaluative style. Theoretically, OOP should result in difficulties for the target of the perfectionism rather than difficulties for the perfectionist him or herself (Flett & Hewitt, 2002). For instance, in their study of male and female pain patients and their spouses, Hewitt, Flett, and Mikail (1995b) found that individuals with partners who were high in OOP reported poorer family functioning and marital adjustment compared to individuals whose partners reported lower levels of perfectionism. Consistent with theory, individuals' own levels of OOP were not associated with their own levels of relationship satisfaction. The lack of personal distress associated with OOP is also in line with self-focused attention models of depression which maintain that attention focused away from the self is less detrimental than when greater attention is directed at the self (Musson & Alloy, 1988; Smith, Ingram, & Roth, 1985). As is to be expected, OOP has also been associated with impaired interpersonal functioning, as research has demonstrated that OOP is related to maladaptive relational outcomes, such as higher levels of negative affect, higher levels of marital conflict, and lower levels of sexual satisfaction (Blatt, 1974; Habke, Hewitt, & Flett, 1999).

Also interpersonal at its core, SPP is the propensity to believe that perfectionistic demands are imposed on the self by others. Individuals with high levels of SPP believe that others place unrealistically high expectations on them, feel pressure to meet these standards, and

perceive that others evaluate them stringently (Flett & Hewitt, 2002). Hewitt and Flett (1991b) theorized that SPP should be associated with a host of negative outcomes given that socially prescribed perfectionists incessantly perceive others as being unreasonable in their expectations and they chronically feel unable to meet others' standards. In particular, SPP should be related to "self-related disorders and symptoms" (Flett & Hewitt, 2002, p.257), as SPP is a self-related dimension (i.e., concerns a lack of perfection within the self).

Evidence has overwhelmingly supported this proposition, as SPP has been associated with a host of psychopathologies such as depression (Hewitt & Flett, 1991b; Hewitt & Flett, 1993; Hewitt et al., 1996), anxiety (Flett et al., 1994-1995; Flett, Madorsky, Hewitt, & Heisel, 2002), suicidal ideation (see O'Connor, 2007 for review), hopelessness (O'Connor, & O'Connor, 2003), negative affect (Dunkley et al., 2003; Frost et al., 1993; Hewitt & Flett, 1991a; Molnar et al., 2006) and eating disorders (Chang, Ivezaj, Downey, Kashima, & Morady, 2008; Downey & Chang, 2007). Moreover, SPP has been related to several proposed precursors of psychopathology such as lower levels of constructive thinking (Flett et al., 1991c; Flett, Russo, & Hewitt, 1994), poorer cognitive emotional regulation strategies (Rudolph, Flett, & Hewitt, 2007), lower levels of perceived social support (Sherry, Law, Hewitt, Flett, & Besser, 2008), the use of less effective coping and problem solving strategies (Flett, Hewitt, Blankstein, Solnik, & Van Brunschot, 1996; Hewitt, Flett, & Endler, 1995a; Rice & Lapsley, 2001), and through the generation, enhancement, anticipation, and perpetuation of stress (see Flett & Hewitt, 2002).

In terms of mapping SPP within the broader structural framework of personality, Hill et al. (1997) found that SPP was strongly linked with neuroticism, particularly with the depression facet. Using the Millon Clinical Multiaxial Inventory (MCMI) with a sample of psychiatric

patients, Hewitt and Flett (1991b) found that SPP was positively associated with both odd-eccentric and anxious-fearful traits (i.e., Borderline, Passive-Aggressive, Avoidant, Schizoid, and Schizotypal subscales of the MCMI). These findings suggest that individuals with higher levels of SPP have a tendency to experience negative affect, especially depression, and tend to avoid conflict and social relationships in general. Yet, research also indicates that SPP is positively associated with sociotropy and dependency, as well as autonomous self-criticism (Flett, Hewitt, Garshowitz, & Martin, 1997; Hewitt & Flett, 1993). Habke and Flynn (2002) interpreted these findings as implying that individuals with high levels of SPP want relationships, but experience them as being turbulent. Indeed, research supports this premise as SPP has been associated with an array of interpersonal difficulties (Flett et al., 1997; Flett, Hewitt, Shapiro, & Rayman, 2001, Hewitt et al., 1996).

These results imply that the effects of SPP are two-fold, as it is not only associated with individual psychopathology, but also with impaired interpersonal functioning. The literature paints a picture of the socially prescribed perfectionist as being overly concerned with gaining the approval of others, desperately seeking perfect social approval from individuals whom they view as being unfair and overly critical, and reacting with higher degrees of sensitivity to personal rejection (Flett et al., 1994; Hewitt & Flett, 1991b), while exhibiting higher levels of negative affect and lower levels of efficacious coping and problem solving skills. From this depiction, it is easy to see how socially prescribed perfectionists are highly vulnerable to both personal and interpersonal difficulties. Thus, unlike SOP, in which the evidence is mixed regarding whether it is a healthy or unhealthy form of perfectionism, SPP clearly embodies the pathological features of perfectionism.

While it can be argued that Hewitt and Flett's conceptualization of perfectionism has marked the beginning of research focusing on the dynamic, multifaceted nature of perfectionism and its manifestation in individual and dyadic contexts, others have criticized it. Specifically, these researchers argue that consistent with historical definitions, only SOP assesses the construct of perfectionism and that the other two dimensions (i.e., OOP and SPP) are only tangential to the construct (Shafran, Cooper, & Fairburn, 2002). They then go on to blame the widespread acceptance and use of the Frost et al. (1990a) and the Hewitt and Flett (1991b) Multidimensional Perfectionism Scales as bolstering the view that perfectionism is multidimensional rather than remain a clinically-based construct.

In response to Shafran et al.'s (2002) argument, Hewitt, Flett, Besser, Sherry, and McGee (2003) maintained that perfectionism is multidimensional. In support of their position, they provided excerpts from several historical theories of perfectionism (e.g., Horney, Hollender, and Pacht) demonstrating that interpersonal aspects of perfectionism have traditionally been considered to be core elements of the construct. In addition, Hewitt and colleagues (2003) drew attention to evidence showing that SPP is positively associated with psychopathology and that both socially prescribed and OOP disrupt the therapeutic alliance, thus highlighting that the interpersonal dimensions of perfectionism also have important clinical implications. Shafran, Cooper, and Fairburn (2003) replied to these criticisms by asserting that they arrived at their conceptualization of perfectionism from a clinical perspective where social aspects tend not to be emphasized. They claimed that "focus on the specific [self-focused] mechanisms maintaining clinical perfectionism is more likely to permit psychopathology to be successfully treated and thereby produce lasting change" (p.1218). However, given the research showing that

perfectionism, especially the interpersonal aspects, interfere with the therapeutic process (Flett & Hewitt, 2002; Sorotzkin, 1998), this seems unlikely.

Moreover, it must be noted that the differences among Hewitt and Flett's three dimensions of perfectionism are *not* in the patterns of the actual behaviour, but in the direction of the behaviour (e.g., self versus other) or attribution (SPP) of the behaviour. Generally speaking, perfectionists adhere to strict and excessive personal guidelines and evaluations of behaviour. Self-oriented perfectionists set these guidelines for themselves and self-evaluate, whereas socially prescribed perfectionists perceive others are setting the guidelines and evaluating them. Finally, other-oriented perfectionists set these guidelines for others and critically evaluate others. In all cases the actual behaviour is the same, implying that each dimension is assessing perfectionism per se, with interpersonal source and direction differentiating the dimensions and leading to potentially distinct outcomes.

Owens and Slade (2008) have stated that "one might regard positive perfectionism as perfectionism we choose and negative perfectionism as perfectionism that is forced upon us" (p.929-930). This implies that interpersonal source and direction of perfectionism may be key distinguishing features in terms of whether perfectionism is associated with desirable or undesirable outcomes. For instance, it could be that self-generated perfectionism is associated with better health because it implies a sense of personal control whereas perfectionism that emanates from outside of the self is associated with poorer health because it implies less control and therefore more pressure. Thus, an important theoretical issue is whether the source and direction of perfectionism differentiates important outcomes. Hewitt and Flett's (1991b) measure of perfectionism was chosen for the current set of studies because it could specifically address

this important issue, because unlike other measures of perfectionism, the MPS-HF directly assesses the interpersonal source and direction of perfectionism, thus allowing me to test whether these are important considerations for understanding the desirability of perfectionism in terms of important health outcomes.

It is also important to gain a better understanding of the relationship between SOP and health, because it is clear that of all of the dimensions of perfectionism that are thought to reflect Positive Achievement Strivings, SOP is the most controversial in terms of its desirability, with some studies reporting that it is related to positive outcomes and others showing that it is related to negative outcomes. Consequently, the MPS-HF was also chosen for this program of research because it allowed me to resolve this important discrepancy in the research literature and to therefore, clarify the relationship between SOP and health. Finally, the MPS-HF was chosen as it directly assesses the interpersonal aspects of perfectionism, which should be considered when studying health and well-being given that interpersonal functioning is strongly related to both health and well-being.

The Key Issue: Can Perfectionism Be Healthy?

A primary question that has stimulated an extensive body of research is the recent debate over the desirability of the construct of perfectionism. In concert with the recent positive psychology movement (Seligman & Csikszentmihalyi, 2000), numerous contemporary researchers have begun to question the traditional view of perfectionism as being entirely maladaptive and to demand a more inclusive model of perfectionism that considers the possibility that perfectionism can be both beneficial and detrimental to one's health, sense of

well-being, and overall functioning. For instance, Lundh (2004) called for a distinction to be made between positive and negative perfectionism asserting;

> There need be nothing negative nor dysfunctional about the striving for perfection - on the contrary, such strivings for perfection represent an important part of healthy human functioning, and a source of many great human accomplishments in various areas (p.256).

The logic here is that it may be plausible for people to display perfectionistic traits, but use them in ways that promote success rather than lead to dysfunction. Indeed, studies addressing this question indicate evidence for the proposition that perfectionism can be both healthy and pathological (see Stoeber & Otto, 2006 for an excellent review). For example, with a large nonclinical sample, Frost, Heimberg, Holt, Mattia, and Neubauer (1993) conducted the first set of factor analyses on the two most widely used measures of perfectionism, the MPS-F and the MPS-HF, and found that two factors emerged. Their first factor consisted of the following subscales; concern over mistakes, parental expectations, parental criticism, and doubt about actions from the MPS-F, and SPP from the MPS-HF. Frost et al. (1993) labeled this factor "Maladaptive Evaluation Concerns". Their second factor, labeled "Positive Strivings," was comprised of items from the organization and personal standards subscales of the MPS-F along with the OOP and SOP subscales from the MPS-HF. Of even greater interest, they found that each of these factors was differentially related to important outcomes, such that Positive Strivings was associated with positive functioning (e.g., positive affect) whereas Maladaptive Evaluation Concerns was related to psychopathology.

Recent studies have further replicated these findings and shown empirically that there are two distinct forms of perfectionism using a variety of samples and measures of perfectionism (Bieling, Israeli, & Antony, 2004; Slade & Owens, 1998; Terry-Short et al., 1995). Moreover, evidence is accumulating that shows that what is often described as the 'adaptive form' of perfectionism is related to positive outcomes, such as higher levels of positive affect (Bieling, Israeli, Smith, & Antony, 2003), higher ratings of life satisfaction (Bergman, Nyland, & Burns, 2007; Chang, Watkins, & Banks, 2004), higher levels of achievement motivation and self-control (Kilbert, Langhinrichsen-Rohling, & Saito, 2005), intrinsic goal orientation and higher levels of self-efficacy for learning and performance (Mills & Blankstein, 2000), higher levels of active coping strategies (Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000), and lower levels of attachment anxiety and avoidance (Rice, Lopez, & Vergara, 2005).

Measures specifically aimed at evaluating both adaptive and maladaptive forms of perfectionism have also been devised based on the growing appreciation that the construct of perfectionism includes both positive and negative features. Terry-Short and colleagues (1995), for instance, constructed the Positive and Negative Perfectionism scale (PANPS) which consists of 40 items that were derived from perfectionism measures such as the MPS-HF (Hewitt & Flett, 1991b) and the Burns Perfectionism Scale (BPS; Burns, 1980) and from eating disorder inventories, such as the Eating Disorders Inventory (EDI; Garner, Olmstead, & Polivy, 1983) and the Setting Conditions for Anorexia Nervosa Scale (SCANS; Slade & Dewey, 1986). The scale was devised so as to have an equal number of questions designed to assess positive items (e.g., producing a perfect performance is a reward in its own right), negative items (e.g., if I make a mistake I feel that the whole thing is ruined), personal perfectionism (e.g., I set very high

standards for myself), and SPP (e.g., People expect nothing less than perfection from me). With a sample of 20 successful athletes, 21 individuals with eating disorders, 15 depressed patients and 225 individuals who served as controls, Terry-Short and colleagues (1995) found that only two factors emerged, a factor that reflected a positive form of perfectionism and one that reflected a negative form of perfectionism. Thus, the positive and negative factors superseded Hewitt and Flett's distinction between SOP and SPP. In terms of group differences, Terry-Short et al. (1995) observed that the group of depressed patients reported higher scores on negative perfectionism compared to the athletes and the controls, but scored lower than the group with eating disorders. Athletes, on the other hand, reported the highest scores on the positive perfectionism scale. With regard to total perfectionism scores, Terry-Short and colleagues (1995) found that clinical groups reported the highest scores. While the reliability of the PANPS seems to be acceptable (Haase, Prapavessis, & Owens, 1999; 2002), the validity of the instrument remains in question.

The Almost Perfect Scale (APS; Slaney & Johnson, 1992, as cited in Slaney, Rice & Ashby, 2002) was developed to assess both positive and negative features of perfectionism, especially with regard to their implications for therapy. Based on their literature review, Johnson and Slaney (1992), as cited in Slaney et al. (2002), interpreted the five core components of perfectionism as follows: having high personal standards, having tendencies to procrastinate, being orderly, being anxious, and having problems with interpersonal relationships. However, initial studies of the APS revealed that it only assessed four factors: standards and order combined, anxiety, interpersonal and counseling relationships, and procrastination (Johnson & Slaney, 1996). While adequate reliability for the APS has been demonstrated, conceptual

problems regarding how the APS measured the negative aspects of perfectionism began to emerge with its increasing use (see Slaney et al., 2002). Specifically, disagreement arose with regard to whether anxiety, interpersonal problems, and procrastination were central components of perfectionism per se, given their prevalence in numerous psychological disorders and the fact that they could just as easily be conceived of as antecedents, consequences, or associated features of perfectionism rather than cardinal aspects of the construct itself.

Given the inherent problems associated with the APS scales designed to assess the negative aspects of perfectionism, Slaney, Rice, Mobley, Trippi, and Ashby (2001) revised the APS (APS-R) so as to include three factors believed to gauge the central components of perfectionism; high standards, order, and discrepancy. Slaney and colleagues defined discrepancy as "the perception that one consistently fails to meet the high standards that one has set for oneself (2002; p. 69) and argued that discrepancy was the primary facet when distinguishing between maladaptive and adaptive perfectionism. To date, research has generally supported the psychometric properties of the 23-item APS-R, demonstrating adequate reliability and that the Standards and the Order factors are positively and moderately associated while the relationship between the Standards and Discrepancy scales is generally inconsequential (Ashby & Rice, 2002; Slaney et al., 2001). Most pertinent to the central question of whether perfectionism incorporates both healthy and unhealthy components are studies that clearly demonstrate the APS-R Standards and Order subscales are related to positive qualities and outcomes such as higher levels of achievement (Accordino, Accordino, & Slaney, 2000), higher levels of self-esteem (Ashby & Rice, 2002), and conscientiousness (Ashby, Slaney, & Mangine, 1996) whereas the Discrepancy subscale is clearly associated with undesirable characteristics

and consequences such as higher levels of depression (Slaney et al., 2001), neuroticism

(Ashby et al., 1996), and lower levels of self-esteem (Accordino et al., 2000; Slaney et al., 2001).

While research using the APS-R seems promising, results should be interpreted with caution, as the APS-R subscales were constructed from a counseling perspective and as such do not seem to conceptually map onto other measures of perfectionism (e.g., the MPS-F and the MPS-HF) very well. Moreover, Flett and Hewitt (2002) have argued that discrepancy is not a fundamental element of perfectionism, but is a related and independent construct. Specifically, they contend that there are important temporal differences between trait perfectionism and self-evaluation, such that perfectionism is relatively stable whereas self-evaluation varies based on one's experiences and feedback (Flett & Hewitt, 2002). In support of their argument they drew attention to research on perfectionism and self-efficacy, which demonstrate that the two constructs are separable. Thus, studies which employ the APS-R should be interpreted with caution due to the questionable construct validity of the APS-R.

In sum, the aforementioned studies indicate that a healthy form of perfectionism (i.e., SOP from the MPS-HF, personal standards and organization from the MPS-F, and/or Standards and Order from the APS-R) can be distinguished from an unhealthy form of perfectionism (i.e., SPP from the MPS-HF, doubt about actions, concern over mistakes, parental expectations, and parental criticism from the MPS-F, and/or Discrepancy from the APS-R) using a variety of data analytic strategies (e.g., factor analysis, cluster analysis) and in a variety of samples such as students (Enns et al., 2001; Frost et al., 1993; Rice & Dellwo, 2002), athletes (Haase et al., 1999; 2002), individuals from the general community (Molnar et al., 2006) and individuals experiencing psychopathology (Terry-Short et al., 1995) and that one form of perfectionism is

related to desirable characteristics and outcomes while the other is related to less favourable qualities and negative outcomes. In general, these results suggest that one can be a perfectionist, and avoid the negative aspects associated with it. Throughout the rest of this paper, Positive Achievement Striving will be used to refer to what researchers consider to be the adaptive form of perfectionism whereas Maladaptive Evaluative Concerns will be used to refer to the maladaptive form of perfectionism, as this is consistent with the perfectionism literature (e.g., DiBartolo et al., 2008; Frost et al., 1993)

In conjunction with empirical findings, theoretical models, such as Slade and Owen's (1998) 'dual process model' of perfectionism, have also been developed to explicate how forms of perfectionism described as adaptive, may indeed manifest empirically. Based on reinforcement theory and Hamachek's theory of perfectionism, Slade and Owens (1998) asserted that there are two distinct forms of perfectionism; positive and negative perfectionism. On the one hand, they delineated positive perfectionism as "a predominantly normal or healthy form that carries positive benefits for the individual" (Slade & Owens, 1998, p.377) and contended that positive perfectionism is "driven by positive reinforcement and a desire for success" (p.377). On the other hand, they described negative perfectionism as "a pathological or unhealthy form that has inherent disadvantages for the individual and is to be avoided or corrected" (p.377) and argued that negative perfectionism is "driven by negative reinforcement and a fear of failure" (p.378). Slade and Owens (1998) maintain that the consequences of the perfectionistic behaviour have greater importance than the behaviour itself, which can be seen by their emphasis on reinforcement as the key factor that distinguishes between positive and negative perfectionism. They also postulated that positive and negative perfectionism could be differentiated in terms of

their emotional correlates, and associated behaviours, such that they coupled positive

perfectionism with performance satisfaction and approach behaviour and associated negative

perfectionism with a lack of performance satisfaction and avoidance behaviour. Thus, according

to this conceptualization, individuals with high levels of positive perfectionism are driven by the

pursuit of success, while individuals with high levels of negative perfectionism are motivated by

a fear of failure.

Despite the recent thrust of literature in support of an adaptive form of perfectionism,

some leading researchers in the field, who study perfectionism primarily from a clinical

perspective, are hesitant to embrace the notion that perfectionism can be adaptive (see Flett &

Hewitt, 2006). Their resistance reflects the following concerns. First, with the exception of

Hamachek, the idea of an adaptive form of perfectionism stands in direct opposition to

traditional theories of perfectionism, which consider perfectionism to be completely maladaptive.

Second, they point out that perfectionism has been found to be not only a vulnerability factor, but

also a maintaining factor for a considerable array of psychopathologies, thus making it difficult

to conceive of perfectionism as having an adaptive component. Third, Flett and Hewitt (2006)

argue that what some researchers believe to be an "adaptive form of perfectionism" may be

actually assessing conscientiousness rather than perfectionism. They go on to argue that striving

for excellence is a necessary, but not sufficient condition in terms of defining perfectionism, as

perfectionism involves rigidity such that perfectionists are those who maintain their standards

"even in situations that do not call for perfection, and who continue to place an irrational

importance on the attainment of impossibly high standards in not just one but several life

domains" (p.476). Fourth, Flett and Hewitt (2006) refer to studies that demonstrate that some of

the subscales that comprise Positive Achievement Strivings (e.g., SOP) are not simply related to approach behaviour, but are related to both approach and avoidance behaviour. They interpreted these results as showing that although self-oriented perfectionists strive toward success; they also have a propensity for anxiety when failure or embarrassment is experienced. Thus, these results are contrary to what Slade and Owen (1998) would expect.

Flett and Hewitt (2006) also remain unconvinced by the actual evidence in favor of considering Positive Achievement Strivings as being adaptive, as they point out that many of the findings are inconsistent, given that many studies report that Positive Achievement Strivings is often related to *both* positive and negative outcomes. Numerous studies, for example, have found evidence that Positive Achievement Striving was positively associated with higher levels of neuroticism and depression, putting its assumed desirability into question (Cox, Enns, & Clara, 2002; Enns, Cox, Sareen, & Freeman, 2001; Parker, 1997; Rice & Dellwo, 2002).

Finally, Lundh, Saboonchi, and Wangby (2008) have questioned the validity of the current two-factor model of perfectionism (i.e., Positive Achievement Striving versus Maladaptive Evaluative Concerns) based on the implications that this model has for "what constitutes maladaptive *patterns* of perfectionism" (p.335). Lundh et al. (2008) have pointed out that based on the current literature derived from the variable-centered approach (i.e., examining the relationships among variables where the goal is to predict outcomes using statistical techniques, such as multiple regression, structural equation modeling, or correlation) one should hypothesize that high levels of adaptive forms of perfectionism should essentially cancel out the deleterious effects of high levels of maladaptive forms of perfectionism, given their opposite effects on various outcomes. Thus, Lundh and colleagues (2008) surmise from the two-factor

model of perfectionism that the most dysfunctional configuration of perfectionism within individuals should be high scores on the maladaptive forms of perfectionism and low scores on the adaptive forms of perfectionism.

According to this line of reasoning, an individual who has low levels of personal standards, low levels of organization (and low levels of SOP), but high levels of concern over mistakes and doubt about actions (and high levels of SPP) should experience the highest levels of psychopathology and the lowest levels of well-being, whereas the person who has high levels of personal standards, organization, concern over mistakes, and doubt about actions should experience lower levels of dysfunction since the adaptive form of perfectionism buffers the individual against the effects of the maladaptive form of perfectionism[1].

Alternatively, Lundh's (2004) perfectionism-acceptance theory states that high personal standards can be adaptive or maladaptive depending on whether they are accompanied by an inability to accept imperfection or not. That is, personal standards are maladaptive when they are combined with an inability to accept one's shortcomings, but are adaptive when combined with one's ability to accept one's failures. In sum, according to the perfectionism-acceptance theory, striving for perfection is not pathological per se, but becomes maladaptive when it develops into a need to be perfect, which Lundh defined as the inability to accept anything less than perfection. In terms of the person-centered approach (i.e., examining the relationships among individuals with the goal of categorizing similar individuals into groups through the use of statistical techniques such as cluster analysis or latent class analysis), the perfectionism-acceptance theory of perfectionism posits that the most maladaptive configuration of perfectionism within

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[1] Theoretically, one could also apply this argument to Hewitt and Flett's dimensions of SOP and SPP, such that the negative effects of high levels of SPP should be buffered by high levels of SOP given that SOP is often considered to be adaptive in the two-factor model of perfectionism and SPP is considered to be maladaptive in nature.

individuals should be high levels of concern over mistakes and doubt about actions along with high levels of personal standards and organization.

Studies which have employed the person-centered approach have not supported what the two-factor model of perfectionism would predict, and instead support Lundh's (2004) perfectionism-acceptance theory. For instance, Parker (1997) and Rice and Mirzadeh (2000) each used person-centered techniques to identify prototypical configurations of perfectionism within individuals in student samples. In each of these studies, three clusters were discovered: non-perfectionists, adaptive perfectionists, and maladaptive perfectionists. However, the maladaptive perfectionists reported higher scores on personal standards than the adaptive perfectionists in both studies, suggesting that the "adaptive" form of perfectionism (i.e., personal standards) does not buffer against the effects of the maladaptive form of perfectionism.

Additional support for the perfectionism-acceptance theory comes from a study conducted by Lundh et al. (2008). In an effort to understand clinically significant perfectionism, which they defined as "patterns of perfectionism which are over-represented in clinical samples and under-represented in non-clinical samples" (p.333), Lundh and colleagues used the MPS-F and employed cluster analysis to identify prototypical configurations of perfectionism with both clinical and non-clinical samples. Overall they found 11 different clusters of perfectionists and non-perfectionists. Of interest, their results demonstrated that clinically significant perfectionism was comprised of the following configuration: high levels of concern over mistakes and high levels of doubts about actions along with high levels of personal standards. Furthermore, they found a configuration that was akin to what most researchers would refer to as adaptive perfectionism, which included high levels of personal standards and organization and low levels

of the remaining 4 subscales of the MPS-F. On the one hand, it can be argued that these results are consistent with Lundh's perfectionism-acceptance theory, such that personal standards were neither adaptive nor maladaptive in an absolute sense, as their desirability was determined by whether they are coupled with an inability to accept failures or one's short-comings or not. However, one could also argue that these results also support Hewitt and Flett's argument that what researchers are referring to as "adaptive" or "healthy" perfectionism, in this case operationally defined as having high personal standards and high levels of organization, is really tapping conscientiousness rather than perfectionism per se as they have stripped the other core components of the construct away.

The issue of whether perfectionism can in fact be adaptive for individuals is far from resolved as overall the results tend to be inconclusive. Clearly one reason for the lack of consensus on the issue is that researchers cannot agree on a conceptual definition of perfectionism. For example, those who define perfectionism conceptually as the tendency to set and strive toward *excessively* high standards and to make overly critical self-evaluations (Frost et al., 1990a; Hewitt & Flett, 1991b) should argue that perfectionism cannot be adaptive, as it is by definition excessive and therefore cannot be adaptive. However, others who have argued that perfectionism need not be excessive, such as those who have embraced Hamachek's conceptualization of normal perfectionism, which by definition is not excessive, as normal perfectionists "are those who feel free to be less precise as the situation permits" (p.27), see no reason why perfectionism cannot be both adaptive and maladaptive. However, while these definitional issues are crucial and in great need of attention for our further understanding of perfectionism, they are largely extraneous to the current literature examining the relative

adaptiveness and maladaptiveness of perfectionism as the majority of researchers define

perfectionism operationally by its measurement instrument rather than conceptually. Thus, as it

stands, the relative adaptiveness of perfectionism remains an open question in the literature as it

is operationally defined.

Stoeber and Otto (2006) have argued that the ambiguity surrounding the adaptiveness of

perfectionism results from three primary sources. First, Stoeber and Otto (2006) pointed out that

researchers have utilized "different facets and different combinations of facets to arrive at

different conceptualizations of the two forms of perfectionism" (p.295). Second, they drew

attention to the fact that researchers in the area of perfectionism have tended to employ two

different research approaches: the variable-centered approach and the person-centered approach

and these approaches have tended not to be integrated. Finally, Stoeber and Otto (2006) observed

that while many studies have found evidence in favour of an adaptive form of perfectionism,

other studies have not, thus leading to further confusion.

Based on their review of the literature, Stoeber and Otto (2006) arrived at two primary

conclusions. They first noted that even though there are myriad conceptualizations of the

fundamental components of the two types of perfectionism, overall "there is considerable

agreement as to which core facets define the two forms of perfectionism: for the Positive

Perfectionistic Strivings dimension, these are high personal standards and SOP; and for the

Negative Perfectionistic Concerns dimension, these are concern over mistakes, doubt about

actions, SPP, and perceived discrepancy actual achievements and high expectations." (p.296). In

terms of the person-centered approach, they concluded that "healthy perfectionists can be

conceived of as individuals with high levels of Perfectionistic Strivings and low levels of

Perfectionistic Concerns, [whereas] unhealthy perfectionists [are] individuals with high levels

of Perfectionistic Strivings and high levels of Perfectionistic Concerns." (p.296). Second, they

concluded that Perfectionistic Strivings were primarily positive, especially when Perfectionistic

Concerns were statistically accounted for in analyses. However, with that being said, Stoeber and

Otto (2006) conceded that the adaptiveness of Positive Strivings is still in question as

longitudinal evidence is mixed, and research has yet to clearly show "the function that striving

for perfection may serve in the development of the individual nor specified the environmental

conditions under which striving for perfection would be adaptive" (p.315). Given the lack of

clarity regarding the desirability of the construct of perfectionism, and the dearth of research

directly examining the health consequences of perfectionism, more research aimed at assessing

the relative healthiness or unhealthiness of perfectionism is clearly warranted. Research that has

specifically addressed the health consequences of perfectionism will now be reviewed.

Perfectionism and Mental Health

Consonant with traditional theories of perfectionism, which consider perfectionism to be

a form of neurosis (e.g., Freud, 1926; Lion, 1946); elevated levels of perfectionism would be

expected in a range of psychological disorders. In fact, research with both clinical and

nonclinical samples has supported this notion, such that perfectionism is often associated with

distress and various forms of psychopathology (see Shafran & Mansell, 2001). For instance,

subscales generally considered to be reflective of Maladaptive Evaluative Concerns (e.g., SPP

from the MPS-HF, doubt about actions, concern over mistakes, parental expectations, and

parental criticism from the MPS-F, discrepancy from the APS-R) have been positively associated

with depressive symptoms in both clinical and non-clinical samples (Frost et al., 1993; Hewitt &

Flett, 1991a; Hewitt et al., 1996; Slaney et al., 2001; Wyatt & Gilbert, 1998) and have been found to be longitudinally predictive of increases in depressive symptomatology over a period of four months (Hewitt et al., 1996). Mixed results have been reported with regard to subscales believed to be reflective of Positive Achievement Striving (e.g., SOP from the MPS-HF, personal standards and organization from the MPS-F, Standards and Order from the APS-R) with some studies observing a positive relationship between subscales that load onto Positive Achievement Striving and depression (Cox et al., 2002; Hewitt & Flett, 1991a), others observing no relationship (Flett et al., 1991b; Slaney et al., 2001), and still others finding that some of its subscales are only positively related to depressive symptomatology when achievement stressors have been experienced (Hewitt et al., 1996).

Of interest, Flett, Hewitt, Blankstein and Gray (1998) found in their series of studies that frequent perfectionistic cognitions were uniquely associated with depressive symptomatology, over and above trait levels of perfectionism in both clinical and subclinical samples. These findings suggest that the frequency of perfectionistic thinking may be a key distinguishing feature in terms of whether individuals experience their perfectionism as healthy or unhealthy. Finally, strengthening the link between perfectionism and depression are studies that have demonstrated that perfectionism is also positively associated with having an external locus of control (Hewitt & Flett, 1991a), poor self-esteem (Flett et al., 1991b), and a sense of hopelessness (O'Connor & O'Connor, 2003), all of which have been directly linked with depressive symptomatology (Abramson et al., 2002; Beck, 1976; Benassi, Sweeney, & Dufour, 1988; Fennell, 1997; Hankin & Abela, 2005).

A large body of work has also established a positive link between perfectionism and anxiety. Researchers have reliably found perfectionism to be elevated in individuals who have been diagnosed with anxiety disorders compared to controls (Antony, Purdon, Huta, & Swinson, 1998) and perfectionism has also been positively associated with anxiety symptomatology in non-clinical samples (Flett et al., 1994-1995). Although perfectionism has been positively related to an array of anxiety disorders, such as panic disorder (Antony et al., 1998; Saboonchi, Lundh, & Öst, 1999), agoraphobia (Iketani et al., 2002), general symptoms of anxiety (Minarik & Ahrens, 1996), posttraumatic stress disorder (PTSD) (Kawamura et al., 2001), and worry (Stöber & Joorman, 2001), the most robust relationships appear to be between perfectionism and social anxiety (Antony et al., 1998; Blankstein, Flett, Hewitt, & Eng, 1993; Laurenti, Bruch, & Haase, 2008; Saboonchi & Lundh, 1997) and between perfectionism and obsessive-compulsive disorder (OCD) (Antony et al., 1998; Rheaume, Freeston, Dugas, Letarte, & Ladouceur, 1995). Given that SPP highlights social evaluation, it is not surprising that SPP is reliably associated with higher levels of social phobia (Alden, Bieling, & Wallace, 1994; Bieling & Alden, 1997) in which the cardinal component is the marked and persistent fear of social or performance situations (American Psychiatric Association, 1994). Similarly, the rigidity, consonant doubts about actions, and the overwhelming concerns about making mistakes associated with perfectionism make it a prime candidate for the development and maintenance of OCD.

Whereas perfectionism is largely viewed as a peripheral factor in the development and maintenance of depressive and anxiety disorders, perfectionism is thought to be a key factor with regard to eating disorders and has even been described as a necessary condition for the development of anorexia nervosa (AN) (Fairburn, Cooper, Doll, & Welch, 1999; Slade, 1982).

The importance of perfectionism within eating disorders is substantiated by its inclusion within scales that are specifically designed to assess eating disorder symptomatology. For instance, both the Setting Conditions for Anorexia Nervosa Scale (SCANS; Slade & Dewey, 1986) and the Eating Disorders Inventory (EDI; Garner et al., 1983) include subscales that assess perfectionism.

Evidence clearly supports the notion that perfectionism is an important factor in the phenomenology of eating disorders. Studies with clinical samples of eating disordered patients have demonstrated that female AN patients report higher levels of perfectionism compared to matched controls (Bastiani, Rao, Weltzin, & Kaye, 1995; Halmi et al., 2000; Sutandar-Pinnock, Woodside, Carter, Olmsted, & Kaplan, 2003). Further, Moor, Vartanian, Touyz, and Beumont (2004) along with Lilenfeld et al. (2000) found that individuals with bulimia nervosa (BN) also reported higher levels of perfectionism compared to matched controls. Results with non-clinical samples have also indicated that perfectionism is closely linked with eating disorders. Hewitt, Flett, and Ediger (1995c), for example, observed that both SOP and SPP, as assessed by the MPS-HF, shared a positive association with eating disorder symptoms, while Minarik and Ahrens (1996) found that higher levels of eating disorder symptoms were related to both concern over mistakes and doubt about actions, as measured by the MPS-F. Finally, higher levels of perfectionism have been reported in individuals who have recovered from AN compared to matched controls (Bastiani et al., 1995; Srinivasagam et al., 1995) which suggests that perfectionism endures despite successful recovery from the eating disorder.

Interestingly, the currently favored healthy/unhealthy distinction of perfectionism does not seem to make sense with regard to the eating disorders literature, as both forms of

perfectionism (e.g., Positive Achievement Striving and Maladaptive Evaluative Concerns) appear to be positively associated with eating disorder symptoms. Cockell et al. (2002), for example, found that AN individuals reported elevated levels of both SPP and SOP compared to healthy controls and a group of patients with mood disorders. These findings are in line with Hewitt et al.'s (1995c) results, which suggest that both SOP (often viewed as a proxy measure of 'healthy perfectionism') and SPP (considered to be a proxy measure of 'unhealthy perfectionism') are related to eating disorder symptoms. Likewise, studies employing the MPS-F have shown that subscales that load onto both Maladaptive Evaluative Concerns (e.g., concern over mistakes, doubt about actions, parental expectations, and parental criticism) and Positive Achievement Striving (e.g., personal standards) are positively related to eating disorder symptomatology. For instance, Halmi et al. (2000) observed that AN individuals reported higher scores on concern over mistakes, doubt about actions, parental expectations, parental criticism, and personal standards, compared to healthy controls while Bastiani et al. (1995) found that AN individuals reported higher scores on concern over mistakes, doubt about actions, parental criticism, organization, and personal standards compared to controls.

These findings may be interpreted as support for Flett and Hewitt's (2006) position that perfectionism is not adaptive or healthy but is, in fact, a vulnerability factor for psychopathology. However, an alternate explanation is also possible. Specifically, DiBartolo, Frost, Chang, LaSota, and Grills (2004) and DiBartolo et al. (2008) have argued that the subscales which constitute Positive Achievement Striving (i.e., personal standards from the MPS-F and SOP from the MPS-HF) simultaneously measure both Positive Achievement Striving and Maladaptive Evaluative Concerns, and it is this overlap that is responsible for the discrepant findings.

DiBartolo and colleagues further claimed that holding high personal standards per se is not unhealthy, but becomes unhealthy when one's self-worth is contingent upon meeting those standards. DiBartolo et al. (2004) found support for their supposition by showing with factor analysis that two of the items that assess personal standards in the MPS-F assessed both contingent self-worth and the tendency to hold high standards and that when those two items were removed from the analyses Positive Achievement Striving no longer shared a positive relationship with psychopathology, but maintained its positive associations with desirable outcomes, such as positive affectivity.

However, the DiBartolo studies are open to two primary critiques. First, these studies were conducted with relatively small and specific samples of young, educated women. Thus, the generalizability of these findings remains in question. Second, these studies can be questioned on theoretical grounds. Few would argue with the conclusion that the tendency to set and strive toward high standards is not in and of itself maladaptive, as the setting of high standards is also considered to be a part of conscientiousness, which has been shown to be adaptive (e.g., Roberts, Walton, & Bogg, 2005). Clearly, holding excessively high standards is a cardinal feature of perfectionism; however, most would argue that perfectionism also involves a lot more and that, without these other facets, the true essence of perfectionism is lost. For instance, Flett and Hewitt (2006) argue that striving for excellence is a necessary, but not sufficient condition in terms of defining perfectionism, as perfectionism involves rigidity such that perfectionists are those who maintain their standards "even in situations that do not call for perfection, and who continue to place an *irrational importance* on the attainment of impossibly high standards in not just one but several life domains" (p.476, italics added). Historically, perfectionism was theorized as not only

having excessively high standards, but also with high levels of self-scrutiny, fear of failure, poor self-esteem when standards are perceived to have not been met, and an inability to experience satisfaction even when successful (e.g., Blatt, 1995, Ellis, 1962, Horney, 1950; Pacht, 1984). Furthermore, most of the traditional theories of perfectionism posit that contingent self-worth is an important feature of perfectionism, rather than tangential to the construct (e.g., Burns, 1980; Ellis, 1962; Missildine, 1963). Finally, even contemporary definitions of perfectionism conceive of perfectionism as being composed of more than just holding high standards as Frost et al. (1990a) defined perfectionism as the tendency to hold and strive toward excessively high standards, *and* to make overly critical self-evaluations. Thus, while the findings from the DiBartolo studies are interesting, such that they show that having high standards is not maladaptive per se and thus should not be the primary focus for clinical intervention, their theoretical relevance depends on the conceptualization of perfectionism that one adopts.

Not as much research has been conducted regarding the relationship between perfectionism and the Axis II disorders. This is surprising, given that rigidity is often considered to be a key feature of perfectionism (e.g., Ellis, 2002; Ferrari & Mautz, 1997; Lion, 1942) and is the primary feature of personality disorders (American Psychiatric Association, 2000). Theoretically, one would expect a relationship between obsessive-compulsive personality disorder (OCPD) and perfectionism given that perfectionism is included as one of the diagnostic criteria for OCPD and that the description of someone with OCPD is strikingly similar to someone with high levels of perfectionism. For instance, a person with OCPD is often described as being rigid, having high self-imposed standards, and as having concerns "about having things done the one "correct" way (American Psychiatric Association, 2000, p.726). "They may

become so involved in making every detail of a project absolutely perfect that the project is never finished" (American Psychiatric Association, 2000, p.725). Other similarities include a focus on orderliness and self-criticism.

Indeed, research indicates that perfectionism and OCPD are positively related, as Iketani and colleagues (2002) observed that in their sample of panic disorder patients OCPD was an indicator of perfectionism as measured by the MPS-F. Further, in their study of undergraduate students, Sherry, Hewitt, Flett, Lee-Baggley, and Hall (2007) observed a significant positive relationship between SPP and Cluster C of the higher-order domains of personality disorders, which includes OCPD. However, Shafran et al. (2002) have pointed out that OCPD and perfectionism are distinct such that an individual with OCPD may not be perfectionistic, as he or she can reach the diagnosis by meeting other criteria such as hoarding, being miserly in their spending, and being highly rigid with regard to their morals.

In terms of differential relationships between the dimensions of perfectionism and personality pathology, it appears that the interpersonal domains of perfectionism have the most robust relationship with personality disorder symptomatology. In their sample of psychiatric patients, Hewitt and Flett (1991b), for instance, observed that SPP was positively related to schizoid, passive-aggressive, borderline, avoidant, and schizotypal personality patterns, whereas OOP was positively associated with the "dramatic cluster" of personality disorders which includes, histrionic, narcissistic, and antisocial personality disorders. In this study, SOP was largely unrelated to personality pathology with the exceptions being clinical symptom indices of hypomania and alcoholism.

Similarly, McCown and Carlson (2004) examined the relationship between perfectionism and personality pathology among a group of people who were in treatment for cocaine addiction and who met diagnostic criteria for Antisocial Personality Disorder (APD), Narcissistic Personality Disorder (NPD), or a mood disorder. Using the MPS-HF, they found that individuals diagnosed with NPD reported higher levels of SPP compared to individuals with a mood disorder or APD. Moreover, they observed that individuals diagnosed with a mood disorder reported significantly higher levels of SOP compared to those with personality pathology. Finally, McCown and Carlson (2004) found that individuals diagnosed with NPD reported significantly higher levels of OOP than those diagnosed with a mood disorder. Thus, it appears that the interpersonal aspects of perfectionism are more strongly related to personality pathology compared to the intrapersonal aspects, which is consistent with definitions of personality disorders that stress interpersonal components. However, given the paucity of research in the area any conclusions at this point must be seen as tentative at best.

In sum, perfectionism is related to a wide array of psychological disorders, such that it is positively associated with symptomatology in non-clinical samples and appears to be elevated in clinical samples. Further, subscales believed to be reflective of Positive Achievement Striving and Maladaptive Evaluative Concerns do not seem to be as easily distinguishable when studying depression or eating disorders, which suggests that Positive Achievement Striving may not be as healthy as some would think it is. From this literature review it is also clear that studies have largely neglected to examine the role of perfectionism in generalized anxiety disorder and posttraumatic stress disorder.

Perfectionism and Subjective Well-Being

In light of the growing body of work aimed at demonstrating the positive aspects of perfectionism and in concert with the recent zeitgeist of positive psychology, research on perfectionism has now begun to broaden its focus on the relationship between perfectionism and more global assessments of functioning, rather than simply examining only the negative aspects of perfectionism (see Chang, Downey, & Lin, 2006; Stoeber & Otto, 2006). Concerning studies on subjective life evaluations, the construct of subjective well-being (SWB) has been particularly valuable. Diener (1984) has articulated that SWB is equivalent to what individuals refer to as "happiness". SWB is composed of three key elements: life satisfaction, positive affect, and negative affect.

SWB is premised on the notion that each individual decides which life domains, circumstances, events, or experiences are most important and weighs these factors accordingly when forming overall life evaluations, which are reflected in levels of LS (i.e. life satisfaction), and when reporting on affective reactions to their lives, reflected in the frequency of PA (i.e. positive affect) and NA (i.e., negative affect). An extensive body of research has linked SWB with a wide range of positive personal, interpersonal, and societal outcomes (e.g., DeNeve & Cooper, 1998; Diener, Suh, Lucas, & Smith, 1999). Thus, high SWB is considered an important personal goal (Diener & Seligman, 2002)" (Molnar, Busseri, Perrier, & Sadava, 2009, p.705).

Only two studies have assessed all of the components of SWB when investigating the relationship between perfectionism and SWB and both have provided evidence in favour of a healthy form of perfectionism. Chang et al. (2004), for example, examined whether adaptive and

maladaptive perfectionism were differentially related to psychological functioning in samples of White and Black female college students and found that that their measure of adaptive perfectionism (i.e., additive combination of the personal standards and organization subscale scores from the MPS-F) was positively associated with life satisfaction and with positive affect among White female students and that their measure of maladaptive perfectionism (i.e., additive combination of concern over mistakes, doubt about actions, parental expectations, and parental criticism subscale scores from the MPS-F) was negatively related to life satisfaction among White female students, negatively associated with positive affect in both groups, and positively associated with negative affect in both White and Black female college students. Using a measure of positive and negative perfectionism constructed by the author for the purpose of his study, Chan (2007) observed that positive and negative perfectionism shared differential relationships with the components of SWB, such that positive perfectionism was associated with higher levels of life satisfaction and positive affect and lower levels of negative affect, whereas negative perfectionism was associated with lower levels of life satisfaction and higher levels of negative affect. As a whole these results indicate that forms of positive perfectionism are related to experiencing higher levels of SWB, whereas forms of negative perfectionism are related to experiencing lower levels of SWB.

While only two studies have examined the linkage between perfectionism and all of the SWB components (e.g., Chang, Watkins, & Banks, 2004) the research literature contains several relevant findings with regard to each of the components of SWB. For instance, recent research has provided evidence of relationships between perfectionism and affect. Positive Achievement Striving, for example, has been reported to be associated with fewer self-defeating behaviors in

evaluative situations, and less vulnerability to negative affect (Bieling et al., 2003; Enns et al., 2001; Rheaume et al., 2000). With regard to the particular facets that comprise Positive Achievement Striving, the personal standards and organization dimensions from the MPS-F have been shown to be positively associated with positive affect (Chang et al., 2004) as has the SOP dimension from the MPS-HF (Frost et al., 1993). Rice and Slaney (2002) further found in their sample of undergraduate students that adaptive perfectionists (i.e., individuals who reported high levels of high standards and order and low discrepancy scores from the APS-R) reported higher levels of positive affect and lower levels of depressed affect compared to maladaptive perfectionists (i.e., high levels of high standards and order and high discrepancy scores from the APS-R). While the majority of findings demonstrate that the facets associated with Positive Achievement Striving tend to be associated with higher levels of positive affect and lower levels of negative affect, there is a caveat, as Positive Achievement Striving has also been positively associated with neuroticism and depression, putting its assumed desirability into question (Cox et al., 2002; Enns et al., 2001; Parker, 1997; Rice & Dellwo, 2002). SOP, in particular, has shown incongruent relations with affect, as it has been shown to be linked with higher levels of positive affect and lower levels of negative affect in some studies (e.g., Frost et al., 1993; Molnar et al., 2006) and yet been positively associated with depression, anxiety, and negative affect in other studies (Flett et al., 1991a; Flett et al., 1991b; Flett et al., 2002; Flett et al., 2003; Hewitt & Flett, 1991a, 1993; Hewitt et al., 1995b).

More consistent findings have been reported with regard to the relationship between Maladaptive Evaluative Concerns and affect, such that this form of perfectionism has been repeatedly linked with higher levels of negative affect and lower levels of positive affect (e.g.,

Bieling et al., 2003; Chang et al., 2004; Dunkley et al., 2003; Frost et al., 1993). SPP, in

particular, has been found to be consistently related to higher levels of negative affect,

depression, and psychological distress (Hewitt & Flett, 1991a; Saboonchi & Lundh, 2003). In

sum, empirical evidence supports differential relationships between the different forms of

perfectionism and positive and negative affect. Further, while the relationship between

Maladaptive Evaluative Concerns and affect seems quite clear, the relationship between Positive

Achievement Striving and affect remains in question.

With regard to life satisfaction, the findings have tended to be quite consistent. Using the

total score of perfectionism from the MPS-F, Chang (2000) found that higher levels of total

perfectionism were related to lower levels of life satisfaction, as measured by the Satisfaction

with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) and higher levels of negative

affect as measured by the Positive and Negative Affect Scales (PANAS; Watson, Clark, &

Tellegen, 1988). Interestingly, perfectionism was unrelated to positive affect in this study.

Moreover, Chang (2000) found that these findings held for both younger and older adults. While

this study's results are intriguing and are consistent with traditional views of perfectionism as

being maladaptive, they are limited and may not be fully accurate, as Chang failed to

differentiate among the different subscales of the MPS-F which have been shown to have

differential effects with psychological functioning (e.g., Frost et al., 1993).

Studies that have explored the differential relationships between various facets of

perfectionism and life satisfaction have consistently revealed unique relationships. Gaudreau and

Antl (2008) assessed athletes both before and after an important athletic competition to test a

structural model in which perfectionism predicted life satisfaction. Further, they hypothesized

that sport-related coping and goal attainment would mediate the relationship between perfectionism and life satisfaction. Overall, they found that Personal Standards Perfectionism (i.e., personal standards from the MPS-F and SOP subscale from the MPS-HF) was not directly related to life satisfaction either before or after the athletic competition. However, they did find evidence of a complicated indirect relationship between Personal Standards Perfectionism and life satisfaction, such that Personal Standards Perfectionism was positively related to self-determined motivation and task-oriented coping in athletes, which, in turn, were positively related to goal attainment, which, in turn, was related to higher levels of life satisfaction after the athletic competition. Moreover, Gaudreau and Antl (2008) observed a direct and negative relationship between Evaluative Concerns Perfectionism (i.e., concern over mistakes, doubt about actions, parental criticism and parental expectations subscales from the MPS-F and the SPP subscale from the MPS-HF) and life satisfaction both before and after the athletic competition. They further found that this relationship was only partially mediated by their hypothesized set of mediator variables.

Studies that have employed the person-centered approach have also supported the notion that healthy perfectionists differ from unhealthy perfectionists in terms of life satisfaction. With a sample of middle-school students, Gilman and Ashby (2003) utilized the APS-R and cluster analysis to identify clusters of adaptive, maladaptive, and non-perfectionistic students. They then compared the clusters in terms of levels of psychopathology and positive adjustment. Results of the study revealed that adaptive perfectionists reported higher levels of self-satisfaction, as measured by the Behavioral Assessment System for Children (BASC; Reynolds & Kamphaus, 1992) compared to maladaptive perfectionists. Moreover, they found that both groups of

perfectionists reported higher levels of self-satisfaction compared to the non-perfectionists. Gilman and Ashby (2003) interpreted their findings as demonstrating that the maintenance of high standards sustains a degree of self-worth even in spite of the stress associated with not attaining one's standards.

Using the APS-R and cluster analysis, Gilman, Ashby, Sverko, Florell, and Varjas (2005) also identified three clusters of perfectionists among both Croatian and American adolescents, which they referred to as adaptive, maladaptive, and non-perfectionists. Consonant with previous findings Gilman et al. (2005) observed that adaptive perfectionists reported higher levels of satisfaction compared to both maladaptive perfectionists and non-perfectionists. Of interest, in the Croatian sample, few differences among the different domains of life satisfaction were found between maladaptive perfectionists and non-perfectionists. In the American sample, maladaptive perfectionists actually reported being more satisfied with their families, living environment, and with their school compared to non-perfectionists. Gilman et al. (2005) interpreted these results as suggesting that possessing high standards may be beneficial for individuals in terms of their sense of well-being, even when those standards are perceived as not being met.

Thus, despite differences in analytic approach (i.e., variable-centered versus person-centered), it appears that the different forms (or types) of perfectionism relate differentially to an individual's overall sense of well-being. With regard to the variable-centered approach, findings have demonstrated that the facets of perfectionism that define Maladaptive Evaluative Concerns are associated with having a poorer sense of well-being, whereas the facets of perfectionism that define Positive Achievement Strivings have been shown to be related positively to SWB or to have no effect on SWB. Thus, according to this approach the facets of perfectionism that

comprise Maladaptive Evaluative Concerns seem to be the most salient for an individual's

level of happiness.

Results from studies that employ the person-centered approach paint a somewhat

different picture in terms of the relative importance of Positive Achievement Striving versus

Maladaptive Evaluative Concerns, as findings from these studies indicate that adaptive

perfectionists report higher levels of SWB compared to both maladaptive perfectionists and non-

perfectionists, but that the latter two groups generally report similar levels. These studies lead

one to the conclusion that the facets of perfectionism that comprise Positive Achievement

Strivings are the most relevant in terms of predicting a person's sense of well-being. In sum,

while the evidence is equivocal in terms of the relative importance of Positive Achievement

Striving perfectionism versus Maladaptive Evaluative Concerns, it is clear that perfectionism

should be considered when examining SWB and that perfectionism has both detrimental and

beneficial effects for individuals' levels of happiness.

Perfectionism and Physical Health

Although the relationship between perfectionism and psychological health is becoming

clearer, relatively little is known about how perfectionism is related to physical health, which is

remarkable, given the recent rekindling of interest in studying the robust relationship between

personality and health (e.g., Christensen et al., 2002; Friedman et al., 1993; Ozer & Benet-

Martinez, 2006; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007; Roberts et al., 2005). The

few studies that have examined the relationship between perfectionism and physical health have

provided evidence of a direct link. In his review of the literature, Pacht (1984) found that

perfectionism was significantly related to various disorders, such as irritable bowel syndrome,

erectile dysfunction, abdominal pain in children, and ulcerative colitis. Moreover, perfectionism has been found to be associated with an array of somatic problems, such as migraine headaches (Burns, 1980; Kowal & Pritchard, 1990), chronic pain (Van Houdenhove, 1986), headaches (Stout, 1984), and asthma (Morris, 1961). However, these studies defined perfectionism as a unidimensional construct, which did not permit researchers to explore whether the specific dimensions of perfectionism were differentially related to health.

Research that has examined how the various dimensions of perfectionism relate to health has provided mixed support for the contention that perfectionism encompasses both healthy and unhealthy features. In terms of chronic fatigue syndrome (CFS) and general levels of fatigue, results suggest that aspects of maladaptive perfectionism are the most salient. With a clinical sample of individuals suffering from CFS with matched controls, White and Schweitzer (2000), for example, utilized the MPS-F to examine the relationship between CFS and perfectionism. Their results supported the notion that specific dimensions of perfectionism were differentially related to chronic fatigue syndrome, in that the most significant differences between the CFS group and the control group were on the MPS-F dimensions of concern over mistakes and doubt about actions, with the CFS group scoring significantly higher on these dimensions. Magnusson, Nias, and White (1996) found that aspects of maladaptive perfectionism, specifically the doubt about actions and parental expectations subscales of the MPS-F, were associated with higher levels of mental fatigue and physical fatigue, respectively, among a sample of female nurses. Finally, Vincent and Walker (2000) compared two groups of adults from the community, those with chronic insomnia and those without, and found that those with chronic insomnia reported higher levels of doubt about actions, concern over mistakes, and parental expectations from the

MPS-F compared to those without chronic insomnia. In each of these studies, no statistically significant differences were found with regard to having high personal standards, when the other subscales were simultaneously considered. Collectively, these results indicate that individuals suffering from CFS and chronic insomnia are characterized by having greater concerns about making mistakes and having greater doubts in their ability to succeed compared to individuals without these health concerns-two hallmark features of maladaptive perfectionism.

While the distinction between healthy and unhealthy perfectionism is apparent when studying the relationship between perfectionism and fatigue, the distinction becomes less clear when studying other health complaints. For instance, research on pain has revealed that aspects of both Positive Achievement Striving and Maladaptive Evaluative Concerns are associated with individuals experiencing higher levels of pain or more frequent pain. Bottos and Dewey (2004) found in their sample of university students that individuals with chronic headaches reported higher levels of both SOP and SPP compared to those with either frequent or infrequent headaches. Further, they found that both SOP and SPP were positively related to the total number of daily hassles reported by individuals, thus prompting the authors to suggest that perfectionists appraise their situations as more stressful than non-perfectionists, which puts them at a higher risk of experiencing headaches.

In their study of university students, Hadjistavropoulos, Dash, Hadjistavropoulos, and Sullivan (2007) found that both SOP and SPP were positively associated with pain-related interference and negative affect at the levels of correlations; however, they found that the effect of SPP was stronger than that of SOP given that only SPP remained a significant predictor of these outcomes when all of the MPS-HF dimensions were entered into the regression equation

simultaneously. In a similar vein, Andersson, Airikka, Buhrman and Kaldo (2005) found that each of the MPS-F dimensions of perfectionism was positively related to tinnitus distress and anxiety among a large sample of tinnitus patients, and that all of the dimensions, with the exception of organization, were positively related to depression.

Research investigating the relationship between perfectionism and general somatic health also does not offer evidence of a clear distinction between an adaptive and maladaptive form of perfectionism. Saboonchi and Lundh (2003) employed a multidimensional approach to examine the link between perfectionism and somatic health in a general population sample. Utilizing the MPS-HF, they found that SOP and SPP were positively correlated with somatic complaints such as daytime sleepiness, headaches, tension, and insomnia. However, the relationship between SPP and somatic complaints was significant only for women. They also found that both SOP and SPP were positively related to negative affect and negatively related to positive affect, which again puts into question the contention that SOP reflects a healthy aspect of perfectionism. Finally, Martin, Flett, Hewitt, Krames, and Szanto (1996) utilized the MPS-HF and found that SOP and SPP were positively associated with physical health complaints in a sample of university students at the levels of correlations, akin to the Hadjistavropoulos et al. (2007) study; however, they found that the effect of SPP was stronger than that of SOP given that only SPP remained a significant predictor of physical health complaints when the other study variables were entered into the regression equation simultaneously. Moreover, they observed a significant interaction between SPP and self-efficacy when predicting health complaints such that individuals who reported the highest levels of SPP and the lowest levels of self-efficacy reported the poorest health.

In a unique study assessing the role of perfectionism in all-cause mortality, Fry and Debats (2009) found that SOP was longitudinally predictive of all-cause mortality over a time period of six and half years in a sample of older adults (65 to 80+ years), such that individuals with high scores on SOP (i.e., 70th to the 100th percentile) were at a 51% increased risk of death relative to individuals with low scores on SOP (i.e., 0 to the 30th percentile). Further, they found that the positive relationship between SOP and all-cause mortality remained after statistically controlling for other health-related variables such as age, social support satisfaction, index of disability in daily life, and the number of medical visits to health-care providers during the previous year. It is noteworthy that SPP was largely unrelated to all-cause mortality in that study.

Finally, at odds with the aforementioned studies, Molnar et al. (2006) found evidence that supports the notion that perfectionism has both positive and negative aspects in terms of one's health. Using structural equation modeling with a community sample of adults, they found that SOP was associated with better self-rated health and SPP was related to poorer self-rated health. Moreover, they observed that positive and negative affect mediated the relationship between perfectionism and self-rated health. SOP was related to higher levels of positive affect and lower levels of negative affect, which, in turn, were related to better self-rated health whereas SPP was related to lower levels of positive affect and higher levels of negative affect, which, in turn, were related to poorer self-rated health. In sum, the facets of perfectionism defining Maladaptive Evaluative Concerns are consistently related to poorer health, suggesting that this form of perfectionism may be a vulnerability factor for poor health. In contrast, the findings with regard to the facets of perfectionism that comprise Positive Achievement Strivings are inconsistent, as some studies reveal that these facets (i.e., personal standards, organization and SOP) are

positively related to health (e.g., Molnar et al., 2006), others report a negative relationship

(e.g., Fry & Debats, 2009; Saboonchi & Lundh, 2003), and still others report no relationship at

all (e.g., Vincent & Walker, 2000). These findings speak to the complexity of the issue of

whether there are healthy aspects of perfectionism.

Summary of the Literature, Goals, and Rationale for the Current Program of Research

The desirability of perfectionism has recently come into question. Unlike traditional

theories of perfectionism which treat perfectionism as being completely pathological, many

contemporary models of perfectionism have tended to embrace Hamachek's (1978) notion that

there are two forms of perfectionism which have been most consistently referred to as Positive

Achievement Striving and Maladaptive Evaluative Concerns. A growing body of work has

provided evidence that these two forms of perfectionism can be distinguished from one another

(Bieling et al., 2004; Slade & Owens, 1998; Terry-Short et al., 1995) across diverse samples and

with different analytic techniques and that the facets of perfectionism that comprise Positive

Achievement Striving are associated with desirable correlates and outcomes, such as higher

levels of coping strategies and lower levels of attachment anxiety and avoidance, while the facets

that define Maladaptive Evaluative Concerns are associated with undesirable outcomes, such as

depression, and lower levels of self-esteem (see Stoeber & Otto, 2006 for review). Researchers

who champion a two-factor model of perfectionism have interpreted these findings as supporting

their contention that perfectionism has both healthy and unhealthy features. However, others

remain unconvinced and continue to endorse the traditional view that perfectionism is strictly

maladaptive, citing that the evidence is inconsistent regarding the healthiness of perfectionism,

as many of the studies reveal that Positive Achievement Striving is often associated with both desirable and undesirable outcomes (e.g., Flett & Hewitt, 2006).

The distinction between adaptive and maladaptive forms of perfectionism become especially blurred when examining the relationship between perfectionism and actual indices of health and well-being, as some studies report that Positive Achievement Striving is positively related to health and well-being (e.g., Chang et al., 2004; Molnar et al., 2006), others report a negative relationship (e.g., Andersson et al., 2005; Saboonchi & Lundh, 2003) and still others report no significant relationship at all (e.g., Vincent & Walker, 2000). SOP, in particular, appears to demonstrate the most inconsistent results with regard to whether it embodies the healthy or unhealthy aspects of perfectionism. Thus, further research aimed at assessing the relative healthiness of SOP is specifically warranted.

Based on the literature review, it appears that several other fundamental issues have also not been resolved. First, while the relationship between perfectionism and psychopathology has been studied extensively, little literature exists regarding the relationship between perfectionism and physical health. This is surprising, given the plethora of research uncovering relationships between psychological factors and physical health (Cohen & Rodriguez, 1995; Friedman & Booth-Kewley, 1987; Friedman et al., 1984; Leventhal, Hansell, Diefenbach, Leventhal, & Glass, 1996; Littrell, 1996; Meeks, Murrell, & Mehl, 2000; Pettit, Kline, Gencoz, Gencoz, & Joiner, 2001) and the recent resurgence of interest in studying the robust relationship between personality and health (Caspi, Roberts, & Shiner, 2005; Ozer & Benet-Martinez, 2006).

Second, to my knowledge, perfectionism has been examined in relation to all three SWB components in only two studies (e.g., Chan, 2007; Chang et al., 2004). Further, both of these

studies examined SWB in relatively young and healthy samples, thus it is unclear whether the results will generalize to older individuals or individuals who are experiencing poor health. In addition, while Chang (2004) employed a well-validated measure of perfectionism (i.e., MPS-F) in his study, Chan (2007) created his own measure of positive and negative perfectionism which has yet to receive further validation. In any case, no study has examined the relationship between perfectionism as measured by the MPS-HF and all of the SWB components in the same study. Given the equivocal findings with regard to the healthiness of SOP and that some view this dimension of perfectionism as being one of the closest approximations to clinical perfectionism, (Shafran et al., 2002) it is important to understand how it is related to individuals' well-being. Further, all three SWB components should be examined simultaneously. Although variability in LS, PA, and NA overlaps considerably, substantial component-specific variance also has been found (Busseri, Sadava, & DeCourville, 2007). Also, despite some similarities, LS, PA, and NA may have different causes, correlates, and consequences (Diener, 1984; Diener et al., 1999).

Third, previous studies that have examined the relationship between perfectionism and mental health, physical health, or well-being have often failed to account for higher-order personality traits, as measured by the FFM (Costa & McCrae, 1992) when testing their models. While a wealth of research supports the premise that perfectionism is associated with a host of negative and positive outcomes, few have tested whether perfectionism provides greater incremental explanatory power over and above higher order personality traits, which is an important test of the value of the lower order construct (Paunonen, 1998). Given that perfectionism is substantially correlated with the higher-order personality traits of neuroticism and conscientiousness (e.g., Dunkley, Blankstein, Zuroff, Lecce, & Hui, 2006; Hill et al., 1997)

and that these variables are also highly related to outcomes of interest in the perfectionism literature, such as psychopathology in the case of neuroticism, and achievement in the case of conscientiousness, this is quite surprising.

Two exceptions in the literature are studies conducted by Enns et al. (2005) and by Page, Bruch, and Hasse (2008). In a cross-sectional study of undergraduate students, Page et al. (2008) found that Positive Achievement Striving and Maladaptive Evaluative Concerns were differentially related to career decision-making self-efficacy, such that Positive Achievement Striving was associated with higher levels of self-efficacy whereas Maladaptive Evaluative Concerns was related to lower levels of career decision-making self-efficacy. Further, they found that perfectionism accounted for unique variance in career decision-making self-efficacy over and above that accounted for by neuroticism, conscientiousness, extraversion, and openness to experience. In addition, they observed a positive relationship between maladaptive perfectionism and career indecision, and that this relationship held even after accounting for neuroticism and conscientiousness. These findings are at odds with the notion that Positive Achievement Striving is simply capturing features of conscientiousness, as these results demonstrate that Positive Achievement Striving is not only distinct from conscientiousness, but that it adds incremental predictive validity, at least with regard to career decision-making self-efficacy.

Conversely, Enns et al. (2005) compared perfectionism vulnerability models with a neuroticism diathesis-stress model in the longitudinal prediction of distress among first-year medical students. Overall, they found that while perfectionism interacted with life events to predict subsequent distress, none of these interactions added incremental predictive validity beyond the interactions between neuroticism and life events, suggesting that perfectionism is not

a specific vulnerability factor for distress. Taken together, these results speak to the importance of including broader personality dimensions when studying a lower-order personality trait, such as perfectionism, especially in relation to health and well-being, which have been shown to correlate highly with higher-order personality traits (e.g., Watson & Pennebaker, 1989).

Finally, although many researchers include SOP as a measure of healthy or adaptive perfectionism, Hewitt and Flett (1993) have argued that SOP is maladaptive as it is a vulnerability factor during times of stress or hardship. In other words, self-oriented perfectionists may appear to be thriving when things are going well, but they will be more likely to experience distress than nonperfectionists when they experience failure or other negative life-events because their perfectionism enhances the aversiveness of the stress that they are experiencing. In general, research has supported Hewitt and Flett's contention when psychopathology is under study, as research has documented that SOP is associated with depression and negative affect when negative events have been experienced (e.g., achievement stressors) and higher levels of anxiety symptomatology when ego-involving situations that threaten the self are introduced (Cheng, 2001; Enns & Cox, 2005; Flett, Hewitt, Blankstein, & Mosher, 1995; Flett et al., 1994-1995; Hewitt & Flett, 1993; Hewitt et al., 1996). However, the specific vulnerability model of perfectionism has not been applied when examining the relationship between perfectionism and physical health or SWB, which may have obscured results relating to the relationship between "positive" forms of perfectionism and health.

Each of these issues was addressed in the current program of research, with the aim of testing the notion that perfectionism has both beneficial and detrimental features in terms of

individuals' health and well-being. Health was defined in each of the studies by The World Health Organization (WHO) as "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (WHO, 1946, p.100). It is important to note that rather than define health in terms of ill health (i.e., the absence of disease); this holistic model of health explicitly draws attention to the positive aspects of health (e.g., happiness, quality of life), which is one of the major strengths of adopting this definition of health. A second strength of utilizing the WHO's definition of health is that it applies to everyone, whereas a negative definition of health only provides information on a limited proportion of the population, given that only a relatively small proportion of the Western population will be in ill health at any one time (Stewart, Ware, Brook, & Davies-Avery, 1978). Thus, the WHO's conceptualization of health was applicable to both the chronically ill and to relatively healthy student samples.

By utilizing both variable-centered and person-centered approaches, the first study addressed two specific research goals: First, a variable-centered approach was utilized to determine whether specific dimensions of perfectionism (i.e., SOP, SPP, & OOP) were differentially related to mental health, physical health, and SWB after accounting for higher-order personality traits related to both perfectionism and health, and to determine whether there was an optimal level of perfectionism in terms of these health-related variables. Second, a person-centered perspective was employed to determine whether distinct configurations of these three dimensions of perfectionism (i.e., SOP, SPP, and OOP) could be reliably found within people and whether there was an optimal profile or pattern of perfectionism in terms of mental health, physical health, and SWB.

While the first study tested different main effects and interactive models of

perfectionism and health, the second study went further by utilizing structural equation modeling

to examine potential mediators and moderators of the relationship between perfectionism and

health (see Figure 1).
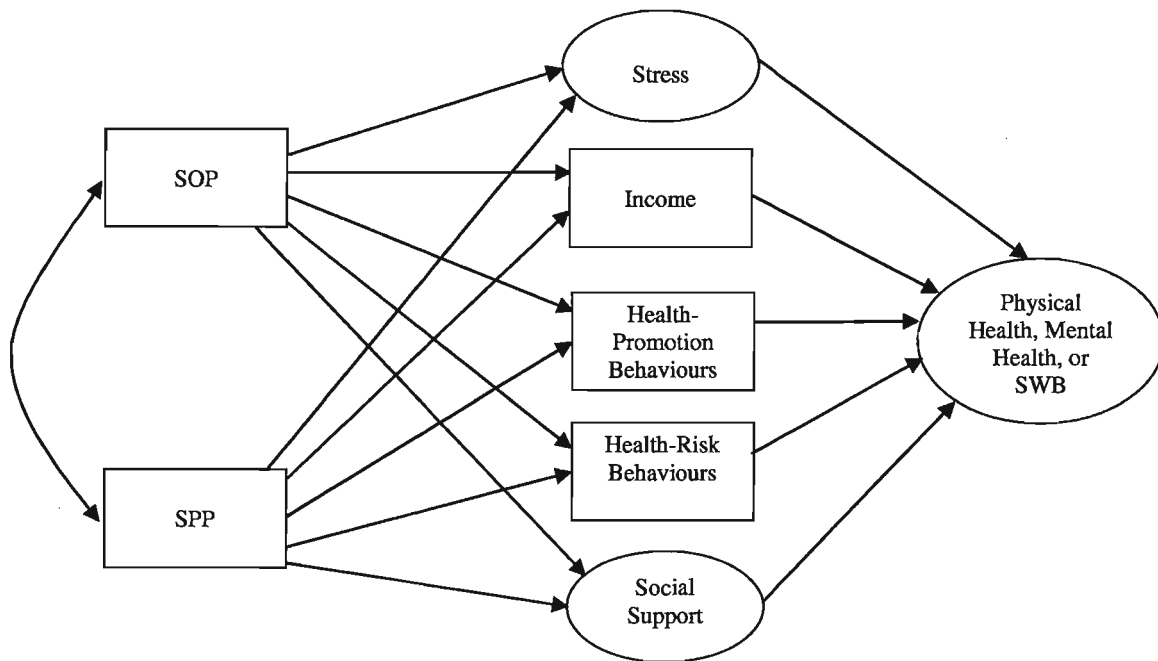
Figure 1. Hypothesized mediated model of perfectionism, health, and well-being[2].
Note. The effects of respondents' sex, extraversion, conscientiousness, and neuroticism will be
accounted for in model testing, but are not shown here for ease of presentation. Likewise, error
terms, disturbances, and covariances among the disturbances of the pathway variables have been
omitted from the figure as well as the indicators of the latent factors for ease of presentation.
Note. SOP: self-oriented perfectionism; SPP, socially prescribed perfectionism.

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[2] Figures of the structural model and each of the measurement models utilized the following conventions: Large
ellipses represent latent variables. Small circles signify measurement error for effect indicators and disturbances for
latent variables, and rectangles represent measured variables. Furthermore, curved double-headed arrows depict
covariances between variables whereas single-headed arrows represent regression paths.

CHAPTER 2

Study One

Rationale and Hypotheses

The primary issue of interest for this study was to examine whether the source and direction of the perfectionism are important factors in determining the relative healthiness of perfectionism. Specifically, the aims of the study were to discern whether specific dimensions of perfectionism (i.e., SOP, OOP, & SPP) are differentially related to mental health, physical health, and SWB after accounting for higher-order personality traits related to both perfectionism and health, and to determine whether there is an optimal level of perfectionism in terms of these health-related variables. Based on the literature reviewed previously, it was posited that SPP would be related to poorer mental and physical health and to lower levels of SWB. OOP was expected to be unrelated to health and SWB because it involves an external focus on other's shortcomings rather than shortcomings of the self and has generally been found to be unrelated to personal outcomes (Flett & Hewitt, 2002). Finally, while SOP was expected to be related to both health and well-being, the direction of the relationship was not hypothesized a priori since research has been inconsistent, showing that SOP is related to both better (e.g., Molnar et al., 2006) and poorer health (Fry & Debats, 2009).

However, a curvilinear relationship between SOP and health was explored, as it may be that moderate levels of SOP are related to better health and well-being whereas levels of SOP that are either too low or too high may be related to poorer health and well-being. Curvilinear relationships have tended not to be directly discussed in terms of perfectionism; however, they are plausible. For instance, to the extent that SOP captures the tendency to hold high standards,

having standards that are either too high or too low may be detrimental, such that having exceedingly high standards would be related to poorer outcomes because those standards would be impossible to reach resulting in higher rates of failure, whereas having standards that are too low would be related to poorer outcomes because the person would lack motivation to achieve desirable outcomes. Thus, according to a nonlinear model, moderate levels of SOP would be beneficial.

Hints that SOP may share a non-linear relationship with various outcomes come from the perfectionism literature. SOP, for example, has been shown to be related to both positive and negative outcomes (e.g., Blankstein & Dunkley, 2002; Hewitt & Flett, 1993), suggesting that it may be that it is not healthy or unhealthy in an absolute sense, but that there is an optimal degree of SOP. There is reason to believe that perfectionism may in fact share a non-linear inverted U-shaped relationship with health and well-being, such that it can be reasonably argued that having moderate standards would be the most beneficial and that having standards that are either too low or high would be detrimental. For example, following from Wilson (1967), Diener et al. (1999) argued "that either inappropriately high or low levels of aspiration can be detrimental to SWB, leading to anxiety (Emmons, 1992) or boredom (Csikszentmihalyi, 1990), respectively" (p.283). This intuitively makes sense as excessively high standards are difficult, if not impossible to reach, which often results in more failure experiences and higher levels of distress. On the other hand, having standards that are too low would suggest a lack of motivation, which is a core component of depression and related to other poor mental health outcomes (American Psychiatric Association, 1994; Beck & Alford, 2009).

It is one thing to identify different dimensions of perfectionism (e.g., SOP, OOP, and SPP) and then to determine their desirability based on their correlates. It is quite another to show that there are individuals who actually exemplify different patterns of perfectionism and that individuals who show different configurations differ from one another in meaningful ways. Thus, by employing a person-centered approach, the second goal of the present study was to determine whether distinct configurations of these three dimensions of perfectionism (i.e., SOP, OOP, and SPP) could be reliably found within people and whether there is an optimal profile or pattern of perfectionism in terms of mental health, physical health, and SWB.

Unlike the variable-centered approach which yields information pertaining to the relationships among variables at the aggregate level, the person-centered approach treats the individual as the primary units of analysis (Busseri et al., 2009). Thus, this approach allows researchers to delineate differences between people in how variables are associated with one another. When employing the person-centered approach, the goal is to discover patterns of thinking, feeling, and behaving within people. So it is not the individual components that are of paramount interest, as the person-centered approach places priority on integrated configurations of variables within people (Magnusson, 2003). Furthermore, each component of the system achieves its meaning by its place in a configuration within the system (Bergman & El-Khouri, 2003; Magnusson, 2003) and "the system derives its characteristic features and properties from interactions among its elements rather than the effect of isolated parts" (Bornstein et al., 2006, p. 548). It follows then, that a primary supposition of the person-centered approach is that the population is heterogeneous with respect to how the variables function in relation to one another (Laursen & Hoff, 2006). That is, people are assigned to groups based on the characteristics that

they have in common and these groups are expected to operate differently from one another (Magnusson, 2003).

Lundh et al. (2008) have pointed out that, based on the current literature derived from the variable-centered approach, one should hypothesize that high levels of healthy perfectionism should essentially cancel out the deleterious effects of high levels of unhealthy perfectionism, given their opposite effects on various outcomes. Thus, Lundh and colleagues (2008) surmise from the two-factor model of perfectionism that the most dysfunctional configuration of perfectionism within individuals should be high scores on the unhealthy form of perfectionism and low scores on the healthy form of perfectionism.

According to this line of reasoning, an individual who has low levels of personal standards, low levels of organization (and low levels of SOP), but high levels of concern over mistakes and doubt about actions (and high levels of SPP) should experience the highest levels of psychopathology and the lowest levels of well-being, whereas the person who has high levels of personal standards, organization, concern over mistakes, and doubt about actions should experience lower levels of dysfunction since the healthy form of perfectionism buffers the individual against the effects of the unhealthy form of perfectionism.

Alternatively, Lundh's (2004) perfectionism-acceptance theory states that high personal standards can be adaptive or maladaptive depending on whether they are accompanied by an inability to accept imperfection or not. That is, personal standards are maladaptive when they are combined with an inability to accept one's shortcomings, but are adaptive when combined with one's ability to accept one's failures. In sum, according to the perfectionism-acceptance theory, striving for perfection is not pathological per se, but becomes so when it develops into a need to

be perfect, which Lundh defined as the inability to accept anything less than perfection. Concerning the person-centered approach, the perfectionism-acceptance theory posits that the most maladaptive configuration of perfectionism within individuals should be high levels of concern over mistakes and doubt about actions along with high levels of personal standards and organization[3]. Studies that have employed the person-centered approach have not supported what the two-factor model of perfectionism would predict, and instead support Lundh's (2004) perfectionism-acceptance theory.

For instance, with different samples and measures of perfectionism, previous studies that have employed a person-centered approach to the study of perfectionism have reliably identified three distinct groups, which are generally referred to as non-perfectionists, adaptive perfectionists, and maladaptive perfectionists, based on the outcomes and correlates associated with each group (e.g., Mobley, Slaney, & Rice, 2005; Parker, 1997; Rice, Bair, Castro, Cohen & Hood, 2003; Rice & Mirzadeh, 2000; Rice & Slaney, 2002). In general, studies have demonstrated that adaptive and maladaptive perfectionists tend to be similar to one another in terms of having comparatively higher standards than the non-perfectionists (Grzegorek, Slaney, Franze, & Rice, 2004; Rice & Mirzadeh, 2000). However, maladaptive perfectionists have been shown to differ from adaptive perfectionists and non-perfectionists, such that they tend to score significantly higher on dimensions of perfectionism that have been consistently linked to undesirable correlates and outcomes (i.e., Discrepancy from the APS-R, and concern over mistakes, doubt about actions, parental expectations and parental criticism from the MPS-F) (Lundh et al., 2008; Rice et al., 2003). Thus, these results demonstrate the advantages of

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[3] Again, this argument could be applied to Hewitt and Flett's dimensions of SOP and SPP, such that the negative effects of high levels of SPP should be buffered by high levels of SOP given that SOP is often considered to be adaptive in the two-factor model of perfectionism and SPP is considered to be maladaptive in nature.

employing the person-centered approach, such that personal standards have been shown to be neither adaptive nor maladaptive in an absolute sense, as their desirability is determined by whether they are coupled with the more undesirable forms of perfectionism or not.

Following the reasoning of Lundh's perfectionism-acceptance theory and based on the findings above, three groups of individuals were expected to be identified in the present study; non-perfectionists, adaptive perfectionists, and maladaptive perfectionists. As in the aforementioned studies, non-perfectionists were expected to report relatively low scores on all three MPS-HF dimensions of perfectionism compared to the maladaptive and adaptive perfectionists. Both adaptive and maladaptive perfectionists were expected to report comparable levels of SOP, as this dimension of perfectionism has been considered to generally reflect high personal standards, which has been shown to be non-discriminating in terms of differentiating between adaptive and maladaptive perfectionism. However, the maladaptive perfectionists were expected to report higher levels of SPP compared to the adaptive perfectionists, as this form of perfectionism has been found to reflect the pathological nature of perfectionism. No specific hypotheses were made regarding the nature of OOP, as the literature has not been clear regarding whether it represents adaptive or maladaptive features of perfectionism and it has been generally found that OOP does not result in difficulties for the perfectionist him or herself (Flett & Hewitt, 2002). Based on the literature, maladaptive perfectionists were expected to report the lowest levels of health and well-being compared to the adaptive perfectionists and the non-perfectionists. However, no a priori hypotheses were made regarding differences between non-perfectionists and adaptive perfectionists in terms of health and well-being, as the literature has

been mixed with regards to the healthiness of the forms of perfectionism that are often considered to be adaptive.

This work extends previous research in several important ways. First, while many studies have utilized cluster analysis to identify different types of perfectionists, the majority have neglected the use of the Hewitt and Flett's MPS-HF (e.g., Parker, 1997; Rice & Lapsley, 2001; Rice & Slaney, 2002). Thus, configurations of Hewitt and Flett's dimensions of perfectionism and how they relate to health and well-being remain largely unknown.

Second, the present study is novel in that it integrated two distinct, yet complementary, analytic techniques (i.e., variable-centered and person-centered) within the same study. Generally, results from each of these techniques are treated independently resulting in confusion regarding the relative adaptiveness or maladaptiveness of perfectionism (see Stoeber & Otto, 2006). Given that each approach has unique advantages and disadvantages and addresses different research questions, it is important to begin to integrate these different approaches. For example, relations among perfectionism dimensions and other variables of interest can be examined using techniques associated with a variable-centered approach, such as multiple regression and structural equation models. Analyses of this sort provide valuable information about a sample or population of interest concerning individual differences in levels of perfectionism in relation to relative standing on other measures of interest, as well as informing the unique associations involving a given perfectionism dimension independent of the other dimensions.

On the other hand, by conceptualizing perfectionism as a constellation of components that co-occur within individuals, questions concerning configurations of perfectionism

dimensions within individuals, and the unique characteristics of people with a particular profile (e.g., healthy perfectionists), can be addressed directly through the application of empirical classification procedures and theoretically-informed group comparisons. More generally, whereas a variable-centered approach can be used to determine what the most important dimensions of perfectionism are in a particular circumstance, the person-centered approach can be used to determine whether individuals share the same perfectionism profile. Further, whereas the variable-centered approach allows researchers to assess the significance of being high or low on particular perfectionism dimensions, the person-centered approach permits researchers to assess the significance of having a particular configuration of perfectionism dimensions (Robins, John, & Caspi, 1998). Therefore, based on the complementary nature of these approaches, integrating person-centered and dimensional approaches should be more informative than investigations setting these approaches in opposition of one another. Integrating these two approaches is especially important with regard to research concerning the relative healthiness or unhealthiness of perfectionism, as Lundh (2004) has pointed out, hypotheses garnered from the variable-centered approach run counter to those offered by the person-centered approach. Thus, employing both approaches within the same study permitted a direct comparison of two competing models of perfectionism in the literature.

Third, to examine the generalizability of the findings, the analyses were conducted with two relatively large samples representing disparate populations. The first sample consisted of upper-year undergraduate students while the second sample consisted of individuals from the community with chronic health complaints. University students were chosen because they were expected to provide greater variance in terms of perfectionism scores than individuals of the

same age who were not attending university, given that people who score higher on measures of perfectionism tend to report higher levels of academic achievement compared to their same age counterparts (Accordino et al., 2000). The chronically-ill sample was chosen because they were expected to provide greater variance in terms of health status and age. Finally, higher-order personality traits were included in the analyses so as to determine whether perfectionism provides greater incremental explanatory power over and above higher-order personality traits. This is an especially important task given that both neuroticism and conscientiousness have been strongly related to perfectionism as well as health and well-being (Hill et al., 1997; Roberts et al., 2005; Watson & Pennebaker, 1989).

Method

Participants and Procedure

Student sample. Students from a Southern Ontario university were recruited into the study through various on-campus events and through on-campus advertisements. Students who agreed to participate in the study ($N = 550$) then completed a web-based questionnaire. Specifically, the survey took approximately 45 minutes to complete. We followed the 'CHERRIES' checklist (see Eysenbach, 2004) to ensure the highest level of quality in the data and given the length of time of the survey, participants were given the option to save their responses and return at a later time to complete the survey if they felt it was necessary. To ensure that individuals did not attempt to deliberately falsify data with multiple submissions, the program required individuals to enter their unique ID code and disallowed multiple submissions from the same computer IP address. Respondents were paid $20. The average respondent in the current study was 22.38 years old ($SD = 0.87$) and 78% ($n = 417$) were women. Ninety-seven percent were Canadian citizens. The survey did not assess respondent ethnicity or race. With regard to relationship status, 36% ($n = 198$) reported being unattached; 21% ($n = 113$) were dating; 39% ($n = 213$) were in a serious relationship; 3% (n = 18) were engaged; 1% ($n = 4$) were married and .4% were separated ($n = 2$). Two individuals failed to report their relationship status. Half ($n = 275$) of the sample were employed part-time; 40% ($n = 216$) were unemployed; and 10% ($n = 56$) reported full-time employment. Three individuals did not report their employment status. Total parental income in the previous year averaged between $70,000 and $79,999 (range = $5000 to over $100 000).

Chronically-ill sample. After a year-long recruitment, 796 participants suffering from

chronic illness were recruited through online support groups and websites that were created for

the benefit of people with chronic illnesses. Specifically, a URL link was posted on these

websites from which participants could access and complete the web-based questionnaire.

Overall, the questionnaire took approximately 45 minutes to complete and the questions were

randomized for each participant to reduce the effects of fatigue. The web-based procedures

utilized with the student sample were employed for this sample as well. No individual incentives

were given for participation. The illnesses targeted by the websites and support groups included

fibromyalgia, chronic fatigue syndrome, diabetes, prostatitis, arthritis, asthma, cardiovascular

disease, intestinal problems, and a website dedicated to addressing men's health issues (see

Appendix A for a list of these websites). The participants ranged in age from 20 to 81 years ($M =$

49 years, $SD = 11$ years) and 93% (n = 716) were female. Participants reported many different

types of chronic illnesses with the most prevalent being chronic fatigue syndrome (50%; $n =$

397), fibromyalgia (78%; $n = 623$), arthritis (42%; $n = 331$), asthma (23%; $n = 180$), irritable

bowel syndrome (IBS; 6%; $n = 48$), cardiovascular disease (6%; $n = 45$), type 2 diabetes (5%; n

$= 43$), chronic thyroid problems including Graves Disease (5%; $n = 40$), chronic headaches (3%;

$n = 24$), chronic back problems (3%; $n = 26$), colitis (3%; $n = 26$), sleep disorders (3%; $n = 25$),

prostate problems (2%; $n = 18$), lupus (2%; $n = 16$), prostate problems (2%; $n = 16$),

hypertension (2%; $n = 19$), Crohn's disease (1%; $n = 10$), type 1 diabetes (1%; $n = 10$), and

cancer (1%; $n = 11$). Most of the participants reported experiencing multiple chronic health

conditions with the average participant reporting experiencing three ($SD = 1.7$) chronic health

conditions for an average of seven years ($SD = 3.0$). In terms of citizenship status, 63% ($n = 485$)

of the participants were American, 24% were Canadian ($n = 185$), 5% were British ($n = 36$), 4% were Australian ($n = 30$), and the remaining participants indicated other countries of citizenship (e.g., Belgium, France, Italy, India, Sweden, and New Zealand). With regard to marital status, 58% ($n = 444$) were married; 2% ($n = 16$) were engaged; 11% ($n = 82$) reported being in a serious relationship; 15% ($n = 115$) were divorced or separated; and 14% ($n = 110$) reported being unattached. In terms of education, 12% ($n = 98$) reported having completed high school or less; 15% ($n = 122$) reported having completed some college courses; 15% ($n = 122$) reported having completed college; 17% ($n = 135$) reported having completed some university courses; 24% ($n = 189$) reported having completed their Bachelor's degree; 11% ($n = 83$) reported having completed their Master's degree; and 6% ($n = 45$) reported having completed a Ph.D. or Professional Degree. Two participants did not report their level of education. Overall, 22% ($n = 171$) of the sample reported being employed full-time; 9% ($n = 73$) part-time; 8% ($n = 60$) self-employed; 9% ($n = 69$) reported that they were retired; 10% ($n = 83$) reported that they were full-time homemakers; 37% ($n = 295$) reported that they were on disability; and 5% ($n = 41$) reported that they were unemployed, laid-off, or only seasonally employed. Four individuals did not report their employment status. The average household income of the participants was between $50 000 and $59 999 (range = under $5000 – over $100 000)

Measures

The study measures are described below. Except where indicated, the same measures were used in both samples.

Perfectionism. Hewitt and Flett's (1991b) Multidimensional Perfectionism Scale (MPS-HF) was used to assess perfectionism. The MPS-HF is composed of three sub-scales, which

measure different sources and foci of perfectionistic standards. The *self-oriented perfectionism* subscale measures the extent to which individuals place high standards on themselves (e.g., "One of my goals is to be perfect in everything I do"). The *other-oriented perfectionism* subscale measures the extent to which an individual places high standards of achievement on significant others (e.g., "I cannot stand to see people close to me make mistakes"). Finally, the *socially prescribed perfectionism* subscale measures the extent to which people feel that high standards are being imposed on them by significant others (e.g., "The people around me expect me to succeed in everything I do"). The total scale consists of 45 items, with 15 items per subscale. After recoding reverse keyed items, a total score for each subscale was created by calculating the sum of the items that were designed to tap each construct. Items were assessed using a Likert scale ranging from 1 *(disagree)* to 7 *(agree)*. The MPS-HF and all of its sub-scales have demonstrated adequate reliability and validity in both clinical and non-clinical samples with Coefficient alphas range between .86 and .88 for SOP, between .74 and .82 for OOP, and between .81 and .87 for SPP (Hewitt & Flett, 1991b; Hewitt et al., 1991). Further, test-retest reliabilities over a three month period range between .75 and .88 for the three subscales in student samples, and between .60 and .69 in psychiatric samples (Hewitt & Flett, 1991b, Hewitt et al., 1991).

SWB.

Life satisfaction. The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffen, 1985) was used to assess life satisfaction. The SWLS consists of 5 items, which were designed to assess global cognitive evaluations of one's life (e.g., The conditions of my life are excellent). All items were responded to on a 7-point Likert Scale ranging from 1*(strongly*

disagree) to 7*(strongly agree)* and were positively keyed so that a total score was calculated by summing all five items. Scores ranging between 5 and 9 reflect extreme dissatisfaction with life, scores ranging from 10 to 14 reflect substantial dissatisfaction with life, scores ranging between 15 and 19 reflect slight dissatisfaction, a score of 20 represents neutrality, scores ranging between 21 and 25 reflect slight satisfaction, scores ranging between 26 and 30 reflect satisfaction, and scores from 31 to 35 reflect extreme satisfaction with life (Diener, 2006, http://www.psych.illinois.edu/~ediener/Documents/Understanding%20SWLS%20Scores.pdf). Validity and reliability of the SWLS has been demonstrated in over 60 studies with samples ranging from college students to the elderly population with coefficient alphas typically ranging from .79 to .89 (see Pavot & Diener, 1993; 2008; Vassar, 2008). Test-retest reliabilities range from .80 to .84 over an interval of one month and .54 for an interval of four years (Adler & Fagley, 2005; Magnus, Diener, Fujita, & Pavot, 1993; Pavot, Diener, Colvin, & Sandvik, 1991; Steger, Frazier, Oishi, & Kaler, 2006). Research has also indicated that the SWLS is positively related to family and friends' reports of the respondent's life satisfaction and with other measures of life satisfaction (see Pavot & Diener, 1993).

Positive and negative affect. The Positive and Negative Affect Schedule (PANAS: Watson et al., 1988) was utilized to assess positive and negative affect. The PANAS consists of 20-items in which participants rate 10 positive (e.g., alert, excited, interested) and 10 negative emotions/feelings (e.g., distressed, guilty, jittery) according to how much they generally (on average) experienced each of the feelings listed. A total score for each subscale was created by calculating the sum of the items that were designed to assess each construct. Response options for this scale ranged from 1 *(not at all)* to 5 *(extremely)*. The factor structure of the PANAS has

been independently confirmed (Crocker, 1997) and the PANAS has been reported to have acceptable reliability for both positive and negative affect (Watson et al., 1988) with coefficient alphas ranging between .86 and .90 for positive affect and between .84 and .91 for negative affect (Watson et al., 1988). Test-retest reliability over an 8-week period is .68 for positive affect and .71 for negative affect (Watson et al., 1988).

Mental health. The four mental health subscales of the Short Form-36v1 Health Survey (Ware, Snow, Kosinski, & Gandek, 1993) were used to assess self-reported mental health. Raw scores on each subscale were first transformed to yield scores on a 0 to 100 scale and then a normed score ranging from 0 to 50 was computed according to scoring procedures suggested by Ware et al. (1993). The mental health component consists of 5 items (e.g., *have you been a very nervous person?*) and were responded to on a Likert Scale ranging from 1 (*all of the time*) to 5 (*none of the time*). The role-emotional component consists of three items in which respondents are asked if they are experiencing any difficulties with work or regular activities due to emotional problems (e.g., *accomplished less than you would like*). Response options were *yes* and *no*. The energy/vitality component consists of four items (e.g., *did you have a lot of energy?*) and were rated on a Likert Scale ranging from 1 *(all of the time)* to 6 *(none of the time)*. Finally, the social functioning component includes 2 items (e.g., during the past 4 weeks, how much of the time have your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)? and were rated on a Likert Scale ranging from 1 *(all of the time)* to 6 *(none of the time)*. All negatively phrased items were recoded so that higher scores indicated higher levels of mental health. The SF-36 is one of the most widely used health status questionnaires in the world (Ware, Kosinski, & Dewey, 2000), as it has been utilized in studies

of more than 130 diseases and conditions (Ware & Gandek, 1998). Its psychometric properties have been rigorously tested, and results suggest that the SF-36 has impressive reliability and validity (Ware et al., 1993).

Depressive symptomatology. Depression was assessed using the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a widely used, 20-item self-report scale devised to measure levels of depressive symptomatology within the previous week (Weissman, Sholomskas, Pottenger, Prusoff, & Locke, 1977); it is generally employed as a screening tool rather than for diagnosing cases of clinical depression. The CES-D had been designed primarily for use in epidemiological studies, but since it concentrates on the cognitive and affective aspects of depression rather than the physical, it is a valuable instrument for studying levels of depressive symptoms in chronically ill populations and student samples (Hann, Winter, & Jacobsen, 1999). While a score of 16 or more is generally accepted as being indicative of high levels of depressive symptomatology (Ensel, 1986; Radloff, 1977), others have argued that a higher cut-off point should be utilized given that false positives that range from 15% to 20% have occurred when a cut-off score of 16 was employed (Boyd, Weissman, Thompson, & Myers, 1982; Zich, Attkisson, & Greenfield, 1990). The CES-D has demonstrated adequate internal validity with coefficient alphas ranging from .84 to .92 (Corcoran & Fisher, 1987; Santor & Coyne, 1997). For the current study, participants were asked to respond to each item thinking of how often they had felt that way lately on a Likert Scale ranging from 1 *(rarely or never)* to 4 *(almost or all of the time)*. Responses were then recoded so that they ranged from 0 to 3 and then summed to create a total depression score (Radloff, 1977).

Composite mental health score. Given that each of the mental health indicators loaded strongly onto a single principal component in both samples, a composite mental health measure was computed by standardizing and averaging the individual measures, so as to reduce the number of statistical analyses. Higher values indicated better mental health.

Physical health. Multiple indicators were used to assess self-perceived physical health status.

Sick days. Respondents answered a question assessing the number of days that they were sick: About how many days were you sick in bed in the past two years? This item had a response set ranging from 1 (*zero*) to 7 (*more than 15*). The item was reverse-scored so that a higher score reflects better health.

SF-36 physical health. The four physical health subscales of the Short Form-36v1 Health Survey (Ware et al., 1993) were used to assess self-reported physical health. Raw scores on each subscale were transformed to yield scores on a 0 to 100 scale and then a normed score ranging from 0 to 50 was computed according to scoring procedures suggested by Ware et al. (1993). The physical functioning component consists of 10 items (e.g., *climbing several flights of stairs, walking one block*). Respondents were asked whether their health had limited performing these activities on a scale ranging from 1 (*Yes, limited a lot*) to 3 (*No, not limited at all*). The role-physical component consisted of four items. Respondents were asked whether they had any problems with work or regular activities (e.g., *accomplished less than you would like*). Response options were *yes* and *no*. The bodily pain component consisted of two items; one assessing severity of pain (rated from 1 - *none* to 6 - *severe*) and one assessing the interference of pain in daily functioning (rated from 1 - *not at all* to 5 - *extremely*). The general health component

included five items. For the first item, respondents were asked to report their perception of their health on a scale ranging from 1 (*excellent*) to 5 (*poor*). The other four items (e.g., "my health is excellent") were rated on a 5-point scale ranging from 1 (*definitely true*) to 5 (*definitely false*). Negatively phrased items were recoded such that higher scores indicate better physical health. Again, the SF-36v1 has demonstrated sound psychometric properties (Ware et al., 1993).

Health symptoms. (adapted from Macmillan, 1957) were assessed by 21 items pertaining to symptoms such as sleep problems, shortness of breath, upset stomach, pains and ailments, fatigue, and the extent to which ill health affected their daily functioning. Participants rated how frequently they had experienced each symptom on a Likert scale ranging from 1 *(never)* to 5 *(always)*. All items were recoded prior to analyses and averaged to form a composite measure, such that higher values indicate better health. Also, a count was made of the number of symptoms reported by each respondent, for descriptive purposes, such that higher values on this variable indicated poorer health.

Composite physical health score. Given that each of the physical health indicators loaded strongly onto a single principal component, a composite physical health measure was computed by standardizing and averaging the individual measures so as to reduce the number of statistical analyses. Higher values indicated more positive physical health.

Personality. The 40-item 'Minimarkers' measure of the Five-Factor Model (FFM) of personality developed by Saucier (1994) was utilized to assess each of the factors delineated by the FFM of personality; extraversion, neuroticism, openness to experience, conscientiousness, and agreeableness. Each factor was assessed by 8 items and respondents rated each item on a Likert Scale ranging from 1 *(extremely inaccurate)* to 9 *(extremely accurate)*. A composite

variable for each of the five factors was computed by averaging each of their respective item scores. Saucier's 'Mini-Markers' of personality are a reduced set of the 100 markers that were originally devised by Goldberg (1992) and have shown adequate psychometric properties with coefficient alphas ranging from .76 to .86 for the five dimensions (Saucier, 1994).

Results

Treatment of Missing Data and Outliers

A small number of participants in the student sample did not respond to all three of the perfectionism subscale measures ($n = 6$) or to some of the health and well-being measures ($n = 5$) and were thus removed from further analyses. Also, given that cluster analytic procedures are quite sensitive to outliers, an additional participant who was a multivariate outlier with regards to health and well-being was removed from subsequent analyses based on a large z-score (i.e., greater than |3|) and a significant Mahalanobis distance score ($p < .001$). Thus, the final student sample consisted of 538 participants ($n = 413$ women). A small number of participants in the chronically-ill sample also did not respond to all three of the perfectionism subscale measures ($n = 18$) or to some of the health and well-being measures ($n = 3$) and were thus removed from further analyses. Two additional participants from the chronically-ill sample were also removed from subsequent analyses because they were deemed to be multivariate outliers on measures of health and well-being based on the criteria listed above. Therefore, the final chronically-ill sample consisted of 773 participants ($n = 723$ women).

Overall, 85% of the participants in the student sample had complete data and all participants had at least 80% of the data complete. Participants were missing information on less than one variable on average ($SD = .53$). Results of independent sample t-tests indicated that students with complete data did not differ from those with incomplete data on any of the study variables. With regard to the chronically-ill sample, 74% of the participants had complete data while the vast majority of participants (98.4%) had at least 86% of the data complete with

participants on average missing information on less than one variable ($SD = .57$). Results of independent t-tests revealed that there were some differences between those with complete data versus not, such that those with incomplete data reported lower levels of physical functioning ($t_{771} = -2.58$, $p < .05$, $d = -.19$), lower levels of general health ($t_{596.09} = -3.31$, $p < .05$, $d = -.27$), lower levels of energy and vitality ($t_{772} = -2.09$, $p < .05$, $d = -.15$), more sick days ($t_{636} = 2.07$, $p < .05$, $d = .16$), more health complaints ($t_{765} = 2.31$, $p < .05$, $d = .17$), and lower levels of SOP ($t_{763} = -2.09$, $p < .05$, $d = -.15$). These results indicate that those with complete data were in better physical health and more perfectionistic than those with incomplete data. While these differences should be kept in mind with regard to the generalizability of the results, the effect sizes were relatively small, suggesting that the differences between the two groups were minor. "All missing values were imputed using the expectation maximum (EM) algorithm in SPSS based on all available data for each participant, as methodological research has shown that this approach is preferable to more common methods including listwise deletion, pairwise deletion, and mean substitution (see Schafer & Graham, 2002)" (as cited in Sadava, Busseri, Molnar, Perrier, & DeCourville, 2009, p.615).

Descriptive Information

In an effort to determine the relative healthiness of the samples with regard to physical and mental health, each sample's SF-36 scores were compared to their appropriate norms. The student sample scores were compared with Canadian SF-36 norms for ages 25-34 years, as presented in Hopman et al. (2000). As presented in Table 1, results of the t-tests revealed that the student sample reported poorer health than expected based on National Canadian norms for all of the SF-36 health dimensions, with the exception of bodily pain, indicating that this particular

sample was not as healthy as those in their general age bracket. While the effect sizes for

physical health were in the low to moderate range, according to the standards set forth by Cohen

(1988), they were in the moderate to high range for the subscales that tap mental health,

suggesting that the student sample was experiencing particularly poor mental health compared to

the average relatively young Canadian person. Inspection of the students' depression scores also

corroborated these findings, in that 46.7% of the sample earned scores on the CES-D of 16 or

higher, indicating high levels of depressive symptomatology. Even when using a more stringent

cut-off score of 27, as suggested by Zich, Attkisson, and Greenfield (1990), 19% of the sample

met criteria for high levels of depressive symptomatology, suggesting that this sample was

experiencing poorer mental health than is to be expected in the general Canadian population aged

25-34 years.

Table 1

Means, Standard Deviations and t-test Results Comparing the Student and Chronically-Ill Samples to Norms for the SF-36 Subscales

	Mean	SD	*t*	Cohen's *d*
Student Sample				
Physical Functioning	47.62	15.18	-3.62*	-.16
Role-Physical	47.78	10.94	-4.71*	-.20
Bodily Pain	49.84	9.88	-.37	-.02
General Health	44.75	13.29	-9.16*	-.40
Energy-Vitality	41.60	11.21	-17.37*	-.75
Social Functioning	46.81	11.24	-6.59*	-.28
Role-Emotional	45.16	12.63	-8.88*	-.38
Mental Health	45.07	12.07	-9.48*	-.41
Chronically-Ill Sample				
Physical Functioning	32.24	10.16	-48.60*	-1.74
Role-Physical	30.87	6.38	-83.30*	-3.00
Bodily Pain	32.55	8.83	-54.95*	-1.98
General Health	30.45	8.92	-60.94*	-2.19
Energy-Vitality	30.96	7.84	-67.52*	-2.43
Social Functioning	30.06	11.27	-49.20*	-1.77
Role-Emotional	38.64	13.83	-22.84*	-.82
Mental Health	40.05	12.83	-21.56*	-.78

Note. * $p < .001$, $N = 538$ student sample, $N = 773$ chronically ill sample.
Note. In this table the student sample results are compared with Canadian SF-36 norms for ages 25-34, as presented in Hopman et al. (2000) while the chronically ill sample results are compared with the norms for the general American population, as presented in Ware et al. (1993).

The chronically-ill sample's SF-36 scores were compared with the norms for the general American population as reported by Ware et al. (1993) given that the majority of participants in this sample reported American citizenship. Results of the *t*-tests revealed that the chronically-ill sample reported much poorer physical and mental health compared to the average American person, with all of the effect sizes ranging in the high range, suggesting large discrepancies.

With regard to perfectionism, both samples reported means that are typical in the literature (see Table 2 in Shafran & Mansell, 2001). In general, the student sample reported being satisfied with their lives, as the sample mean for the Satisfaction With Life Scale (Diener et al., 1985) was considered to reflect a high score according to criteria set forth by Diener (2006). The chronically-ill sample was considered to be slightly below average in terms of their life satisfaction based on Diener's criteria. According to Diener (2006), individuals who score within this range "usually have small but significant problems in several areas of their lives, or have many areas that are doing fine, but one area that represents a substantial problem for them" (Diener, 2006; http://www.psych.illinois.edu/~ediener/Documents/Understanding%20SWLS% 20Scores.pdf).

In terms of differences within each of the samples, results of independent *t-test*s indicated that men and women in the student sample did not differ significantly in terms of SOP ($t_{536} = .80$, $p = .43$), OOP ($t_{536} = -1.87$, $p = .06$), SPP ($t_{536} = .56$, $p = .57$), nor in terms of SWB ($t_{536} = -.66$, $p = .51$). However, there were significant sex-related differences in mental health ($t_{536} = -2.16$, $p = .03$, $d = -.19$) and physical health ($t_{536} = -4.15$, $p < .001$, $d = -.36$), such that men reported better mental and physical health compared to women. Results of a one-way analysis of variance (ANOVA) revealed that citizenship status did not differentiate individuals in the chronically-ill sample with regards to physical health, mental health, SWB, nor with regards to any of the perfectionism dimensions (Values ranging from $F = .36$, $p = .78$ to $F = 2.24$, $p = .08$).

Concerning differences between the samples, independent sample *t*-test results indicated that the student sample was significantly different from the chronically-ill sample for all study

variables with the exceptions of SPP and neuroticism (See Table 2). As expected, the student sample reported better physical and mental health compared to the chronically-ill sample and reported higher levels SWB compared to the chronically-ill sample. Concerning personality, the student sample reported higher levels of SOP, OPP, extraversion, and conscientiousness relative to the chronically-ill sample. Finally, the student sample reported lower levels of stress compared to the chronically-ill sample. Effect sizes ranged from small to large, according to criteria set forth by Cohen (1988), with the largest differences between the samples on variables associated with physical health, mental health, and SWB.

Table 2

Group Differences on All Study Variables

	Student Sample			Chronically-Ill Sample			*t*	*df*	Cohen's *d*
	M	*SD*	α	*M*	*SD*	α			
Age	22.62	.87	single item	48.90	10.95	single item	66.39*	786.02	4.74
Household Income	8.71	2.61	single item	6.74	3.20	single item	-12.23*	1276.24	-.66
SOP	69.72	15.28	.91	66.97	19.14	.92	-2.89*	1284.63	-.16
OOP	59.11	9.98	.73	54.15	13.71	.83	-7.57**	1306.42	-.42
SPP	53.60	12.93	.85	53.92	16.63	.88	.39	1293.07	.02
Extraversion	5.88	1.36	.83	5.02	1.53	.82	-10.73**	1233.37	-.61
Conscientiousness	6.67	1.18	.80	6.42	1.40	.82	-3.55**	1261.96	-.20
Neuroticism	4.74	1.36	.80	4.88	1.49	.80	1.71	1218.41	.10
Physical Functioning SF-36	52.50	9.30	.95	32.24	10.16	.90	-37.36**	1216.13	-2.14
Role-Physical SF-36	50.75	9.07	.84	30.87	6.38	.73	-43.85**	897.20	-2.93
Bodily Pain SF-36	52.75	9.23	r = .78	32.55	8.83	r = .77	-39.69**	1122.45	-2.37
General Health SF-36	50.21	10.02	.81	30.46	8.92	.76	-36.71**	1066.47	-2.25
Energy-Vitality SF-36	46.71	9.39	.81	30.96	7.84	.80	-31.91**	1017.59	-2.00
Social Functioning SF-36	48.37	9.91	r = .63	30.06	11.27	r = .70	-31.11**	1240.22	-1.77
Role-Emotional SF-36	45.00	12.89	.85	38.64	13.83	.85	-8.53**	1204.41	-.49
Mental Health SF-36	45.99	10.76	.81	40.05	12.83	.86	-9.08**	1264.47	-.51
Symptom Count	12.58	4.54	.91	17.91	2.23	.86	25.16**	717.86	1.88
Sick Days	5.41	1.43	single item	3.62	2.45	single item	-16.61**	1273.53	-.93
Depression	17.46	10.83	.93	28.15	11.46	.92	16.98**	1309	.94
Positive Affect	36.64	5.98	.89	31.38	7.04	.89	-14.55**	1258.41	-.82
Negative Affect	22.56	6.55	.87	25.73	8.11	.91	7.79**	1280.42	.44
Life Satisfaction	24.91	6.19	.90	16.23	7.64	.88	-22.66**	1279.45	-1.27
Stress	-.20	.77	r = .51	.13	.93	r = .57	6.98**	1259.73	.40
Physical Health	.45	.64	.77	-.32	.71	.66	-20.57**	1225.91	-1.17
Mental Health	.25	.96	r = .81	-.17	.87	r = .71	-8.46**	1309	-.47
SWB	.43	.66	.73	-.30	.78	.69	-18.43**	1262.30	-1.04

Note. ** p <.001, * p <.01, N = 538 student sample, N = 773 chronically ill sample.

Note. The sick days variable was recoded so that higher scores are indicative of better health. On average students reported missing work or school between 4-6 days over the past 2 years while the chronically ill sample reported missing work or school due to illness between 7-9 days.

Note. In this table the student sample results were computed using the norms for the general American population, as presented in Ware et al. (1993) for comparison purposes.

Note. SOP = self-oriented perfectionism; OOP = other-oriented perfectionism; SPP = socially prescribed perfectionism.

At the level of bivariate correlations, all of the perfectionism dimensions were positively correlated with one another within each sample (See Table 3). Of interest, there were differences between the samples in terms of how perfectionism was related to health and well-being. For instance, whereas SOP was related to poorer physical and mental health and to lower levels of SWB in the chronically-ill sample, it was unrelated to physical and mental health and associated with higher levels of SWB in the student sample.

Table 3. *Correlations Between All Study Variables for the Student and Chronically-Ill Samples*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. SOP	1	.50*	.52*	-.11*	.15*	.24*	-.03	-.03	-.11*	-.07	-.03	-.07*	-.11*	-.21*	-.17*	-.03	.25*	-.01	.28*	-.01	.23*	-.12*	-.21*	-.13*
2. OOP	.44*	1	.41*	-.01	.12*	.24*	.01	.00	-.03	-.10*	.00	.00	-.09*	-.11	-.06	-.04	.15*	.00	.15*	-.02	.14*	-.06	-.13*	-.07*
3. SPP	.35*	.31*	1	-.21*	-.13*	.37*	-.09*	-.07	-.14*	-.13*	-.10*	-.15*	-.26*	-.35*	-.24*	-.07*	.45*	-.23*	.43*	-.20*	.37*	-.20*	-.40*	-.36*
4. EXTRA	.02	.09*	-.12*	1	.17*	-.26*	.05	.03	-.01	.08*	.22*	.12*	.13*	.26*	.12*	-.01	-.31*	.43*	-.28*	.16*	-.17*	.07	.29*	.37*
5. CONSC	.35*	.14*	-.11*	.12*	1	-.31*	.11*	.06	.11*	.15*	.10*	.08*	.21*	.23*	.16*	.03	-.29*	.37*	-.31*	.15*	-.15*	.14*	.28*	.35*
6. NEUROT	.13*	.13*	.33*	-.18*	-.23*	1	-.08*	-.09*	-.13*	-.26*	-.16*	-.17*	-.27*	-.52*	-.29*	-.07	.55*	-.40*	.67*	-.30*	.47*	-.24*	-.51*	-.58*
7. PF-36	-.01	-.02	-.11*	.14*	.11*	-.15*	1	.40*	.46*	.48*	.44*	.54*	.21*	.25*	.52*	.20*	-.26*	.19*	-.22*	.37*	-.19*	.64*	.35*	.33*
8. RP-36	-.05	.01	-.15*	.13*	.10*	-.12*	.21*	1	.41*	.36*	.41*	.43*	.26*	.22*	.45*	.21*	-.22*	.15*	-.16*	.24*	-.15*	.59*	.33*	.23*
9. BP-36	-.01	.00	-.20*	.18*	.17*	-.20*	.24*	.46*	1	.39*	.39*	.45*	.29*	.29*	.58*	.16*	-.33*	.16*	-.22*	.25*	-.22*	.64*	.41*	.27*
10. GH-36	-.02	-.02	-.25*	.21*	.22*	-.34*	.25*	.32*	.48*	1	.47*	.51*	.22*	.36*	.60*	.31*	-.38*	.32*	-.33*	.41*	-.31*	.70*	.44*	.45*
11. EV-36	-.10*	-.08	-.27*	.31*	.15*	-.38*	.14*	.37*	.40*	.49*	1	.53*	.22*	.36*	.54*	.23*	-.36*	.41*	-.23*	.37*	-.26*	.57*	.54*	.43*
12. SF-36	-.06	-.03	-.29*	.15*	.17*	-.32*	.19*	.50*	.52*	.43*	.50*	1	.32*	.39*	.54*	.31*	-.40*	.29*	-.31*	.44*	-.24*	.64*	.62*	.44*
13. RE-36	-.05	-.02	-.26*	.11*	.18*	-.29*	.11*	.51*	.32*	.34*	.46*	.60*	1	.56*	.38*	.03	-.53*	.30*	-.45*	.28*	-.35*	.32*	.67*	.44*
14. MH-36	-.07	-.06	-.35*	.29*	.22*	-.51*	.19*	.31*	.32*	.45*	.59*	.60*	.48*	1	.45*	.08*	-.78*	.52*	-.72*	.48*	-.59*	.39*	.84*	.73*
15. SYMP	.01	.00	-.30*	.24*	.18*	-.38*	.26*	.50*	.60*	.60*	.61*	.58*	.44*	.56*	1	.25*	-.53*	.31*	-.45*	.40*	-.36*	.84*	.60*	.49*
16. S-DAYS	.05	.04	-.06	.09*	.20*	-.20*	.20*	.25*	.33*	.42*	.33*	.29*	.25*	.23*	.48*	1	-.13*	.08*	-.06	.15*	-.13*	.65*	.14*	.12*
17. DEP	.04	.08	.43*	-.35*	-.28*	.52*	-.20*	-.39*	-.42*	-.51*	-.63*	-.64*	-.54*	-.80*	-.68*	-.30*	1	-.57*	.74*	-.51*	.54*	-.45*	-.92*	-.77*
18. PA	.29*	.12*	-.17*	.45*	.38*	-.34*	.12*	.14*	.24*	.36*	.43*	.29*	.27*	.46*	.35*	.24*	-.54*	1	-.47*	.40*	-.29*	.28*	.58*	.79*
19. NA	.10*	.06	.41*	-.33*	-.27*	.63*	-.17*	-.25*	-.33*	-.44*	-.47*	-.45*	-.35*	-.62*	-.51*	-.18*	.67*	-.36*	1	-.41*	.61*	-.35*	-.72*	-.80*
20. LS	.02	-.03	-.34*	.34*	.22*	-.43*	.17*	.25*	.27*	.45*	.47*	.46*	.41*	.64*	.46*	.27*	-.66*	.56*	-.51*	1	-.36*	.42*	.52*	.77*
21. STRESS	.26*	.13*	.37*	-.17*	-.03	.47*	-.10*	-.19*	-.30*	-.37*	-.55*	-.43*	-.37*	-.52*	-.53*	-.23*	.52*	-.27*	.52*	-.45*	1	-.33*	-.56*	-.53*
22. PHY-H	-.02	.01	-.24*	.23*	.24*	-.35*	.43*	.57*	.69*	.70*	.58*	.59*	.46*	.50*	.87*	.77*	-.61*	.36*	-.45*	.45*	-.45*	1	.53*	.45*
23. MENT-H	-.07	-.07	-.42*	.32*	.26*	-.52*	.21*	.48*	.48*	.54*	.74*	.77*	.70*	.86*	.72*	.34*	-.95*	.52*	-.66*	.67*	-.58*	.67*	1	.77*
24. SWB	.09*	.01	-.38*	.46*	.36*	-.57*	.19*	.26*	.34*	.51*	.57*	.50*	.42*	.71*	.55*	.28*	-.77*	.79*	-.77*	.86*	-.51*	.52*	.76*	1

Note: * p <.05, n = 538 student sample, n = 773 chronically ill sample.
Note: Correlations for the chronically ill sample are presented in the upper diagonal and the correlations for the student sample are presented in the lower diagonal.
Note: SOP: self-oriented perfectionism, OOP: other-oriented perfectionism, SPP: socially prescribed perfectionism, EXTRA: extraversion, CONSC: conscientiousness, NEUROT: neuroticism, PF-36: physical functioning subscale of the SF-36, RP-36: role-physical subscale of the SF-36, BP-36: bodily pain subscale of the SF-36 whereby higher scores reflect less pain and better health, GH-36: general health subscale of the SF-36, EV-36: energy-vitality subscale of the SF-36, SF-36: social functioning subscale of the SF-36, RE-36: role-emotional subscale of the SF-36, MH-36: mental health subscale of the SF-36, SYMP: mean symptom score whereby higher scores reflect better health, S-DAYS: number of sick days whereby higher scores reflect better health, DEP: depression, PA: positive affect, NA: negative affect, LS: life satisfaction, PHY-H: physical health composite measure, MENT-H: mental health composite measure, SWB: subjective well-being composite measure.

Regression Analyses for the Student Sample

For each sample, hierarchical multiple regression was employed using SPSS 17 statistical software, to determine which dimensions of perfectionism were associated with health and well-being after accounting for higher-order personality traits, to test whether SOP shared a curvilinear relationship with health and well-being, and to determine whether the relationships between SOP and indices of health and well-being were moderated by stress, as it is proposed in the literature. A quadratic term for SOP was created to test for possible curvilinear associations between SOP and health and well-being and an interaction term for SOP and stress was computed to test whether stress moderates the relationship between SOP and indices of health and well-being. Because composite variables, such as the quadratic terms, are correlated with their component variables, to reduce nonessential multicollinearity and to ease the interpretation and probing of significant interactions, each of the component variables (i.e., SOP, SPP, OOP, stress) was centered around their sample mean before the quadratic and interaction terms were computed (Aiken & West, 1991; Cohen, Cohen, West, & Aiken, 2003) and only the centered variables were entered in the regression models.

A four-step hierarchical multiple regression model was tested for each of the dependent variables of interest (i.e., physical health, mental health, and SWB) with each sample. For each model, the dependent variable was regressed on the relevant demographic variables (i.e. sex in the case of the student sample, and age and household income for the chronically-ill sample) on the first step, conscientiousness, neuroticism, and extraversion on the second step; SOP, SPP, OOP, and stress on the third step, and on the non-linear components on the fourth step of the

regression equation[4]. Observed interactions were further probed using a series of post hoc

regression equations, referred to as simple slopes analysis by Aiken and West (1991). For

example, to test the hypothesis that the relationship between SOP and health varies as a function

of stress, simple slope analyses were conducted to observe differences in slope by stress and to

determine whether these slopes differed significantly from zero. Finally, given the relatively

large number of predictors in each model, an adaptation of Fisher's protected t-test strategy, as

described in Cohen et al. (2003), was employed as a method of evaluating the statistical

significance of the predictors to control for Type 1 error inflation. As outlined in Cohen et al.

(2003, pp. 187-190) the overall R^2 of the model was first assessed for statistical significance

using the standard F test at $p < .05$. If the overall R^2 was found to be significant then each set of

predictors was tested for statistical significance utilizing the standard F test for each step at $p <$

.05. Finally, if a given set of predictors was found to be statistically significant, each of the

individual predictors was evaluated for statistical significance using standard t-tests at $p < .05$.

Physical health. A four-step hierarchical multiple regression analysis was conducted in

which physical health was regressed on respondent's sex, extraversion, conscientiousness,

neuroticism, SOP, OOP, SPP, stress, and the nonlinear terms represented by the squared term of

SOP, and the two-way interaction between SOP and stress. Overall the model was significant,

accounting for 30% of the variability in physical health ($F_{10,527} = 22.12$, $p < .001$). Examination

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[4] For the chronically-ill sample, age, and household income were entered on the first step of the regression equation so that their possible effects on health and well-being were accounted for in the model. Sex was not included in the model due to the very small number of men in the chronically-ill sample. For the student sample, sex was entered on the first step of the regression equation, but age and income were not included in the model due to the fact that the sample was quite homogeneous with respect to these variables. Broader personality variables were entered in the step previous to the perfectionism measures so that their possible effects on health and well-being would be accounted for when the relationship between perfectionism and health and well-being was assessed.

of the residuals indicated that the assumptions of normality and homoscedasticity were tenable

for this model. Results of this regression model are presented in Table 4.

Table 4

Summary of the Multiple Regression in which Physical Health was Regressed on Respondent's Sex, Extraversion, Conscientiousness, Neuroticism, SOP, OOP, SPP, Stress, and the Nonlinear Terms Representing SOP Squared and the Two-Way Interaction between SOP and Stress for the Student Sample

Variable	Beta	sr^2	ΔR^2	F Change	df	p
Step 1						
Sex	.18**	.030	.03	17.18	1,536	<.001
Step 2						
Extraversion	.15**	.020				
Conscientiousness	.19**	.030				
Neuroticism	-.26**	.060	.20	37.84	3,533	<.001
Step 3						
SOP	.02	.000				
OOP	.03	.000				
SPP	-.07	.003				
Stress	-.34**	.080	.30	17.63	4,529	<.001
Step 3						
SOP^2	.00	.000				
SOPXStress	.02	.000	.30	.17	2,527	.840
n = 538						

*Note. p <.05, **p < .01*

From Table 4 it is clear that there was a significant association between respondent's sex and physical health, such that men reported better health than women. With regard to personality, higher levels of extraversion and conscientiousness were related to better physical health, while higher levels of neuroticism were associated with poorer physical health. None of the perfectionism dimensions were significantly related to physical health in this model.[5] Finally, stress was negatively associated with physical health, such that those reporting higher levels of stress reported poorer health. Neither of the nonlinear components was related to physical health[6].

Mental health. A four-step hierarchical multiple regression analysis was conducted in which mental health was regressed on respondent's sex, extraversion, conscientiousness, neuroticism, SOP, OOP, SPP, stress, and the nonlinear terms represented by the squared term of SOP, and the two-way interaction between SOP and stress. Overall, the model was significant, accounting for 51% of the variability in mental health ($F_{10,527} = 54.89$, $p < .001$). Examination of the residuals indicated that the assumptions of normality and homoscedasticity were tenable for this model. Results of this regression model are presented in Table 5.

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5 When a three-step multiple regression was run in which physical health was regressed on sex, SOP, OOP, SPP, stress, and the hypothesized nonlinear components, not accounting for extraversion, conscientiousness, and neuroticism, SOP ($\beta = .12$, p <.01) was found to be positively associated with physical health while SPP ($\beta = -.15$, p <.01) was found to be negatively associated with physical health. These differing results speak to the importance of including broader personality dimensions in models assessing the relationships between perfectionism and indices of health and well-being.

[6] Model building procedures were employed for each of the regression models presented in which non-hypothesized, yet plausible interaction terms, were tested for statistical significance to meet inclusion in the models. One set of interaction terms tested during the model building phase included SOP by sex, OOP by sex, and SPP by sex. None of these interaction terms were statistically significant in any of the models during the model building phase of analyses and thus were not included in the final regression models. Based on these results, it can be concluded that the relationships between perfectionism and health and between perfectionism and well-being did not differ as a function of respondent's sex.

Table 5

Summary of the Multiple Regression in which Mental Health was Regressed on Respondent's Sex, Extraversion, Conscientiousness, Neuroticism, SOP, OOP, SPP, Stress, and the Nonlinear Terms Representing SOP Squared and the Two-Way Interaction between SOP and Stress for the Student Sample

	Variable	Beta	sr^2	ΔR^2	F Change	df	p
Step 1							
	Sex	.09*	.010	.01	4.65	1,536	.032
Step 2							
	Extraversion	.22**	.050				
	Conscientiousness	.15**	.020				
	Neuroticism	-.44**	.180	.36	90.64	3,533	<.001
Step 3							
	SOP	.08*	.004				
	OOP	.00	.000				
	SPP	-.19**	.020				
	Stress	-.40**	.110	.17	44.74	4,529	<.001
Step 3							
	SOP^2	-.01	.000				
	SOPXStress	-.02	.000	.00	.39	2,527	.676
n = 538							

*Note. p <.05, **p < .01*

As shown by Table 5, respondent's sex was related to mental health, such that men reported better mental health than women. With regard to personality, higher levels of extraversion and conscientiousness were associated with better mental health, while higher levels of neuroticism were associated with poorer mental health. SOP was found to be positively associated with mental health, such that those reporting higher levels of SOP also reported better mental health. In light of the nonsignificant zero-order correlation between SOP and mental

health and the existing literature which suggests that SPP may suppress the relationship between SOP and positive outcomes (e.g., Hill, Huelsman, & Araujo, 2010), a follow-up analysis in which SPP was not included in the regression equation was conducted. Results from this analysis indicated that while the overall model remained significant ($F_{9,528} = 55.46$, $p < .001$), the association between SOP and mental health was no longer statistically significant ($\beta = .03$, $p = .47$), indicating a case of classic suppression (Conger, 1974) in which SPP indeed suppressed the relationship between SOP and mental health. Thus, it must be concluded that SOP was positively related to mental health only when the effects of SPP were held constant.[7] SPP was found to share a negative relationship with mental health, such that individuals reporting higher levels of SPP reported poorer mental health. Further, the significant negative association between SPP and mental health remained statistically significant when SOP was removed from the regression equation suggesting that SOP did not suppress the relationship between SPP and mental health. Finally, stress was negatively associated with mental health, such that those reporting higher levels of stress reported poorer mental health. None of the other predictors were statistically significant.

SWB. A four-step hierarchical multiple regression analysis was conducted in which SWB was regressed on respondent's sex, extraversion, conscientiousness, neuroticism, SOP, OOP, SPP, stress, and the nonlinear terms represented by the squared term of SOP, and the two-way interaction between SOP and stress. Overall the model was significant, accounting for 62% of the variability in SWB ($F_{10,527} = 86.61$, $p < .001$). Examination of the residuals indicated that the

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[7] It should be noted that the relationship between SOP and mental health remained statistically significant when stress, OOP, extraversion, conscientiousness, and neuroticism were each removed from the analyses one at a time, thus affirming that SPP was indeed the suppressor variable.

assumptions of normality and homoscedasticity were tenable for this model. Results of this

regression model are presented in Table 6.

Table 6

*Summary of the Multiple Regression in which SWB was Regressed on Respondent's Sex,
Extraversion, Conscientiousness, Neuroticism, SOP, OOP, SPP, Stress, and the Nonlinear Terms
Representing SOP Squared and the Two-Way Interaction between SOP and Stress for the
Student Sample*

Variable	Beta	sr^2	ΔR^2	F Change	df	p
Step 1						
Sex	.03	.001	.00	.44	1,536	.509
Step 2						
Extraversion	.35**	.120				
Conscientiousness	.22**	.040				
Neuroticism	-.46**	.190	.50	178.87	3,533	<.001
Step 3						
SOP	.21**	.030				
OOP	.02	.000				
SPP	-.19**	.030				
Stress	-.31**	.070	.12	41.28	4,529	<.001
Step 3						
SOP^2	-.01	.000				
SOPXStress	.04	.000	.00	.82	2,527	.441
n = 538						

Note. p <.05, **p < .01

As indicated in Table 6, sex was not related to SWB, suggesting that men and women did

not differ in their levels of SWB. Higher levels of extraversion and conscientiousness were

associated with higher levels of SWB, while higher levels of neuroticism were associated with

lower levels of SWB. A positive relationship between SOP and SWB was observed, such that

those reporting higher levels of SOP also reported greater SWB. As with the case of mental health, supplementary analyses were conducted to determine whether the positive relationship between SOP and SWB was inflated due to suppression. When SPP was removed from the regression equation results demonstrated that the positive relationship between SOP and SWB remained statistically significant ($\beta = .16$, $p < .001$), although the unique variance in SWB explained by SOP decreased by 1%. Thus, while it can be argued that suppression was present, it had little effect on the analyses. A negative relationship between SPP and SWB was observed, such that individuals reporting higher levels of SPP tended to report less happiness. Finally, stress was negatively associated with SWB, such that those reporting higher levels of stress also reported lower levels of SWB. None of the other predictors were statistically significant.[8]

Regression Analyses for the Chronically-Ill Sample

Physical health. A four-step hierarchical multiple regression analysis was conducted in which physical health was regressed on respondent's age, household income, extraversion, conscientiousness, neuroticism, SOP, OOP, SPP, stress, and the nonlinear terms represented by the squared term of SOP, and the two-way interaction between SOP and stress. Overall the model was significant, accounting for 18% of the variability in physical health ($F_{11,761} = 14.74$, $p < .001$). Examination of the residuals indicated that the assumptions of normality and homoscedasticity were tenable for this model. Results of this regression model are presented in Table 7.

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[8] When a three-step multiple regression was run in which SWB was regressed on sex, SOP, OOP, SPP, stress, and the hypothesized nonlinear components, not accounting for extraversion, conscientiousness, and neuroticism, and interaction between SOP and stress was observed ($b = .09$, $p < .01$). Simple slopes analyses of the SOP by stress interaction indicated that stress moderated the relationship between SOP and SWB, such that SOP was more strongly associated with SWB under high levels of stress ($b = .48$, $p < .01$) compared to low levels of stress ($b = .39$, $p < .01$).

Table 7

Summary of the Multiple Regression in which Physical Health was Regressed on Respondent's Age, Household Income, Extraversion, Conscientiousness, Neuroticism, SOP, OOP, SPP, Stress, and the Nonlinear Terms Representing SOP Squared and the Two-Way Interaction between SOP and Stress for the Chronically-Ill Sample

	Variable	Beta	sr^2	ΔR^2	F Change	df	p
Step 1							
	Age	.16**	.020				
	Income	.17**	.030	.06	23.01	2,770	<.001
Step 2							
	Extraversion	-.01	.000				
	Conscientiousness	.06	.003				
	Neuroticism	-.18**	.030	.04	11.14	3,767	<.001
Step 3							
	SOP	-.03	.001				
	OOP	.02	.000				
	SPP	-.07	.003				
	Stress	-.24**	.040	.06	13.28	4,763	<.001
Step 3							
	SOP^2	-.15**	.020				
	SOPXStress	-.01	.000	.02	9.72	2,761	<.001
n = 773							

Note. $p < .05$, **$p < .01$

From Table 7 it is clear that age was associated with physical health, such that older people tended to report better health than younger people. Household income was also positively associated with physical health, such that those with higher income reported better health. As expected, stress was negatively related to physical health, such that those with higher levels of stress reported poorer health. With regard to personality, higher levels of neuroticism were

associated with poorer physical health. In addition, the quadratic term for SOP was

negatively associated with health, indicating that SOP shared a non-linear inverted U-shaped

relationship with health. From Figure 2, it appears that at moderate levels, SOP was related to

better health whereas at both low and high levels, SOP was related to poorer health. None of the

other predictors were statistically significant.
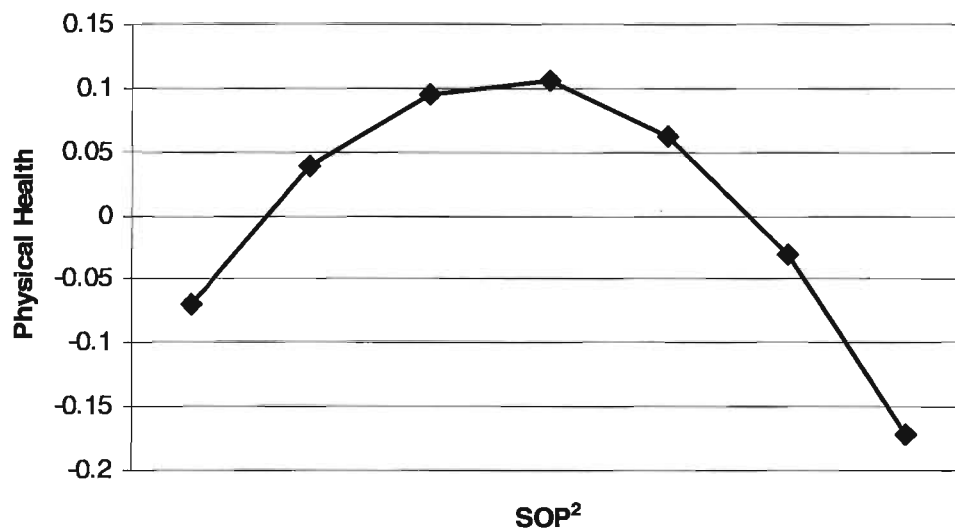
Figure 2. The relationship between SOP^2 and physical health after accounting for the effects of age, household income, extraversion, conscientiousness, neuroticism, SOP, OOP, SPP, and stress.

Mental health. A four-step hierarchical multiple regression analysis was conducted in which mental health was regressed on respondent's age, household income, extraversion, conscientiousness, neuroticism, SOP, OOP, SPP, stress, and the nonlinear terms represented by the squared term of SOP, the two-way interaction between SOP and stress, and the two-way interaction between OOP and SPP[9]. Overall the model was significant, accounting for 47% of the variability in mental health ($F_{12,760} = 55.32$, $p < .001$). Examination of the residuals indicated that the assumptions of normality and homoscedasticity were tenable for this model. Results of this regression model are presented in Table 8.

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[9] Model building procedures were employed for each of the regression models presented in which non-hypothesized, yet plausible interaction terms, were tested for statistical significance to meet inclusion in the models. The interaction terms tested in the model building phase of analyses for each model were as follows; SOP by SPP, OOP by SPP, SOP by OOP, OOP by stress, SPP by stress, SPP^2, and OOP^2. None of these interaction terms were statistically significant in any of the models during the model building phase of analyses with the exception of OOP by SPP as a predictor of mental health in the chronically-ill sample. Thus, OOP by SPP was included in the final regression model in which mental health was regressed on age, household income, extraversion, conscientiousness, neuroticism, SOP, OOP, SPP, SOP^2, and SOP by stress.

Table 8

Summary of the Multiple Regression in which Mental Health was Regressed on Respondent's Age, Household Income, Extraversion, Conscientiousness, Neuroticism, SOP, OOP, SPP, Stress, and the Nonlinear Terms Representing SOP Squared, the Two-Way Interaction between SOP and Stress, and the Two-Way Interaction between OOP BY SPP for the Chronically-Ill Sample

Variable	Beta	sr^2	ΔR^2	F Change	df	p
Step 1						
Age	.13**	.020				
Income	.24**	.060	.08	31.47	2,770	<.001
Step 2						
Extraversion	.16**	.020				
Conscientiousness	.08**	.010				
Neuroticism	-.41**	.140	.25	92.81	3,767	<.001
Step 3						
SOP	-.03	.001				
OOP	.03	.000				
SPP	-.15**	.010				
Stress	-.35**	.090	.14	48.47	4,763	<.001
Step 3						
SOP^2	-.08**	.010				
SOPXStress	-.02	.000				
OOPXSPP	.06*	.003	.01	3.35	3,760	.019
n = 773						

Note. p <.05, **p < .01

As shown in Table 8, age and household income were each linked with mental health, such that older individuals and those with higher incomes reported better mental health than younger individuals and those with lower incomes. A negative relationship between stress and mental health was also observed, such that those with higher levels of stress reported poorer mental health. In terms of personality, extraversion and conscientiousness were both positively

related to mental health with those exhibiting higher levels of each reporting better mental health, while neuroticism was negatively associated with mental health, such that those with higher levels of neuroticism reported poorer mental health. SPP was found to be negatively related to mental health, such that individuals who reported higher levels of SPP also reported poorer mental health. An interaction between OOP and SPP was also observed, such that it appeared that at higher levels of SPP, OOP was related to better mental health. However, results of simple slopes analyses revealed that at high, moderate, and low levels of SPP, none of the slopes differed significantly from zero. Finally, the quadratic term for SOP was found to be statistically significant and negative, indicating that SOP shared a non-linear inverted U-shaped relationship with mental health. As indicated by Figure 3, at moderate levels, SOP was related to better mental health whereas at both low and high levels, SOP was related to poorer mental health.

Figure 3. The relationship between SOP^2 and mental health after accounting for the effects of age, household income, extraversion, conscientiousness, neuroticism, SOP, OOP, SPP, and stress.

SWB. A four-step hierarchical multiple regression analysis was conducted in which SWB was regressed on respondent's age, household income, extraversion, conscientiousness, neuroticism, SOP, OOP, SPP, stress, and the nonlinear terms represented by the squared term of SOP, and the two-way interaction between SOP and stress. Overall the model was significant, accounting for 53% of the variability in SWB ($F_{11,761} = 76.69$, $p < .001$). Examination of the residuals indicated that the assumptions of normality and homoscedasticity were tenable for this model. Results of this regression model are presented in Table 9.

Table 9

Summary of the Multiple Regression in which SWB was Regressed on Respondent's Age, Household Income, Extraversion, Conscientiousness, Neuroticism, SOP, OOP, SPP, Stress, and the Nonlinear Terms Representing SOP Squared and the Two-Way Interaction between SOP and Stress for the Chronically-Ill sample

Variable	Beta	sr^2	ΔR^2	F Change	df	p
Step 1						
Age	.16**	.020				
Income	.24**	.060	.09	35.64	2,770	<.001
Step 2						
Extraversion	.21**	.040				
Conscientiousness	.15**	.020				
Neuroticism	-.45**	.170	.35	159.15	3,767	<.001
Step 3						
SOP	.05	.002				
OOP	.04	.001				
SPP	-.12**	.010				
Stress	-.29**	.060	.08	33.06	4,763	<.001
Step 3						
SOP^2	-.05*	.003				
SOPXStress	-.05*	.003	.01	5.23	2,761	.006
n = 773						

*Note. p <.05, **p < .01*

From Table 9 it is clear that age and household income were each associated with SWB, such that older individuals and those with higher incomes reported greater happiness than younger individuals and those with lower incomes. A negative association between stress and SWB was also observed, such that those with higher levels of stress reported less happiness. In terms of personality, extraversion and conscientiousness were both positively related to SWB

with those exhibiting higher levels of each reporting higher levels of happiness, while neuroticism was negatively associated with SWB, such that those with higher levels of neuroticism reported lower levels of happiness. SPP was found to share a negative relationship with SWB, such that individuals who reported higher levels of SPP also reported lower levels of happiness. An interaction between SOP and stress was also observed, such that it appeared that the relationship between SOP and SWB was stronger at lower levels of stress (see Figure 4).
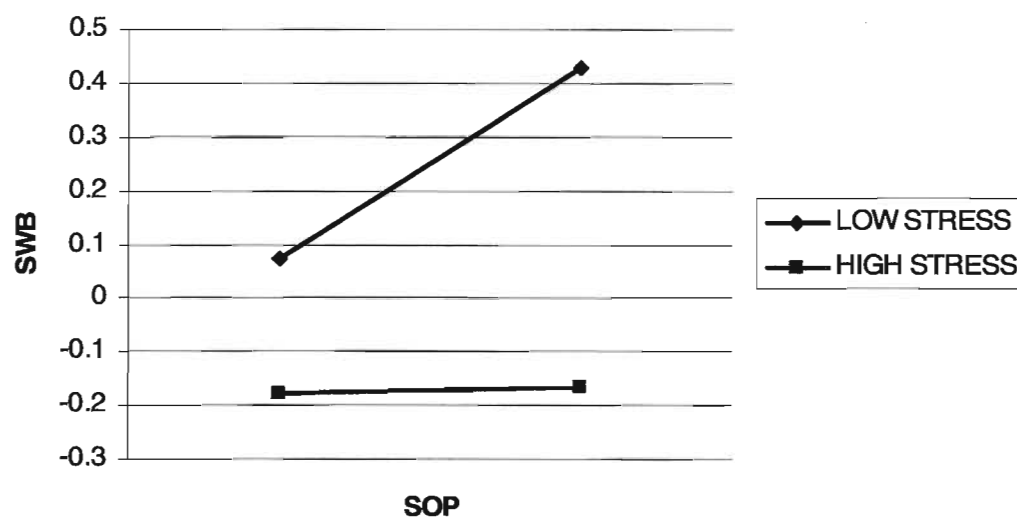
Figure 4. Two-way Interaction of SOP and stress on SWB for the chronically-ill sample.

Results of simple slopes analyses corroborated this interpretation, as a significant positive relationship was found between SOP and SWB at low levels of stress ($b = .004$, $p < .05$), but the relationship between SOP and SWB was nonsignificant at both moderate ($b = .002$, $p = .10$) and high levels of stress ($b = .0001$, $p = .92$). Finally, the quadratic term for SOP was found to be statistically significant and negative, indicating that SOP shared a non-linear inverted U-shaped relationship with SWB. As indicated by Figure 5, at moderate levels, SOP was related to higher

levels of happiness whereas at both low and high levels, SOP was related to lower levels of
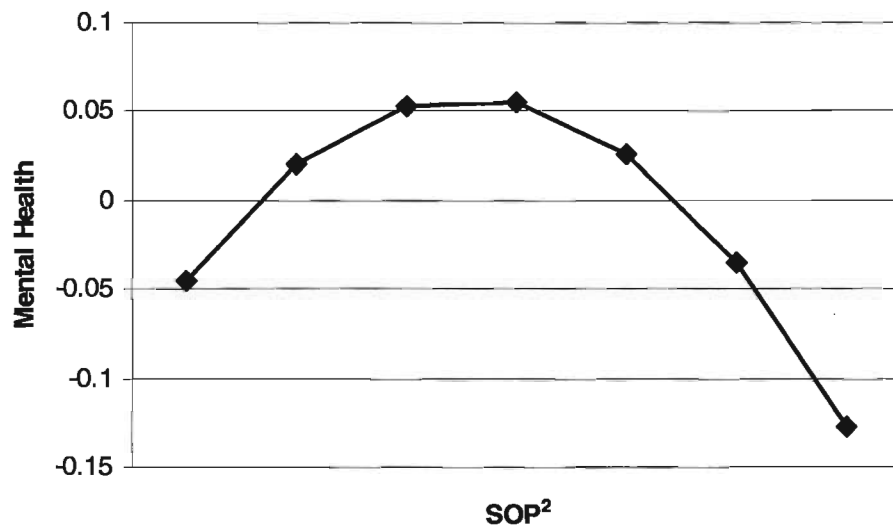
happiness.
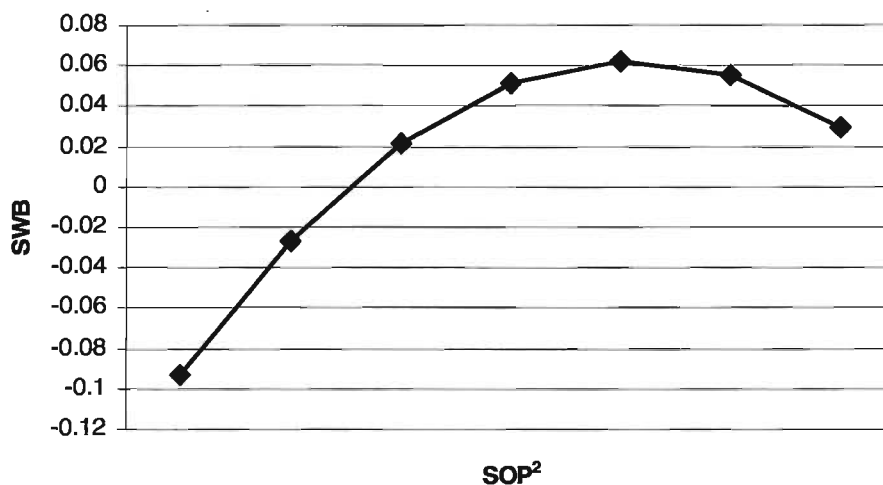
Figure 5. The relationship between SOP^2 and mental health after accounting for the effects of age, household income, extraversion, conscientiousness, neuroticism, SOP, OOP, SPP, and stress.

In summary, the results of the regression analyses for both samples revealed that the

relationship between perfectionism and physical health was not as robust as the relationships

between perfectionism and mental health and between perfectionism and SWB. The findings

from the present study generally support the contention that SPP is related to poorer outcomes

with regards to mental health and SWB, while the results concerning SOP differ depending on

sample characteristics. In the student sample, for instance, SOP appeared to demonstrate positive

attributes, because it was related to better mental health and higher levels of SWB even after

broader personality characteristics such as extraversion, conscientiousness, and neuroticism were

taken into account in the regression models. In the chronically-ill sample, the findings regarding

SOP were more complex, such that the quadratic term for SOP shared a negative relationship

with physical health, mental health, and SWB. Specifically, results indicated that in the chronically-ill sample SOP was associated with poorer health at both lower and higher levels, but was associated with better health at moderate levels. Further, for SWB, SOP was only related to higher levels of SWB under low levels of stress.

Cluster Analyses

Determining perfectionism clusters. In each sample, ratings of SOP, OOP, and SPP from the student and community samples were examined using cluster analysis. Cluster analytic procedures categorize individuals into groupings regardless of the reliability and validity of the resulting clusters. Consequently, establishing replicability within samples and generalizability across samples, as well as providing evidence for the validity of a given cluster solution, are critical. The current research employed the same cluster analytic approach that was used in Busseri, Sadava, Molnar, and DeCourville's (2009) study (see pages 169-170), which was based on a well-established procedure drawn from the existing research examining personality from a person-centered perspective (for other studies employing the cluster analytic approach that was used in the present work, see Asendorpf, 2003; Caspi & Silva, 1995; Costa, Herbst, McCrae, Samuels, & Ozer, 2002).

As in Busseri et al. (2009), a two-stage approach was applied to identify the optimal cluster solutions within each sample. First, to equate scores across perfectionism measures, the SOP, OOP, and SPP ratings were standardized within each sample.

Second, a hierarchical (agglomerative) cluster analysis was performed for each sample using Ward's method and squared Euclidean distance as the dissimilarity measure. A number of solutions were estimated, ranging from two up to 10 clusters. Third, the cluster

centers (i.e., the mean values of SOP, OOP, and SPP in each cluster) from these solutions were used as start values for a series of k-means cluster analyses, again comprising between two and 10 clusters. With this approach, assignments of participants to clusters based on the hierarchical procedure are optimized using the k-means procedure by maximizing both the separation among clusters and homogeneity within clusters.

Fourth, to assess the replicability of these k-means cluster solutions within-samples, the previous three steps were repeated using five randomly-selected sub-samples comprising two-thirds of respondents[10]. Fifth, the third step was repeated within each sub-sample using the final cluster centers from the full sample as the start values. Sixth, to determine the overall within-sample replicability of the cluster analytic results in each sub-sample, the assignments of respondents to clusters from step four for each sub-sample was cross-tabulated with results from step five, and agreement was estimated by the kappa coefficient. The amount of variance in the perfectionism dimensions explained by the cluster solutions also was examined. Consistent with previous research applying a person-centered approach to study personality (e.g., Asendorpf, 2003; Asendorpf, Borkeneau, Ostendorf, & Van Aken, 2001; Costa et al., 2002), kappas of .60 or greater were considered adequate. A well-fitting cluster solution also was expected to explain a substantial proportion of variance in SOP, OOP, and SPP (Bergman, Magnusson, & El-Khouri, 2003).

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[10] "In general random halves tend to used in personality research (e.g., Asendorpf, et al., 2001). However, provided the relatively small sample sizes [in both the student and chronically-ill samples], subsamples consisting of two-thirds were used instead so as to provide large enough sample sizes to detect relatively smaller clusters" (Busseri et al., 2009, p.169).

A second two-stage approach was then undertaken to determine replicability and generalizability of the cluster solutions across samples. To the extent that the perfectionism configurations identified in one sample are generalizable, rather than sample-specific or spurious, clusters identified in one sample also should be identified in other samples. To determine the across-sample generalizability of the cluster analytic results, a second series of cluster analytic models were estimated. First, the final cluster centers from the chronically-ill sample were used as initial values for k-means cluster analyses in the student sample. Similarly, the final cluster centers from the student sample were used as start values for k-means cluster analyses in the chronically-ill sample. Within each sample, assignments of participants to clusters from the original (within-sample) k-means solutions were cross-tabulated with those based on the start values "borrowed" from the other sample. Agreement was estimated by the kappa coefficient (as cited in Busseri et al., 2009, p.169-170).

Results for each sample from the within-sample replicability analyses are presented in Table 10, as are the amounts of explained variance in the perfectionism components. In general, results showed that solutions consisting of fewer clusters had higher kappas, indicating higher within-sample replicability, whereas solutions consisting of more clusters accounted for more variability in the perfectionism components. Four solutions were found in the student sample that met the combined criteria of 60% of total explained variance or greater and a kappa of .60 or greater (Asendorpf et al., 2001; Busseri et al., 2009): the 5-, 6-, 8- and 9-cluster solutions. In the

chronically-ill sample five solutions met both criteria: the 4-, 5-, 6-, 7-, and 8-cluster

solutions. Results from the across-sample replicability analyses are also displayed in Table 10.

Table 10

Amount of Explained Variance and Cluster Replicability Results for Each Sample

Solution	Within-Sample		Across-Sample
	Mean Kappa	Explained Variance	Kappa for original versus "borrowed" start values
Student Sample			
2 clusters	.99	.37	.99
3 clusters	.70	.48	.67
4 clusters	.62	.56	.68
5 clusters	.73	.62	.35
6 clusters	.69	.67	.52
7 clusters	.58	.70	.49
8 clusters	.65	.72	.67
9 clusters	.72	.74	.82
10 clusters	.55	.76	.53
Chronically-Ill Sample			
2 clusters	1.00	.42	1.00
3 clusters	.91	.55	.99
4 clusters	.79	.62	1.00
5 clusters	.91	.67	.47
6 clusters	.68	.71	.63
7 clusters	.70	.74	.71
8 clusters	.61	.76	.57
9 clusters	.58	.78	.60
10 clusters	.46	.79	.52

Overall, results of these analyses revealed that the cluster solutions were not very

consistent across samples. The five-cluster solution was chosen as the best fitting solution based

on the within-sample replicability assessments, because the five-cluster solution was consistent

within each sample and the most parsimonious solution. Results from discriminant function

analyses further supported a five-cluster solution in each sample because 98% of the student

sample and 97% of the chronically-ill sample were correctly classified using a five-cluster

solution. While the kappa coefficients for the across-sample replicability were quite low for

the five-cluster solution, it should be noted that three of the five clusters did replicate across

samples.

Cluster profiles. Descriptive information regarding the profiles of the MPS-HF scale means and

standard deviations for each of the five clusters, as well as the means and standard deviations for

the total sample are presented in Table 11 for the students and the community sample of adults

suffering from chronic illness.

Table 11

Descriptives by Sample for the Five-Cluster Solution

	Label	SOP		OOP		SPP		
Student Sample		M	SD	M	SD	M	SD	Size
Cluster 1	High SPP	62.40	10.31	57.75	6.96	60.94	6.74	148
Cluster 2	High SOP & High OOP	82.60	9.56	68.78	6.41	51.92	7.26	105
Cluster 3	Low SPP	68.17	10.20	56.41	5.71	43.20	6.52	140
Cluster 4	Extreme Perfectionism	86.65	8.41	66.30	8.25	72.80	6.24	76
Cluster 5	Non-Perfectionism	50.33	10.16	44.87	7.10	40.39	8.93	69
Total Sample		69.72	15.28	59.11	9.98	53.60	12.94	538
Chronically-Ill Sample								
Cluster 1	High SPP	74.29	12.47	51.14	9.22	70.07	9.99	172
Cluster 2	Low SOP	51.87	8.13	52.93	7.50	48.72	8.45	204
Cluster 3	High SOP & Low SPP	77.43	9.55	54.86	9.06	43.72	8.38	153
Cluster 4	Extreme Perfectionism	88.50	9.07	73.37	9.81	68.86	12.55	136
Cluster 5	Non-Perfectionism	41.91	11.64	36.07	7.66	33.66	9.28	108
Total Sample		66.97	19.14	54.15	13.71	53.92	16.64	773

Figure 6 displays the configurations of standardized scores for each of the five clusters for the

student sample (i.e., z scores, which are defined as the differences between the total sample mean

and the cluster mean, divided by the sample standard deviation) while Figure 7 displays the five-

cluster solution for the chronically-ill sample.
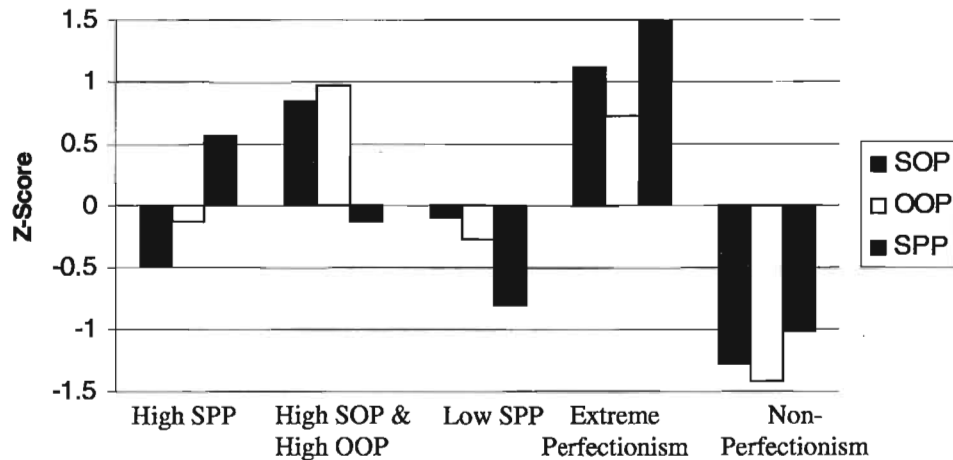
Figure 6. Five-cluster solution of perfectionism for the student sample.

For the student sample, participants who were included in Cluster 1 (high SPP; 27% of the sample) had moderate scores on SOP and OOP and high (standardized) mean levels of SPP. Respondents who comprised Cluster 2 (high SOP and high OOP; 20%) were characterized by high mean levels of both SOP and OOP, and moderate levels of SPP. Cluster 3 (26%) was referred to as "low SPP" as it consisted of individuals who reported moderate levels of SOP and OOP, but who reported low mean levels of SPP. Cluster 4 was labeled "extreme perfectionism" (14%), as the individuals who comprised it reported high mean levels on all three perfectionism components. Finally, Cluster 5 (13%) consisted of respondents who reported low mean levels on all three perfectionism components. Thus, Cluster 5 was referred to as "non-perfectionism".
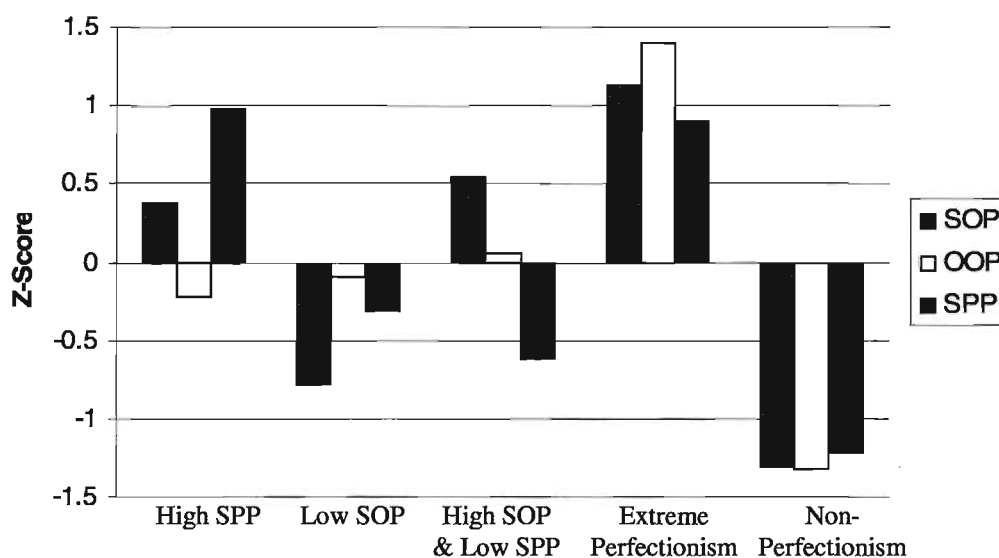
Figure 7. Five-cluster solution of perfectionism for the chronically-ill sample.

Three of the five clusters were equivalent to the student sample for the chronically-ill

sample. Tantamount to the student sample, Cluster 1 (high SPP; 22% of the sample) consisted of

individuals who reported high mean levels of SPP, yet moderate mean levels of SOP and OOP.

Cluster 4 (18%) was again labeled "extreme perfectionism" because this group of individuals

reported high mean levels on all three of the perfectionism components. Akin to the student

sample, the respondents who comprised Cluster 5 (non-perfectionism; 14%) had low mean levels

on all three of the perfectionism components and were thus considered to be non-perfectionists.

The remaining two clusters were unique to the chronically-ill sample. Cluster 2 (low SOP; 26%)

was characterized by moderate levels of OOP and SPP, and accompanied by low levels of SOP.

Cluster 3 (20%) in the chronically-ill sample was akin to Cluster 3 in the student sample such

that it was characterized by moderate levels of OOP and low levels of SPP, yet was distinctive in

that, for the chronically-ill sample, it was also typified by high levels of SOP. Thus, Cluster 3

for the chronically-ill sample was labeled "high SOP, low SPP".

Cluster comparisons. After determining the best-fitting cluster solution in each sample,

clusters were compared within each sample on sex in the student sample, and age and household

income for the chronically-ill sample, using a chi-square test and one-way ANOVA,

respectively.[11] Clusters were then compared on mental health, physical health, SWB, and stress

measures using multivariate analysis of variance procedures (MANOVA) and Bonferroni pair-

wise comparisons. MANOVA was chosen to assess differences among the different clusters, as it

addresses Type 1 error inflation, given that it is an omnibus test, and also accounts for moderate

correlations among similar constructs (see Tabachnick & Fidell, 2008). Clusters were also

compared with regard to mental and physical health and SWB while statistically controlling for

the effects of higher-order personality traits and total levels of perfectionism using multivariate

analysis of covariance (MANCOVA) and Bonferroni-corrected pair-wise comparisons.

Student sample. A chi-square test revealed that the clusters did not differ in terms of the

distribution of men and women in each cluster (χ^2_4= 5.85, p = .21). From Table 12 it is clear that

the clusters did, however, differ in terms of personality, physical and mental health, and SWB.

Results from the first MANOVA, which tested whether the clusters differed in terms of the broad

personality traits of extraversion, conscientiousness, and neuroticism were statistically

significant (Wilks' λ = .82, $F_{(12,1405.19)}$ = 9.34, p < .001). Since the MANOVA demonstrated a

significant main effect, the nature of the relationship between this main effect and the dependent

variables was investigated. Univariate ANOVAs for each dependent variable were conducted as

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[11] Comparisons were not made with regard to age and income for the student sample because this sample was quite homogeneous with respect to these variables. Sex-related differences were not assessed in the chronically-ill sample because there were too few men for the analyses to be meaningful.

follow-up tests to the MANOVA. Using the Bonferroni method for controlling Type I error rates, each follow-up ANOVA was tested at the .017 level. The ANOVA testing differences in conscientiousness ($F_{(4,533)} = 10.88$, $p < .001$) and neuroticism ($F_{(4,533)} = 14.90$, $p < .001$) were statistically significant. Keep in mind, however, that the effect sizes were considered to be in the small range. The ANOVA assessing differences in extraversion was not considered to be statistically significant ($F_{(4,533)} = 2.68$, $p = .03$).

Table 12

Cluster Comparisons for the Student Sample

Comparison Variables	High SPP	High SOP & High OOP	Low SPP	Extreme Perfectionism	Non-Perfectionism	η^2
Sex (% female)	76	70	82	80	72	NA
Extraversion	-.12	.16	.13	-.21	-.01	.02
Conscientiousness	-.37$_a$	.31$_{b,c}$	.15$_b$	.22$_b$	-.23$_{a,b,d}$	.08
Neuroticism	.20$_{a,c}$	-.03$_a$	-.30$_b$	.57$_{a,c}$	-.40$_b$	.10
Stress	.06$_b$	-.03$_b$	-.25$_{b,c}$	.79$_a$	-.46$_{b,c}$	.13
Physical Health Composite	-.23$_a$	.20$_b$	.19$_b$	-.37$_a$	.20$_b$	.06
Mental Health Composite	-.32$_a$	.22$_b$	.36$_b$	-.64$_a$	.33$_b$	.14
SWB Composite	-.43$_a$	.33$_b$	.36$_b$	-.41$_a$	.16$_b$	.13

Note. Standardized group means are displayed. Within rows, means with different subscripts denote statistically different pair-wise comparisons.

Bonferroni post-hoc analyses were then conducted to test for differences among the clusters in conscientiousness and neuroticism. As shown in Table 12, the "high SPP" cluster appeared to have the lowest levels of conscientiousness and was similar to the "non-perfectionism" cluster which also was characterized by low levels of conscientiousness. Conversely, the "high SOP and high OOP" cluster appeared to have high levels of conscientiousness, as the individuals in this group had higher scores than individuals in the "non-perfectionism" and "high SPP" clusters, although they did not differ from the other clusters which were intermediary. For neuroticism, the "high SPP" and the "extreme perfectionism"

clusters appeared to be operating similarly, as they had the highest levels of neuroticism

compared to the other clusters, but did not differ from one another.

Findings from a second MANOVA, which tested whether the cluster differed in terms of

physical health, mental health, SWB, and stress, were also statistically significant (Wilks' $\lambda =$

.75, $F_{(16, 1619.81)} = 9.88$, $p < .001$). Once again, univariate ANOVAs for each dependent variable

were computed as follow-up tests to the MANOVA. Using the Bonferroni method for controlling

Type I error rates, each ANOVA was tested at the .013 level. Results revealed that the clusters

were significantly different in terms of physical health ($F_{(4, 533)} = 8.01$, $p < .001$), mental health

($F_{(4, 533)} = 22.28$, $p < .001$), SWB ($F_{(4, 533)} = 20.41$, $p < .001$), and stress ($F_{(4, 533)} = 20.43$, $p < .001$).

Similar to the regression analyses, results showed that the effects of perfectionism were less

robust for physical health compared to the other dependent variables

(see Table 12).

Bonferroni post-hoc analyses were then conducted to test for differences among the

clusters with regards to each dependent variable. A consistent pattern in the results can be seen

from Table 12, as the "high SPP" and "extreme perfectionism" clusters tended to have the

poorest health and well-being and the highest levels of stress compared to the other clusters. The

"high SPP" cluster only differed from the "extreme perfectionism" group in terms of stress with

the "extreme perfectionism" cluster reporting significantly higher levels of stress compared to all

of the other clusters and the "low SPP" and "non-perfectionism" clusters reporting the lowest

levels of stress. Interestingly, the "high SOP and high OOP" cluster, reported levels of health and

well-being that were comparable to the clusters that were characterized by either moderate or

low levels of perfectionism, suggesting that SOP and OOP may not be pathological when they

are not coupled with high levels of SPP. However, this conclusion is tempered by the fact

that the "high SOP and high OOP" cluster did report higher levels of stress compared to the

clusters typified by low to moderate levels of perfectionism.

Finally, a MANCOVA was computed as a means of testing the incremental predictive

utility of perfectionism in terms of health and well-being with regard to higher-order personality

traits related to perfectionism, health, and well-being (i.e., extraversion, conscientiousness, and

neuroticism). Further, total levels of perfectionism were also accounted for in these analyses to

determine whether the source of the disparities among clusters in health and well-being was due

to qualitative differences or due to quantitative differences in levels of total perfectionism.

Results indicated that extraversion (Wilks' $\lambda = .81$, $F_{(4,526)} = 31.51$, $p < .001$, $\eta^2 = .19$),

conscientiousness (Wilks' $\lambda = .90$, $F_{(4,526)} = 14.72$, $p < .001$, $\eta^2 = .10$), neuroticism (Wilks' $\lambda = $

.73, $F_{(4,526)} = 49.47$, $p < .001$, $\eta^2 = .27$), total levels of perfectionism (Wilks' $\lambda = .98$, $F_{(4,526)} = $

2.56, $p = .04$, $\eta^2 = .02$) and cluster (Wilks' $\lambda = .92$, $F_{(16,1607.59)} = 2.82$, $p < .001$, $\eta^2 = .02$) each had

a significant effect on the combined dependent variables, with the broader personality variables

having small to moderate effects and total perfectionism levels having a very small effect. Given

that the omnibus multivariate test was significant, univariate ANOVAs were carried out to

determine the source of the differences. Each ANOVA was tested at the .013 level to account for

the number of analyses. After accounting for the effects of extraversion, conscientiousness,

neuroticism, and total levels of perfectionism, results showed that the clusters were significantly

different in terms of mental health ($F_{(4,529)} = 5.73$, $p < .001$) and SWB ($F_{(4,529)} = 8.44$, $p < .001$),

but were no longer different with regard to physical health ($F_{(4,529)} = 1.86$, $p = .12$) or stress

($F_{(4,529)} = 2.46$, $p = .04$).

Table 13

Cluster Comparisons for the Student Sample after Accounting for Extraversion,
Conscientiousness, Neuroticism, and Total Levels of Perfectionism

Comparison Variables	High SPP	High SOP & High OOP	Low SPP	Extreme Perfectionism	Non-Perfectionism	η^2
Stress	.01	-.18	-.02	.22	.05	.02
Physical Health Composite	-.11	.16	.05	-.16	.06	.01
Mental Health Composite	-.18$_{a,c}$	.25$_b$	.11$_{b,c}$	-.15$_{a,b,c}$	-.07$_{a,b,c}$	.04
SWB Composite	-.24$_a$	.24$_{b,c}$	.13$_{b,c}$	-.06$_{a,c}$	-.06$_{a,c}$	.06

Note. Standardized group means adjusted for the covariates are displayed. Within rows, means with different subscripts denote statistically different pair-wise comparisons.

Bonferroni post-hoc analyses were conducted to test for differences among the clusters in mental health and SWB. As shown in Table 13, the "high SOP and high OOP" cluster had better mental health than the "high SPP" and the "extreme perfectionism" clusters. The "low SPP" cluster reported better mental health than the "high SPP" cluster. The "high SOP and high OOP" and "low SPP" clusters also reported higher levels of well-being compared to the "high SPP" cluster. None of the other comparisons were statistically significant.

In sum, results from the student sample demonstrated that the "high SPP" and the "extreme perfectionism" clusters tended to report poorer health and well-being compared to the remaining clusters, while the "high SOP and high OOP" cluster tended to report the highest levels of health and well-being. However, the latter finding is tempered by the fact that those in the "high SOP and high OOP" also reported higher levels of stress compared to individuals with moderate to low levels of perfectionism, which is a risk factor for poor health and well-being. Of interest, there were no differences among the clusters in stress when the effects of broader personality traits were taken into account, suggesting that it may have been individuals' levels of neuroticism in the "high SOP and high OOP" cluster accounting for the association rather than

perfectionism per se. Overall, the results were more robust for mental health and SWB than for physical health and stress.

Chronically-ill sample. While the results from one-way ANOVA demonstrated that the clusters were significantly different in terms of household income ($F_{(4,772)} = 2.80$, $p < .025$), none of the pair-wise comparisons was statistically significant, suggesting that there were no substantial differences (see Table 14). The clusters were found to be significantly different with regard to age ($F_{(4,772)} = 4.78$, $p = .001$), as pair-wise comparisons revealed that the individuals who comprised the "non-perfectionism" cluster were significantly older than those in the "high SPP", "extreme perfectionism", and "high SOP" clusters (see Table 14).

Table 14

Cluster Comparisons for the Chronically-Ill Sample

Comparison Variables	High SPP	Low SOP	High SOP & Low SPP	Extreme Perfectionism	Non-Perfectionism	η^2
Age	47.59_a	$49.49_{a,b}$	47.80_a	47.89_a	52.70_b	.02
Household Income	6.41	6.46	7.03	7.40	6.74	.01
Extraversion	$-.30_{a,b,c}$	$.12_{b,c}$	$-.04_{a,b}$	$-.01_{a,b,c}$	$.32_{b,c}$	.04
Conscientiousness	$-.24_b$	$-.17_b$	$.37_{a,c}$	$.14_{a,c}$	$-.01_{a,b,c}$	.05
Neuroticism	$.19_{b,c}$	$-.13_b$	$.09_{b,c}$	$.53_a$	$-.59_b$	.11
Stress	$.44_{a,c}$	$-.24_b$	$-.09_{b,c}$	$.27_{a,c}$	$-.45_b$	.10
Physical Health Composite	$-.29_a$	$.16_b$	$.25_b$	$-.23_a$	$.12_b$	.05
Mental Health Composite	$-.50_a$	$.23_b$	$.21_b$	$-.32_a$	$.46_b$	.13
SWB Composite	$-.40_a$	$.11_b$	$.20_b$	$-.21_a$	$.42_b$	.08

Note. Standardized group means adjusted for the covariates are displayed. Within rows, means with different subscripts denote statistically different pair-wise comparisons.

Results from the MANOVA, which tested whether the clusters differed in the broad personality traits of extraversion, conscientiousness, and neuroticism were statistically significant (Wilks' $\lambda = .81$, $F_{(12,2026.94)} = 14.46$, $p < .001$). Given that the omnibus MANOVA demonstrated a significant main effect, the nature of the relationships between this main effect and the dependent variables were investigated. Univariate ANOVAs for each dependent variable

were conducted as follow-up tests to the MANOVA. Using the Bonferroni method for controlling Type I error rates for multiple comparisons, each ANOVA was tested at the .017 level. Statistically significant differences were observed in extraversion ($F_{(4,768)} = 7.42$, $p < .001$), conscientiousness ($F_{(4,768)} = 10.20$, $p < .001$) and neuroticism ($F_{(4,768)} = 24.12$, $p < .001$). As shown in Table 14, follow-up means comparisons indicated that the "non-perfectionism" cluster had higher levels of extraversion than the "high SPP" and the "high SOP and low SPP" clusters and the "high SPP" cluster had lower levels of extraversion than the "low SOP" cluster. The "high SOP and low SPP" and "extreme perfectionism" clusters had the highest levels of conscientiousness, but did not differ from one another. The "extreme perfectionism" cluster had the highest levels of neuroticism. The "high SPP" cluster reported higher levels of neuroticism compared to the "low SOP" and "non-perfectionism" clusters, but lower levels than the "extreme perfectionism" cluster.

A second MANOVA which tested whether the clusters were different with regard to stress, physical health, mental health, and SWB was statistically significant. (Wilks' $\lambda = .84$, $F_{(16,2337.75)} = 8.83$, $p < .001$). As a follow-up to the MANOVA, univariate ANOVAs indicated that the clusters were different in terms of stress ($F_{(4,768)} = 21.70$, $p < .001$), physical health ($F_{(4,768)} = 9.94$, $p < .001$), mental health ($F_{(4,768)} = 27.40$, $p < .001$), and SWB ($F_{(4,768)} = 16.56$, $p < .001$).

Bonferroni post-hoc analyses were conducted to test for differences among the clusters on each of the dependent variables. As shown in Table 14, the pattern of results was the identical for physical health, mental health, and SWB, such that those in the "high SPP" and "extreme perfectionism" clusters reported significantly worse health and well-being compared to those in

the remaining clusters, while the "high SPP" and "extreme perfectionism" clusters did not differ from one another. Concerning stress, the "high SPP" and "extreme perfectionism" clusters had the highest levels of stress compared to the remaining clusters and those in the "non-perfectionism" and "low SOP" clusters reported significantly less stress than those in the "high SOP and low SPP" cluster.

As in the student sample, a MANCOVA was conducted to test whether the clusters were significantly different from one another in health, well-being, and stress, when the effects of total levels of perfectionism, extraversion, conscientiousness, and neuroticism were accounted for in the analyses. A significant multivariate effect of cluster on the combined dependent variables was observed (Wilks' λ = .94, $F_{(16,2325.53)}$ = 2.99, $p < .001$). Furthermore, extraversion (Wilks' λ = .92, $F_{(4,761)}$ = 16.12, $p < .001$, η^2 = .08), conscientiousness (Wilks' λ = .96, $F_{(4,761)}$ = 7.37, $p < .001$, η^2 = .04), and neuroticism (Wilks' λ = .76, $F_{(4,761)}$ = 61.75, $p < .001$, η^2 = .25) each had a significant effect on the combined dependent variables, with neuroticism having the largest effect. The results concerning total levels of perfectionism were not statistically significant (Wilks' λ = .99, $F_{(4,761)}$ = 2.27, p = .06, η^2 = .01). Given that the omnibus multivariate test for cluster was significant, univariate ANOVAs were conducted to determine the source of the differences. Bonferroni correction procedures were again employed because there were multiple analyses. Thus, a probability level of .013 was considered to be statistically significant (i.e., .05/4). Results indicated that there were significant differences among the clusters for stress ($F_{(4,764)}$ = 6.22, $p <.001$), physical health ($F_{(4,764)}$ = 4.50, p = .001), mental health ($F_{(4,764)}$ = 7.09, $p <.001$), and SWB ($F_{(4,764)}$ = 3.89, p = .004).

Table 15

Cluster Comparisons for the Chronically-Ill Sample after Accounting for Extraversion, Conscientiousness, Neuroticism, and Total Levels of Perfectionism

Comparison Variables	High SPP	High SOP & High OOP	Low SPP	Extreme Perfectionism	Non-Perfectionism	η^2
Stress	$.25_a$	$-.08_{a,b}$	$-.06_b$	$-.21_b$	$.10_{a,b}$	.02
Physical Health Composite	$-.22_a$	$.12_{a,b}$	$.20_b$	$-.07_{a,b}$	$-.07_{a,b}$	.01
Mental Health Composite	$-.29_a$	$.12_b$	$.14_b$	$.04_b$	$-.01_{a,b}$	.04
SWB Composite	$-.20_a$	$.03_{a,b}$	$.11_b$	$.08_{a,b}$	$.01_{a,b}$	.06

Note. Standardized group means adjusted for the covariates are displayed. Within rows, means with different subscripts denote statistically different pair-wise comparisons.

Bonferroni post-hoc analyses were conducted to test for differences among the clusters with regards to each of the dependent variables, statistically controlling for the effects of extraversion, conscientiousness, neuroticism, and total levels of perfectionism. As shown in Table 15, the pattern of results changed when the broader personality traits and total levels of perfectionism were accounted for in the model. The primary difference was that the "high SPP" cluster and the "extreme perfectionism" cluster became quite distinguishable, with the "high SPP" cluster reporting the poorest levels of health and well-being and the highest levels of stress and the "extreme perfectionism" cluster reporting levels of health, well-being, and stress comparable to the remaining clusters. Given that the "extreme perfectionism group" reported the highest levels of neuroticism compared to the rest of the clusters and that this cluster no longer reported poorer levels of health and well-being when the effects of neuroticism had been accounted for, it is plausible that high levels of neuroticism may explain why this group of individuals tend to experience poorer health and well-being. In general, the largest disparities in health and well-being were between the "high SPP" and the "low SPP" clusters, suggesting that SPP is the key dimension of Hewitt and Flett's model of perfectionism with regard to health and

well-being. Further, these differences remained even after accounting for broader personality traits suggesting that the "high SPP" group was uniquely vulnerable to poor health and well-being.

Discussion

Utilizing two different samples (a sample of university students and a sample of adults suffering from various chronic illnesses), the purpose of the present study was to examine the relationships between Hewitt and Flett's (1991b) dimensions of perfectionism and health, in which health was defined as "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (WHO, 1946, p.100). Both variable-centered and person-centered approaches were employed to achieve this aim, as some have argued that confusion surrounding the relative healthiness (or unhealthiness) of perfectionism is caused by a failure to integrate the findings from these two disparate, yet complementary approaches (see Stoeber & Otto, 2006). First, from a variable-centered perspective, a series of hierarchical multiple regression analyses was performed to determine whether specific dimensions of perfectionism (i.e., SOP, OOP, and SPP) were differentially associated with physical health, mental health, and SWB, after accounting for higher-order personality traits related to both the independent and dependent variables (i.e. extraversion, conscientiousness, and neuroticism). Results from these analyses were also drawn upon to assess whether there was an optimal level of perfectionism in terms of these health-related variables.

Several key findings emerged from these analyses that replicated across the two samples. As expected, SPP was linked with poorer physical and mental health and with lower levels of SWB in both the student and chronically-ill samples. These findings support and extend previous studies that have shown that when perfectionism is perceived to be coming from others is stressful and detrimental to health and well-being (e.g., Molnar et al., 2006). It must be noted, however, that the results for both samples revealed that the relationship between SPP and

physical health was not as robust as the relationships between SPP and mental health and between SPP and SWB, because the negative association between SPP and physical health was no longer statistically significant when neuroticism was entered into the regression equations. Thus, these results suggest that while SPP may be a general vulnerability factor for poor physical health, it is not a specific vulnerability factor. These findings speak to the importance of including higher-order personality traits when assessing the value of lower-order traits.

More striking, SPP maintained its negative associations with mental health and well-being after accounting for the effects of neuroticism, conscientiousness, and extraversion in the models and these results were replicated in two disparate samples. Thus, strong support was garnered for the notion that SPP is a *specific* vulnerability factor for poorer mental health and lower levels of SWB, and not just indicative of high levels of neuroticism. This is an important contribution to the literature, as few researchers have included higher-order personality traits when studying the relationship between perfectionism and health-related variables, which has left some to question the relative importance of perfectionism with regard to health and well-being.

One exception is the Enns et al. (2005) study, which directly tested the incremental predictive utility of perfectionism (as measured by both the MPS-HF and the MPS-F) when longitudinally predicting distress (i.e., depression and hopelessness) in a group of first-year medical students. The primary aim of the study was to determine whether perfectionism vulnerability models (e.g., interaction between SPP and negative life events) contributed to variance in distress beyond that of neuroticism diathesis-stress models (e.g., interaction between neuroticism and negative life events). In contrast to the present study, Enns et al. (2005) found

that perfectionism vulnerability models did not have incremental validity over and above neuroticism diathesis-stress models when predicting distress. Thus, they concluded that perfectionism is only a general, rather than a specific vulnerability factor for distress. Likely reasons for the disparities in findings are that the Enns et al. (2005) study relied upon a select sample of medical students which may have restricted the generalizability of their findings. Further, while the current study addressed main effects of perfectionism on health and well-being, the Enns et al. (2005) study strictly assessed specific perfectionism vulnerability models. Finally, the Enns et al. (2005) study assessed longitudinal associations between perfectionism and distress while the current study was restricted to cross-sectional associations. Thus, while strong support was provided by the present study for the contention that SPP has a specific negative relationship with both mental health and SWB over and above that of neuroticism, whether these relations hold across time remains unclear. Thus, longitudinal research utilizing a life-span perspective is needed to address this important issue.

Another finding that converged in both the student and the chronically-ill samples was that OOP was found to be unrelated to health and well-being. This finding is consonant with the literature, which has consistently demonstrated that OOP is often not related to personal distress, but to others' distress. For example, in their study of male and female pain patients and their spouses, Hewitt et al. (1995b) found that individuals with partners who were high in OOP reported poorer family functioning and marital adjustment compared to individuals whose partners reported lower levels of perfectionism. Consistent with theory, individuals' own levels of OOP were not associated with their own levels of relationship satisfaction. The lack of personal distress associated with OOP is also in line with self-focused attention models of

depression, which maintain that attention focused away from the self is less detrimental than when greater attention is directed at the self (Musson & Alloy, 1988; Smith et al., 1985). Thus, future studies should explore the role of OOP in health and well-being in samples of couples and families, where individuals' levels of OOP could be assessed in terms of their own health and the health of their significant others.

Unlike the findings concerning SPP and OOP, the results pertaining to SOP differed depending on sample characteristics. In the student sample, for instance, SOP appeared to demonstrate some positive attributes, in that it was related to better mental health and higher levels of SWB even after broader personality characteristics such as extraversion, conscientiousness, and neuroticism were taken into account in the regression models. Thus, for the students, SOP seemed to embody some healthy aspects of perfectionism. These findings are in accordance with seminal theories of perfectionism, which indicate that self-focused perfectionism is beneficial in moderation (Adler, 1956) and are in line with empirical studies that have reported positive associations between SOP and favourable outcomes (see Stoeber & Otto, 2006). For instance, self-oriented perfectionists have been found to express high levels of motivation for learning, adapting, and self-actualizing - processes associated with positive outcomes (Blankstein & Dunkley, 2002). Furthermore, SOP has been associated with a host of adaptive outcomes such as achievement striving, goal-oriented and resourceful behaviour, assertiveness, higher levels of positive affect, and better self-rated health (Blankstein & Dunkley, 2002; Flett et al., 1991b; Frost et al., 1993; Molnar et al., 2006). Thus, the results from the student sample add to the growing body of work which suggests that SOP is not necessarily

detrimental and may, in fact, exemplify some elements of Hamachek's (1978) 'normal' perfectionism (Frost et al., 1993; Slaney et al., 1995).

Akin to the findings concerning SPP, the positive association between SOP and physical health was nullified when the higher-order personality traits were entered into the regression equation. Conversely, the positive associations between SOP and mental health and between SOP and SWB remained statistically significant, even after the inclusion of conscientiousness into the regression equations. These findings are noteworthy, as they demonstrate the incremental predictive utility of SOP for mental health and SWB.

The finding that SOP was associated with better mental health and higher levels of SWB, even after accounting for conscientiousness, is important for a second reason as well. Some researchers have dismissed evidence that has supported the claim that perfectionism can have adaptive potential, arguing that researchers have, in these cases, mislabeled SOP as a form of adaptive perfectionism because one of its fundamental characteristics is the pursuit of excellence (Flett & Hewitt, 2006). They have claimed that, what some researchers believe to be an "adaptive form of perfectionism", may be actually assessing conscientiousness rather than perfectionism. Flett and Hewitt's (2006, 2007) position is that SOP is necessarily maladaptive, as it does not entail a healthy form of achievement striving, but is characterized by a compulsive and unremitting pursuit of perfection accompanied by severe self-criticism when perfection is not achieved. On the one hand, the evidence garnered from this study supports Flett and Hewitt's (2006, 2007) notion that SOP is clearly discernable from conscientiousness, as the pattern of zero-order correlations for SOP was quite different from the pattern for conscientiousness. Moreover, SOP accounted for unique variance in mental health and SWB that was not accounted

for by conscientiousness. On the other hand, the findings from the present study appear to refute the notion that SOP is strictly maladaptive, as SOP was assessed with a well-validated measure of perfectionism and maintained a unique positive association with mental health and SWB after accounting for the effects of high-order personality traits, such as conscientiousness.

It is tempting to conclude, based on these findings, that SOP reflects a healthy form of perfectionism (at least among university students). However, this conclusion is tempered by the fact that SOP was also associated with higher levels of stress, negative affect, and neuroticism. Thus, while SOP may have some positive aspects for students who are attending university, where striving toward perfectionistic standards is encouraged, as Flett and Hewitt (2006, 2007) point out, there are also costs associated with it, such as experiencing higher levels of stress, negative affect, and higher levels of emotional instability.

The conclusion that SOP reflects a form of healthy perfectionism is also qualified by the findings from the chronically-ill sample. In the chronically-ill sample, the findings regarding SOP were more complex, such that the quadratic term for SOP shared a negative relationship with physical health, mental health, and SWB. Specifically, results indicated that for adults suffering from various forms of chronic illness, SOP was associated with poorer health at both lower and higher levels, but was associated with better health at moderate levels.

These findings should be expected, as they are consistent with theory. For example, following from Wilson (1967), Diener et al. (1999) argued "that either inappropriately high or low levels of aspiration can be detrimental to SWB, leading to anxiety (Emmons, 1992) or boredom (Csikszentmihalyi, 1990), respectively" (p.283). Thus, to the extent that SOP captures the propensity to hold high standards, having standards that are either too high or too low may be

unhealthy, such that having exceedingly high standards would be associated with poorer

outcomes because those standards would be impossible to reach resulting in higher rates of

failure, stress, and possible exhaustion. However, having standards that are too low would

suggest a lack of motivation, which is a core component of depression and related to various

other poor mental health outcomes (American Psychiatric Association, 1994; Beck & Alford,

2009). Further, the finding that SOP shares a nonlinear relationship with health and well-being

helps to alleviate the confusion surrounding the desirability of SOP, as it suggests that SOP is not

healthy or unhealthy in the absolute sense, but that there is an optimal level of SOP. However,

caution is clearly warranted concerning this finding, as it did not replicate with the student

sample and, to my knowledge, has not been reported in other studies addressing the relationship

between perfectionism and health.

In view of the numerous disparities between the samples it is impossible to elucidate why

SOP appeared to function differently in each group. One could speculate that SOP would serve a

more adaptive role among students because they are in an achievement-oriented setting where

striving for perfection is not only actively encouraged, but often rewarded. For instance, research

has demonstrated that individuals who report having higher levels of personal standards report

higher levels of academic achievement (Accordino et al., 2000; Brown et al., 1999). Further, the

students were relatively young and healthy. Thus, the possible detrimental effects on health and

well-being from even very high levels of SOP may not have been evident yet. Therefore, it may

be that even high levels of SOP have some adaptive potential for the university students because

they are being rewarded for it and the deleterious effects of high levels of SOP have not had time

to present themselves. Although hints of future problems associated with SOP were evident, as

SOP was associated with being more emotionally unstable, and with experiencing higher levels of stress and negative affect.

In sharp contrast to the student sample, a large percentage of the individuals who comprised the community sample of adults with chronic illnesses were on disability, rather than working in achievement-driven settings. Consequently, whereas moderate levels of SOP could be motivating and lead to feelings of well-being, there would be no tangible rewards for high levels of SOP. Further, those with high levels of SOP, who were on disability, may have been particularly vulnerable to distress, because they could not actively pursue their perfectionistic standards due to poor health. Moreover, most of the individuals in chronically-ill sample were older than the students; thus, the high levels of stress and exhaustion that have been shown to be associated with high levels of SOP would have had enough time to impact their health and well-being, making high levels of SOP far less desirable for this group. However, only prospective longitudinal studies that include diverse, representative samples and explore the possibility of curvilinear effects for SOP can properly address these speculations.

It is one thing to identify different dimensions of perfectionism (e.g., SOP, OOP, and SPP) and then assess their healthiness based on their correlates. It is quite another to demonstrate that there are, in fact, people who exemplify different profiles of perfectionism and that people who exhibit dissimilar profiles differ from one another in meaningful ways. Following from this logic, the second goal of this study was to determine whether there were a few prototypical configurations of SOP, OOP, and SPP that could be found within individuals and whether there was an optimal profile of perfectionism in terms of health and well-being. Results from multi-stage cluster analyses indicated that different configurations of perfectionism could be found

within individuals using Hewitt and Flett's (1991b) conceptualization perfectionism. Thus, a significant contribution of the present study was to show that intra-individual profiles of perfectionism can be observed using Hewitt and Flett's dimensions of perfectionism and using empirical classification techniques instead of empirically-derived cut-off scores that lack a theoretical basis. However, contrary to expectations, results showed that there were five, rather than three, different clusters of perfectionists in both the student and chronically-ill samples. Three of these configurations were equivalent between samples: The "high SPP" cluster which consisted of individuals who reported high mean levels of SPP, accompanied by moderate mean levels of SOP and OOP; an "extreme perfectionism" cluster which consisted of individuals who reported high mean levels on all three of the perfectionism components; and a "non-perfectionism" cluster which consisted of individuals whom had low mean levels on all three of the perfectionism components. The fourth cluster was similar between samples such that individuals in this cluster in both samples were typified by low levels of SPP and moderate levels of OOP, yet was distinctive such that for the chronically-ill sample it was also typified by high levels of SOP and for the student sample it was typified by moderate levels of SOP. Therefore, the fourth cluster was labeled "low SPP" in the student sample and "high SOP and low SPP" in the chronically-ill sample. The final cluster was unique to each sample. In the student sample the final cluster (high SOP and OOP) consisted of people who exhibited high levels of SOP and OOP and moderate levels of SPP whereas in the chronically-ill sample the final cluster (Low SOP) was typified by people who exhibited low levels of SOP and moderate levels of SPP and OOP.

Most studies have reported three clusters of perfectionists (i.e. adaptive perfectionists, maladaptive perfectionists, and non-perfectionists) (e.g., Mobley et al., 2005; Parker, 1997; Rice & Mirzadeh, 2000; Rice & Slaney, 2002), whereas five were identified in the present work. However, it is difficult to compare and contrast the current results with those of previous studies, as none of the previous studies examined Hewitt and Flett's dimensions of perfectionism on their own, as they either assessed Frost's (1990) dimensions (e.g., Parker, 1997), or studied the dimensions from the APS-R (Rice & Slaney, 2002). Further, different analytic techniques were used to arrive at the final cluster solutions in the previous works. Thus, future research using the same analytic techniques with the same criteria and different samples should be completed before the number of unique types of perfectionists can be confidently determined. What is important to underscore here, however, is not the precise number of configurations of perfectionism that were identified, but how the results derived from the person-centered approach coalesced with those of the variable-centered approach to address the question of the healthiness of perfectionism.

The primary goal of employing both variable-centered and person-centered approaches was to assess two competing models of perfectionism, which have very different implications for determining whether perfectionism has any adaptive potential. The two-factor model of perfectionism, derived from the variable-centered approach, posits that there is a healthy form of perfectionism and an unhealthy form of perfectionism. Researchers who champion this model tend to treat SOP as a healthy form of perfectionism and treat SPP as an unhealthy form of perfectionism. Based on this model, one would hypothesize that an individual who has low levels of SOP, but high levels of SPP, should experience the highest levels of psychopathology and the

lowest levels of well-being, whereas the person who has high levels of both SOP and SPP

should experience lower levels of dysfunction since the "healthy" form of perfectionism should

buffer the individual against the effects of the unhealthy form of perfectionism.

Alternatively, Lundh's (2004) perfectionism-acceptance theory, which was derived from

the person-centered approach, avers that high personal standards can be adaptive or maladaptive

depending on whether they are accompanied by an inability to accept imperfection or not. In

other words, striving for perfection is maladaptive when it is combined with an inability to

accept one's shortcomings, but is adaptive when combined with the ability to accept failures.

This theory could be applied to Hewitt and Flett's model of perfectionism, arguing that SOP, in

which a primary component is having high personal standards, could be healthy when

individuals can accept less than perfection, but will be unhealthy when they do not allow

themselves to accept anything less than perfection. Unlike SOP, which measures the extent to

which individuals place high standards on themselves, SPP assesses the extent to which

individuals perceive that high standards are imposed on them by significant others. Given that

the high standards in this case are imposed from others outside of the self and are, therefore, not

under the control of the individuals themselves, individuals high in SPP may be less able to

accept imperfection than those high in SOP, as those high in SPP will perceive that others will

not allow anything less than perfection.

With regard to the person-centered approach, the perfectionism-acceptance theory posits

that the most maladaptive configuration of perfectionism within individuals should be high levels

of concern over mistakes and doubt about actions along with high levels of personal standards

and organization. When applied to Hewitt and Flett's (1991b) model, the most maladaptive

configuration would be high levels of SPP along with high levels of SOP. If it is the total level of perfectionism that is the most detrimental to health and well-being, than one would expect individuals with high levels of SOP, OOP, and SPP to report the poorest outcomes.

Although the composition of the clusters differed between the student and the chronically-ill samples, the pattern of results when comparing the clusters on measures of personality, health, and well-being were quite consistent across the samples. In general, the findings supported the notion that SPP is deleterious to health and well-being as individuals in the "high SPP" and the "extreme perfectionism" clusters routinely reported the poorest health and well-being, with the largest discrepancies being between the groups characterized by high levels of SPP versus those characterized by low levels of SPP. Thus, the present findings demonstrated that SPP is a key distinguishing factor in terms of health and well-being.

The results also showed that SOP was neither healthy nor unhealthy in the absolute sense, as individuals in the "extreme perfectionism" group, who reported high levels of SOP, along with high levels in OOP and SPP, reported equivalent health to those in the "high SPP" group. Thus, high levels of SOP did not buffer the negative health effects of SPP, as the two-factor model of perfectionism would predict. Further, those in the "extreme perfectionism" group reported high levels of neuroticism and stress in both samples, suggesting that this configuration may be at a particularly high risk for negative outcomes. Finally, the "high SOP and high OOP" cluster in the student sample tended to report the highest levels of health and well-being and the "high SOP and low SPP" cluster also reported relatively good health, such that their levels of health were equivalent to those in the "low SOP" and "nonperfectionism" clusters and better than those in the "high SPP" and "extreme perfectionism" clusters. Thus, it appears that individuals

with high levels of SOP, even when accompanied by high levels of OOP may not experience

negative health outcomes as long as they are also not high in SPP. However, it must be noted that

these individuals also did report higher levels of stress compared to individuals with moderate to

low levels of perfectionism, which could be a risk factor for poor health and well-being over

time.

Thus, results from the person-centered approach yielded evidence that individuals do

exhibit different profiles of Hewitt and Flett's (1991b) dimensions of perfectionism and that

these profiles have direct implications for health and well-being. In general, results did not

support the two-factor model of perfectionism and were more in favour of Lundh's (2004)

perfectionism-acceptance theory, as it applies to Hewitt and Flett's (1991b) model of

perfectionism, such that SOP was not considered to be a healthy or unhealthy form of

perfectionism in the absolute sense, because its desirability rested on whether it was combined

with high levels of SPP or not.

In summary, results from both the variable-centered and person-centered approaches

complemented one another and yielded strong support for the notion that when perfectionism is

perceived to be coming from others (SPP), it is not only associated with poorer health, but is a

specific vulnerability factor for poorer mental health and lower levels of SWB in both a

relatively young and healthy student sample and a sample of adults suffering from various

chronic illnesses. Moreover, findings from both of these approaches converged to demonstrate

that when perfectionism is self-imposed (SOP), it is neither healthy nor unhealthy in an absolute

sense. From the variable-centered perspective, this conclusion was supported by the fact that

SOP was associated with both positive (e.g., better mental health and higher levels of SWB in

the student sample), and negative correlates (e.g., higher levels of negative affect, stress, and neuroticism in both samples). Evidence from the chronically-ill sample further substantiated this conclusion by showing that there may be an optimal level of SOP, given that moderate levels of SOP were found to be associated with better health and higher levels of SWB, whereas levels that were too low or too high were found to be associated with poorer health and lower levels of SWB. The findings from the person-centered approach were particularly informative. They not only demonstrated that there are prototypical configurations of perfectionism, but also that the relative healthiness of SOP varies as a function of the other dimensions of perfectionism included, such that SOP did not appear to be associated with poorer health or well-being unless it was combined with high levels of SPP. Finally, results from this study indicated that the associations between perfectionism and mental health and between perfectionism and well-being are more robust than the association between perfectionism and physical health. Limitations, suggested directions for future research, and practical implications for this work are discussed in the General Discussion section.

CHAPTER 3

Study Two

Rationale and Hypotheses

While the first study tested different main effect and interactive models of perfectionism and health, this study went further by utilizing structural equation modeling with a community sample of adults suffering from various chronic illnesses and a sample of upper-year university students, to assess the extent to which the different dimensions of perfectionism (i.e., SOP, OOP, and SPP) were related to health and well-being in the context of a theoretically-based five-pathway model (see Figure 1) that has been implicated in the literature (e.g., Dunkley et al., 2000). The five mediating pathways that were specifically examined in the current study were stress, perceived social support, socioeconomic status, and health-promotion and health-risk behaviours.

One potential mediating pathway that has received attention in the literature is stress. Flett and Hewitt (2002) have postulated that stress can mediate the relationship between perfectionism and psychopathology via four distinct pathways; stress generation, stress anticipation, and stress perpetuation (which are all related to the degree of stress that individuals are exposed to), and stress enhancement (which is related to how individuals react to the stress that they are exposed to). In general, research has supported Flett and Hewitt's notion that perfectionism generates stress which, in turn, leads to greater psychopathology and a poorer sense of well-being over time (e.g., Chang, 2000; Dunkley et al., 2000, 2003). For instance, using structural equation modeling, Chang et al. (2004) found that stress fully mediated the relationship between perfectionism and negative affect among a sample of Black women and

partially mediated the relationship among White women. In addition, research findings demonstrate support for Flett and Hewitt's contention that perfectionism perpetuates individuals' stress, such that studies indicate that certain dimensions of perfectionism (e.g., SPP, doubt about actions, concern over mistakes) are associated with the use of maladaptive coping styles that are associated with a prolonged stress response (Flett & Hewitt, 2002). In light of the convincing evidence that stress also has deleterious effects on health and well-being (Bowler, 2001; Kessler, 1997; Kiecolt-Glaser & Glaser, 2001; Robinson & Godbey, 1998; Tennant, 2002; Wargo, 2007), it is reasonable to expect that stress would represent a pathway from perfectionism to health as well. Given that perceived stress has been shown to be a robust predictor of health and adjustment difficulties and is related to perfectionism (Blankstein & Flett, 1992; DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; DeLongis, Folkman, & Lazarus, 1988; Dunkley & Blankstein, 2000), it was chosen as the measure of stress for the present study.

The second hypothesized pathway is through perceived social support. As previously discussed, both theory and empirical evidence support the proposition that perfectionism is associated with a host of interpersonal difficulties (Habke & Flynn, 2002). SPP, for example, has been linked with experiencing negative social interactions more frequently and with higher levels of hostility, neediness, fear of evaluation, shyness, and loneliness (Flett et al., 1996, 1997). Consistent with theories that suggest that individuals with high levels of SPP tend to be overly concerned with gaining perfect social approval from individuals whom they view as being unfair and overly critical, and tend to react with higher degrees of sensitivity to personal rejection (Flett et al., 1994; Hewitt & Flett, 1991b), it is not surprising that this dimension of perfectionism has also been associated with lower levels of perceived social support. For instance, using structural

equation modeling Dunkley et al. (2000) found in a sample of college students that the relationship between evaluative concerns perfectionism (i.e., SPP from the MPS-HF and doubt about actions and concern over mistakes from the MPS-F) and distress was mediated by perceived social support, along with hassles, and avoidant coping. Specifically, their results indicated that evaluative concerns perfectionism was associated with lower levels of perceived social support, which in turn, were related to higher levels of distress. Personal standards perfectionism (i.e., SOP from the MPS-HF and personal standards from the MPS-F) was unrelated to perceived social support in that study. Using a longitudinal study design with a clinical sample, Dunkley, Sanislow, Grilo, and McGlashan (2006) substantiated the previous findings when they observed that perfectionism (as measured by the DAS) was longitudinally predictive of depression three years later and that this relationship was mediated by negative social interactions, avoidant coping, and perceived social support. Once again, individuals with higher levels of perfectionism reported more frequent negative social interactions, higher levels of avoidant coping, and lower levels of perceived social support, which in turn, were related to higher levels of depression.

While the aforementioned studies indicate that individuals with higher levels of particular forms of perfectionism (i.e., SPP, doubt about actions, and concern over mistakes) appraise others as being unavailable or unwilling to support them, they do not address whether this appraisal is realistic or biased. Sherry, Law, Hewitt, Flett, and Besser (2008) conducted a study that addressed this issue. With a sample of undergraduate students, Sherry et al. (2008) tested their social disconnection model, which states that the relationship between SPP and depression is mediated by social disconnection. That is, SPP was hypothesized to be related to lower levels

of both perceived and received social support which, in turn, were believed to be related to higher levels of depression. SOP and OOP were not expected to be associated with either form of social support because SOP is largely unrelated to social support in the literature and OOP is often not related to personal distress, but to others' distress. Results of the study generally supported their social disconnection model, such that individuals with higher levels of SPP reported lower levels of perceived social support which, in turn, were associated with higher levels of depression. Of interest was the finding that perfectionism was unrelated to received social support, which was operationally defined in the study by the Inventory of Socially Supportive Behaviors that assesses overt behaviours (e.g., assisting with a goal, providing transportation, or providing a place to stay).

Thus, the findings from that study indicate that individuals with higher levels of SPP do not actually receive lower levels of assistance or support from others, but they feel dissatisfied with the level of support that they are receiving. This finding is in line with studies that have demonstrated that those with higher levels of SPP believe that others are highly critical of them. Thus, as Sherry et al. (2008) point out, it may be that individuals with higher levels of SPP are misinterpreting their received social support (e.g., attempted support is perceived as degradation and criticism rather than as help) leaving them with a sense of dissatisfaction and disconnection from others.

Robust relationships among social support, physical health, mental health, and well-being have also been well documented (Cassel, 1976; House, Landis, & Umberson, 1988; Ren, Skinner, Lee, & Kazis, 1999; Schwarzer & Leppin, 1991; Sarason, Sarason, & Gurung, 2001). Higher levels of social support, for instance, have been associated with lower levels of PTSD and

depression, and to higher overall levels of mental health (Ren et al., 1999), whereas lower levels of social support have been shown to be a risk factor for age-adjusted mortality (Berkman & Glass, 2000; Berkman & Syme, 1994), to poorer immune system functioning (Uchino, Cacioppo, & Kiecolt-Glaser, 1996) and to poorer prognosis after myocardial infarction (Farmer et al., 1996; Lett et al., 2007). Research in the area of SWB has consistently demonstrated that social resources and strong relationships are amongst the strongest correlates of well-being (Diener, & Seligman, 2002; Myers, 2000). Social networks are a source of health information and tangible support in times of illness. Moreover, the perception of available social support contributes to decreased stress (Cohen, Underwood, & Gottlieb, 2000). While both received and perceived social support have been related to health, studies have consistently demonstrated that perceived social support is more influential with respect to health and well-being than is received support (Barrera, 1986; Dunkel-Schetter & Bennett, 1990; Sarason, Sarason, & Pierce, 1990). Thus, perceived social support was the focus in the present study.

Socioeconomic status (SES), which is most often measured as a combination of income, education, and occupational status, represents a third potential pathway between perfectionism and health. Two of the most widely held assumptions regarding perfectionism are that perfectionists are successful people in the world and that their success is a direct result of their perfectionistic tendencies. These beliefs are clearly articulated by Blatt (1995) who argued that possessing high standards is "associated with good work habits, striving, and high achievement" (p.1006). Indeed, when interviewed, self-identified perfectionists report that even though their perfectionism causes them distress, they would not relinquish it because they attribute their success to it (Slaney & Ashby, 1996; Slaney, Chadha, Mobley, & Kennedy, 2000). Studies

examining the relationship between perfectionism and achievement have primarily focused

on academic achievement. While some studies have reported null findings (e.g., Mobley et al.,

2005; Rice & Dellwo, 2002) the majority have been generally supportive of the premise that

those forms of perfectionism that are generally regarded as adaptive (e.g., SOP from the MPS-

HF, personal standards from the MPS-F, standards from the APS-R) are positively associated

with academic achievement.

Accordino et al. (2000), for instance, found in their sample of high-school students that

those with higher levels of personal standards, as measured by the APS-R, had higher levels of

achievement orientation and higher grade point averages (GPAs) compared to those with lower

levels of personal standards. Using cluster analysis and the APS-R with a sample of university

students, Grzegork et al. (2004) observed that both adaptive and maladaptive perfectionists

reported higher GPAs than non-perfectionists. Moreover, while adaptive and maladaptive

perfectionists did not differ in terms of their actual GPA, they differed in their satisfaction with

their GPA, such that adaptive perfectionists reported being significantly more satisfied with their

GPA than the maladaptive perfectionists.

Brown et al. (1999) tracked a small sample of undergraduate students over a semester

long course and found that those with higher levels of personal standards, as measured by the

MPS-F, received higher grades and reported studying more often than those with lower levels.

Cox, Enns, and Clara (2002) as well as Enns et al. (2001) found that positive strivings were

positively related to self-reported performance in a sample of medical students. In terms of

differences in achievement with regard to a specific task, Bieling, Isreali, Smith, and Antony,

(2003) observed that undergraduate students who reported higher levels of adaptive

perfectionism received higher grades on their midterm exam compared to those with lower levels. Likewise, Witcher, Alexander, Onwuegbuzie, Collins, and Witcher (2007) discovered that graduate students with higher levels of SOP and OOP obtained higher levels of achievement in their graduate level research methodology course compared to those with lower levels. Finally, with a sample of university students, Stoeber and Kersting (2007) found that perfectionistic strivings, as measured by the adapted version of the Striving for Perfection Scale of the Multidimensional Inventory of Perfectionism in Sport (Stöber, Otto, & Stoll, 2004), was positively associated with aptitude test scores for reasoning, speed, and work samples; measures that are often used by personnel in hiring decisions. Collectively, these results suggest that those with higher levels of perfectionism, particularly the dimensions that tap possessing high personal standards, tend to have higher academic achievement compared to those with lower levels.

However, it could also be argued that perfectionism should be associated with underachievement via its relationship with self-handicapping. A relationship between perfectionism and forms of self-handicapping should be expected, given that both constructs encompass individual's concerns about standards, levels of competence, and how individuals are evaluated by other people. The fear of failure that is often a central facet of perfectionism could, theoretically create the need to develop self-handicapping behaviours, as in an attempt to conceal inadequacies. For instance, if individuals believe that they must attain a very high standard on a test and they also question their ability to achieve that standard, then one solution is to self-handicap.

Indeed, evidence supports this proposition, as studies have demonstrated that perfectionism is often related to poor work habits, such as self-handicapping and procrastination

in particular (Frost et al., 1990; Hobden & Pliner, 1995; Sherry, Flett, & Hewitt, 2001). For instance, Ferrari (1992) reported a positive relationship between perfectionism and procrastination. However, these results must be qualified on the basis that the measure of perfectionism employed in that study had questionable psychometric properties. With a sample that comprised both undergraduate and graduate students, Saddler and Sacks (1993) observed that SPP was positively related to academic procrastination, while Flett, Blankstein, Hewitt, and Koledin (1992) found, in their sample of undergraduate students, that SPP was positively related to both academic and general procrastination. Finally, Hewitt et al. (2003) observed that perfectionistic self-presentation was positively associated with higher levels of self-handicapping in both undergraduate student and heterogeneous clinical samples. That is, those who were concerned about appearing perfect to others were more likely to engage in self-handicapping activities, such as excuse-making or procrastination. Hewitt and colleagues interpreted their results as indicating that "perfectionistic self-presentation reflects a defensive self-presentational style" (p.1312).

In sum, the literature suggests that facets of perfectionism, such as personal standards and SOP, should be related to higher levels of achievement, which should result in higher levels of SES, given that education is the most commonly used indicator of SES in epidemiological studies and has been shown to be one of the best indicators of SES (Liberatos, Link, & Kelsey, 1988; Winkleby, Jatulis, Frank, & Fortmann, 1992). On the other hand, maladaptive forms of perfectionism, such as doubt about actions and SPP, should be associated with lower levels of achievement and SES because self-handicapping has been related to academic

underachievement, to lower levels of adjustment (Zuckerman, Kieffer, & Knee, 1998) and to lower achievement in general (Garcia, 1995).

Whereas the relationship between perfectionism and SES is implied based on findings which demonstrate an association between perfectionism and academic achievement, a direct and robust relationship between SES and health has been well established. Several studies have documented a relationship between SES and morbidity and mortality rates, such that as SES increases morbidity and mortality rates decrease (Adler et al., 1994; Blaxter, 1987; Hann, Kaplan, & Camacho, 1987; Marmot, Kogevina, & Elston, 1987; Marmot, Ryff, Bumpass, Shipley, & Marks, 1997; Wilkens, Berthelot, & Ng, 2002). Further, the inverse association between SES and health is found whether SES is operationally defined as education, income, or occupational attainment and seems to reflect the impact of SES on health rather than vice versa (Fox, Goldblatt, & Jones, 1985; Winkleby et al., 1992). Finally, the relationship between SES and health is observed across almost all forms of disease, predicts prognosis after diagnosis, and endures across the lifespan (Marmot et al., 1987, Pincus, Callahan, & Burkhauser, 1987).

The relationship between SES and SWB is quite modest, especially when psychological factors have been accounted for. Objective resources, such as income (Diener, Sandvik, Seidlitz, & Diener, 1993; Myers, 2000; Myers & Diener, 1995) have been shown to have only a small effect on SWB. Moreover, only small percentages of variance in SWB can be explained by the demographic variables included in most studies (DeNeve & Cooper, 1998). For instance, Argyle (1999) found that all the demographic factors they measured (e.g., education, sex, income, age, employment, marital status) accounted for less than 20 percent of the variance in SWB. Research studies on national income (i.e., Gross National Product), personal income, and income change,

along with research on individuals with high levels of SES, report statistically significant relationships between income and SWB (Diener & Biswas-Diener, 2002). Bear in mind, however, that the association between income and SWB is generally the strongest amongst individuals at the lowest levels of income, as income only has small effects once individuals have their basic needs met (Diener et al., 1993). In sum, it appears that SES is positively related to SWB, but the magnitude of the effect is smaller relative to physical health.

The fourth and fifth potential pathways are behavioural. Contrary to studies that have clearly demonstrated that health-related behaviors such as smoking, dieting, dangerous driving habits, unprotected sex, excessive drinking, exercising, and adherence to medical recommendations are important determinants of health (Baum & Poluszny, 1999; Blair et al., 1989; Birmingham, Muller, Palepu, Spinelli, & Anis, 1999; Cargiulo, 2007; Ellison, Morrison, de Groh, & Villeneuve, 1999), very little empirical research has examined the direct relationship between perfectionism and health-related behaviours. To my knowledge, only one study has examined the link between perfectionism and general health behaviours. With a sample of female college students, Chang, Ivezaj, Downey, Kashima, and Morady (2008) found that both SOP and SPP were associated with higher rates of disordered eating; however, only SPP was related to poorer health-related behaviours in general, as measured by the Health Behavior Scale (Hooker & Kaus, 1994).

The studies that have addressed specific health-related behaviours have focused on three particular areas, disordered eating, exercise dependence, and substance use. Studies have reliably found that perfectionism is indeed positively related to disordered eating symptomatology and that distinguishing between healthy and unhealthy forms of perfectionism does not seem

appropriate in this area, as both forms are positively related to disordered eating (Hewitt et al., 1995; Minarik & Ahrens, 1996). Similarly, research in the area of exercise dependence (i.e., maladaptive pattern of over-exercising) has also failed to clearly differentiate healthy and unhealthy forms of perfectionism, as studies have found both forms to be positively related to exercise dependence (Hagan & Hausenblas, 2003; Hausenblas & Symon Downs, 2002). For example, among a large sample of middle-aged runners, Hall, Hill, Appleton, and Kozub (2009) found that both SOP and SPP were positively associated with exercise dependence.

With respect to substance use, the findings have been mixed. Flett and colleagues (2008) investigated the link between perfectionism and binge drinking in a sample of university students and found that while parental criticism was associated with a higher frequency of binge drinking episodes, SOP was associated with fewer binge drinking episodes. Flett et al.'s (2008) findings are in line with studies that have clearly demonstrated that conscientiousness is negatively related to health-risk behaviours (Bogg & Roberts, 2004; Booth-Kewley & Vickers, 1994; Friedman et al., 1995). Given the strong relationship between SOP and conscientiousness, one would then expect SOP to be related to health-related behaviours in a manner similar to conscientiousness. Moreover, one would particularly expect SOP to be negatively associated with health-risk behaviours, such as risky alcohol consumption, given that achievement striving (a central component of SOP) also shares a negative relationship with health-risk behaviours (Simons, Christopher, & McLaury, 2005).

However, results have not been consistent in this area. For instance, among a relatively small sample of psychiatric patients, Hewitt and Flett (1991b) found that SOP was positively associated with alcohol abuse among men; OOP was positively associated with drug abuse, and

SPP was positively associated with alcohol abuse among women. These findings are in line with Bulik et al. (2004) who also reported a positive relationship between perfectionism and alcohol use disorders. Collectively, it appears that while SPP continues to embody the pathological features of perfectionism, the desirability of SOP and OOP remains elusive when studying health-related behaviours. Clearly, more research is needed to address these relationships because the research to date has only examined a limited number of health-related behaviours and has primarily focused on young and healthy women (see Hewitt & Flett, 1991b for an exception).

In this work, a theoretically-based five-pathway model of health and well-being was tested (see Figure 1). Based on the literature review the following hypotheses were tested. First, SPP was posited to be related to higher levels of perceived stress and health-risk behaviours, and to lower levels of SES, perceived support, and health-promotion behaviours, which, in turn, were expected to be related to lower levels of health and well-being. Second, OOP was expected to be unrelated to health and well-being because it involves an external focus on other's shortcomings rather than shortcomings of the self. Therefore, although a possible link between OOP and health was explored, it was not part of the hypothesized model because there is neither any theoretical rationale nor empirical evidence relating OOP directly to health or well-being. Finally, while SOP was postulated to be associated with each of the proposed mediators, and with health and well-being, the direction of the relationships (apart from a positive relationship between SOP and SES) was not hypothesized a priori due to the lack of consistency in the literature.

This research contributes to the literature in several important ways. First, while both theory and the existing research literature implicate these multiple pathways, researchers have

not tested the association between perfectionism and health through the combined effects of stress, socioeconomic status, social support, and health-related behaviours. This step is crucial to explicating the processes by which perfectionism and health are associated. Indeed, although theoretically distinguishable, the socioeconomic, stress, social support, and health-related behaviour pathways cannot be presumed to be empirically independent. For instance, greater social support is related to lower levels of appraised stress (Cohen & Wills, 1985; Thoits, 1995), while social support is positively related to SES and to positive health-related behaviours (Gallo, Bogart, Vranceanu, & Matthews, 2005; Katapodi, Facione, Miakowski, Dodd, & Waters, 2002; McNicholas, 2002). Therefore, given the expected correlations among pathways, and consistent with theories regarding perfectionism, a simultaneous test of all five pathways is needed to compare the relative importance of these processes. The current study is a first step in this direction. Second, each of the models was tested with the inclusion of higher-order personality traits that have been shown to be relevant both in terms of perfectionism and health, which once again assesses the value of perfectionism in terms of its predictive utility.

Method

Participants and Procedure

Please see Study One.

Measures

Perfectionism. As in Study One, Hewitt and Flett's (1991b) Multidimensional Perfectionism Scale (MPS-HF) was employed in this study.

SWB. Please refer to Study One for details regarding the specific measures that were employed. Rather than use a composite variable, as in Study One, SWB was assessed via a latent variable approach. The use of latent variables is highly desirable, as "the isolation of concepts (i.e. SWB in this case) from uniqueness and unreliability of their indicators increases the probability of detecting association and obtaining estimates of free parameters close to their population values" (Hoyle, 1995, p.14). Further, research has demonstrated that it is important to examine both common- and specific-component variance with regard to SWB (e.g., Busseri, Sadava, & DeCourville, 2007). A latent variable approach allowed the relationship between perfectionism and the common variance among the SWB components to be tested, while also permitting the relationship between perfectionism and each of the specific components of SWB (i.e., LS, PA, and NA) to be examined, which helps to address this important issue.

Mental health. Each of the four subscales of the SF-36v1 that assess mental health was used to create a latent variable for general mental health: mental health, role-emotional, social functioning, and energy-vitality. Details regarding the SF-36v1 can be found in Study One.

Physical health. Please refer to Study One for details regarding the specific measures that were employed. In the absence of a commonly accepted "gold standard" for the

measurement of self-reported health, it is necessary to adopt a multi-measurement strategy,

and to eschew assumptions of equivalence amongst number of days sick in bed, health

symptoms, and the SF-36v1 subscales for physical health. Therefore, common variance amongst

these measures was sought by developing a latent variable measurement model (see Newcomb &

Bentler, 1987).

Personality. As in Study One, Saucier's 40-item 'Minimarkers' measure of personality

was employed. See Study One for details regarding this measure.

Socioeconomic status. Socioeconomic status (SES) was assessed via personal income.

Participants were asked to report their household income on a scale ranging from 1 *(under*

$5000) to 12 *($100 000 or more)*.

Social support. Social support was assessed via The Social Support Questionnaire (SSQ;

Sarason, Levine, Basham, & Sarason, 1983), which asks respondents to list up to nine

individuals, using initials and putting the relationship in parentheses, on which they can call in

various situations. The instructions were: "list all the people you know, excluding yourself,

whom you can count on for help or support in the manner described." In addition, for each item

respondents indicated their degree of satisfaction with support on a six-point scale from 1 *(very*

dissatisfied) to 6 *(very satisfied)*. The instructions were: "tell us how satisfied you are with the

overall support you have." Social support network (SSN) was obtained by summing the number

of persons listed as potential supports across items. Social support satisfaction (SSS) was

obtained by averaging across the six satisfaction ratings. Higher scores indicate larger perceived

support networks and higher levels of satisfaction with the perceived availability of social

support respectively. Sarason et al. (1983) reported that the coefficient alpha for social support

network was .97 while the value for social support satisfaction was .94. Test-retest

correlations of .90 were reported for social support network and .83 for social support

satisfaction over an interval of four weeks. Both social support network and satisfaction were

used to create a latent variable for perceived social support with higher scores indicating higher

levels of perceived support.

Stress. Stress was assessed with two items created for the purposes of the present

research. The first item asked respondents "On average, how often do you become stressed and

tense in a one-week period?" This item was rated along a 5-point Likert scale ranging from 0

(*never*) to 4 (*everyday*). The second item asked "Would you describe your life in general as: 3 =

very stressful, 2 = fairly stressful or 1 = *not at all stressful.*" Items were standardized and

averaged to form a composite measure of self-perceived stress. Higher scores indicate higher

levels of perceived stress.

Health behaviours. An inventory consisting of 25 Likert-scale items ranging from 1

(*never*) to 5 (*very often*) commonly used in health behavior research (e.g., Berkman & Breslow,

1983) was created. The content of the items dealt with the frequency of engaging in the

following behaviors: smoking, drinking alcohol, using marijuana and illicit drugs, exercising,

caring for personal hygiene, managing stress, getting medical checkups, controlling weight,

eating nutritiously, getting dental care, and driving. Two summary scores were computed. A

health risk variable was computed by counting each of the health-risk items that were endorsed

(e.g., consuming alcohol, using marijuana, driving while tired). Likewise, a health-promotion

variable was created by counting each of the health-promotion items that were endorsed (e.g.,

seeing a physician when ill, getting strenuous exercise). All items were scored so that higher

scores indicate more frequently engaging in negative and positive health-related behaviors, respectively.

Data Analytic Approach

First, preliminary analyses were conducted to determine measurement and sample characteristics: Descriptive statistics (e.g., mean, standard deviation, range, skewness, and kurtosis), frequency analyses, and distributions (histograms) of both the single-item and composite variables were generated to detect nonnormality, outliers, heterogeneity of variance and to verify that the data were entered accurately. If outliers were present on composite scores, they were changed to a value of three standard deviations, while maintaining their ordinal status. Non-normal distributions were transformed accordingly.

Correlation matrices were also examined to investigate the relationships among the variables and, more specifically, to identify multicollinearity. Identifying multicollinearity is necessary when conducting structural equation modeling because it can cause a sample covariation matrix to be 'non-positive definite' which renders the data nonanalyzable (Kline, 1998). Multivariate multicollinearity was also evaluated by calculating multiple squared correlations, between each variable and all of the other variables of interest. Bivariate correlations greater than .85 were used to indicate multicollinearity and multiple squared correlations greater than .90 were utilized to identify multivariate multicollinearity (Kline, 1998).

Using AMOS version 17 (Arbuckle, 2008) software, Structural Equation Modeling (SEM) was utilized to test the conceptual model displayed in Figure 1. Specifically, SEM was conducted in two phases, as recommended by Kline (1998). In the first phase of analyses, confirmatory factor analyses (CFA) were carried out to determine the adequacy of fit to the data

for the proposed measurement models of physical health, mental health, SWB, social

support, and stress. In the second phase of analyses, path analysis was used to test the structural

model.

The two-step procedure was employed based on the following reasoning: If one tests the

measurement models and the structural model simultaneously and a poor fit is indicated by the

results, the researcher is in a quandary, as he or she will not know if the poor fit is a result of

misspecification of the measurement models, the structural model, or perhaps, both (Kline,

1998). Thus, the entire structural model was specified as a set of measurement models and each

was evaluated for its 'goodness of fit'. When each measurement model was tested and adequate

fit was achieved, the complete structural model was tested and its goodness of fit was evaluated.

By utilizing the two-step procedure, results from the final model indicating a poor fit could be

attributed to misspecification of the structural model.

Mardia's (1970) test of multivariate kurtosis was used to assess normality for each model.

Results were statistically significant (kurtosis values ranging from 22.79, critical value = 11.71,

to 41.56, critical value = 17.96) indicating non-normality at the multivariate level. To address the

issue of multivariate non-normality with our relatively large sample sizes, parameter estimation

was conducted with bootstrapping procedures (Efron & Tibshirani, 1993), as studies have

demonstrated that bootstrapping procedures produce more accurate estimates than maximum

likelihood estimation when the data are not normally distributed at the multivariate level (e.g.

Enders, 2002; Nevitt & Hancock, 2001). One thousand bootstrap samples were drawn from the

original sample with replacement.

Model fit was assessed using the chi-square statistic, the comparative fit index (CFI), the root-mean-square error of approximation (RMSEA), pclose, and the standardized root mean square residual (SRMR). The chi square statistic (χ^2) tests the statistical significance of the difference between the just-identified version of the model (all parameters are free to vary) against the hypothesized version of the model (Kline, 1998). A good fit is indicated by a nonsignificant χ^2, whereas a significant χ^2 indicates that the fit of the hypothesized model is significantly worse than the just-identified model, which suggests an overall poor fit. However, the χ^2 statistic is very sensitive to sample size. Thus, it may not be reliable for large sample sizes because it causes an increase in Type I errors with large sample sizes (Tabachnick & Fidell, 2001). Therefore, a variety of other fit indices were consulted to assess model fit.

The CFI assesses the fit of the hypothesized model by indicating the proportion of improvement of the hypothesized model over the null model, in which the variables are independent (Tabachnick & Fidell, 2001). The CFI varies between 0 and 1, where values of .90 or greater indicate adequate fit (Hu & Bentler, 1995). The RMSEA estimates the lack of fit in the hypothesized model compared to a completely saturated model. The RMSEA is bounded by 0 and will take on that value when a model exactly reproduces a set of observed data. A value of .05-.06 is indicative of close fit, a value of .08 is indicative of marginal fit, and values greater than .08 are indicative of poor fit (Browne & Cudeck, 1993). Pclose is a significance value for testing the null hypothesis that the population RMSEA is equal to zero (Browne & Cudeck, 1993). Nonsignificant values (i.e., p > .05) are therefore indicative of an adequate fit to the data. Finally, the SRMR represents the average differences between the sample variances and covariances and the estimated population variances and covariances. Values of the SRMR range

from 0 to 1.0 with values of .08 or less indicate a good-fitting model (Tabachnick & Fidell, 2001). When necessary, theory and modification indices guided model changes to achieve adequate fit.

One must also be aware that some elements of the model may not satisfactorily delineate specific correlations among the variables, despite the fact that the overall fit of the model is deemed acceptable. Thus, the squared multiple correlations of the endogenous variables were scrutinized for small values, as small values indicate that only a small proportion of the variance of the endogenous variable is explained by the other variables present in the model (Tabachnick & Fidell, 2001). Moreover, the standardized residuals were examined for large values, as large standardized residuals are representative of components of the model that do not adequately explain the associated observed correlation (Kline, 1998). Finally, the fit of particular components within the hypothesized model was evaluated by examining the significance of the hypothesized variances, covariances, and regression paths within the model.

Both total and specific indirect effects were assessed using the bias-corrected bootstrap method with Mplus version 5.2 software (Muthen & Muthen, 1998-2008). This method has been found to provide a more precise balance between Type 1 and Type 2 errors compared to other techniques employed to test indirect effects (MacKinnon, Lockwood, & Williams, 2004). One thousand bootstrap samples and the 95% bias-corrected confidence intervals (CIs) were utilized to test the statistical significance of indirect effects.

Finally, "specific effects" or "nonstandard effects" (Newcomb, 1994, p. 464; Newcomb & Rickards, 1995, p. 146) were assessed following recommendations by Newcomb (1994), such that direct paths from independent variables to the error variances of the indicator variables of

the endogenous latent factors were included when modification indices suggested their

inclusion and when they made sense conceptually. Specific effects were evaluated in the current

study because they not only allowed me to test the relations between the independent variable

(i.e., perfectionism) and the general outcome of interest (e.g., SWB), but also allowed me to

assess relationships between the independent variable and specific outcomes (e.g., unique

variance in positive affect not captured by the latent variable SWB). Studying specific effects

was deemed appropriate for the present study, because the endogenous latent constructs met

Newcomb's (1994) criteria for "Condition B, in which similar (but not identical) measured

variables are used to reflect the latent construct and in which it is possible to hypothesize a

specific or unique aspect of the indicator variables that is substantively different from the

common portion shared with the other indicators of the latent variable, but not truly error

variance" (Newcomb, 1994, p.464).

Unfortunately, the models could not be tested for possible sex differences because the

men's sample size in the student sample (n = 125) and especially in the chronically-ill sample (n

= 50) was too small to assess such complex models. For instance, results from MacCallum,

Browne, and Sugawara (1996) indicate that a sample size of at least 183 is required to test the

hypothesized model of perfectionism and physical health presented in Figure 8 that has 96

degrees of freedom, for not close fit with power of .80.
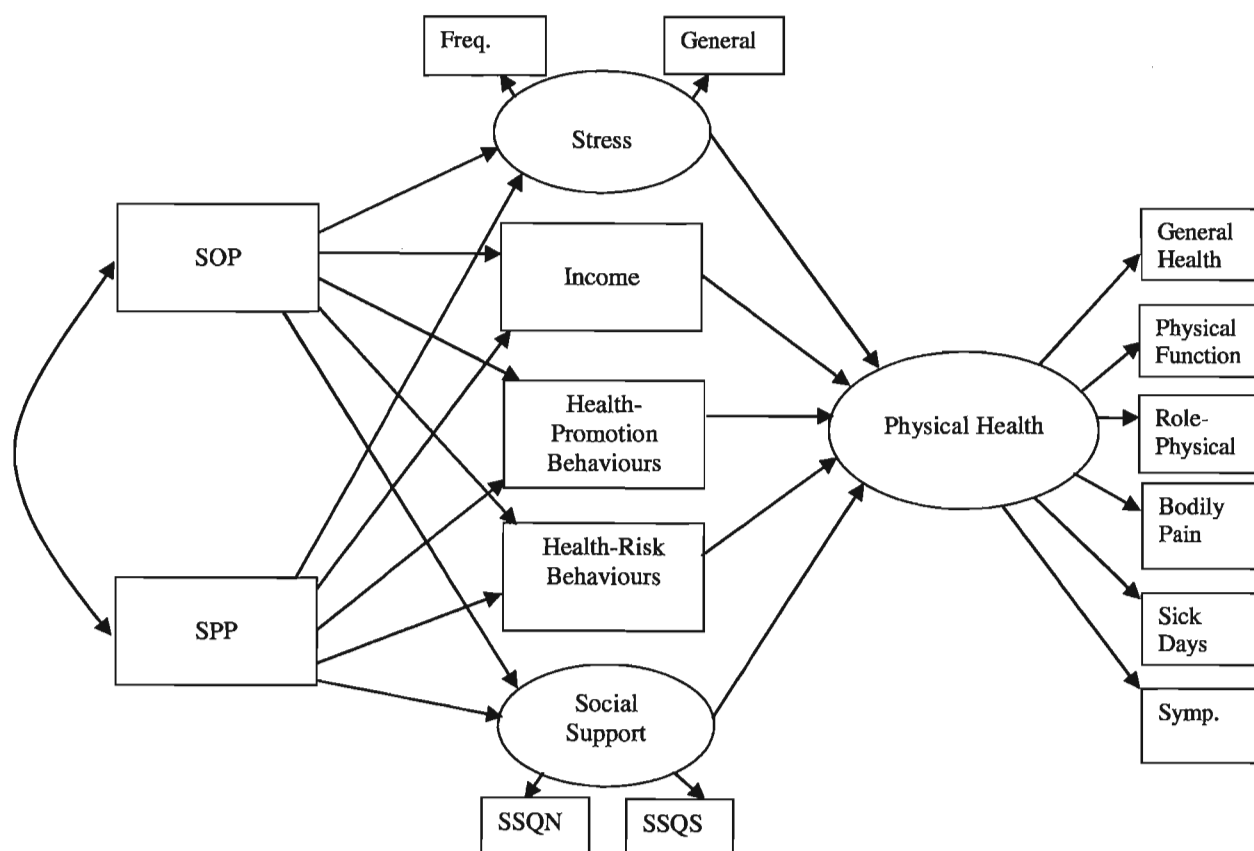
Figure 8. Hypothesized mediated model of perfectionism and physical health.
Note. The effects of respondents' sex, extraversion, conscientiousness, and neuroticism were accounted for in model testing, but are not shown here for ease of presentation. Error terms, disturbances, and covariances among the disturbances for the pathway variances are also not displayed for ease of presentation.
Note. SOP= self-oriented perfectionism; SPP= socially prescribed perfectionism; SSQN = size of social support network; SSQS = satisfaction with social support network; Freq. = frequency of experiencing stress per week; General = how stressful life is in general; Symp. = self-report health symptoms.

Another commonly used rule of thumb in the literature is that there should be at least 5 cases per estimated parameter (Bentler & Chou, 1987). Given that the hypothesized model has 94 distinct parameters to be estimated at least 470 cases would be required for accurate model testing. In either case, with only 125 men in the sample, multiple group analyses to test for

possible sex differences was not appropriate.[12] Given that multiple groups analyses could not

be performed to test for possible sex-related differences, respondents' sex was included in each

of the models and treated as a covariate so as to account for its effects in each model.

Results

Treatment of Missing Data and Outliers

A small number of participants in the student sample did not respond to all three of the

perfectionism subscale measures ($n = 6$) or to some of the health and well-being measures ($n = 5$)

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12 The models of interest for mental health and SWB were also unable to be tested for sex-related differences. For instance, in the case of the hypothesized model for mental health, results from MacCallum et al. (1996) specify that a sample size of at least 154 is required to test a model that has 79 degrees of freedom, for close fit with power of .80 and a sample size of at least 202 for not close fit with power of .80. Using the rule of thumb that requires 5 cases per estimated parameter (Bentler & Chou, 1987), a minimum sample size of 460 would be required for accurate model testing. In the case of the hypothesized model for SWB, a sample size of at least 231 is required to assess a model that has 44 degrees of freedom, for close fit with power of .80 and a sample size of at least 286 for not close fit with power of .80 (MacCallum et al., 1996). Further, following the requirement of at least 5 cases per estimated parameter (Bentler & Chou, 1987), a minimum sample size of 460 is necessary for precise model testing. In either case, with only 125 men in the sample, multiple group analyses to test for possible sex differences was untenable.

and were thus removed from further analyses. An additional participant, who was a multivariate outlier with regards to health and well-being, was also removed from subsequent analyses based on a large z-score (i.e., greater than |3|) and a significant Mahalanobis distance score ($p < .001$). Thus, the final student sample consisted of 538 participants ($n = 413$ women).

Overall, 87% of the participants in the student sample had complete data and all participants had at least 80% of the data complete. Participants were missing information on less than one variable on average ($SD = .52$). Results of independent sample t-tests indicated that students with complete data did not differ from those with incomplete data except for three variables: SOP ($t_{536} = -2.09$, $p = .04$, $d = -.18$), SPP ($t_{536} = -2.04$, $p < .04$, $d = -.18$), and daily stress ($t_{78.28} = -2.35$, $p = .02$, $d = -.20$). These results suggest that those with complete data were more perfectionistic and had higher levels of stress compared to those with incomplete data. However, the effect sizes were relatively small, indicating that the differences were minor.

A small number of participants in the chronically-ill sample did not respond to all three of the perfectionism subscale measures ($n = 18$) or to some of the health and well-being measures ($n = 3$) and were thus removed from further analyses. Two additional participants from the chronically-ill sample were also removed from subsequent analyses because they were deemed to be multivariate outliers on measures of health and well-being based on the criteria listed above. Therefore, the final chronically-ill sample consisted of 773 participants ($n = 723$ women).

Overall, 67% of the participants in the chronically-ill sample had complete data while the vast majority of participants (98.8%) had at least 81% of the data complete with participants, on average, missing information on less than one variable ($SD = .57$). Results of independent t-tests

revealed that there were some differences between those with complete data versus not, such that those with incomplete data reported lower levels of conscientiousness (t_{769} = 3.12, p <.05, d = .23), larger social support networks ($t_{468.01}$ = -2.14, p <.05, d = -.20), lower levels of SOP (t_{763} = 3.23, p <.05, d = .23), lower levels of physical functioning ($t_{561.13}$ = 3.00, p <.05, d = .25), lower levels of general health ($t_{602.39}$ = 2.50, p <.05, d = .20), lower levels of role-functioning ($t_{623.28}$ = 2.47, p <.05, d = .20), lower levels of energy and vitality (t_{771} = 2.17, p <.05, d = .16), less personal income ($t_{527.90}$ = 5.76, p <.05, d = .50), and more days sick in bed (t_{635} = -2.13, p <.05, d = -.17). These results indicate that those with complete data were in better physical health, had more personal income, and were more perfectionistic than those with incomplete data. However, with the exception of personal income, the effect sizes were relatively small, suggesting that the majority of the differences between the two groups were minor. All missing values were imputed using the expectation maximum (EM) algorithm in SPSS based on all available data for each individual, as empirical research has clearly demonstrated that this method is preferential to more conventional methods including listwise deletion, pairwise deletion, and mean substitution (see Schafer & Graham, 2002).

Descriptive Information

Descriptive information regarding group differences on all study variables is presented in Table 16. It is clear from Table 16 that the two samples were quite distinct, differing on all model variables, with the exceptions of SPP and neuroticism. Generally speaking, the student sample was more extraverted, conscientious, and perfectionistic than the chronically-ill sample.

The students were also healthier and more satisfied with their lives compared to the

chronically-ill sample. Moreover, the students reported higher levels of perceived social support

and lower levels of stress than the chronically-ill sample. Finally, the students reported engaging

in more health-promotion behaviours and fewer health-risk behaviours compared to the

chronically-ill sample.

Table 16

Group comparisons on all study variables

	Student Sample			Chronically-Ill Sample					
	Mean	SD	α	Mean	SD	α	t	df	Cohen's *d*
SOP	69.72	15.28	.91	66.97	19.14	.92	-2.89*	1284.63	-.16
SPP	53.60	12.93	.85	53.92	16.64	.88	.39	1293.07	.02
Extraversion	5.88	1.36	.83	5.02	1.53	.82	-10.73**	1233.37	-.61
Conscientiousness	6.67	1.18	.80	6.42	1.40	.82	-3.55**	1261.96	-.20
Neuroticism	4.74	1.36	.80	4.88	1.49	.80	1.71	1218.41	.10
Physical Functioning SF-36	52.50	9.30	.95	32.24	10.16	.90	-37.36**	1216.13	-2.14
Role-Physical SF-36	50.75	9.07	.84	30.87	6.38	.73	-43.85**	897.20	-2.93
Bodily Pain SF-36	52.75	9.23	r = .78	32.55	8.83	r = .77	-39.69**	1122.45	-2.37
General Health SF-36	50.21	10.02	.81	30.46	8.92	.76	-36.71**	1066.47	-2.25
Energy-Vitality SF-36	46.71	9.39	.81	30.96	7.84	.80	-31.91**	1017.59	-2.00
Social Functioning SF-36	48.37	9.91	r = .63	30.06	11.27	r = .70	-31.11**	1240.22	-1.77
Role-Emotional SF-36	45.00	12.89	.85	38.64	13.83	.85	-8.53**	1204.41	-.49

	Mean	SD	α	Mean	SD	α	t	df	d
Mental Health SF-36	45.99	10.76	.81	40.05	12.83	.86	-9.08**	1264.47	-.51
Symptom Count	12.58	4.54	.91	17.91	2.23	.86	25.16**	717.86	1.88
Sick Days	5.41	1.43	single item	3.62	2.45	single item	-16.61**	1273.53	-.93
Depression	17.46	10.83	.93	28.15	11.46	.92	16.98**	1309	.94
Positive Affect	36.64	5.98	.89	31.38	7.04	.89	-14.55**	1258.41	-.82
Negative Affect	22.56	6.55	.87	25.73	8.11	.91	7.79**	1280.42	.44
Life Satisfaction	24.91	6.19	.90	16.23	7.64	.88	-22.66**	1279.45	-1.27
On average how stressful life is	1.49	1.00	single item	2.06	1.18	single item	9.53**	1261.50	.54
How often feel stress in a week	1.92	.55	single item	2.01	.64	single item	2.74*	1248.19	.16
Personal Income	1.43	.60	single item	3.78	2.50	single item	25.18**	1309	1.39
Social Support Network Size	5.60	2.06	.91	3.78	2.20	.92	-15.10**	1309	-.84
Social Support Satisfaction	5.29	.80	.92	4.39	1.47	.95	-14.32**	1247.05	-.81
Positive Health Behaviour Count	8.49	2.14	.65	5.61	2.24	.65	-23.29**	1309	-1.29
Health Risk Behaviour Count	6.17	2.16	.67	10.33	.94	.54	42.03**	679.16	3.23

Note. $N = 538$ student sample, $N = 773$ chronically ill sample. ** $p < .001$, * $p < .01$.

Note. The sick days variable was recoded so that higher scores are indicative of better health. On average students reported missing work or school between 4-6 days over the past 2 years while the chronically ill sample reported missing work or school due to illness between 7-9 days.

Note. In this table the student sample results were computed using the norms for the general American population, as presented in Ware et al. (1993) for comparison purposes.

Note. SOP = self-oriented perfectionism; SPP = socially prescribed perfectionism.

Concerning within sample differences, results from independent sample *t*-tests revealed that there were some sex differences with regards to model variables in the student sample. For instance, women were more conscientious ($t_{536} = 3.77$, $p < .001$, $d = .33$) than men. Further, women reported being stressed more frequently ($t_{222.42} = 5.29$, $p < .001$, $d = .71$), and perceived their lives to be generally more stressful ($t_{178.86} = 3.78$, $p < .001$, $d = .57$) compared to men. Although men reported experiencing more bodily pain ($t_{536} = -2.28$, $p = .02$, $d = -.20$), engaging in fewer health-promotion behaviours ($t_{536} = 2.23$, $p = .03$, $d = .19$), and engaging in more health-risk behaviours ($t_{187.06} = -3.65$, $p < .001$, $d = -.53$), they generally reported better health, such that they reported higher levels of general health ($t_{536} = -2.33$, $p = .02$, $d = -.20$), more energy ($t_{536} = -2.61$, $p = .01$, $d = -.23$), better social functioning ($t_{536} = -2.19$, $p = .03$, $d = -.19$), and better

emotional functioning ($t_{226.06} = -2.37$, $p = .02$, $d = -.32$), as measured by the SF-36, compared to women. There were no other sex-related differences.

Concerning the chronically-ill sample, one-way ANOVAs were conducted to determine whether any of the study variables differed as a function of citizenship status. Results revealed only three significant differences, that were small in magnitude. First, Canadians reported having higher levels of conscientiousness compared to Americans ($F_{3,739} = 3.23$, $p = .02$, $\eta^2 = .01$). Second, Canadians reported having more energy/vitality than Americans ($F_{3,739} = 3.67$, $p = .01$, $\eta^2 = .02$). Finally, British citizens reported poorer physical functioning compared to Canadians and Americans ($F_{3,739} = 4.23$, $p = .01$, $\eta^2 = .02$).

The Student Sample

Correlational analyses. As expected, SOP was positively associated with SPP. Further, higher levels of SOP were related to higher levels of conscientiousness, neuroticism, positive affect, negative affect, and stress (see Table 17). SOP was also associated with lower levels of energy/vitality and with less engagement in health-risk behaviours. Thus, the complexity of SOP is clearly understood at the level of zero-order correlations, as it was associated with both positive (e.g., positive affect, conscientiousness) and negative (e.g., stress) correlates. As expected, SPP was consistently associated with undesirable characteristics, such as poorer physical and mental health, less engagement in health-promotion behaviours, lower levels of social support and life satisfaction, higher levels of stress and neuroticism, and lower levels of

conscientiousness and extraversion. In terms of the broader personality traits, extraversion and conscientiousness tended to be linked with positive attributes and outcomes, such as better physical and mental health, higher levels of social support, higher levels of life satisfaction, more engagement in health-promotion behaviours, and lower levels of stress (in the case of extraversion). As anticipated, neuroticism was related to negative attributes and outcomes, such as poorer physical and mental health, lower levels of social support and life satisfaction, less engagement in health-promotion behaviours, more involvement in health-risk behaviours, and higher levels of stress. The size of the social support network was associated with engaging in more positive health-related behaviours and lower levels of stress, while satisfaction with social support network was associated with less stress. Personal income was positively related to the size of one's social support network and to health-risk behaviours. Generally speaking, the correlations among the pathway variables were in the small to moderate range

Table 17

Bivariate Correlations Between all Model Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1. SOP	1	.52*	-.11*	.15*	.24*	-.03	-.02	-.11*	-.07	-.03	-.07*	-.11*	-.21*	-.17*	-.02	.25*	.00	.28*	-.01	-.16*	-.10*	-.09*	.05	.13*	.20*	.20*
2. SPP	.35*	1	-.21*	-.12*	.37*	-.09*	-.07	-.15*	-.13*	-.10*	-.14*	-.26*	-.35*	-.24*	-.05	.45*	-.23*	.43*	-.20*	-.41*	-.41*	-.16*	.15*	.06	.32*	.34*
3. EXTRA	.02	-.12*	1	.17*	-.27*	.05	.03	-.01	.08*	.22*	.13*	.13*	.26*	.12*	-.01	-.31*	.43*	-.28*	.16*	.22*	.18*	.12*	-.04	.03	-.19*	-.11*
4. CONSC	.35*	-.11*	.12*	1	-.31*	.11*	.06	.11*	.15*	.10*	.08*	.21*	.23*	.16*	.02	-.29*	.37*	-.31*	.14*	.13*	.10*	.24*	-.16*	.17*	-.17*	-.10*
5. NEUROT	.13*	.33*	-.18*	-.23*	1	-.08*	-.09*	-.13*	-.26*	-.16*	-.18*	-.28*	-.52*	-.30*	-.06	.55*	-.40*	.67*	-.30*	-.32*	-.31*	-.23*	.23*	-.04	.47*	.36*
6. PF-36	-.01	-.11*	.14*	.11*	-.15*	1	.42*	.47*	.48*	.44*	.55*	.21*	.25*	.52*	.14*	-.26*	.20*	-.23*	.37*	.11*	.17*	.27*	.08*	.28*	-.18*	-.15*
7. RP-36	-.05	-.15*	.13*	.10*	-.12*	.21*	1	.43*	.37*	.42*	.47*	.26*	.22*	.46*	.19*	-.21*	.15*	-.15*	.26*	.10*	.16*	.01	.00	.11*	-.14*	-.11*
8. BP-36	-.01	-.20*	.18*	.17*	-.20*	.24*	.46*	1	.39*	.39*	.45*	.29*	.29*	.58*	.10*	-.33*	.16*	-.23*	.24*	.14*	.18*	.21*	-.06	.17*	-.19*	-.20*
9. GH-36	-.02	-.25*	.21*	.22*	-.34*	.25*	.32*	.48*	1	.47*	.51*	.22*	.36*	.60*	.29*	-.38*	.32*	-.33*	.41*	.18*	.26*	.25*	-.02	.18*	-.29*	-.26*
10. EV-36	-.10*	-.27*	.31*	.15*	-.38*	.14*	.37*	.40*	.48*	1	.54*	.23*	.36*	.55*	.20*	-.36*	.41*	-.23*	.37*	.18*	.23*	.25*	-.01	.14*	-.26*	-.20*
11. SF-36	-.06	-.29*	.15*	.17*	-.32*	.19*	.50*	.52*	.43*	.50*	1	.32*	.39*	.55*	.28*	-.41*	.30*	-.31*	.46*	.24*	.29*	.19*	.01	.17*	-.23*	-.22*
12. RE-36	-.05	-.26*	.11*	.18*	-.29*	.11*	.51*	.32*	.34*	.46*	.60*	1	.56*	.39*	.00	-.53*	.30*	-.45*	.28*	.25*	.25*	.19*	-.15*	.07*	-.34*	-.28*
13. MH-36	-.07	-.35*	.29*	.22*	-.51*	.19*	.31*	.32*	.45*	.59*	.60*	.48*	1	.46*	.07	-.78*	.52*	-.72*	.48*	.42*	.40*	.35*	-.19*	.08*	-.58*	-.47*
14. SYMP	-.06	-.30*	.24*	.18*	-.38*	.26*	.45*	.60*	.60*	.61*	.58*	.44*	.56*	1	.18*	-.53*	.31*	-.45*	.40*	.21*	.28*	.23*	-.10*	.19*	-.34*	-.30*
15. S-DAYS	.05	-.06	.09*	.20*	-.20*	.20*	.25*	.33*	.42*	.33*	.29*	.25*	.23*	.48*	1	-.11*	.08*	-.03	.14*	.11*	.11*	.02	-.05	-.11*	-.11*	-.08*
16. DEP	.04	.43*	-.35*	-.28*	.52*	-.20*	-.39*	-.42*	-.51*	-.63*	-.64*	-.54*	-.80*	-.68*	-.30*	1	-.57*	.74*	-.51*	-.47*	-.50*	-.33*	.22*	-.10*	.53*	.43*
17. PA	.29*	-.17*	.45*	.38*	-.34*	.12*	.14*	.24*	.36*	.43*	.29*	.27*	.46*	.35*	.24*	-.54*	1	-.47*	.40*	.33*	.30*	.30*	-.10*	.15*	-.33*	-.20*
18. NA	.10*	.41*	-.33*	-.27*	.63*	-.17*	-.25*	-.33*	-.44*	-.47*	-.45*	-.35*	-.62*	-.51*	-.18*	.67*	-.36*	1	-.41*	-.37*	-.38*	-.28*	.17*	-.08*	.61*	.47*
19. LS	.02	-.34*	.34*	.22*	-.43*	.17*	.25*	.27*	.45*	.47*	.46*	.41*	.64*	.46*	.27*	-.66*	.56*	-.51*	1	.38*	.46*	.22*	-.04	.19*	-.32*	-.32*
20. SSQN	.01	-.24*	.27*	.11*	-.31*	.16*	.15*	.15*	.24*	.35*	.27*	.21*	.32*	.26*	.12*	-.36*	.36*	-.31*	.39*	1	.62*	.24*	-.16*	.04	-.25*	-.26*
21. SSQS	-.02	-.26*	.29*	.12*	-.28*	.03	.13*	.19*	.30*	.31*	.32*	.28*	.39*	.26*	.12*	-.45*	.41*	-.35*	.50*	.50*	1	.20*	-.13*	.04	-.29*	-.36*
22. PHB	-.01	-.14*	.14*	.15*	-.20*	.09*	.08	.13*	.30*	.33*	.17*	.18*	.26*	.17*	.10*	-.27*	.29*	-.24*	.35*	.18*	.14*	1	-.13*	.08*	-.21*	-.24*
23. HRB	-.12*	.02	.08	-.20*	.16*	-.09*	-.07	-.13*	-.10*	-.07	-.10*	-.04	-.17*	-.20*	-.09*	.21*	-.14*	.18*	-.10*	.00	-.07	-.06	1	.07*	.17*	.11*
24. INCOME	.04	.05	.09*	.04	.06	.01	-.07	.04	-.01	-.02	-.07	-.02	-.05	-.02	.05	.05	.00	-.01	-.03	-.10*	-.03	.00	.11*	1	-.08*	.02
25. STRS-F	.18*	.33*	-.17*	-.06	.45*	-.10*	-.20*	-.31*	-.37*	-.52*	-.44*	-.38*	-.52*	-.54*	-.22*	.53*	-.30*	.50*	-.44*	-.23*	-.31*	-.18*	-.02	.02	1	.59*
26. STRS-A	.27*	.30*	-.14*	.05	.36*	-.08	-.14*	-.21*	-.27*	-.43*	-.31*	-.27*	-.38*	-.39*	-.18*	.38*	-.16*	.41*	-.34*	-.20*	-.17*	-.17*	-.05	.03	.51*	1

Note: * p <.05, n = 538 student sample, n = 773 chronically ill sample.

Note: Correlations for the chronically ill sample are presented in the upper-right diagonal and the correlations for the student sample are presented in the lower-left diagonal.

Note: SOP: self-oriented perfectionism, SPP: socially prescribed perfectionism, EXTRA: extraversion, CONSC: conscientiousness, NEUROT: neuroticism, PF-36: physical functioning subscale of the SF-36, RP-36: role-physical subscale of the SF-36, BP-36: bodily pain subscale of the SF-36, whereby higher scores reflect less pain and better health, GH-36: general health subscale of the SF-36, EV-36: energy-vitality subscale of the SF-36, SF-36: social functioning subscale of the SF-36, RE-36: role-emotional subscale of the SF-36, MH-36: mental health subscale of the SF-36, SYMP: mean symptom score, whereby higher scores reflect better health, S-DAYS: number of sick days whereby higher scores reflect better health, DEP: depression, PA: positive affect, NA: negative affect, LS: life satisfaction, SSQN: size of social support network, SSQS: social support satisfaction, PHB: positive health-related behaviours, HRB: health-risk behaviours, INCOME: personal income, STRS-F: how often stressed in a one-week period, STRS-A: how stressful life is on average.

Analyses of the structural models.

Measurement models. Before examining the structural relationships among variables, a measurement model was tested to ensure that the latent variables were properly specified. Specifically, the items of physical health, social support, and stress were analyzed with CFA, allowing the latent factors to be correlated. Based on criteria for model fit, this model fit the data reasonably well ($\chi^2_{(32)} = 93.85$, $p < .001$, CFI = .96, RMSEA = .06, $p_{close} = .11$, SRMR = .04). However, inspection of the standardized residual covariance matrix suggested that there was a problem with the model, such that the standardized residuals between bodily pain and role physical - both indicators of physical health - exceeded the absolute value of 2. Further, modification indices revealed that model fit would be greatly improved by the inclusion of a covariance between the error terms for bodily pain and role physical. Since the addition of a covariance between these variables made sense theoretically, it was included in the measurement model and a chi-square difference test indicated significant improvement in model fit ($\chi^2_{diff(1)} = 20.58$, $p < .05$, ΔCFI = .01, ΔRMSEA = .01). All parameter estimates for the final measurement model were statistically significant and in the expected direction.

A second measurement model including the items of mental health, social support, and stress were analyzed with CFA, allowing the latent variables to be correlated. Results revealed that this model did not fit the data well ($\chi^2_{(24)} = 109.55$, $p < .001$, CFI = .96, RMSEA = .08, $p_{close} < .001$, SRMR = .04). Examination of the standardized residual covariance matrix and modification indices revealed that a covariance between the error terms for social functioning and role emotional - both indicators of mental health - should be included to improve model fit.

Indeed, results of a chi-square difference test indicated that model fit was significantly improved by the addition of this covariance and criteria for model fit suggested that this model fit the data well ($\chi^2_{diff(1)}$ = 51.66, p < .05, ΔCFI = .02, ΔRMSEA = .03). All parameter estimates for the final measurement model were statistically significant and in the expected direction.

Finally, a measurement model including the items of social support, stress, and SWB was tested with CFA. Based on criteria for model fit, this model did not fit the data well ($\chi^2_{(11)}$ = 63.81, p < .001, CFI = .95, RMSEA = .10, p_{close} = .001, SRMR = .05). Inspection of the standardized residual covariance matrix and modification indices indicated that a covariance between the error terms for positive and negative affect and a covariance between the disturbance for the latent construct stress and the error term for negative affect should be included in the model. Inclusion of these covariances significantly improved model fit (i.e., $\chi^2_{diff(2)}$ = 44.41, p < .05, ΔCFI = .04, ΔRMSEA = .05) and resulted in a well fitting model ($\chi^2_{(9)}$ = 19.40, p = .02, CFI = .99, RMSEA = .05, p_{close} = .54, SRMR = .02). All parameter estimates for the final measurement model were statistically significant and in the expected direction.

Structural models.

Physical health. A main effects model was tested to determine whether perfectionism had incremental predictive utility with regards to physical health when broader personality traits related to both perfectionism and physical health (i.e., extraversion, neuroticism, and conscientiousness) and respondents' sex were included in the model. Specifically, the effects of extraversion, conscientiousness, neuroticism, and respondents' sex were accounted for in the model by allowing correlations between each of these constructs and each of the perfectionism dimensions and by allowing a path from each of these variables to physical health. Based on

criteria for model fit, this model provided an adequate fit to the data ($\chi^2_{(38)}$ = 60.27, p = .01, CFI = .98, RMSEA = .03, p_{close} = .97, SRMR = .03) and estimation for all 1,000 individual bootstrap samples yielded convergence and meaningful solutions. Concerning the broader personality dimensions, extraversion and conscientiousness were each positively associated with physical health (β = +.18 and β = +.17, respectively) while neuroticism was negatively associated with physical health (β = -.26). Respondents' sex was positively associated with physical health indicating that men reported better physical health than women (β = +.20). SPP was associated with lower levels of extraversion (β = -.12) and conscientiousness (β = -.11) and with higher levels of neuroticism (β = +.33). SOP was related to higher levels of conscientiousness (β = +.35) and neuroticism (β = +.13) and was unrelated to extraversion. Central to the current study, SPP was negatively associated (β = -.19) with physical health when extraversion, neuroticism, and conscientiousness were included in the model. The association between SOP and physical health was not statistically significant.

The conceptual model depicted in Figure 1 with physical health as the outcome of interest and accounting for respondents' sex, extraversion, conscientiousness, and neuroticism was then tested. Goodness of fit indices revealed that the structure of our hypothesized model provided an acceptable explanation of the data (i.e., $\chi^2_{(96)}$ = 184.22, p < .001, CFI = .96, RMSEA = .04, p_{close} = .94, SRMR = .03) and estimation for all 1,000 individual bootstrap samples yielded convergence and meaningful solutions. As recommended by Holmbeck (1997), two models were contrasted to test for mediation: a model in which the link between perfectionism and physical health was fully mediated by social support, personal income, health-promotion behaviours, health-risk behaviours, and stress and a partially mediated model which included both direct and

indirect effects from perfectionism to physical health. Holmbeck (1997) contended that

mediation is demonstrated when the partially mediated model does not significantly improve the

fit of the fully mediated model. No significant differences were found between the fully

mediated model and a partially mediated model in which direct paths from SOP and SPP to

physical health were included (i.e., $\chi^2_{\text{diff}(2)} = 1.18$, $p > .05$) and the direct paths from each

perfectionism dimension to physical health were not found to be statistically significant. Overall,

the final model depicted in Figure 9 accounted for 57% of the variance in physical health[13].

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[13] Although not depicted in Figure 9, as anticipated there were significant covariances among the pathway variables. Stress was negatively related to health-promotion behaviours (r = -.19) and to perceived social support (r = -.26). Personal income was positively related to health-risk behaviours (r = .09). None of the other covariances between pathway variables were statistically significant. Respondents' sex was positively associated with personal income (β = .10) and health-risk behaviours (β = .15) and was negatively associated with stress (β = -.22) and health-promotion behaviours (β = -.10). That is, men reported higher personal incomes and engaging in more health-risk behaviours and lower levels of stress and less engagement in health-promotion behaviours than women.
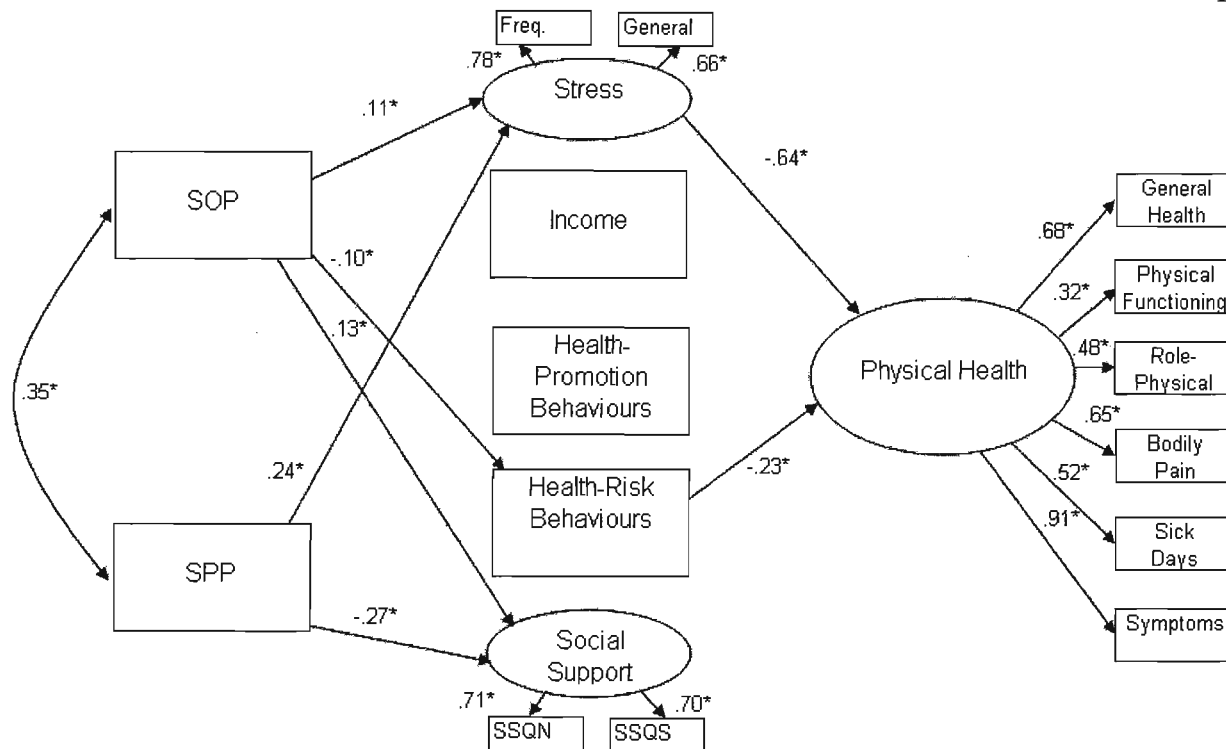
Figure 9. Final mediated model of perfectionism and physical health accounting for the effects of respondents' sex, extraversion, conscientiousness, and neuroticism.

Note. The effects of respondents' sex, extraversion, conscientiousness, and neuroticism were accounted for in model testing, but are not shown here for ease of presentation. Error terms, disturbances, and covariances among the disturbances for the pathway variances are also not displayed for ease of presentation. Only statistically significant paths are shown.

Note. SOP: self-oriented perfectionism; SPP, socially prescribed perfectionism; SSQN, size of social support network; SSQS, satisfaction with social support network; Freq., how often stressed in a one-week period; General, how stressful life is in general.

The significant parameter coefficients for the final model are depicted in Figure 9. With regard to the broader personality dimensions, extraversion shared significant positive associations with social support (B = +.31), income (B = +.10), health-promotion behaviours (B = +.09), and with health-risk behaviours (B = +.13), and was unrelated to stress. Extraversion also shared a direct positive association with physical health (B = +.11). Conscientiousness was negatively related to health-risk behaviours (B = -.12). A direct positive association between

conscientiousness and physical health was also observed ($B = +.18$). Finally, neuroticism was negatively associated with health-promotion behaviours ($B = -.15$) and social support ($B = -.30$). Neuroticism was also positively associated with stress ($B = +.45$) and health-risk behaviours ($B = +.18$). Neuroticism was not directly related to physical health.

Of central interest to the present study was the relationship between perfectionism and physical health. Specifically, SPP was found to be negatively associated with social support which, in turn, was not related to physical health in the present model. Results, however, supported the notion that SPP shared a significant and negative indirect association with physical health via stress ($B = -.16$; 95% CI $= -.25 - -.07$). Thus, the results provided clear evidence that SPP is a specific vulnerability factor for physical health, as a negative association between SPP and physical health was observed even after consideration of the effects of broader personality traits and respondents' sex. Findings further demonstrated that the relationship between SPP and physical health was completely mediated by stress.

SOP was positively related to social support which, in turn, was unrelated to physical health. SOP was also positively associated with stress, which, in turn, was negatively related to physical health and the specific indirect effect of SOP to physical health via stress was statistically significant ($B = -.09$; 95% CI $= -.17 - -.01$). Finally, SOP was also negatively related to health-risk behaviours which, in turn, was negatively related to physical health. However, the specific indirect effect of SOP to physical health via health-risk behaviours was not statistically significant ($B = .02$; 95% CI $= -.001 - .04$). Thus, when the effects of broader personality characteristics were taken into account SOP was also found to be a unique vulnerability factor for physical health via stress.

A four-pathway (i.e., personal income, health-promotion behaviours, health-risk behaviours, and social support) model in which stress was treated as a moderator of the model, which is line with diathesis-stress models of perfectionism, was then tested with multiple group analyses. This comparison allowed a test of whether stress is best conceptualized as a mediator or moderator of the relationship between perfectionism and health, an issue that has received considerable attention in the literature. Specifically, two groups were formed (i.e., a high stress and a low stress group) by using a median split on stress. Results of multiple group analyses indicated that the four-pathway model was not invariant with respect to perceived stress level, as the fully constrained model was significantly different from the fully unconstrained model (i.e., $\chi^2_{diff(59)} = 100.38$, $p < .05$). However, compared to the fully unconstrained model, there was not a significant decrement in model fit when the factor loadings (i.e., $\chi^2_{difference\ (6)} = 5.61$, $p > .05$; ΔCFI = .001; ΔRMSEA = .001) or structural path coefficients (i.e., $\chi^2_{difference\ (38)} = 51.26$, $p > .05$; ΔCFI = .009; ΔRMSEA = .001) were constrained to be equal. Thus, SOP was related to higher levels of social support and to lower levels of health-risk behaviours which, in turn, were both related to better health, in both the high and low stress groups. SPP was associated with lower levels of social support which, in turn, was related to poorer health in both the high and low stress groups. However, the final model did not appear to be invariant with respect to perceived stress in terms of error covariances (i.e., $\chi^2_{difference\ (59)} = 99.18$, $p < .05$; ΔCFI = .01; ΔRMSEA = .001) or measurement error (i.e., $\chi^2_{difference\ (79)} = 217.51$, $p < .05$; ΔCFI = .09; ΔRMSEA = .012).

In summary, when the effects of higher-order personality traits were taken into account, results demonstrated that SPP was associated with poorer health and that this association was

completely mediated by stress. Findings also showed that SOP was negatively associated with physical health via stress, when the effects of conscientiousness, neuroticism, and extraversion were taken into account.

Mental health. A main effects model was tested to determine whether perfectionism had incremental predictive utility with regard to mental health when respondent's sex and broader personality traits related to both perfectionism and mental health were included in the model (i.e., extraversion, neuroticism, and conscientiousness). Specifically, respondents' sex, extraversion, conscientiousness, and neuroticism were entered into the model by allowing correlations between each of these constructs and each of the perfectionism dimensions and by allowing a path from each of the broader personality variables and respondents' sex to mental health. Based on criteria for model fit, this model provided an adequate fit to the data ($\chi^2_{(28)} =$ 68.60, $p < .001$, CFI = .98, RMSEA = .05, p_{close} = .39, SRMR = .03) and estimation for all 1,000 individual bootstrap samples yielded convergence and meaningful solutions.

Regarding the higher-order personality dimensions, extraversion and conscientiousness were each positively associated with mental health ($\beta = +.23$ and $\beta = +.13$, respectively) while neuroticism was negatively associated with mental health ($\beta = -.40$). SPP shared a negative relationship with extraversion ($\beta = -.12$) and conscientiousness ($\beta = -.11$) and a positive relationship with neuroticism ($\beta = +.33$). SOP was positively associated with conscientiousness ($\beta = +.35$) and neuroticism ($\beta = .13$) and was unrelated to extraversion. Respondent's sex was not related to mental health. Central to the current study, a negative association ($\beta = -.28$) between SPP and mental health was observed when respondents' sex, extraversion, neuroticism,

and conscientiousness were included in the model. The association between SOP and mental health was not statistically significant.

The conceptual model depicted in Figure 1 with mental health as the outcome of interest accounting for respondents' sex, extraversion, conscientiousness, and neuroticism was then tested. Goodness of fit indices revealed that the structure of the hypothesized model provided an acceptable explanation of the data (i.e., $\chi^2_{(79)} = 185.75$, p < .001, CFI = .97, RMSEA = .05, p_{close} = .47, SRMR = .03) and estimation for all 1,000 individual bootstrap samples yielded convergence and meaningful solutions. Further, no significant differences were found between the fully mediated model and a partially mediated model in which direct paths from SOP and SPP to mental health were included (i.e., $\chi^2_{diff(2)} = 5.28$, $p > .05$) and the direct paths from each perfectionism dimension to mental health were not found to be statistically significant. Overall, the final model depicted in Figure 10 accounted for 75% of the variance in mental health[14].

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[14] Although not depicted in Figure 10, as anticipated there were significant covariances among the pathway variables. Stress was negatively related to health-promotion behaviours (r = -.19) and to perceived social support (r = -.26). Personal income was positively related to health-risk behaviours (r = .09). None of the other covariances between pathway variables were statistically significant. Respondents' sex was positively associated with personal income (β = .10) and health-risk behaviours (β = .15) and was negatively associated with stress (β = -.22) and health-promotion behaviours (β = -.10). That is, men reported higher personal incomes and engaging in more health-risk behaviours and lower levels of stress and less engagement in health-promotion behaviours than women.
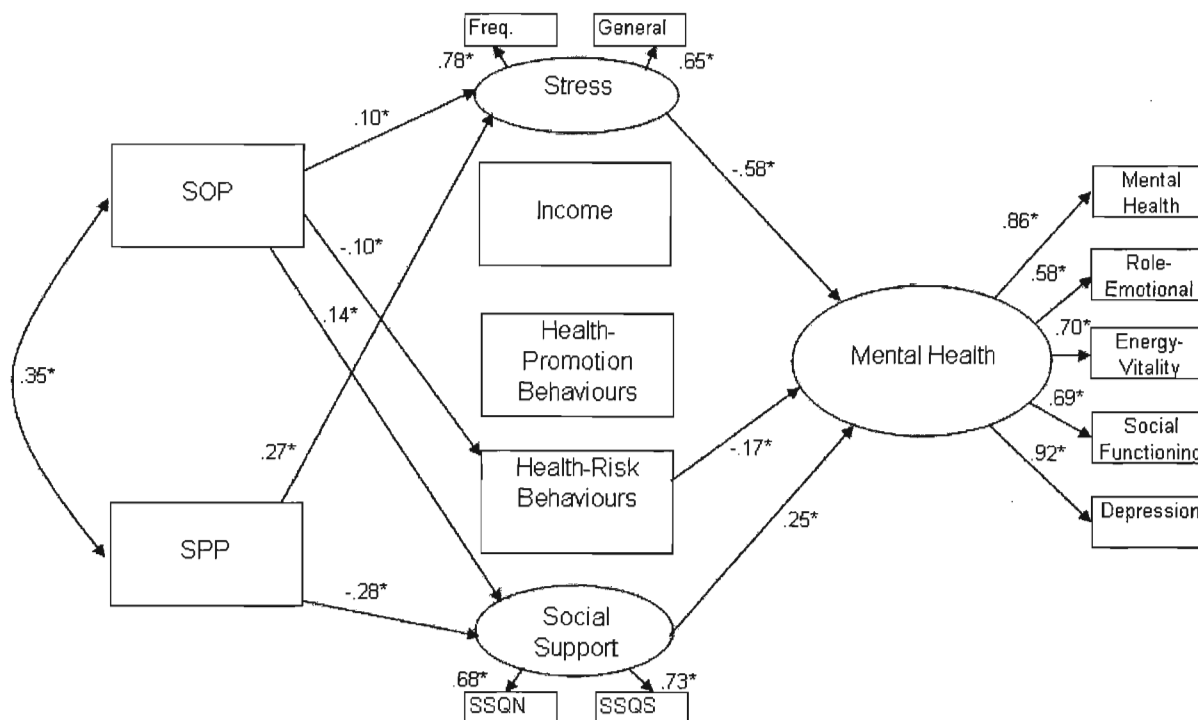
Figure 10. Final mediated model of perfectionism and mental health accounting for the effects of respondents' sex, extraversion, conscientiousness, and neuroticism.
Note. The effects of respondents' sex, extraversion, conscientiousness, and neuroticism were accounted for in model testing, but are not shown here for ease of presentation. Error terms, disturbances, and covariances among the disturbances for the pathway variances are also not displayed for ease of presentation. Only statistically significant paths are shown.
Note. SOP: self-oriented perfectionism; SPP, socially prescribed perfectionism; SSQN, size of social support network; SSQS, satisfaction with social support network; Freq., how often stressed in a one-week period; General, how stressful life is in general.

Concerning the higher-order personality terms, extraversion was related to higher levels of personal income (β = +.10), health-promotion behaviours (β = +.09), health-risk behaviours (β = +.13), and social support (β = +.32). Extraversion was also directly related to better mental health (β = +.12). Conscientiousness was negatively associated with health-risk behaviours (β = -.12) and was directly associated with better mental health (β = +.16). As expected, neuroticism was related to higher levels of stress (β = +.44) and health-risk behaviours (β = +.18) and to

lower levels of social support ($\beta = -.29$) and health-promotion behaviours ($\beta = -.15$). A direct association between neuroticism and mental health was not observed.

Of primary interest, SOP was positively related to stress and to social support and was negatively related to health-risk behaviours (see Figure 10). SPP shared a positive association with perceived stress and a negative association with perceived social support. Of the pathway variables, only perceived stress, health-risk behaviours, and social support were related to mental health, each in the expected direction. The implied indirect effects from SOP to mental health were tested using the bias corrected bootstrap method. The findings indicated that the total indirect effect of SOP to mental health was not statistically significant ($B = -0.01$; 95% CI $= -.09 - .07$). Moreover, the specific indirect effects of SOP to mental health via stress ($B = -0.06$; 95% CI $= -.12 - .003$) and health-risk behaviours ($B = 0.02$; 95% CI $= -.001 - .03$) were not found to be statistically significant. However, the specific indirect effect from SOP to mental health via perceived social support was found to be statistically significant ($B = 0.04$; 95% CI $= .01 - .09$). Findings regarding SPP demonstrated that the total indirect effect from SPP to mental health was statistically significant ($B = -0.23$; 95% CI $= -.31 - -.16$). The specific indirect effects from SPP to mental health via stress ($B = -0.16$; 95% CI $= -.23 - -.08$) and via social support ($B = -0.07$; 95% CI $= -.13 - -.02$) were each found to be statistically significant.

As was the case with physical health, a four-pathway (i.e., personal income, health-promotion behaviours, health-risk behaviours, and social support) model of perfectionism and mental health, in which stress was treated as a moderator, was then tested with multiple group analyses. Results indicated that the four-pathway model of perfectionism and mental health was not invariant with respect to perceived stress level, such that the model fit of the fully

constrained model was significantly different from the fully unconstrained model (i.e.,

$\chi^2_{diff(77)}$ = 204.39, $p < .05$; ΔCFI = .065; ΔRMSEA = .008). Specifically, the findings suggested

that the factor loadings were not invariant with respect to perceived stress level (i.e., $\chi^2_{diff(5)}$ =

13.74, $p < .05$; ΔCFI = .004 ΔRMSEA = .001) and by releasing one constraint at a time, it was

discovered that the source of the invariance was the social support network loading for the latent

factor for social support, as the model without this constraint was not significantly different from

the fully unconstrained model (i.e., $\chi^2_{diff(4)}$ = 6.37, $p > .05$; ΔCFI = .001; ΔRMSEA < .001).

Although social support network significantly and positively loaded onto the social support latent

variable in each group, the loading was slightly stronger (+.71) in the high stress group compared

to the low stress group (+.67). The structural paths were also not found to be invariant with

respect to perceived stress level (i.e., $\chi^2_{diff(37)}$ = 62.73, $p < .05$; ΔCFI = .013; ΔRMSEA < .001).

By releasing one constraint at a time the source of the invariance was found. The paths from

respondents' sex to health-promotion behaviours and from respondents' sex to social support

were not invariant with respect to perceived stress level. When these constraints were released

the model did not differ from that of the fully unconstrained model (i.e., $\chi^2_{diff(26)}$ = 70.79, $p < .05$;

ΔCFI = .02; ΔRMSEA = .004). Specifically, results indicated that men engaged in fewer health-

promotion behaviours and reported lower levels of social support than women in the high stress

group only. However, SOP was related to less engagement in health-risk behaviours and to

having more social support which in turn, were related to better mental health for both the low

and high stress groups. SPP was associated with having less social support which, in turn, was

associated with better mental health in both the high and low stress groups. Finally, the error

covariances (i.e., $\chi^2_{diff(55)}$ = 94.55, $p < .05$; ΔCFI = .02; ΔRMSEA < .001) and measurement error

were not invariant with respect to perceived stress level (i.e., $\chi^2_{\text{diff}(74)} = 187.46$, $p < .05$; ΔCFI $= .058$; ΔRMSEA $= .007$).

In summary, results suggested that SPP was associated with poorer mental health, even after consideration of higher-order personality traits related to both perfectionism and mental health. Further, the findings supported the notion that the relationship between SPP and mental health was fully mediated by stress and social support when respondents' sex, extraversion, conscientiousness, and neuroticism were included in the model, such that SPP was related to higher levels of stress and to lower levels of social support, each of which were associated with poorer mental health. In terms of SOP, results revealed that when the effects of extraversion, conscientiousness, and neuroticism were taken into consideration, SOP was not directly associated with mental health, but was indirectly associated with better mental health via higher levels of perceived social support.

SWB. A main effects model was evaluated to determine whether perfectionism had incremental predictive utility with regard to SWB when respondents' sex and broader personality traits related to both perfectionism and SWB were included in the model (i.e., extraversion, neuroticism, and conscientiousness). Specifically, respondents' sex, extraversion, conscientiousness, and neuroticism were entered into the model by allowing correlations between each of these constructs and each of the perfectionism dimensions and by allowing a path from each of the broader personality variables to SWB. While estimation for all 1,000 individual bootstrap samples yielded convergence and meaningful solutions, results indicated that this model did not provide an adequate fit to the data ($\chi^2_{(12)} = 196.24$, $p < .001$, CFI $= .85$, RMSEA $= .17$, $p_{\text{close}} < .001$, SRMR $= .07$). Examination of the standardized residual covariance

matrix and modification indices revealed that including specific effects from neuroticism to negative affect, SOP to positive affect, and from SPP to negative affect, along with a covariance between the error terms for negative and positive affect, would significantly improve model fit. Indeed, results indicated that the model including these modifications was an adequate fit to the data ($\chi^2_{(8)} = 26.90$, $p = .001$, CFI $= .99$, RMSEA $= .07$, $p_{close} = .14$, SRMR $= .02$).

In terms of the broader personality dimensions, extraversion and conscientiousness were each positively associated with SWB ($\beta = +.43$ and $\beta = +.19$, respectively) while neuroticism was negatively associated with SWB ($\beta = -.34$). A positive specific association between neuroticism and negative affect was also observed ($\beta = +.44$). Of primary importance to the current study, SPP shared a negative association with SWB ($\beta = -.24$) when the effects of respondents' sex, extraversion, neuroticism, and conscientiousness were taken into account. A specific positive relationship between SPP and negative affect was observed ($\beta = +.13$) as was a positive specific relationship between SOP and positive affect ($\beta = +.44$). Respondents' sex was not related to either of the perfectionism dimensions or to SWB. SPP was positively associated with neuroticism ($\beta = +.33$) and negatively associated with extraversion and conscientiousness ($\beta = -.12$, $\beta = -.11$, respectively), while SOP was positively associated with conscientiousness and neuroticism ($\beta = +.35$, $\beta = +.13$, respectively). The association between SOP and SWB was not statistically significant. Further respondent's sex was not related to SWB.

The conceptual model depicted in Figure 1 with SWB as the outcome of interest, accounting for the effects of respondents' sex, extraversion, conscientiousness, and neuroticism and with the specific effects from SOP to positive affect, SPP to negative affect, and neuroticism to negative affect included in the model was then tested. Goodness of fit indices revealed that the

structure of the hypothesized model provided an acceptable explanation of the data (i.e., $\chi^2_{(45)}$

= 113.68, p < .001, CFI = .97, RMSEA = .05, p_{close} = .31, SRMR = .03) and estimation for all

1,000 individual bootstrap samples yielded convergence and meaningful solutions. Further, no

significant differences were found between the fully mediated model and a partially mediated

model in which direct paths from SOP and SPP to SWB were included (i.e., $\chi^2_{diff(2)}$ = 3.48, p >

.05) and the direct paths from each perfectionism dimension to SWB were not found to be

statistically significant. Overall, the final model depicted in Figure 11 accounted for 90% of the

variance in SWB.[15]

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[15] Although not depicted in Figure 11, as expected there were significant covariances among the pathway variables. Stress was negatively related to health-promotion behaviours (r = -.19) and to perceived social support (r = -.27). Personal income was positively related to health-risk behaviours (r = .09). None of the other covariances between pathway variables were statistically significant. Respondents' sex was positively associated with personal income (β = .10) and health-risk behaviours (β = .15) and was negatively associated with stress (β = -.22) and health-promotion behaviours (β = -.10). That is, men reported higher personal incomes and engaging in more health-risk behaviours and lower levels of stress and less engagement in health-promotion behaviours than women.
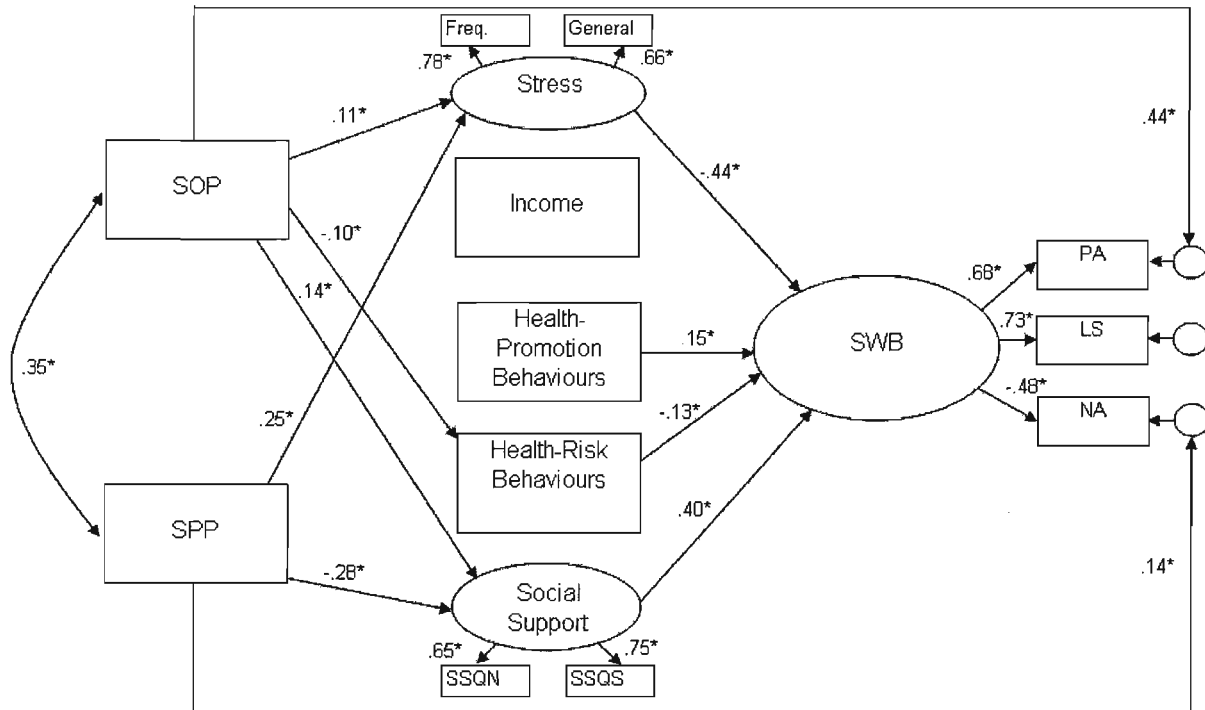
Figure 11. Final mediated model of perfectionism and SWB accounting for the effects of respondents' sex, extraversion, conscientiousness, and neuroticism. *Note.* The effects of respondents' sex, extraversion, conscientiousness and neuroticism were accounted for in model testing, but are not shown here for ease of presentation. Error terms, disturbances, and covariances among the disturbances for the pathway variances are also not displayed for ease of presentation. Only statistically significant paths are shown.
Note. SOP: self-oriented perfectionism; SPP: socially prescribed perfectionism; SSQN: size of social support network; SSQS: satisfaction with social support network; Freq.: how often stressed in a one-week period; General: how stressful life is in general; LS: life satisfaction; PA: positive affect; NA: negative affect.

Concerning the higher-order personality dimensions, extraversion was related to higher levels of personal income ($\beta = +.10$), health-promotion behaviours ($\beta = +.09$), health-risk behaviours ($\beta = +.13$), and to higher levels of social support ($\beta = +.31$). Furthermore, extraversion was directly related to higher levels of SWB ($\beta = +.26$). Conscientiousness was negatively associated with health-risk behaviours ($\beta = -.12$). Moreover, conscientiousness was directly associated with higher levels of SWB ($\beta = +.19$). As expected, neuroticism was related to higher levels of stress ($\beta = +.45$) and health-risk behaviours ($\beta = +.18$), and to lower levels of social support ($\beta = -.29$) and health-promotion behaviours ($\beta = -.15$). A specific positive relationship between neuroticism and negative affect was also observed ($\beta = +.44$).

Of primary interest, SPP was negatively associated with social support and positively associated with perceived stress (see Figure 11). Moreover, a specific positive association between SPP and negative affect was also observed. SOP was positively related to stress and to social support and was negatively related to health-risk behaviours. SOP also shared a specific positive association with positive affect. Of the pathway variables, stress and health-risk behaviours were each associated with lower levels of SWB, while health-promotion behaviours and social support were each associated with higher levels of SWB.

The implied indirect effects were tested using the bias corrected bootstrap method with the 95% confidence intervals. Results revealed that the total indirect effect from SPP to SWB was significant ($B = -0.23$; 95% CI $= -.31 - -.16$) while the total indirect effect of SOP to SWB was not ($B = 0.02$; 95% CI $= -.06 - .10$). Results indicated that the specific indirect effect of SPP to SWB via social support was statistically significant ($B = -0.11$; 95% CI $= -.18 - -.05$) as was the specific indirect path from SPP to SWB through stress ($B = -0.11$; 95% CI $= -.17 - -$

.05). The specific indirect effect from SOP to SWB via social support was statistically

significant ($B = 0.05$; 95% CI $= .002 - .11$), but the specific indirect effect from SOP to SWB

via stress ($B = -0.03$; 95% CI $= -.07 - .01$) and the specific indirect effect from SOP to SWB via

health-risk behaviours ($B = 0.01$; 95% CI $= -.003 - .03$) was not.

As was the case with physical and mental health, a four-pathway model of perfectionism

and SWB, in which stress was treated as a moderator, was then tested with multiple group

analyses. Results indicated that the four-pathway model of perfectionism and SWB was not

invariant with respect to perceived stress level, such that the model fit of the fully constrained

model was significantly different from the fully unconstrained model (i.e., $\chi^2_{diff(75)} = 178.52$, $p <$

.05; $\Delta CFI = .07$; $\Delta RMSEA = .004$). Specifically, the findings suggested that the factor loadings

were invariant with respect to perceived stress level (i.e., $\chi^2_{diff(3)} = 5.80$, $p > .05$; $\Delta CFI = .002$;

$\Delta RMSEA < .001$), but the structural paths were not (i.e., $\chi^2_{diff(38)} = 66.59$, $p < .05$; $\Delta CFI = .02$;

$\Delta RMSEA = .002$). By releasing one constraint at a time it was discovered that the paths from

conscientiousness to SWB, respondents' sex to health-promotion behaviours, and the path from

respondents' sex to social support were not equal between the high and low stress groups. When

these constraints were released there was no significant differences between a model in which

the remaining structural paths and factor loadings were constrained and the fully unconstrained

model (i.e., $\chi^2_{diff(35)} = 45.04$, $p > .05$; $\Delta CFI = .007$; $\Delta RMSEA = .006$).

Specifically, results showed that low conscientiousness was only associated with lower

levels of SWB in the high risk group. Further, sex differences in health-promotion behaviours

and in social support were only significant in the high stress group, such that men engaged in

fewer health-promotion behaviours and perceived less social support than women in the high

stress group only. Most importantly there were no differences in terms of the relations between perfectionism and SWB, such that SOP was related to less engagement in health-risk behaviours and to higher levels of social support, which, in turn, were related to higher levels of SWB in both the low and high stress groups and SPP was related to lower levels of social support, which, in turn, were related to lower levels of SWB in both the low and high stress groups. Moreover, SOP was specifically related to higher levels of positive affect and SPP was specifically related to higher levels of negative affect in both the low and high stress groups. Finally, results showed that the error covariances (i.e., $\chi^2_{\text{diff}(56)} = 94.73$, $p < .05$; ΔCFI = .027; ΔRMSEA = .001) and measurement errors (i.e., $\chi^2_{\text{diff}(73)} = 156.57$, $p < .05$; ΔCFI = .057; ΔRMSEA = .004) were not invariant with respect to perceived stress level.

Collectively, results indicated that SPP was associated with lower levels of SWB when broader personality traits were taken into consideration. Moreover, results revealed that the association between SPP and SWB was fully mediated by social support and by stress, such that individuals with higher levels of SPP experienced higher levels of stress and perceived having less social support, which in turn, were related to experiencing lower levels of SWB. A direct positive association between SPP and negative affect further supported the notion that SPP was linked with lower levels of SWB. SOP was found to be indirectly related to higher levels of SWB via higher levels of perceived social support. Further, SOP was directly associated with higher levels of positive affect, suggesting that SOP had desirable outcomes with regard to SWB.

The Chronically-Ill Sample

Correlational analyses. Aside from its positive associations with conscientiousness and personal income, SOP was largely related to undesirable characteristics and outcomes, such as experiencing poorer physical and mental health; experiencing more stress; engaging in fewer health-promotion behaviours; having less perceived social support; experiencing more frequent negative affect; and being more neurotic (see Table 17). Further, a positive association was observed between SOP and SPP. As expected, SPP was consistently linked with unfavourable correlates and outcomes, such as experiencing poorer physical and mental health; having less perceived social support; experiencing more stress; having lower ratings on life satisfaction and less frequent positive affect; experiencing more frequent negative affect; engaging in fewer health-promotion behaviours and more health-risk behaviours; and being more neurotic.

As anticipated, extraversion and conscientiousness were generally found to be adaptive in that they were associated with better physical and mental health, higher ratings on life satisfaction and positive affect, and lower levels of stress. Conversely, neuroticism was mainly found to be maladaptive, as it was related to poorer physical and mental health, lower ratings on positive affect and life satisfaction, higher levels of negative affect, higher levels of perceived stress, less engagement in health-promotion behaviours and greater engagement in health-risk behaviours. The size of the social support network was associated with partaking in more health-promotion behaviours and negatively associated with health-risk behaviours and with stress, while satisfaction with one's social support network was associated with less engagement in health-risk behaviours and with lower levels of stress. Personal income was related to better physical and mental health, higher levels of positive affect and lower levels of negative affect,

higher ratings of life satisfaction, and to greater engagement in both health-promotion and

health-risk behaviours. In general, the associations among the pathway variables were in the

small to moderate range.

Analyses of the structural models.

Measurement models. Prior to testing the structural relationships among variables, a

measurement model was tested to ensure that the latent variables were properly specified.

Specifically, the items comprising physical health, social support, and stress were analyzed with

a CFA model, permitting the latent variables to be correlated. Based on criteria for model fit, this

model fit the data reasonably well ($\chi^2_{(32)}$ = 111.45, p < .001, CFI = .97, RMSEA = .06, p_{close} =

.16, SRMR = .04). However, inspection of the standardized residual covariance matrix suggested

that part of the model may have been mispecified, such that the standardized residuals between

general health and number of sick days - both indicators of physical health - exceeded the

absolute value of 2. Further, modification indices revealed that model fit would be greatly

improved by the inclusion of a covariance between the error terms for general health and number

of sick days. A chi-square difference test indicated significant improvement in model fit ($\chi^2_{diff(1)}$

= 24.31, p < .05, ΔCFI = .01, ΔRMSEA = .01) with the inclusion of this error covariance. All

parameter estimates for the final measurement model were statistically significant (p < .01) and

in the expected direction.

A measurement model with stress, social support, and mental health was then assessed.

Results revealed that the model did not fit the data well ($\chi^2_{(24)}$ = 253.59, p < .001, CFI = .92,

RMSEA = .11, p_{close} < .001, SRMR = .06). Examination of the standardized residual covariance

matrix revealed that the source of the difficulties, such that the standardized residuals between

mental health and role-emotional and between social-functioning and energy-vitality -all indicators of mental health- were each above the absolute value of 2. Thus, covariances between mental health and role-emotional and between social functioning and energy-vitality were added to the model. The addition of these covariances greatly improved model fit ($\chi^2_{diff(2)}$ = 166.36, $p <$ .05, ΔCFI = .06, ΔRMSEA = .05) and resulted in a well-fitting model ($\chi^2_{(22)}$ = 87.23, $p < .001$, CFI = .98, RMSEA = .06, p_{close} = .07, SRMR = .03). All loadings for the latent variables were statistically significant ($p < .01$) and in the expected direction.

Finally, a measurement model including stress, social support, and SWB was tested. Results indicated that the measurement model provided a poor fit to the data ($\chi^2_{(11)}$ = 138.25, $p <$ .001, CFI = .93, RMSEA = .12, $p_{close} < .001$, SRMR = .06). Unfortunately, inspection of the standardized residual covariance matrix indicated that many of the standardized residuals were well above an absolute value of 2 and many of the suggested modifications were to add direct paths from social support and/or stress to the specific indicators of SWB rather than to SWB itself, indicating that LS, positive affect, and negative affect should be treated as separate manifest variables rather than as indicators of a latent construct. Although some researchers tend to not to distinguish between operationally defining SWB as the common variance amongst LS, positive affect, and negative affect or as three separate yet related constructs, others have provided solid arguments why this practice should be abandoned and call on researchers to be consistent in their measurement approach (Busseri & Sadava, in press). Thus, given that SWB was defined as the common variance amongst LS, positive affect, and negative affect, and that this measurement model did not fit the data, further analyses assessing the relationship between

perfectionism and SWB were not conducted, as testing these relations with a different measurement model of SWB would have a different meaning.[16]

Structural models.

Physical health. A main effects model was evaluated to determine whether perfectionism had incremental predictive utility with regard to physical health when respondents' sex and broader personality traits related to both perfectionism and physical health were included in the model (i.e., extraversion, neuroticism, and conscientiousness). Specifically, respondents' sex, extraversion, conscientiousness, and neuroticism were entered into the model by allowing correlations between each of these constructs and each of the perfectionism dimensions and by allowing a path from each of the broader personality variables to physical health. Estimation for all 1,000 individual bootstrap samples yielded convergence and meaningful solutions and results indicated that this model was a reasonable representation of the data ($\chi^2_{(38)} = 115.80$, $p < .001$, CFI = .96, RMSEA = .05, $p_{close} = .39$, SRMR = .03).

Respondents' sex was positively associated with physical health ($\beta = +.12$), indicating that men reported better physical health than women. Again, perfectionism was unrelated to respondents' sex. As expected, the path coefficient between conscientiousness and physical health was significant and positive ($\beta = +.11$) while the path coefficient between neuroticism and physical health was significant and negative ($\beta = -.20$). Extraversion was unrelated to physical health. Central to the current study, the path coefficient between SPP and physical health was

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[16] When a measurement model that included social support, stress, LS, positive affect, and negative affect (each as separate variables) was assessed, results indicated that this model also fit the data unsatisfactorily ($\chi^2_{(7)} = 47.62$, $p <$ .001, CFI = .98, RMSEA = .09, $p_{close} = .004$, SRMR = .03).

significant and negative (β = -.11), while the estimate for the path between SOP and physical health was not statistically significant.

Concerning the relationships between perfectionism and the higher-order personality traits, SOP was negatively related to extraversion (β = -.11) and positively associated with conscientiousness (β = +.15) and neuroticism (β = +.24). SPP was negatively associated with extraversion (β = -.21) and conscientiousness (β = -.12) and positively associated with neuroticism (β = +.37). Thus, results demonstrated that SPP was significantly associated with poorer health, even after accounting for respondents' sex and broader personality traits related to both perfectionism and physical health. Finally, SOP and SPP were positively related (r = +.52). The latent variable loadings were all significant ($p < .01$), with the direct effects model accounting for 12% of the variance in physical health.

Following recommendations from Holmbeck (1997) two models were compared in an effort to ascertain mediation: First, a model in which the link between perfectionism and physical health was fully mediated by social support, personal income, health-promotion behaviours, health-risk behaviours, and stress and, second, a partially mediated model which included both direct and indirect effects from perfectionism to physical health. Respondents' sex, along with neuroticism, conscientiousness, and extraversion were also included in each model by allowing covariances between each of these variables and each dimension of perfectionism and by allowing direct paths from each of these variables to each of the proposed mediators as well as to physical health. Results from the fully mediated model demonstrated that the model did not provide an adequate fit to the data ($\chi^2_{(96)}$ = 327.17, $p < .001$, CFI = .94, RMSEA = .06, p_{close} = .07, SRMR = .04). Modification indices indicated that the addition of specific paths from income

to number of sick days and from health-promotion behaviours to physical functioning would significantly improve model fit. As anticipated, the addition of these paths greatly improved model fit ($\chi^2_{diff(2)}$ = 35.46, $p < .05$, ΔCFI = .01, ΔRMSEA = .01) and resulted in a well-fitting model ($\chi^2_{(94)}$ = 291.71, $p < .001$, CFI = .95, RMSEA = .05, p_{close} = .29, SRMR = .03). When this model was compared to a model that included direct paths from each dimension of perfectionism to physical health, results indicated that there was nonsignificant improvement in model fit ($\chi^2_{diff(2)}$ = 4.29, $p > .05$, ΔCFI < .001, ΔRMSEA < .001).

The results from the final model, which accounted for 29% of the variance in physical health, are presented in Figure 12[17]. With regard to the higher-order personality traits, extraversion was positively related to perceived social support (β = +.11) and was unrelated to all other variables in the model. As expected, conscientiousness was positively related to personal income (β = +.15) and to health-promotion behaviours (β = +.20) and was negatively related to health-risk behaviours (β = -.09). Neuroticism was positively associated with stress (β = +.45) and with health-risk behaviours (β = +.18) and was negatively associated with health-promotion behaviours (β = -.12) and with perceived social support (β = -.23).

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[17] Although not displayed in Figure 12, respondents' sex was positively related to personal income (β = .19) and negatively related to social support (β = -.10). In other words, men reported higher levels of personal income and lower levels of social support compared to women. As anticipated, there were significant covariances among the pathway variables. Stress was negatively related to health-promotion behaviours (r = -.19) and to perceived social support (r = -.27). Personal income was positively related to health-risk behaviours (r = .10). Social support was positively related to health-promotion behaviours (r = .19). None of the other covariances between pathway variables were statistically significant.
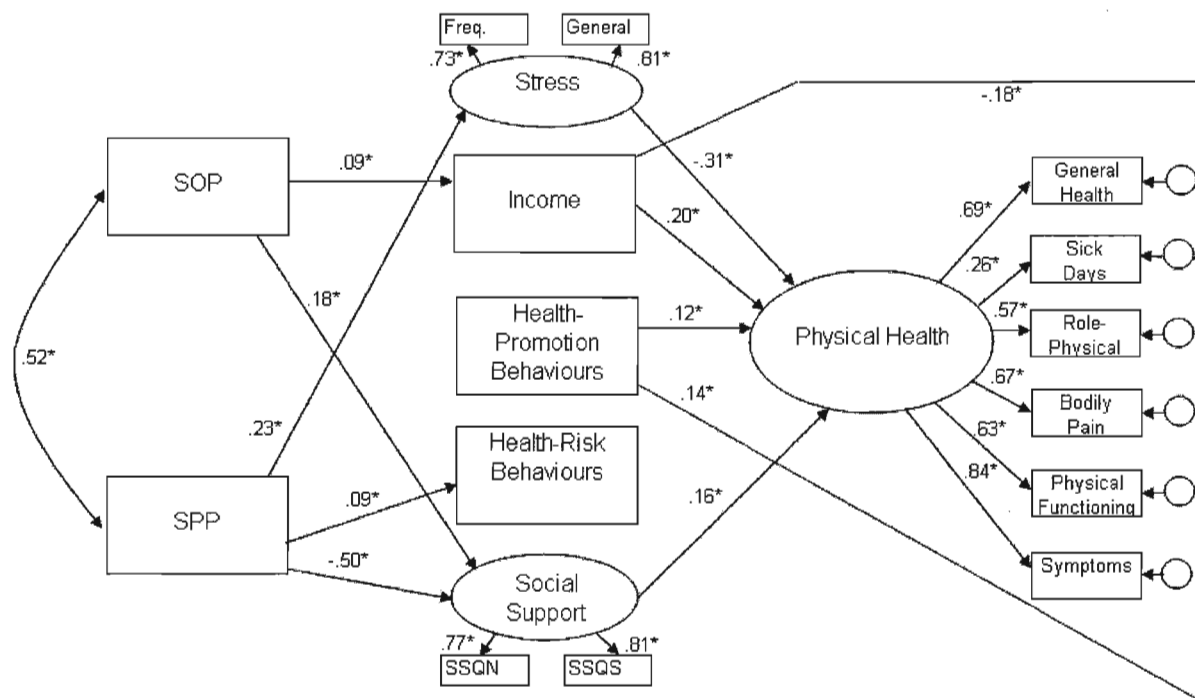
Figure 12. Final mediated model of perfectionism and physical health accounting for the effects of respondents' sex, extraversion, conscientiousness, and neuroticism.

Note. The effects of respondents' sex, extraversion, conscientiousness, and neuroticism were accounted for in model testing, but are not shown here for ease of presentation. Error terms, disturbances, and covariances among the disturbances for the pathway variances are also not displayed for ease of presentation. Only statistically significant paths are shown.

Note. SOP: self-oriented perfectionism; SPP, socially prescribed perfectionism; SSQN, size of social support network; SSQS, satisfaction with social support network; Freq., how often stressed in a one-week period; General, how stressful life is in general

As indicated, the relationship between SPP and physical health was no longer statistically significant when the hypothesized mediators were included in the model, suggesting complete mediation. Of the potential mediators, SPP was positively associated with stress and negatively associated with perceived social support[18]. Results using the bootstrap method with 1,000 bootstrap samples and the 95% confidence intervals demonstrated that the specific indirect

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[18] While SPP was positively associated with health-risk behaviours, health-risk behaviours were not associated with physical health and were therefore not a potential mediator of the relationship between SPP and physical health.

effects from SPP to physical health through stress (β = -.07, CI = -.11 - -.03) as well as through social support (β = -.08, CI = -.14 - -.03) were each statistically significant.

For SOP, results demonstrated that individuals with higher levels of SOP reported higher personal incomes and higher levels of social support compared to those with lower levels of SOP. The positive association between SOP and social support in the structural model was quite extraordinary, considering that SOP shared significant negative zero-order correlations with each of the indicator variables for the latent construct of social support. These findings are clearly indicative of negative suppression, in which SPP operated as a suppressor variable (see Maassen & Bakker, 2001, for a review of suppression), such that when the variance associated with SPP was partialled out of the association between SOP and social support, positive relationships were uncovered. In addition, results also demonstrated that while a direct association could not be demonstrated between SOP and physical health, the specific indirect effect from SOP to physical health via social support (β = .03, CI = .01 - .05) was statistically significant as was the specific indirect effect from SOP to physical health via personal income (β = .02, CI = .001 - .04).

As with the student sample, a four-pathway (i.e., personal income, health-promotion and health-risk behaviours, and social support) model of perfectionism and physical health, in which stress was treated as a moderator, was then tested with multiple group analyses. Results indicated that the four-pathway model of perfectionism and physical health was not invariant with respect to perceived stress level, such that the model fit of the fully constrained model was significantly different from the fully unconstrained model (i.e., $\chi^2_{diff(81)}$ = 241.81, p < .05; ΔCFI = .06; ΔRMSEA = .005). Specifically, the findings suggested that the factor loadings were not invariant with respect to perceived stress level (i.e., $\chi^2_{diff(6)}$ = 13.66, p < .05; ΔCFI = .003; ΔRMSEA <

.001). The source of the problem was uncovered by releasing one constraint at a time. Results showed that when the constraint for the factor loading of role-physical on physical health was released the model with the remaining factor loading constraints was not significantly different from the fully unconstrained model (i.e., $\chi^2_{diff(5)} = 4.50$, $p > .05$; ΔCFI = .001; ΔRMSEA = .001). Specifically, results demonstrated that the factor loading of role-physical on physical health was significant for both groups, but that role-physical was a stronger indicator of physical health in the low stress (β = +.60) compared to the high stress group (β = +.54). The structural paths were found to be invariant with respect to perceived stress level (i.e., $\chi^2_{diff(39)} = 43.31$, $p > .05$; ΔCFI = .002; ΔRMSEA = .003), such that SOP was associated with higher levels of personal income and social support, which in turn, were related to better physical health in both groups. SPP was associated with higher levels of health-risk behaviours, which was unrelated to physical health in both groups, and to lower levels of social support which was related to poorer physical health in both low and high stress groups. The error covariances (i.e., $\chi^2_{diff(60)} = 99.61$, $p < .05$; ΔCFI = .015; ΔRMSEA = .003) and variances were not invariant with respect to perceived stress level (i.e., $\chi^2_{diff(80)} = 225.97$, $p < .05$; ΔCFI = .055; ΔRMSEA = .004).

Collectively, findings concerning physical health revealed that SPP was a risk factor for poorer health even after the effects of broader personality traits related to both perfectionism and physical health were accounted for in the model. Moreover, the findings indicated that the relationship between SPP and physical health was fully mediated by social support and stress, such that SPP was associated with lower levels of perceived social support and higher levels of stress, both of which, in turn, were related to poorer health. The relationship between SOP and physical health was much more modest with SOP being positively related to physical health only

indirectly through higher levels of social support and through higher levels of personal income. Moreover, the positive relationship between SOP and social support was the result of negative suppression. SPP functioned as a suppressor variable since a significant positive relationship between SOP and social support was only found when variance from SPP was statistically accounted for in the analyses.

Mental health. A main effects model testing the association between perfectionism and mental health while taking into account the higher-order personality traits of neuroticism, extraversion, and conscientiousness was evaluated utilizing two observed variables (SOP and SPP) to represent the independent variable (perfectionism), and one latent variable to represent the dependent variable (mental health). Respondents' sex along with the broader personality traits were also entered into the models by allowing correlations between each of these variables and each of the perfectionism dimensions and by allowing direct paths from respondents' sex, extraversion, conscientiousness, and neuroticism to mental health. All of the 1,000 individual bootstrap samples converged and provided meaningful solutions. Results indicated that the model fit the data well ($\chi^2_{(27)} = 86.69$, $p < .001$, CFI = .98, RMSEA = .05, $p_{close} = .30$, SRMR = .03). The latent variable loadings were all significant ($p < .01$), with the direct effects model accounting for 44% of the variability in mental health. With regard to the higher-order personality traits, extraversion and conscientiousness were each significantly and positively associated with mental health ($\beta = +.14$, and $+.12$, respectively), while a negative association was observed between neuroticism and mental health ($\beta = -.41$). Respondents' sex was unrelated to mental health and to perfectionism.

Concerning perfectionism, both SOP and SPP were positively related to neuroticism (β = +.24, and +.37, respectively) and negatively related to extraversion (β = -.11, and -.21, respectively). However, whereas SPP was negatively related to conscientiousness (β = -.12), SOP was positively associated with conscientiousness (β = +.15). Of primary importance to the study at hand, a negative association between SPP and mental health was observed even after accounting for the higher-order personality traits (β = -.25). No direct association between SOP and mental health was observed.

A model in which the link between perfectionism and mental health was fully mediated by stress, social support, personal income, health-promotion and health-risk behaviours was then tested and compared to a model which also included direct effects from perfectionism to mental health. Respondents' sex and the broader personality traits were accounted for in both models by allowing a covariance between each of these variables and both dimensions of perfectionism and by allowing direct paths from each of these variables to each of the pathway variables and to mental health. Results showed that the fully mediated model achieved an adequate fit to the data ($\chi^2_{(78)}$ = 270.01, p < .001, CFI = .96, RMSEA = .06, p_{close} = .07, SRMR = .03). When this model was compared to a model that included direct paths from each dimension of perfectionism to mental health, results indicated that there was no significant improvement in model fit ($\chi^2_{diff(2)}$ = 5.58, p > .05, ΔCFI < .001, ΔRMSEA < .001).

The final model which accounted for 71% of the variability in mental health is presented in Figure 13[19]. Concerning the higher-order personality traits, extraversion was positively associated with social support (β = +.11) and with mental health (β = +.08). Conscientiousness was positively related to personal income (β = +.15) and to health-promotion behaviours (β = +.20) and was negatively related to health-risk behaviours (β = -.09). Conscientiousness also shared a direct positive association with mental health (β = +.07). Finally, neuroticism was positively associated with stress (β = +.45) and health-risk behaviours (β = +.18) and was negatively associated with health-promotion behaviours (β = -.12) and social support (β = -.23). A direct negative association between neuroticism and mental health (β = -.15) was also observed.

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[19] Although not displayed in Figure 13, there were significant covariances among the pathway variables. Personal income was positively associated with health-risk behaviours (r = .10). Health-promotion behaviors was negatively associated with stress (r = -.17) and was positively associated with social support (r = .19). Stress was negatively associated with social support (r = -.25). None of the other covariances between pathway variables were statistically significant. Also not depicted in Figure 13, respondents' sex was positively related to personal income (β = .19) and negatively related to social support (β = -.10). In other words, men reported higher levels of personal income and lower levels of social support compared to women.
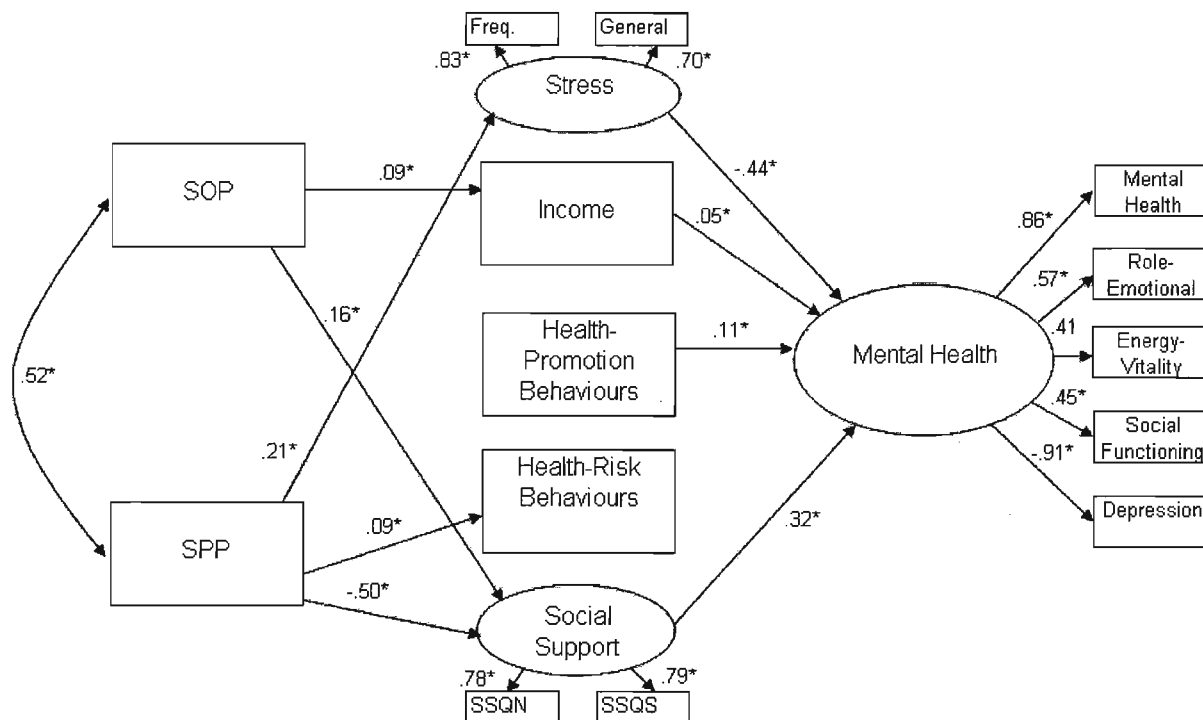
Figure 13. Final mediated model of perfectionism and mental health accounting for the effects of respondents' sex.

Note. The effects of respondents' sex were accounted for in model testing, but are not shown here for ease of presentation. Error terms, disturbances, and covariances among the disturbances for the pathway variances are also not displayed for ease of presentation. Only statistically significant paths are shown.

Note. SOP: self-oriented perfectionism; SPP, socially prescribed perfectionism; SSQN, size of social support network; SSQS, satisfaction with social support network; Freq., how often stressed in a one-week period; General, how stressful life is in general.

Of central importance was the association between perfectionism and mental health. Results demonstrated that SPP was positively associated with stress and with health-risk behaviours and was negatively associated with social support (see Figure 13). That is, individuals with higher levels of SPP experienced more stress, had less social support, and engaged in more health-risk behaviours compared to individuals with lower levels of SPP. Conversely, SOP was positively related to personal income and to social support. Thus, individuals with higher levels of SOP

reported earning more money and having more social support than those with lower levels of

SOP. Again, the positive relationship between SOP and social support is indicative of negative

suppression, such that SOP was only positively related to social support when the effects of SPP

were accounted for within the model and held constant. Of the pathway variables, stress,

personal income, health-promotion behaviours, and social support were related to mental health-

all in the expected direction.

Results using the bias-corrected bootstrap method with 95% confidence intervals

revealed that the total indirect effect of SPP to mental health was statistically significant (β = -

.26, CI = -.32 - -.19). In terms of specific indirect effects, the indirect effect of SPP to mental

health via social support (β = -.16, CI = -.20 - -.11) was statistically significant as was the

indirect effect of SPP to mental health via stress (β = -.09, CI = -.14 - -.05). The total indirect

effect of SOP to mental health was not statistically significant (β = .03, CI = -.03 - .08).

However, the specific indirect effect of SOP to mental health via social support was significant

(β = .05, CI = .02 - .08). None of the other specific indirect effects regarding SOP and mental

health were statistically significant.

A four-pathway model, in which stress was treated as a moderator, was then tested with

multiple group analyses. Results revealed that the four-pathway model of perfectionism and

mental health was not invariant with respect to perceived stress level, such that the model fit of

the fully constrained model was significantly different from the fully unconstrained model (i.e.,

$\chi^2_{diff(77)}$ = 216.16, p < .05; ΔCFI = .05; ΔRMSEA = .005). Specifically, the findings suggested

that the factor loadings were not invariant with respect to perceived stress level (i.e., $\chi^2_{diff(5)}$ =

20.48, p < .05; ΔCFI = .004; ΔRMSEA = .001). The source of the problem was uncovered by

releasing one constraint at a time. Results showed that when the constraint for the factor

loading of depression on mental health was released the model with the remaining factor loading

constrained to be equal between the groups was not significantly different from the fully

unconstrained model (i.e., $\chi^2_{\text{diff(4)}} = 5.35$, $p > .05$; ΔCFI = .001; ΔRMSEA < .001). Specifically,

results demonstrated that the factor loading of depression on mental health was significant for

both groups, but that depression was a stronger indicator of mental health in the high stress group

($\beta = -.97$) than in the low stress group ($\beta = -.83$). While the structural paths (i.e., $\chi^2_{\text{diff(36)}} = 41.59$,

$p > .05$; ΔCFI = .002; ΔRMSEA = .004) were invariant with respect to perceived stress level, the

structural covariances (i.e., $\chi^2_{\text{diff(57)}} = 97.89$, $p < .05$; ΔCFI = .015; ΔRMSEA = .003) and error

variances were not (i.e., $\chi^2_{\text{diff(76)}} = 207.99$, $p < .05$; ΔCFI = .047; ΔRMSEA = .003). Thus, after

accounting for higher-order personality traits, results demonstrated that SPP was associated with

lower levels of social support which, in turn, was related to poorer mental health in both the low

and high stress groups, whereas SOP was related to higher levels of social support, which, in

turn, was related to better mental health in both the low and high stress groups, when the effects

of SPP were included in the model and held constant.

In sum, the findings indicated that individuals with higher levels of SPP experienced

poorer mental health and that this relationship held even after accounting for broader personality

traits that are related to both perfectionism and to mental health. Further, the findings showed

that the link between SPP and mental health was fully accounted for by social support and stress,

such that individuals with higher levels of SPP experienced higher levels of stress and lower

levels of social support, which, in turn, were related to poorer mental health. When SPP and

higher-order personality traits were accounted for in the models, SOP was found to be largely

unrelated to mental health, with the exception that SOP was associated with better mental health via its positive association with social support. However, this effect was quite modest and only present when the effects of SPP were included in the model and held constant.

Sample Comparisons

Multiple group comparisons were conducted to determine whether the models assessing physical health and mental health, while including the broader personality traits, were equivalent between samples. Given the apparent differences between the models for each sample for physical health, it was not surprising that the models were not invariant with respect to sample, as the fully unconstrained model was quite different from the fully constrained model for factor loadings (i.e., $\chi^2_{diff(7)} = 96.06$, $p < .05$; $\Delta CFI = .015$; $\Delta RMSEA = .004$), structural paths (i.e., $\chi^2_{diff(46)} = 297.60$, $p < .05$; $\Delta CFI = .042$; $\Delta RMSEA = .007$), covariances (i.e., $\chi^2_{diff(67)} = 611.94$, $p < .05$; $\Delta CFI = .092$; $\Delta RMSEA = .014$), and error variances (i.e., $\chi^2_{diff(83)} = 1590.78$, $p < .05$; $\Delta CFI = .253$; $\Delta RMSEA = .035$). Further analyses revealed that there were two specific differences between the samples in terms of factor loadings, such that physical functioning was a much stronger indicator of the latent construct for physical health for the chronically ill sample ($\beta = +.65$) than for the student sample ($\beta = +.32$) and the size of the social support network was a stronger indicator of latent construct for social support for the chronically ill sample ($\beta = +.78$) than for the student sample ($\beta = +.71$). When these constraints were released, there were no significant differences between a model in which the remaining factor loadings were constrained to be equal between samples and the fully unconstrained model (i.e., $\chi^2_{diff(5)} = 6.09$, $p > .05$; $\Delta CFI < .001$; $\Delta RMSEA = .001$).

With regards to the differences between samples in structural paths, results from follow-up analyses revealed that there were many significant differences. For instance, while SPP was negatively related to perceived social support in both samples, the relationship was much stronger in the chronically-ill sample ($\beta = -.49$) compared to the student sample ($\beta = -.28$). Respondents' sex was negatively associated with health-risk behaviours only in the student sample. There were also several inconsistencies with regard to direct associations with physical health. For example, while stress was negatively related to physical health in both samples, the relationship was stronger in the student sample ($\beta = -.58$) than in the chronically-ill sample ($\beta = -.34$). Health-promotion behaviours were only associated with better health in the chronically-ill sample and health-risk behaviours were only associated with poorer health in the student sample. Conscientiousness and extraversion were positively related to physical health only in the student sample. Finally, there were several differences concerning personal income as well, which was not unexpected, given that there was much more variance in personal income for the chronically-ill sample compared to the student sample. For example, while men reported higher personal incomes in both samples, there was a stronger positive relationship between respondents' sex and personal income in the chronically-ill sample ($\beta = +.19$) compared to the student sample ($\beta = +.11$). Conscientiousness and SOP were positively associated with personal income only in the chronically-ill sample. In sum, results from multiple group analyses revealed that while there were some important consistencies between the two samples in the model concerning perfectionism and physical health, there were also several very important differences between the samples that need to be recognized and addressed.

In light of the ostensible differences between the samples in the model linking perfectionism with mental health, the model was not expected to be invariant with respect to sample. Results from multiple group analyses supported this notion, as the fully unconstrained model was quite different from the fully constrained model for factor loadings (i.e., $\chi^2_{diff(6)}$ = 113.00, $p < .05$; ΔCFI = .014; ΔRMSEA = .005), structural paths (i.e., $\chi^2_{diff(45)}$ = 262.07, $p < .05$; ΔCFI = .029; ΔRMSEA = .005), covariances (i.e., $\chi^2_{diff(66)}$ = 576.41, $p < .05$; ΔCFI = .069; ΔRMSEA = .013), and error variances (i.e., $\chi^2_{diff(82)}$ = 1559.20, $p < .05$; ΔCFI = .20; ΔRMSEA = .035). Subsequent analyses indicated that there were substantial differences between the samples in the measurement model for mental health, such that the factor loadings for energy-vitality, social functioning, and depression were not invariant with respect to sample. Results revealed that the primary differences were that energy-vitality and social functioning were much better indicators of mental health for the student sample (β = +.71, β = +.71, respectively) than for the chronically-ill sample (β = +.41, β = +.45, respectively). Moreover, the measurement model for perceived social support was not invariant with respect to sample, as the size of the social support network was a stronger indicator of social support for the chronically-ill sample (β = +.78) than for the student sample (β = +.68). The majority of structural paths were not invariant with respect to sample, further suggesting that the model linking perfectionism with mental health was not equivalent between the two samples.

Discussion

In this study, the link between perfectionism and health was examined in a sample of relatively young and healthy university students and a community sample of adults suffering from various chronic illnesses. This study contributed to the literature in several important ways, as it was the first to utilize structural equation modeling to assess the differential effects of Hewitt and Flett's (1991b) dimensions of perfectionism on health within the context of a theoretically-derived five pathway model while accounting for the effects of higher-order personality traits. Further, the models were tested with two diverse samples, thus increasing the generalizability of the findings. Several significant findings were obtained from the study.

First, the results from this study demonstrated that individual differences in perfectionism are important for health and well-being in that perfectionism was consistently linked with physical health, mental health, and SWB, even after consideration of broader personality traits related to both perfectionism and health. Second, when the direct relations between perfectionism and health were assessed, results revealed that Hewitt and Flett's dimensions of perfectionism indeed, shared, differential associations with health and well-being, which were fairly consistent across both samples (with the exception of SWB). As expected, SPP was consistently shown to be a specific vulnerability factor for poorer health and well-being. This is a key finding, as it not only replicated previous studies (e.g., Molnar et al., 2006), but provided clear evidence that the association between SPP and health does not simply reflect a general proclivity towards negativity, as the link between SPP and health remained significant even after including the effects of neuroticism.

When assessing the direct link between SOP and health, results indicated that SOP was only modestly related to indices of health and well-being. For example, despite SOP being related to poorer health and well-being at the level of zero-order correlations in the chronically-ill sample and being associated with lower levels of energy-vitality and higher levels of positive and negative affect in the student sample, SOP was not directly related to health or well-being in any of models when the effects of SPP and higher-order personality traits were included. These results are consistent with past studies which have failed to find substantial links between SOP and health (e.g., Hadjistavropoulos et al., 2007), but are at odds with work conducted by Fry and Debats (2009) which showed that SOP was longitudinally predictive of all-cause mortality.

Without examining more complex models that include possible mechanisms that contribute to the link between perfectionism and health, one would conclude based on this study's findings that SOP is largely unrelated to health and well-being. Yet, in this case this would be an erroneous conclusion because when broken down into direct and indirect effects, empirical support was consistently garnered for the hypothesized indirect (as opposed to direct) link between perfectionism and health. The cross-sectional nature of the present work did not allow conclusions concerning causality and temporal order to be drawn. However, a significant contribution of this study was in supplying empirical support for the conceptual model in which both SPP and SOP are associated with health via numerous interconnected intervening pathways.

The Relative Contribution of the Five Model Pathways

When the relative role of each of the five hypothesized pathways linking perfectionism (i.e., SOP and SPP) to health (i.e., perceived stress, income, health-risk and health-promotion behaviours, and perceived social support) was assessed, results from the student sample demonstrated that SPP was linked to higher levels of perceived stress and lower levels of perceived social support. When the overlap with SPP was statistically accounted for in the models, SOP was associated with higher levels of stress, higher levels of perceived social support, and lower levels of health-risk behaviours. In the community sample of adults with chronic illness, SPP was associated with higher levels of stress, more engagement in health-risk behaviours, and lower levels of social support. Conversely, when the overlap between SOP and SPP was accounted for in the models, SOP was linked with higher levels of income and higher levels of perceived social support. SPP was consistently linked with higher levels of stress and with lower levels of perceived social support in both samples while SOP was linked with higher levels of perceived social support in both samples. Moreover, of the five potential pathways, only stress was uniquely associated with physical health in both samples and only stress and perceived social support were both uniquely associated with mental health in both samples.

Perceived stress. Overall, results from both samples clearly identified stress as one of the fundamental mechanisms linking perfectionism to indices of health and well-being. These findings are in keeping with Flett and Hewitt (2002), who have reasoned that perfectionists' relentless striving for unreasonably high standards coupled with their harsh self-evaluative style leave them prone to experience greater stress. They have further asserted that perfectionists

actually "take an active role in creating or generating stress for themselves...by stringently evaluating themselves and others, focusing on negative aspects of performance, and experiencing little satisfaction (in their endeavours)" (p.259). Indeed, research has supported the notion that perfectionists have more exposure to stress, by showing that both SOP and SPP are associated with higher levels of self-imposed pressure (e.g., Flett, Parnes, & Hewitt, 2001, as cited in Flett & Hewitt, 2002), and with experiencing more negative life events that have a higher likelihood of being self-generated (e.g. divorce, getting fired from a job). Evidence has also been garnered to support the premise that individuals with elevated levels of perfectionism are more reactive to stress than those with lower levels of perfectionism (e.g., Fry, 1995; Frost et al., 1995). For instance, Wirtz et al. (2007) found in their study of middle-aged men, that perfectionism, particularly the dimension of concern over mistakes, was associated with higher cortisol stress reactivity, including HPA axis activation in response to a psychosocial stressor. Thus, perfectionism has been shown to be related to both greater stress exposure and greater reactivity to stress.

In keeping with the wealth of research that has consistently found a robust link between stress and psychopathology, Flett and Hewitt (2002) have argued that stress is one of the primary mechanisms linking perfectionism to psychological maladjustment. The findings from the current study not only support previous studies, which have shown that stress plays a pivotal role in the association between perfectionism and mental health (e.g., Chang, 2000; Dunkley et al., 2003), but are noteworthy, because they also clearly demonstrate the important role of stress in the link between perfectionism and physical health.

Alternatively, it could be argued that the perfectionism - stress - health pathway simply represents a general tendency toward complaining and negativity, rather than a causal sequence, because SOP, SPP, perceived stress, and measures of self-reported health have all been found to be positively related to neuroticism (Hill et al., 1997; Watson & Pennebaker, 1989). Indeed, Larsen (1992) found that individuals high in neuroticism are prone to negative cognitive biases with regard to health, such that individuals high in neuroticism tend to not only report higher levels of health symptoms at baseline, but also later recall those symptoms to be worse than originally reported. While the findings from the current study cannot completely rule out this explanation of the data because all of the measures were self-report and a cross-sectional design was employed, they diminish its likelihood, as the SPP-stress-health pathway remained statistically significant in both samples and across all indices of health when the effects of neuroticism were included in each of the models as did the SOP-stress-physical health pathway in the student sample. Thus, while conclusions regarding causality and temporal order cannot be afforded due to the cross-sectional nature of the study, it can be concluded that perfectionism is uniquely associated with health and that stress contributes to their association.

With regard to the specific dimensions of perfectionism, the SPP-stress-health pathway was far more robust than the SOP-stress-health pathway, as the association between SPP and all indices of health and well-being were mediated by stress in both samples, while stress only mediated the link between SOP and physical health, and this pathway was only present in the student sample. These results suggest that individuals who have a tendency to perceive that perfectionistic standards are being imposed upon them by others, rather than emanating from within the self, are particularly prone to experiencing higher levels of stress which, in turn,

results in their experiencing poorer physical health and well-being. Indeed, research (e.g. Flett, Velyvis, & Hewitt, 2001, as cited in Flett & Hewitt, 2002) has supported Flett and Hewitt's (2002) notion that those who are characterized by higher levels of SPP are prone to higher levels of stress due to their high levels of interpersonal sensitivity and interpersonal awareness, which makes them more likely to construe ambiguous interpersonal feedback as threatening, thus, creating stress from what is most likely a harmless situation. The results from the present study extend the literature by not only showing that SPP shares a unique relationship with stress after considering the effects of neuroticism across two very disparate samples, but by demonstrating that the link between SPP and stress has implications for physical health and well-being along with mental health.

SOP was positively related to stress in all of the models for the student sample. However, stress only mediated the relationship between SOP and physical health, as the specific indirect effect of SOP via stress to mental health and SWB failed to reach statistical significance. SOP was not related to higher levels of stress in the models for the sample of adults with chronic illness. Results in the literature also have not been consistent with regard to the link between SOP and stress, with some studies showing positive associations between SOP and stress (e.g., Hewitt & Flett, 1993) and others finding no association (e.g., Chang & Rand, 2000; Chang, 2006). Generally speaking, results have tended to show that SOP seems most highly related to achievement stressors (e.g., Hewitt et al., 1996). Thus, perhaps SOP is more relevant and likely to be activated by daily achievement pressures and evaluations for students and may be less relevant for the chronically medically ill. That is, the students' stressors may be more achievement-based and thus more relevant to SOP, while the stress of the chronically-ill sample

may be more interpersonal or more related to their health conditions. Having said this,

however, it must be acknowledged that this explanation is speculative and warrants replication.

Alternatively, it could be argued from a statistical perspective that the null findings

concerning the path from SOP to stress in the chronically-ill sample was a result of redundancy

effects. That is, the variance in SOP that was shared with SPP was responsible for the positive

zero-order correlation between SOP and each of the indicators of stress rather than the unique

variance in SOP. For instance, when both SPP and SOP were included in the models for the

chronically-ill sample, SOP was not related to stress, despite SOP's positive association with

each of the indicators of stress at the level of zero-order correlations. Yet, when the effects of

SPP were *not* included in the models for the chronically-ill sample, SOP was positively related to

stress, which in turn, was related to physical and mental health. These results clearly illustrate

redundancy. Thus, when the effects of SPP were included in the analyses, SOP appeared to have

more desirable outcomes. Further, redundancy was found in the chronically-ill sample, where the

correlation between SOP and SPP was higher compared to the student sample. These findings

suggest that in the chronically-ill sample, the common variance between SOP and SPP (e.g., high

on both factors), and not SOP per se, may have been responsible for the undesirable health

outcomes found at the level of zero-order correlations. While the results from the chronically-ill

sample clearly support this conclusion, results from the student sample clearly demonstrated that

higher levels of SOP were related to experiencing greater stress, which in turn, were related to

experiencing poorer physical health, even when the effects of SPP were taken into account.

Thus, one important implication of the present work is in providing direct empirical evidence for

the linkage between perfectionism and various indices of health via the stress pathway and in

showing that the relationship between SOP and stress may vary as a function of sample characteristics.

Perceived social support. Evidence for the social support pathway linking perfectionism and indices of health was also yielded from the present work. SPP was consistently associated with perceiving less social support, which, in turn, was related to poorer mental health in both samples, poorer physical health in the chronically ill-sample, and lower levels of SWB in the student sample. Consistent with theories which suggest that individuals with high levels of SPP tend to be overly concerned with gaining perfect social approval from individuals whom they view as being unfair and overly critical, and tend to react with higher degrees of sensitivity to personal rejection (Flett et al., 1994; Hewitt & Flett, 1991b), it was not surprising that this dimension of perfectionism was associated with lower levels of perceived social support. The current findings are also in line with past research that has shown that SPP is associated with a wide range of relational difficulties including marital discord, experiencing negative social interactions more frequently and with higher levels of hostility, neediness, fear of evaluation, shyness, and loneliness (Flett et al., 1996, 1997; Hewitt et al., 2006). The finding that perceived social support was related to better physical and mental health is in line with past studies (e.g. House et al., 1988). Interestingly, perceived social support was only related to physical health in the chronically-ill sample when all of the other mediators were considered simultaneously, suggesting that a felt sense of detachment may be particularly detrimental for health for those who are currently experiencing illness.

The present work replicates findings by Dunkley et al. (2000) who found that evaluative concerns perfectionism (i.e., SPP from the MPS-HF and doubt about actions and concern over

mistakes from the MPS-F) was associated with lower levels of perceived social support in a sample of college students and extend them by showing that these findings are also generalizable to individuals suffering from various chronic illnesses. These results also support the social disconnection model put forth by Sherry et al. (2008), which posits that individuals high in SPP are more likely to experience poorer mental health in part because they feel a profound sense of disconnection from others. As reasoned by Sherry et al. (2008), persons high in SPP may be at a greater risk of poorer mental health because they "engage in a pattern of distorted social appraisals and interpersonally aversive behaviours that hinder the development of stable and supportive relationships" (p.343). The current findings further extend the social disconnection model to physical health, as individuals higher in SPP not only reported poorer mental health, but also poorer physical health and the link between SPP and physical health was also in part explained by individuals' appraisals of low levels of social support. In sum, the current study underscores the importance of relational factors when studying links between perfectionism and health.

While the present work indicates that individuals with higher levels of SPP appraise others as being unavailable or unwilling to support them, they do not address whether this appraisal is realistic or biased, as only perceived social support was assessed. However, Sherry et al. (2008) measured both perceived and received social support in their study of undergraduates and found that perfectionism was related to perceived social support and unrelated to received social support, which was operationally defined in the study by the Inventory of Socially Supportive Behaviors which assesses overt behaviours (e.g., assisting with a goal, providing transportation, or providing a place to stay). Thus, the findings from the Sherry et al. (2008)

study indicate that individuals with higher levels of SPP do not actually receive lower levels of assistance or support from others, yet feel unsatisfied with the level of support that they are receiving. This finding is in line with studies which have demonstrated that those with higher levels of SPP believe that others are highly critical of them. Thus, as Sherry et al. (2008) point out, it may be that individuals with higher levels of SPP are misinterpreting their received social support (e.g., attempted support is perceived as degradation and criticism rather than as help), which leaves them with a sense of dissatisfaction and disconnection from others.

SOP, on the other hand, was related to higher levels of perceived social support in both samples. The finding that SOP was related to higher levels of social support was unexpected, as SOP tends to not be related to interpersonal factors in the literature. While these results were unanticipated, they are congruent with research conducted by Flynn et al. (1998) as cited in Flett and Hewitt (2002) and Hill et al. (1997), which examined the relationship between perfectionism and the interpersonal circumplex and found that SOP was largely related to higher levels of agreeableness and gregariousness in women, both of which have been shown to be related to experiencing greater perceived social support (Finch & Graziano, 2001; Swickert, 2009). Likewise, Flett et al. (1996) found in their primarily female sample that individuals high in SOP were particularly nurturing in their relationships. Given that both of the samples in the present study were predominantly female, it could be reasoned that the women who were high in SOP made their relationships a focus, such that they fostered their relationships more than those with lower levels of SOP, which resulted in stronger social support networks. With that being said, it must be noted that this reasoning is speculative at best and replication is required before definitive conclusions can be made.

However, a more likely explanation for this unexpected finding is statistical in nature, because the positive relation between SOP and perceived social support was clearly the result of negative suppression in the chronically-ill sample and classic suppression in the student sample. In the chronically-ill sample, for example, SOP was negatively related to each of the indicators of social support at the level of zero-order correlations, but was positively related to social support in the SEM models when the effects of SPP were accounted for, clearly illustrating negative suppression effects. Likewise, in the student sample, SOP was unrelated to each of the indicators of social support at the level of zero-order correlations, yet was positively related to social support in the SEM models when the effects of SPP were taken into account. These results indicate a case of classical suppression.

Suppression effects are becoming increasingly common in the perfectionism literature, which is not surprising given that the correlations between SOP and SPP typically range between .40 and .50 (Enns et al., 2002; Stoeber & Otto, 2006). For instance, in their study examining a mediational model of perfectionism, emotional dysregulation, and psychological distress, Aldea and Rice (2006) found that personal standards perfectionism (PS) and emotional dysregulation were positively related at the level of zero-order correlations, yet PS was negatively related to emotional dysregulation when evaluative concerns perfectionism (EC) was statistically accounted for in the analyses. Based on their findings, Aldea and Rice (2006) concluded that statistically controlling for the effects of one dimension of perfectionism (e.g. EC) serves to "purify" the remaining dimension (e.g. PS). Likewise, Hill, Hall, Appleton, and Murray (2010) found suppression effects when testing their mediational model of perfectionism, validation-seeking, and athletic burnout with a sample of athletes. Specifically, they found that SOP was

positively related to validation-seeking at the level of bivariate correlations. However, no association was found between SOP and validation-seeking in the SEM model when the effects of SPP were included in the analyses. Based on their findings, Hill et al. (2010) suggested that the suppression effects of SOP and SPP suggest that some of the undesirable effects associated with SOP may reflect its shared variance with SPP. The results from both samples clearly support this point.

Personal income. Results from the present work provided only modest support for the notion that SES is an important pathway linking perfectionism to indices of health and well-being, as personal income mediated only the relationship between SOP and physical health and this result was only found in the chronically-ill sample. The findings from the chronically-ill sample linking SOP to better physical health via higher levels of personal income are in keeping with work which shows that perfectionism is linked with higher levels of achievement (e.g., Bieling et al., 2003; Grzegork et sl., 2004; Stoeber & Kersting, 2007) and the large literature demonstrating the robust link between SES and health (e.g., Adler et al., 1994; Blaxter, 1987; Hann et al.,1987; Marmot et al., 1987; Marmot et al., 1997). While SOP was related to higher levels of personal income which, in turn, was related to better mental health in the chronically-ill sample, the specific indirect effect itself did not achieve statistical significance. In the context of the five-pathway model, these findings suggest that the personal income pathway linking SOP to mental health may be less relevant compared to stress and perceived social support pathways for the chronically-ill sample.

Neither dimension of perfectionism was related to personal income in the student sample. Moreover, despite the robust relationship between SES and health in the literature, personal

income was not uniquely associated with any of the indices of health in the student sample. One possible explanation for these null findings is the restricted range of personal income for the student sample, as this sample was largely homogeneous in terms of SES status, given that the sample consisted largely of full-time university students (rather than part-time students), most of whom had part-time jobs with similar degrees of income. Thus, there simply may not have been enough variance in personal income to adequately test the pathway among the students.

Health-Related behaviours. Very little support was garnered for the notion that health-related behaviours represent important intervening pathways from perfectionism to health and well-being. For instance, neither dimension of perfectionism was related to health-promotion behaviours, and health-promotion behaviours were not associated with health and well-being in the structural models for either sample. Further, while SOP was associated with less engagement in health-risk behaviours in the student sample and engagement in health-risk behaviours was associated with poorer health and well-being, the specific indirect effect of SOP to health and well-being via health-risk behaviours did not reach statistical significance. Likewise, while SPP was associated with engagement in more health-risk behaviours in the chronically-ill sample, health-risk behaviours was unrelated to health. A likely statistical explanation for the lack of support for the health-related pathways is that the null findings may reflect a certain degree of multicollinearity among the pathways - an explanation that will expanded upon further in the following section. A second explanation for the lack of findings concerning the health-related pathways may reflect the cross-sectional nature of the study, such that most studies which have reported the health-damaging effects of behaviours such as poor diet, smoking, and higher levels

of alcohol use have focused on the long-term effects of these behaviours, which were not examined in the current work.

In sum, while the present work found that the health-behaviour pathways linking perfectionism to health and well-being were not considered to be relevant relative to the other pathways in the five-pathway model, evidence was found to support the notion that SOP may embody some positive features among students, as it was associated with less engagement in health-risk behaviours in this sample. Thus, students who were high in SOP were less likely to use illicit drugs, drink large amounts of alcohol, or drive dangerously. In light of the robust relationship between SOP and conscientiousness, the present findings are consistent with studies that have clearly shown that conscientiousness is negatively related to health-risk behaviours (Bogg & Roberts, 2004; Friedman et al., 1995) and adds to the literature by demonstrating that SOP may have some protective features.

Associations Among the Five Model Pathways

An important contribution of the present study was that all of the five hypothesized pathways linking perfectionism to health and well-being were tested simultaneously. While each of the five pathways has been theorized in the literature and some of the individual pathways have been tested, (e.g., stress and social support pathways) the present work was the first to examine all five intervening pathways simultaneously. This was a valuable step, as evidenced by the associations among the pathway variables in the present work. In the student sample, for instance, social support, stress, and health-promotion behaviours were associated with one another, while income was only modestly associated with health-risk behaviours and with the size of the social support network. Moreover, all of the pathway variables were associated with

the measured indicators of physical and mental health and SWB, with the exception of income. Yet, only stress was associated with physical health in the predictive model and only stress, health-risk behaviours, and social support were associated with mental health and SWB in the predictive models. The pattern of intercorrelations among the pathway variables was even stronger in the chronically-ill sample where all of the pathway variables were inter-related with the exception of income, which was not related to social support. Further, all of the pathway variables, with the exception of health-risk behaviours, were related to physical and mental health in the predictive models, despite health-risk behaviours being related to measured indicators of mental health in bivariate correlations.

When examining the results in the context of the five pathway model and with respect to both samples, it appears that the stress pathway was the most salient in terms of the link between perfectionism and physical health, while the stress and social support pathways were the most important pathways with regard to mental health and well-being. These results could be interpreted from a statistical standpoint as reflecting multicollinearity among the multiple pathways, such that the variability that each pathway variable accounted for in health and well-being overlapped to some degree, and when the shared variability among the pathway variables was taken into account in the model, the unique associations between stress and physical health, stress and mental health, and social support and mental health were more robust and consistent compared to the other unique associations.

From a developmental psychopathology framework (Cicchetti, 1984; Sroufe & Rutter, 1984), one could argue on conceptual grounds that the pathway variables are associated with one another through a sequence of processes instead of taking place all at once in response to

perfectionistic tendencies. Flett and Hewitt (2002), for instance, have argued that perfectionism leads to experiencing higher levels of stress, and stress has been found to be predictive of many health-risk behaviours, such as alcohol use (e.g., Brady & Sonne, 1999) and smoking (e.g. Cohen & Lichtenstein, 1990). Further, some psychosocial models of social support and health suggest that social support promotes better health because individuals with higher levels of social support are exposed to greater pressure to follow normative health behaviours, and as such taking better care of themselves (see Cohen, 1988). Blazer (1982), for example, found that those with higher levels of social support at baseline reported better health practices 30 months later. Thus, there are many ways of organizing the pathway variables that have not been addressed in the current study. Future research should concentrate on delineating the various arrangements of these pathway variables and employ prospective longitudinal research designs to extend the current work.

Consistency of the Model Across Samples

A novel contribution of the present work was that the five-pathway model linking perfectionism to health and well-being was tested with two disparate samples: a sample of relatively young and healthy university students and a sample of primarily middle-aged individuals who were suffering from various chronic illnesses. Notwithstanding substantial differences in age, employment, physical health, mental health, and SWB, there were some striking similarities in the models across the two groups. First, perfectionism and physical health were indirectly associated with one another via the stress pathway in both samples. Second, perfectionism and mental health were indirectly linked through the stress and social support pathways in both samples. These similarities in the structural model across two dissimilar

samples speak to the importance of these pathways when studying the health consequences of perfectionism and provide strong support for both stress generation and social disconnection models of perfectionism and further extend both models to physical health.

In light of the ostensible differences between the samples, it comes as no surprise that there were also several points of divergence in the findings between the samples, many of which have been discussed previously. The most notable difference was the fact that the proposed measurement model for the latent construct SWB, which has received ample support in the literature (e.g., Arthaud-Day et al., 2005; Molnar et al., 2009) and fit the data well in the student sample, did not fit in the chronically-ill sample. Thus, the conceptual model linking perfectionism to SWB could not be tested with the chronically-ill sample. While measuring SWB as a latent construct that captures the common variance among its three components (i.e., positive affect, negative affect, and life satisfaction) is an accepted and common practice in the SWB literature, it is not the sole method. For instance, in a recent review paper on the structure of SWB, Busseri and Sadava (in press) clearly demonstrated that there is no gold standard for assessing the structure of SWB and outlined five different methods in which this could be done. Many researchers fail to be consistent when assessing the structure of SWB, sometimes treating SWB as a second-order latent construct while at other times treating it as three separate components. However, Busseri and Sadava (in press) have provided compelling reasons for abandoning this practice and call on researchers to be consistent in their measurement approach (Busseri & Sadava, in press). Thus, while the conceptual model of perfectionism and SWB could have been tested using a different structural model of SWB, I chose against this option because testing the model with a different measurement model of SWB would have had a different

meaning. Speculating on why the structure of SWB varied as a function of sample characteristics in the present study is clearly beyond the scope of this paper. However, this work underscores the importance of giving serious thought to the assessment of the structure of SWB, which is timely, given the marked current interest in understanding the relationship between perfectionism and SWB.

Another salient difference between the samples was that SOP and SPP were more strongly related in the chronically-ill sample than in the student sample, which most likely accounted for the suppression effects of SPP in the chronically-ill sample. This finding was unexpected and warrants future investigation, as very little work has addressed how perfectionism changes across the lifespan and whether reciprocal relations are present between perfectionism and health status.

Diathesis-Stress Model of Perfectionism and Health

Up to this point, stress has been primarily discussed as a mediator of the relationship between perfectionism and health, yet it is far more common in the literature for stress to be treated as a moderator when linking perfectionism with various outcomes. Hewitt and Flett (1993), for instance, put forth the specific vulnerability hypothesis arguing that SOP is a vulnerability factor during times of stress or hardship. In other words, self-oriented perfectionists may appear to be thriving when things are going well, but they will be more likely to experience distress than nonperfectionists when they experience failure or other negative life-events because their perfectionism enhances the aversiveness of the stress that they are experiencing. While this reasoning can also be applied to SPP, such that SPP may be particularly aversive under stressful conditions, researchers have tended to find that the effects of SPP are much more direct and

therefore influenced to a lesser degree by moderating factors (Flett & Hewitt, 1995). The results of the current work, however, failed to find support for the specific vulnerability hypothesis in either sample, as the links between SOP and health and between SPP and health did not change as a function of stress. These findings are in line with other studies that have failed to find support for diathesis-stress models of SOP (Dunkley & Blankstein, 2000; Sherry, Hewitt, Flett, & Harvey, 2003) or SPP (e.g., Dean & Range, 1996, 1999; Hewitt et al., 1996, 2002). Thus, the results from this study suggest that stress is better conceptualized as a mediator of the relationship between perfectionism and health rather than as a moderator.

Conclusions

In summary, when the effects of higher-order personality traits were taken into account, results demonstrated that perfectionism was uniquely associated with indices of health and well-being. This work adds to the growing literature demonstrating the predictive utility of narrower personality traits, such as perfectionism, showing that perfectionism is more than just a mix of neuroticism and conscientiousness. Most importantly, the findings from this study yielded initial support for the proposed theoretically-based five-pathway model relating perfectionism to health and well-being via the stress, SES, health-behaviour and social support pathways. This work clearly underscored the importance of examining indirect pathways from perfectionism to health, as the complex relationship between SOP and health would have been completely overlooked if only direct associations between perfectionism and health had been examined. Findings from the current study highlighted the significance of the stress and social support pathways when understanding the relationship between perfectionism and health, as the relationship between SPP and health was completely mediated by these processes and SOP was indirectly related to

indices of health and well-being via the stress (student sample) and social support pathways. Limitations, future directions for research, and implications of the current work are discussed in the General Discussion Section that follows.

CHAPTER 4

General Discussion

Can Perfectionism be Healthy?

The research question driving this work concerned whether perfectionism, operationally defined in terms of Hewitt and Flett's (1991b) model of perfectionism, has both beneficial and detrimental features in terms of individuals' health and well-being. As expected, the evidence from the current study clearly supported the notion that SPP is deleterious to individuals' health and well-being. Findings from Study One demonstrated that SPP is directly associated with poorer health and well-being in both university students and adults suffering from various chronic health conditions, and further showed from a person-centered perspective that there is a large group of individuals with high levels of SPP and that it is, indeed, these individuals who reported the poorest health and lowest levels of well-being. Thus, individuals who perceive that perfectionistic standards are imposed on them by others are at an increased risk for poorer health and well-being.

The results concerning SPP replicate the existing literature, which has demonstrated that SPP taps the maladaptive aspects of perfectionism (Dunkley et al., 2003; Frost et al., 1993; Hewitt & Flett, 1991a; Saboonchi & Lundh, 2003; Sorotzkin, 1985) and extends it in important ways. For instance, previous studies that have examined the relationship between perfectionism and mental health, physical health, or well-being have often failed to account for higher-order personality traits, as measured by the FFM (Costa & McCrae, 1992) when testing their models. While a multitude of research supports the premise that SPP is associated with a host of negative outcomes, few have tested whether it provides greater incremental explanatory power over and

above higher order personality traits, such as neuroticism, which is an important test of the value of the lower order construct (Paunonen, 1998). However, it was clearly demonstrated in this work that SPP is a unique vulnerability factor for poor health and well-being, as the negative relationship between SPP and health remained when the effects of neuroticism were accounted for in the analyses, speaking to the incremental predictive utility of perfectionism with regards to health and well-being.

Further extending the literature, were the results from the meditational analyses which not only demonstrated that SPP was related to poorer health and well-being, but went further by delineating the specific mechanisms that explain their relationship. Relative to health-relevant behaviours and SES, results clearly underscored the importance of stress processes and perceived social support in explaining the relationship between SPP and health. These results lend support to stress generation models of perfectionism (Flett & Hewitt, 2002) and to the social disconnection model of perfectionism (Sherry et al., 2008) and further demonstrate each model's validity in the prediction of physical health as well as psychological distress.

In stark contrast to the consistent results regarding SPP and health, the findings concerning SOP were complex, as SOP was associated with both desirable and undesirable correlates in the current investigation. These findings are consonant with the literature, which has shown that SOP is related to both positive and negative health outcomes. For instance, on the one hand, Fry and Debats (2009) found that SOP was longitudinally predictive of all-cause mortality among a community sample of older adults, such that those with high levels of SOP were at a 51% increased risk of death. However, on the other hand, Fry and Debats (2010) found, in a community sample of older adults suffering from Type 2 diabetes, that SOP was associated with

greater longevity, such that those with high levels of SOP lived significantly longer than those with low levels of SOP. In trying to explain this unexpected finding, Fry and Debats (2010) speculated that perfectionism, at least when directed at oneself, can foster longevity among older adults with Type 2 diabetes by helping them better manage the strict medical regimen that must be followed by diabetics, such as consistently monitoring their blood glucose levels and following a stricter diet.

The results that emerged from the current investigation help to alleviate some of the confusion surrounding the relationship between SOP and health, as they clearly show that SOP is not healthy or unhealthy in an absolute sense. Rather, the relative healthiness of SOP must be understood in the context of several important factors. First, the findings from Study One clearly illustrated that sample characteristics may, in part, determine the relative healthiness of SOP, as SOP appeared to be associated with more favourable outcomes among university students compared to those suffering from chronic medical illness. These findings are in line with the broader literature on perfectionism, which has tended to show that SOP is more deleterious in clinical samples, such as individuals with eating disorders or other forms of psychopathology.

Bearing in mind the numerous disparities between the samples in this study, it is impossible to accurately delineate why SOP appeared to function differently in the groups. However, one could make a case that SOP would be associated with more favourable outcomes among students because they are in an achievement-oriented setting where striving for perfection is not only actively encouraged, but often rewarded. For instance, research has demonstrated that individuals who report having higher levels of personal standards report higher levels of academic achievement (Accordino et al., 2000; Brown et al., 1999). In addition, as opposed to

the chronically-ill participants who were primarily middle-aged, the students were relatively young and healthy. Consequently, the potential damaging health effects from even very high levels of SOP may not have been evident yet. Hence, it may be that even high levels of SOP have some adaptive potential for the university students because they are rewarded for it and the harmful health effects of high levels of SOP have not had time to present themselves. Although, hints of future difficulties associated with SOP in students were apparent, as SOP was associated with being more emotionally unstable, and with experiencing higher levels of stress and negative affect.

Thus, like the conflicting results reported by Fry and DeBats (2009) and Fry and Debats (2010), the results from this work help to clarify why confusion exists in the literature surrounding the associations between SOP and indices of health and well-being, as these relationships were found to vary as a function of sample characteristics. Future studies would be well-served by evaluating the associations between perfectionism and indices of health and well-being with different populations to determine the generalizability of the findings. Further, while it was speculated that the differences between the samples in the associations between SOP and indices of health and well-being may have been the result of differences in age, employment status, and/or health status, these issues remain unclear. Consequently, one fruitful avenue for future research would be to include theoretically relevant moderators of the relationship between SOP and indices of health and well-being, which would permit researchers to determine what factors help to determine the relative healthiness or unhealthiness of SOP.

Second, results from Study One underscored the importance of assessing curvilinear relationships between SOP and health, rather than adhering strictly to testing linear models. In

the sample of adults with chronic medical illness, for instance, results clearly demonstrated that moderate levels of SOP were associated with better health and well-being, whereas both low and high levels of SOP were associated with poorer health and well-being. As previously discussed, these findings are theoretically consistent and suggest that rather than SOP being healthy or unhealthy in an absolute sense, there may be an optimal level of SOP. Accordingly, researchers need to allow for the possibility of curvilinear relationships between SOP and health in their work because linear associations between SOP and health may not capture the complexity of their relationship, and may lead to erroneous conclusions.

Third, the effects of suppression were evident in each of the analyses and responsible for the seemingly desirable effects of SOP in the chronically-ill sample, with the most striking case of suppression coming from Study Two in which the originally negative bivariate relationship between SOP and social support became positive when the effects of SPP were taken into consideration in the SEM models. Thus, when the joint variance between SPP and SOP was statistically accounted for in the analyses, SOP appeared to have desirable outcomes, as opposed to the bivariate correlations in which SOP appeared to have undesirable outcomes or no relationship with health and well-being.

As previously discussed, suppression effects in the area of perfectionism are becoming more prevalent, with some researchers suggesting that it is important to test multiple dimensions of perfectionism simultaneously so that researchers can statistically control for the joint variance among the dimensions of perfectionism so as to "purify" the dimension of interest (e.g. Aldea & Rice, 2006). While the idea of statistically accounting for the joint variance among the dimensions of perfectionism makes sense, given that the dimensions of perfectionism often

operate simultaneously within individuals, there are problems associated with this approach. An obvious difficulty with this statistical approach is that the shared variance among the different dimensions of perfectionism is often quite substantial, with correlations typically ranging from .40 to .60. For instance, in the current study the correlation between SOP and SPP was .52 in the chronically-ill sample. Consequently, removing this shared variance from the analyses may lead to the elimination of valuable information. Lynam, Hoyle, and Newman (2006), for example, have argued that "partialling changes variables…[and] that it is difficult to know what construct an independent variable represents once the variance shared with other independent variables is removed" (p.329). Lynam et al. (2006) further pointed out that as the degree of overlap between variables increases, the similarity between the residualized variable and the original variable decreases. Thus, in the case of perfectionism, where the dimensions are highly related, partialling the effects of one dimension from another drastically alters the substantive interpretation of the findings, as researchers can no longer be confident that the residualized variable reflects the original construct of interest. In this case, when the joint variance between SOP and SPP are statistically accounted for, the "purified" SOP may have reflected quite a different construct from the original SOP, thus resulting in quite divergent findings.

Thus, researchers who examine highly related constructs of interest, such as different dimensions of perfectionism, face quite a dilemma, as those who simply refer to bivariate correlations to examine links between perfectionism and health can be criticized on the grounds that these dimensions are highly related and therefore do not operate independently within people, as the bivariate associations would suggest. However, researchers who examine different

dimensions of perfectionism simultaneously, thus accounting for the joint variance among

the different perfectionism dimensions can be criticized on the grounds that the partialled or

residualized variables often bear little resemblance to the original constructs of interest. Further,

the results from these two different approaches often result in conflicting results which leads to

greater confusion surrounding the relative healthiness of SOP.

One way to deal with this issue would be to create a hybrid model of perfectionism, as

has been done in the SWB literature (e.g., see Busseri et al., 2007). That is, a second-order

perfectionism factor could be created including each of Hewitt and Flett's (1991b) dimensions of

perfectionism, which would decompose the variance in perfectionism into both common and

dimension-specific sources. This type of model would help researchers clarify the relationship

between perfectionism and health by allowing them to test simultaneously how both the common

variance and the dimension-specific sources of variance in perfectionism are related to health

and well-being. For instance, it could be that the dimension-specific sources of variance

demonstrate more consistent and robust relationships with indices of health and well-being

compared to the common variance, which would highlight the unique facets of Hewitt and Flett's

dimensions of perfectionism. Conversely, it could be that it is only the common variance in

Hewitt and Flett's (1991b) dimensions of perfectionism that is substantively related to health and

well-being. These questions can be addressed by assessing the relations between both common

and dimension-specific sources of variance in perfectionism and indices of health and well-

being.

As was done in Study One, a second way to address these issues is to employ person-

centered approaches, which allow researchers to detect different configurations of perfectionism

as they occur within individuals, without setting the dimensions in opposition to one another. Thus, these procedures allow researchers to consider the dimensions simultaneously without losing the shared variance and the original essence of the constructs. For instance, the results yielded from the cluster analyses helped to clarify the suppression effects found in the SEM models described above concerning the desirability of SOP, namely the finding that SOP was related to much more undesirable outcomes when the effects of SPP were not considered, but was related to more desirable outcomes when the effects of SPP were accounted for the in the models.

The results from the cluster analyses reconciled the meaning of these findings by showing that SOP was neither healthy nor unhealthy in the absolute sense, as individuals in the "extreme perfectionism" group, who reported high levels of SOP, along with high levels in OOP and SPP, reported equivalent health to those in the "high SPP" group. Therefore, high levels of SOP did not buffer the negative health effects of SPP, suggesting that it is not adaptive in the sense that it serves a protective function. Further, those in the "extreme perfectionism" group reported high levels of neuroticism and stress in both samples, suggesting that this configuration may be at a particularly high risk for negative outcomes. Finally, the "high SOP and high OOP" cluster in the student sample tended to report the highest levels of health and well-being and the "high SOP and low SPP" cluster also reported relatively good health, such that their levels of health were equivalent to those in the "low SOP" and "nonperfectionism" clusters and better than those in the "high SPP" and "extreme perfectionism" clusters. Thus, it appears that individuals with high levels of SOP, even when accompanied by high levels of OOP may not experience negative health outcomes as long as they are also not high in SPP. However, it must be noted that

these individuals also reported higher levels of stress compared to individuals with moderate to low levels of perfectionism, which could be a risk factor for poor health and well-being over time.

Therefore, results from the person-centered approach yielded evidence that individuals exhibit a few prototypical profiles on Hewitt and Flett's (1991b) dimensions of perfectionism and that there is, indeed, a group of individuals who exemplify the profile of "high SOP". Moreover, when the different dimensions of perfectionism are considered simultaneously without removing their joint variance, SOP was found to be neither healthy nor unhealthy in the absolute sense. Consequently, one of the lessons garnered from this set of studies is to be cognizant when employing procedures that remove the joint variance among different dimensions of perfectionism, as the resulting findings, especially with regard to SOP, may not be applicable to the original construct of interest and lead to inaccurate interpretations of the data. One way to address this issue is to utilize different analytic procedures, such as person-centered approaches, to complement one's research.

Finally, when assessing the relationship between perfectionism and indices of health and well-being, results from Study Two clearly illustrated the importance of assessing indirect pathways from perfectionism to health, as the complex relationships between SOP and indices of health and well-being would not have been evident if only direct associations between perfectionism and health had been examined. For instance, the nonsignificant direct association between SOP and mental health in the student sample was actually masking two significant indirect effects which operated in opposing directions (e.g., SOP was indirectly associated with poorer mental health via higher levels of stress *and* indirectly associated with better mental

health via higher levels of social support in the student sample). It is not uncommon for studies that only assess the direct link between SOP and indices of health and well-being to report null findings, especially when the effects of SPP are included in the models (e.g., Vincent & Walker, 2000), However, as the current set of studies showed, without examining the indirect pathways that link perfectionism to health and well-being, one cannot be confident in concluding that SOP is unrelated to health and well-being because it may be that SOP shares a complex relationship with these health-related variables, which is essentially, washed out by indirect effects that are operating in opposing directions. Hence, examining indirect pathways from perfectionism to health and well-being not only elucidates the mechanisms that explain the link between perfectionism and health, which informs perfectionism theory and has direct clinical implications, but, on a conceptual level, may help to clarify the confusion surrounding the relative healthiness or unhealthiness of SOP.

In brief, the findings from this investigation provided robust evidence to support the contention that SPP is maladaptive for both relatively young and healthy university students and adults suffering from chronic medical illness. Individuals high in SPP consistently reported poorer health and lower levels of well-being, even after the effects of neuroticism, conscientiousness, and extraversion were taken into account, attesting to the importance of SPP as a specific vulnerability factor for health and well-being. Further, results highlighted the importance of stress processes and perceived social support in understanding the relations between SPP and health and well-being, as those with higher levels of SPP reported experiencing greater stress and having less social support available to them; both of which were related to experiencing poorer health and well-being.

This work also revealed the complexity of the relationships between SOP and indices of health of well-being, as results demonstrated that SOP is neither healthy nor unhealthy in an absolute sense. Rather, the findings suggested that several factors need to be considered when assessing the association between SOP and indices of health well-being, such as sample characteristics, possible curvilinear relationships between SOP and indices of health and well-being, the occurrence of suppression and redundancy, and the presence of indirect pathways from SOP to health and well-being that may operate in opposing directions, thus resulting in non-significant direct effects.

Limitations and Future Directions

Several limitations to the present study must be noted. First, assessments of all of the constructs of interest were derived from self-report data. Self-reported health measures have been criticized, as research has shown that they not only assess actual health problems, but may also tap neuroticism (Watson & Pennebaker, 1989). However, subjective self-report measures of health have demonstrated impressive construct and predictive validity. Indeed, simply asking individuals to rate their health on one single-item scale predicts subsequent mortality, even after statistically accounting for health-risk factors, such as physician ratings, diagnosed illnesses, SES, and health-risk behaviours (see review by Idler & Benyamini, 1997). Further, unique relationships between perfectionism and health emerged when the effects of neuroticism were accounted for in the models, thus diminishing the interpretation that the link between perfectionism and health reflected a general proclivity toward negativity. Nonetheless, it is important for researchers to corroborate the link between perfectionism and physical health with

other measurement procedures, such as "objective" measures of health. In addition, the inclusion of informant reports would also boost confidence in the validity of the results.

Moreover, on a separate, but related issue, the measure of self-reported stress included in the present study was not ideal, as it was composed of two very general questions concerning an overall assessment of how stressful individuals felt their lives were and how often they experienced stress in a one-week period. While significant effects concerning stress were clearly found in the present work, the magnitude of the effects may have been diminished due to the mediocre measure of stress that was used in this study. Future studies would be better served by employing a validated and more precise measure of stress, such as the Perceived Stress Scale (Cohen & Williamson, 1988). Further, given that stress was found to be a key mediating factor in the relationship between perfectionism and health, it is important to evaluate different aspects of stress (e.g. daily hassles, major life events, chronic stress) to gain a better understanding of which stress processes best explain the link between perfectionism and indices of health and well-being.

Third, the cross-sectional design of the present work along with the problem of equivalent models in SEM precludes inferences regarding the direction or temporal order of observed associations (see MacCallum, Wegener, Uchino, & Fabrigar, 1993). For instance, while the current results imply that perfectionism has an impact on health, there are plausible alternative interpretations of these findings. It could be argued, for example, that individuals with higher levels of SOP are not in better health than others, but may report better health due to denial because their perfectionism does not allow them to have any flaws, such as being sick. Furthermore, it may be that SPP not only results in poorer health, but that poor health increases

perfectionists` perceptions that others are putting more demands on them because perfectionists do not allow themselves the luxury of the sick role. The stability of the relationship between perfectionism and health also remains unknown. As a result, the longer-term associations between perfectionism and health are largely unknown. For instance, evidence from the personality literature has demonstrated that personality is surprisingly malleable (McCrae et al., 1999; Roberts et al., 2006), thus, the assumption that perfectionism is relatively stable and remains unaffected by health must to be assessed rather than assumed. Only longitudinal research utilizing a life-span perspective can truly address these questions. In addition, future longitudinal studies will facilitate our understanding of the dynamics by which perfectionism, stress, and social support are related to health. Thus, a longitudinal design would allow researchers to test the trajectories of change in the relationship between perfectionism and health over time.

Fourth, both studies were web-based studies, which have been criticized on the grounds that they generate lower response-rates, result in non-representative samples, and have limited accessibility (Rhodes et al., 2003). Countering these concerns is research that suggests that web-based studies result in samples that are representative and equivalent in quality to other methodologies. For instance, Lewis, Watson, and White (2009) compared a paper and pencil survey to an internet administered survey and found that these two methodologies yielded equivalent data. Furthermore, the internet sample was much more diverse than the comparison sample. With regards to the current study, it is certain that the samples were limited to those with internet access, thus reducing the generalizability of the findings. Further, while the study was advertised on several different internet sites covering a wide range of chronic illnesses, the

populations seeking information from these sites may have been biased compared to other populations of adults suffering from chronic illness. However, an advantage to using web-based surveys is that research suggests that web-based studies may actually provide greater accessibility to previously hidden populations (Rhodes et al., 2003; Ahern, 2005). For instance, many individuals in the sample of adults with chronic illness reported experiencing difficulty in mobility and may not have participated if they had been required to attend a paper and pencil survey session.

As with other web-based surveys, the diagnosed chronic medical conditions reported by the participants cannot be verified. To mitigate against the falsification of data, we only included participants who also reported the number of years that they have been diagnosed with the condition by their health-care provider. However, future research would be well served to test the models in the current work with chronically-ill individuals whose conditions have been verified by health-care providers to increase the validity of the findings. On a related note, I am confident that individuals did not attempt to deliberately falsify data with multiple submissions, as the program that I used required individuals to enter their unique ID code and disallowed multiple submissions from the same computer IP address.

With regard to the quality of the data garnered from web-based surveys, several studies have assessed the validity of web-based surveys by comparing the results of studies conducted on the web with identical studies in the real world. These studies suggest that the validity and reliability of data obtained online are comparable to those obtained by classical methods (Buchanan & Smith, 1999), as internet administration and pen-and-paper administration appear to be equivalent based on quality-of-life measures in adolescents, health-related questionnaires

completed by internet volunteers, and trauma survey in healthy college volunteers (Wu et al., 2009). For example, Ritter et al. (2004), who recruited participants from the internet and randomly assigned them either to a mail survey or to a web survey, observed that participation was at least as good, if not better, among the web survey group than among those receiving questionnaires by mail. In addition the investigators found that the responses to 16 health-related questions did not differ significantly between the two study groups. While there is ample evidence to support the validity and reliability of web-based studies and the recommended guidelines for conducting web-based surveys were followed in the present work (e.g. the 'CHERRIES' checklist: see Eysenbach, 2004), this work should be replicated with more traditional methods of data collection to verify the findings.

Fifth, no evidence emerged from the present work to suggest that OOP is related to poorer health or well-being, which is in keeping with research and theory that indicates that OOP tends not to be related to personal difficulties, but is related to partner reports of distress (e.g., Flett & Hewitt, 2002; Hewitt et al., 1995). Thus, in the case of OOP, one would expect OOP to affect the health and well-being of those for whom the perfectionism is directed at rather than affect the health and well-being of the perfectionist. Unfortunately, this proposition could not be tested within the current investigation because only individuals and not their partners, family members, or friends were assessed. Consequently, the full range of health effects for OOP could not be evaluated. A fruitful avenue for future research would be study the link between perfectionism and indices of health and well-being within the context of romantic couples, families, or friends, which would allow researchers to accurately gauge whether level of OOP is associated with the health and well-being of close others.

Sixth, only Hewitt and Flett's measure of perfectionism was employed in these studies. As previously discussed, there are several ways of operationally defining perfectionism and each method has unique implications and interpretations. Although the MPS-HF is a well-validated measure of perfectionism and commonly used in the research literature, the research questions addressed in the current work should be tested with alternative measures of perfectionism to determine the generalizability of the findings and to get a better sense of what specific components of perfectionism are most pathogenic for health. For instance, SPP is strongly related to the facets of concern over mistakes, doubts about action, and parental criticism, which are measured by the MPS-F (Frost, 1990a). A nice complement to the current work would be to test which of these specific facets is/are related to health and well-being as measured in the current study and to explicate the mechanisms by which these facets of perfectionism are related to health and well-being.

Seventh, each of the dependent variables (i.e., physical health, mental health, and SWB) was tested independently in the current set of studies, as this analytic strategy is consistent with the existing literature, which tends to test the associations between perfectionism and each of these dependent variables separately. While this analytic strategy was appropriate to addressing the research questions for the current set of studies, testing each dependent variable separately increased the number of statistical tests performed, thus inflating the possibility of committing a Type1 Error. Procedures for protecting against Type 1 error were followed when appropriate (e.g., Bonferroni corrections) to combat this problem. However, testing each dependent variable separately failed to account for the high level of relatedness among physical health, mental health, and SWB. Future studies could address this issue by employing a variety of analytic

techniques. For instance, one could use SEM to test whether physical health, mental health, and SWB, all load onto a larger second-order general health factor. Further, this type of modeling procedure would allow researchers to determine how perfectionism is related to the common variance in physical health, mental health, and SWB while also allowing them to assess whether perfectionism has unique associations with physical health, mental health, and/or SWB once the common variance among these health-related constructs has been accounted for.

Finally, while respondents' sex was statistically accounted for in each of the analyses, the issue of possible sex-related differences could not be tested in either sample due to the small number of men in each sample. Studies have clearly demonstrated sex-related differences in physical health, with the majority of studies reporting that men experience better health than women (e.g., Shumaker & Hill, 1991). In addition, sex-related differences are apparent in many of the hypothesized pathways linking perfectionism to health and well-being. The positive relationship between stress and physical health, for instance, and the negative relationship between perceived social support and physical health, have each been shown to be stronger for women than for men (Denton, Prus, & Walters, 2004; Wohlgemuth & Betz, 1991). Conversely, health-risk behaviours, such as consuming alcohol, driving dangerously, and smoking may have a stronger link with poorer health for men compared to women (Denton et al., 2004). With regard to perfectionism, research has shown that SOP is related to agreeableness and higher levels of nurturance in women, but not in men (Habke & Flynn, 2002). Thus, the association between perfectionism and social connectivity may differ as a function of sex. In short, the models tested in the present work should be tested with both men and women to determine whether there are important sex-related differences present.

Implications

In addition to the theoretical implications that have already been discussed, current findings also suggest important clinical implications for treatment and intervention efforts directed at addressing perfectionistic tendencies among both students and adults suffering with chronic illness. Findings demonstrated that relative to SOP and OOP, SPP was more deleterious for health and well-being among both students and adults suffering with chronic illness. Thus, intervention effects should specifically target those perfectionists who have a propensity to believe that others expect constant perfection from them and are stringently evaluating and scrutinizing them because as these individuals will be most likely to experience the health-damaging effects of perfectionism.

Treatments, such as cognitive-behavioural therapy and interpersonal therapy have shown some success in reducing perfectionistic tendencies. For instance, Arpin-Cribbie, Irvine, Ritvo, Cribbie, Flett, and Hewitt (2008) demonstrated that a 10-week web-based psychological intervention, that included both stress management and cognitive behavioural techniques directed at diminishing perfectionism and psychological distress, was successful among a group of university students. Further, Pleva and Wade (2007) documented the effectiveness of self-help for perfectionism, specifically showing that guided self-help, following cognitive-behavioural self-help strategies outlined by Antony and Swinson (1998), led to a significant reduction in perfectionistic tendencies and their associated psychopathology. Finally, DiBartolo, Frost, Dixon, and Almodovar (2001) demonstrated the benefits of a brief cognitive restructuring intervention in reducing perfectionistic tendencies among a group of female university students who were high in the dimension of concern over mistakes.

While there has been some documented success in treating perfectionism, one must keep in mind that perfectionism is an ingrained personality style and is therefore very difficult to treat. Moreover, many individuals are hesitant to relinquish their perfectionism because they attribute their successes to it and believe that it is fundamental to their identity (Slaney & Ashby, 1996; Slaney et al., 2000). Thus, in addition to treating the perfectionism itself, results from the current study suggest two other avenues for intervention. First, individuals with higher levels of perfectionism reported that they experienced greater stress than those with lower levels of perfectionism, and this finding was particularly strong for those who were high in SPP. This finding suggests that perfectionists may benefit from interventions aimed at developing and enhancing better stress management strategies, such as developing adaptive coping skills. Second, individuals high in SPP consistently reported that they did not have strong social support networks and were dissatisfied with the social support that they were given. Further, lower levels of social support, in part explained the negative association between SPP and indices of health and well-being. Consequently, these findings suggest that the negative health effects associated with SPP might be mitigated by helping these perfectionists to cultivate strong social support networks, which would, most likely, involve some cognitive restructuring and interpersonal therapy to address their traditionally high levels of interpersonal sensitivity.

Summary

In conclusion, the present work attests to the relevance of studying individual differences in perfectionism in relation to health and well-being. Most important, the findings from the present investigation clearly demonstrated the need to move beyond asking whether perfectionism is adaptive or maladaptive, especially with regard to SOP because the findings that

emerged from this study revealed that the answers to this question are far more complicated than the question affords. While the results from the current investigation indicated that SPP is associated with poorer health and well-being and that the association is explained by stress processes and perceived social support, the present work illustrated that SOP is neither healthy nor unhealthy in the absolute sense. Rather, the relative healthiness or unhealthiness of SOP depends on many factors, such as the population under study, the level of SOP, whether suppression effects are present, and whether particular indirect pathways (e.g., stress and perceived social support) that link SOP with indices of health and well-being are included in the study or not. Thus, it is time to begin asking more complex questions that will provide much more substantive information, such as under what circumstances, and for whom, does SOP have the most harmful or beneficial consequences? Are there particular levels of SOP that are more detrimental to health than others or is there an optimal level of SOP? Moreover, it is time to move beyond studying simple bivariate correlations. Rather, researchers should examine specific mechanisms that explain the relations between perfectionism and indices of health and well-being, which will not only have important theoretical implications on which more concise models of perfectionism and health can be built, but will allow insight into developing more specific interventions to help perfectionists avoid the possible negative health implications of perfectionism.

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APPENDIX A

Chronically-Ill Study Websites with Ad Online

The Arthritis Society
http://www.arthritis.ca/toolbox/contact%20us/default.asp?s=1

The Arthritis Society is Canada's principal arthritis health charity dedicated to funding and promoting arthritis education, research-based solutions and community-based support. The Society empowers the nearly 4.5 million Canadians with arthritis, 1.8 million in Ontario alone, to live their lives to the fullest by combating the daily limitations of arthritis. In the last 60 years, The Society has invested $160 million towards arthritis research to develop better treatments and, ultimately, find a cure.
' The mission of The Arthritis Society is to search for the underlying causes and subsequent cures for arthritis, and to promote the best possible care and treatment for people with arthritis.'

FM-CFS Canada
http://fm-cfs.ca/research.html

Mission Statement:
FM-CFS Canada (formerly known as Compassion in Action) is dedicated to advancing Fibromyalgia (FM) and Chronic Fatigue Syndrome (CFS) education, research and treatment. The organisation received its national charity registration status on February 27, 1996.
Guiding Principles:

We open our effort to all people. We know these illnesses are hard on incomes and careers so all of our information is freely available.
Our chosen path is to work with others, complementing the abilities of our partners to develop solutions on a national scale, drawing on the community of patients, self-help groups, researchers, physicians, government and nongovernment health organisations. Our intention is to help build an organisational capacity to promote research, education, and improved treatment and achieve milestones towards the level of support enjoyed by other health causes that have similarly large communities to serve.
We believe in strategies and plans based on solid reasoning and research, and have objectives in a wide range of areas that are interconnected for the advancement of our movement. We recognise, for example, that physician education is important, but we realise that until they are paid better and have support similar to that with other illnesses, few are interested. Our community faces a large interwoven set of systemic problems, and needs systemic solutions, with some coming before others. While continuing to work on projects, we seek Federal funding to help our movement take a giant step forward, to begin to have the resources to achieve the rest of our needs.

FM-CFS Canada follows an Information Privacy Policy, a 24 point ethics policy, an Ethical Fundraising & Financial Accountability Code, and a pharmaceutical sponsorship policy, among others.

Roots, and Organisational Development:
The organisation was created by patients and physicians afflicted with CFS/ME & FM. Although many initiatives were advanced over the years, they eventually found that their medical conditions limited their ability to do all they wanted to do. This limitation affects other groups too. Involved from the very beginning have been Drs. Eva and Paul Grof, both distinguished human beings, who care very much for people with FM & CFS. They led a search for a team with additional skills, for healthy people to inspire.
Recruiting some of Ottawa's bright lights, in 2002, Dr. Grof & Dr. Ed Napke, and David Mann, stayed on for consistency with the guiding spirit and corporate knowledge, and a new team was formed. The founders had educated and involved new patients, physicians, and community and business leaders that possessed the reputation, experience and skill sets needed to pursue a wide range of goals. The charity began more relationships with specialist advisors (public relations, legal, governance, advice, etc.), similar to those found surrounding corporate Boards. They began talking with the leaders of large health charities to learn of their experiences, structures, and policies, meeting with some of their specialists in research, advocacy, public relations, and funding.
As you consider how much needs to be done for this movement, you may appreciate for the first time how important are groups like the Cancer Society, Arthritis Society, and so many others. Long overdue, this cause needs such resources too.

Co-operate and Communicate for a Cure
www.CO-cure.org

Begun in 1996, the Co-Cure Project is a purely volunteer patient-driven effort to promote the sharing of information about chronic fatigue syndrome and fibromyalgia and related disorders.

Main Goal: To further co-operative efforts towards finding the cure for Chronic Fatigue Syndrome and Fibromyalgia.
One of the primary ways in which this goal may be achieved is through effective distribution and exchange of information between the medical/clinical, political, patient groups, as well as other organizations/institutions. Therefore, the list is open to individuals and groups who are interested, either professionally or personally, in information pertaining to CFS and FM.
Because of the overlap in symptom profiles, we also welcome as members those individuals interested in or affected by Multiple Chemical Sensitivity, Gulf War Syndrome, and auto-immune conditions. However, at least at this time, we must limit the nature of the information suitable for posting to that which is directly relevant to CFS and FM.

International Association for Chronic Fatigue Syndrome
http://www.cfids.org/

The CFIDS Association of America is the largest and most active charitable organization dedicated to chronic fatigue syndrome (CFS), also known as chronic fatigue and immune dysfunction syndrome (CFIDS). Since 1987, the Association has invested more than $28.1 million in initiatives to bring an end to the pain, disability and suffering caused by CFS.

Our Mission:
For CFS to be widely understood, diagnosable, curable and preventable.

Our Strategy:
To stimulate research aimed at the
early detection, objective diagnosis and effective treatment of CFS through
expanded public, private and commercial investment.

Our Core Values:
To lead with integrity, innovation and purpose.

The CFIDS Association offers information and resources to patients, family members, caregivers, support groups, media professionals the general public and health care professionals. The Association is proud to lead national efforts in research, public policy and communications that will advance understanding, diagnosis, treatment and prevention of CFS. We are grateful to all those who support our vital work.

National Fibromyalgia Association
http://www.fmaware.org/contact.htm

About the National Fibromyalgia Association (NFA)

The National Fibromyalgia Association is a 501(c) 3 nonprofit organization whose mission is: To develop and execute programs dedicated to improving the quality of life for people with fibromyalgia

Canadian Society of Intestinal Research
http://www.badgut.com

The Canadian Society of Intestinal Research (CSIR) is a registered charity (10809 0374 RR0001). Established on October 18, 1976, CSIR is dedicated to increasing public awareness, providing patient educational materials, and funding medical research regarding a broad range of gastrointestinal diseases and disorders.

Governed by a voluntary Board of Directors and overseen by a Medical Advisory Council, the Society has a large membership base that includes many health care professionals and patients.

The Society is sustained through membership dues, donations and various fundraising events.

This website represents only a fraction of the information that we have available for those who are interested. Please contact us and we can supply you with further resources.

American Chronic Pain Association

http://www.theacpa.org/default.aspx

Our Mission
To facilitate peer support and education for individuals with chronic pain and their families so that these individuals may live more fully in spite of their pain.
To raise awareness among the health care community, policy makers, and the public at large about issues of living with chronic pain.

SLE Lupus Foundation
http://www.lupusny.org/
For 40 years we've led the way in delivering care, raising awareness, and educating people like you about lupus from our headquarters in New York City and through our West Coast partner, Lupus LA—and in pioneering discovery to find a cure through our national research partner, the Lupus Research Institute.

Canadian Prostate Cancer Network
http://www.cpcn.org/

The Prostate Cancer Canada Network, formerly the Canadian Prostate Cancer Network, speaks for thousands of men and their families who, each year, are diagnosed with prostate cancer. With our 120 affiliated support groups across Canada we:

α help individuals and their families understand and cope with prostate cancer by providing up to date medical information and individual support
α lobby for increased funding for research, treatment facilities and programs
α promote the importance of early detection through public awareness campaigns

Diabetes Sonoma County
www.diabetessociety.org

Mission and History
The Mission of the Diabetes Society is to improve the lives of people affected by diabetes through education, advocacy, support services, and partnerships. For over 40 years, the Diabetes Society has been providing education and one-on-one consultation to individuals with diabetes, and educating the general public about the seriousness of the disease. The Diabetes Society was organized in 1963 as the result of efforts by a group of mothers of children with diabetes. Today, the Diabetes Society is the only organization in California that provides as extensive a range of services and programs for people of all ages who live with diabetes.The Diabetes Society is an independent organization with no regional, state, or national affiliations. The Diabetes Society's operations are funded through donations from individuals, foundations, corporations, service clubs, special events, fees for service, and membership dues. The Diabetes Society's health education programs provide for proper medical management of diabetes through education, one-on-one counseling with a registered nurse and/or dietitian, individualized diet and exercise plans,

support groups, and educational camps for insulin dependent youth. The American Diabetes Association (ADA) recognized the Diabetes Society for meeting its national standards for diabetes self-management education. In addition to educational programs for the community, the Diabetes Society provides education for health care professionals, blood-glucose screenings, and participation in numerous workplace and community health fairs. The Society partners with numerous device and pharmaceutical companies in providing clinical trial opportunities.

People Served
The Society's client base includes children of all ages, teenagers, adults, and seniors. Most clients come from the low- to middle-income socioeconomic groups, and many are under or uninsured. While most adult clients come from the San Francisco Bay Area, the Diabetes Society serves over 460 children and teens with diabetes from all over California through our camp programs. As a one-stop shop for diabetes education and support in our community - we provide an extensive range of clinical services and education programs for people of all ages who live with diabetes. These include:
The largest camping program for kids with diabetes in the United States - 14 educational and recreational camps for over 460 children, teens and families.
Diabetes screenings to over 6,000 people annually to identify those who have diabetes, and pre-diabetes and connect them with a medical home and services.
Diabetes education classes taught by registered dietitians, nurses, and certified diabetes educators. We are a nationally recognized diabetes education center.
Individual appointments to help with meal planning, nutrition, medication, insulin therapy, and weight management.
Support groups for adults, teens and parents of children with diabetes.
Diabetes education for health care professionals.
Advocacy among policy makers and community groups.
Of the estimated 160,000 people with diabetes in Santa Clara and San Mateo Counties, we serve approximately 10,000 annually, with most of those residing in or near Santa Clara County. Of those we serve, 48% are Caucasian, 23% Hispanic, 14% Asian, 5% African-American, and 10% from other ethnic groups.

Men's Health
http://menshealth.about.com/mbiopage.htm

Men's Health Blog regarding general health issues that men experience including chronic health conditions.
Asthma Society of Canada
http://www.asthma.ca/adults/

For over 35 years, we have been a leader in asthma care. We're the experts. We are dedicated to helping Canadians live with asthma through research and education.

Advertisements on Websites:

The advertisements for the study were tailored to the particular illness.

This is a study, being conducted at Brock University in Canada, of how people cope with serious chronic illnesses such as ME/CFS and/or fibromyalgia, particularly through their personal relationships with others. While it is well known that people who have strong social ties have better health and recovery, we do not well understand the pathways by which this occurs. Through the survey responses of people who actually cope with such conditions, researchers hope to better understand these processes and how to help them. Anyone suffering from a chronic illness such as ME/CFS and/or fibromyalgia is encouraged to participate in this research; location of residence is not a concern, as we would like to have participants from all over the world.

Study Link:

www.brocku.ca/nhs

Appendix B

Measures

The Satisfaction with Life Scale

These are five statements that you may or may not agree or disagree with. Using the 1-7 scale below, indicate your agreement with each item by selecting the appropriate response. Please be open and honest in your responding.

	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor Disagree	Slightly Agree	Agree	Strongly Agree
	1	2	3	4	5	6	7
In most ways my life is close to my ideal.							
The conditions of my life are excellent.							
I am satisfied with my life.							
So far I have gotten the important things I want in life.							
If I could live my life over, I would change almost nothing.							

The Positive and Negative Affect Scale

This scale consists of a list of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you generally feel this way, that is, how you feel on average. Use the following scale to record your answers.

	Not at all 1	Very slightly 2	Moderately 3	Quite a bit 4	Extremely 5
On average, I tend to feel:					
Interested	□	□	□	□	□
Distressed	□	□	□	□	□
Upset	□	□	□	□	□
Strong	□	□	□	□	□
Guilty	□	□	□	□	□
Scared	□	□	□	□	□
Hostile	□	□	□	□	□
Enthusiastic	□	□	□	□	□
Proud	□	□	□	□	□
Irritable	□	□	□	□	□

Alert	□	□	□	□	□
Ashamed	□	□	□	□	□
Inspired	□	□	□	□	□
Nervous	□	□	□	□	□
Determined	□	□	□	□	□
Attentive	□	□	□	□	□
Jittery	□	□	□	□	□
Active	□	□	□	□	□
Afraid	□	□	□	□	□
Excited	□	□	□	□	□

The Center for Epidemiologic Studies Depression Scale

Below is a list of the ways you might have felt. Please indicate how often you have felt that way lately by selecting the box that comes closest to your response.

	Rarely or never 1	Some or a little of the time 2	Occasionally or a moderate amount of time 3	Most or all of the time 4
1. I was bothered by things that don't usually bother me.				
2. I did not feel like eating; my appetite was poor.				
3. I felt like I could not shake off the blues, even with help from my family or friends.				
4. I felt like I was just as good as other people.				
5. I had trouble keeping my mind on what I was doing.				
6. I felt depressed.				
7. I felt that everything I did was an effort.				
8. I felt hopeful about the future.				
9. I thought my life had been a failure.				
10. I felt fearful.				
11. My sleep was restless.				
12. I was happy.				
13. I talked less than usual.				
14. I felt lonely.				
15. People were unfriendly.				
16. I enjoyed life.				
17. I had crying spells.				
18. I felt sad.				
19. I felt that people disliked me.				
20. I could not "get going".				

	Never 1	Rarely 2	Sometimes 3	Fairly Often 4	Always 5
1. Had trouble getting to sleep or staying asleep?					
2. Ill health affected the amount of work you did?					
3. Felt nervous, fidgety or tense?					
4. Bothered by shortness of breath when you were not exercising or working hard?					
5. Bothered by pains and ailments in different parts of you body?					
6. Lost your appetite?					
7. Had spells of dizziness?					
8. Your state of health prevented you from carrying out things you like to do?					
9. Troubled by headaches?					
10. Had arthritis or swelling in any joint?					
11. Bothered by an upset stomach?					
12. Had colds?					
13. Had ulcers?					
14. Had allergies?					
15. Had the flu?					
16. Had stomach aches?					
17. Had fractures (broken bone)?					
18. Had a loss of energy?					
19. Had fatigue, tiredness?					
20. Felt slowed down?					
21. Had trouble moving?					

Many of us have times when things just do not seem right or we do not feel so well for one reason or another. HOW OFTEN have each of the following happened to you in the past year?

Health Behaviours

How often do you do each of the following?

	Never	Rarely	On Occasion	Fairly Often	Very Often
	1	2	3	4	5
Get enough relaxation					
Maintain desired weight					
Regular dental check-up					
Overwork					
Limit foods with fats/sugar					
Things 'get me down'					
Spend time outdoors					
Get strenuous exercise					
Floss teeth					

	Never	Rarely	On Occasion	Fairly Often	Very Often
	1	2	3	4	5
Take vitamins					
Use marijuana					
Use other illicit drug					
Have a good breakfast					
Have blood pressure checked					
Have unprotected sex					
Take medication as prescribed					
Eat junk food					
Examine breasts (women only)					

	Never	Rarely	On Occasion	Fairly Often	Very Often
	1	2	3	4	5
Have PAP smear test (women only)					
See physician when ill					
Smoke cigarettes					
Drink alcoholic beverages					

Drive without seatbelts
Drive when too tired
Drive when very angry
Drive after a few drinks
Go on a diet

Health Behaviours

This section deals with your use of alcoholic drinks and other substances and your feelings about them. There are no "right" or "wrong" answers, only your own personal experiences. Remember, we are committed to protecting your identity and privacy. Your answers are important to us, even if you do not drink. Let's consider one drink to be one bottle or can of beer, one glass of wine, or one shot (about 1 ¼ ounces) of rye/scotch/vodka/gin/rum/brandy/liqueur or a mixed drink, such as rum and coke, vodka and orange, or a Black Russian. A draft or light beer would be about the same as HALF a drink. THINK OF THE PAST YEAR, and select the most appropriate answer

1. How often do you go drinking or have a drink?
- Never
- Less than once a month
- About twice a month (once every two weeks)
- Once a week
- Twice a week
- 3 or 4 times a week
- 5 or 6 times a week
- About once a day
- More than once a day

2. On average, when you are drinking, about how much do you drink on one occasion?
- Nothing
- No more than a sip or a taste
- Less than a drink
- One drink (a draft of beer, half a glass of wine)
- 1 and ½ drinks
- 2 drinks
- 3 drinks
- 4 or 5 drinks
- 6 or 7 drinks
- More than 7 drinks

3. In the past year, how often have you drunk enough alcoholic beverages to feel pretty high?
- Never
- Once or twice
- 3 or 4 times
- 5 or 6 times
- 7 or 8 times
- 9 or 10 times
- 11 or 12 times
- More that 12 times

4. In the past year, how often have you drunk enough alcoholic beverages to feel unsteady on your feet?
- o Never
- o Once or twice
- o 3 or 4 times
- o 5 or 6 times
- o 7 or 8 times
- o 9 or 10 times
- o 11 or 12 times
- o More than 12 times

In the past year, how often have you drunk enough alcoholic beverages to *feel that you are drunk?*	Never	Once or twice	3 or 4 times	5 or 6 times	7 or 8 times	9 or 10 times	11 or 12 times	More than 12 times

Have you spent more than a day or a whole weekend drinking in the past year?	Never	Once	Twice	**More than twice**

How often do you have four or more drinks on *one occasion?*	Never	A few times a year	Once a month	Twice a month	About once a week	3 to 4 times a week	Most days

How often do you have five or more drinks on *one occasion?*	Never	A few times a year	Once a month	Twice a month	About once a week	3 to 4 times a week	Most days

Please read the following and select the appropriate box.

1. In the past week, how many cigarettes did you smoke?

If you did not smoke any cigarettes, type 0 in the blank.

*number of cigarettes*_____

OR

*number of packs*_____

"Mini Makers" of the Five Factor Model

Please consider each adjective below, and indicate how accurately that adjective describes your typical personality, using the following scale:

1 = extremely inaccurate
2 = very inaccurate
3 = somewhat inaccurate
4 = slightly inaccurate
5 = neither accurate nor inaccurate
6 = slightly accurate
7 = somewhat accurate
8 = very accurate
9 = extremely accurate

Creative	1 2 3 4 5 6 7 8 9	Talkative	1 2 3 4 5 6 7 8 9
Unimaginative	1 2 3 4 5 6 7 8 9	Quiet	1 2 3 4 5 6 7 8 9
Philosophical	1 2 3 4 5 6 7 8 9	Outgoing	1 2 3 4 5 6 7 8 9
Narrow-minded	1 2 3 4 5 6 7 8 9	Shy	1 2 3 4 5 6 7 8 9
Original	1 2 3 4 5 6 7 8 9	Lively	1 2 3 4 5 6 7 8 9
Conventional	1 2 3 4 5 6 7 8 9	Passive	1 2 3 4 5 6 7 8 9
Complex	1 2 3 4 5 6 7 8 9	Cheerful	1 2 3 4 5 6 7 8 9
Shallow	1 2 3 4 5 6 7 8 9	Restrained	1 2 3 4 5 6 7 8 9
Orderly	1 2 3 4 5 6 7 8 9	Anxious	1 2 3 4 5 6 7 8 9
Disorganized	1 2 3 4 5 6 7 8 9	Fearless	1 2 3 4 5 6 7 8 9
Thorough	1 2 3 4 5 6 7 8 9	Worrying	1 2 3 4 5 6 7 8 9
Undisciplined	1 2 3 4 5 6 7 8 9	Insensitive	1 2 3 4 5 6 7 8 9
Diligent*	1 2 3 4 5 6 7 8 9	Sentimental	1 2 3 4 5 6 7 8 9
Inefficient	1 2 3 4 5 6 7 8 9	Tough	1 2 3 4 5 6 7 8 9
Precise	1 2 3 4 5 6 7 8 9	Emotional	1 2 3 4 5 6 7 8 9
Irresponsible	1 2 3 4 5 6 7 8 9	Feelingless	1 2 3 4 5 6 7 8 9
Patient	1 2 3 4 5 6 7 8 9	Sly	1 2 3 4 5 6 7 8 9
Quick-Tempered	1 2 3 4 5 6 7 8 9	Sneaky	1 2 3 4 5 6 7 8 9
Tolerant	1 2 3 4 5 6 7 8 9	Tricky	1 2 3 4 5 6 7 8 9
Argumentative	1 2 3 4 5 6 7 8 9	Undevious	1 2 3 4 5 6 7 8 9
Forgiving	1 2 3 4 5 6 7 8 9	Pretentious**	1 2 3 4 5 6 7 8 9
Irritable	1 2 3 4 5 6 7 8 9	Pompous	1 2 3 4 5 6 7 8 9
Gentle	1 2 3 4 5 6 7 8 9	Cunning	1 2 3 4 5 6 7 8 9
Critical	1 2 3 4 5 6 7 8 9	Undeceptive	1 2 3 4 5 6 7 8 9

* Diligent means hard-working
** Pretentious means self-important

Social Support Questionnaire

The following questions ask about the people in your life who provide you with help or support.
Each question has two parts. First, think of all the people you know, excluding yourself, that you
can count on to help or support you in the manner described. This would include parents,
brothers and/or sisters, a romantic partner, friends, clergy or other people.

1. a) How many people can you count on to distract you from your worries when you are stressed?

0
1
2
3
4
5
6
7
8
9 or more

b) How satisfied are you with the overall level of support?
□ *6. very satisfied*
□ *5. fairly satisfied*
□ *4. a little satisfied*
□ *3. a little dissatisfied*
□ *2. fairly dissatisfied*
□ *1. very dissatisfied*

**2. a) Please select the number of people you can count on to help you feel more relaxed
when you are under pressure or tense?**

0
1
2
3
4
5
6
7
8
9 or more

b) How satisfied are you with the overall level of support?
☐ *6. very satisfied*
☐ *5. fairly satisfied*
☐ *4. a little satisfied*
☐ *3. a little dissatisfied*
☐ *2. fairly dissatisfied*
☐ *1. very dissatisfied*

3. a) Please select the number of people that accept you totally, including both your worst and your best points?

0
1
2
3
4
5
6
7
8
9 or more

b) How satisfied are you with the overall level of support?
☐ *6. very satisfied*
☐ *5. fairly satisfied*
☐ *4. a little satisfied*
☐ *3. a little dissatisfied*
☐ *2. fairly dissatisfied*
☐ *1. very dissatisfied*

4. a) Please select the number of people you can count on to care about you, regardless of what is happening to you?

0
1
2
3
4
5
6
7

8

9 or more

b) How satisfied are you with the overall level of support?

☐ *6. very satisfied*
☐ *5. fairly satisfied*
☐ *4. a little satisfied*
☐ *3. a little dissatisfied*
☐ *2. fairly dissatisfied*
☐ *1. very dissatisfied*

5. a) Please select the number of people you can really count on to help you feel better when you are generally down in the dumps.

0

1

2

3

4

5

6

7

8

9 or more

b) How satisfied are you with the overall level of support?

☐ *6. very satisfied*
☐ *5. fairly satisfied*
☐ *4. a little satisfied*
☐ *3. a little dissatisfied*
☐ *2. fairly dissatisfied*
☐ *1. very dissatisfied*

6. a) Please select the number of people you can count on to console you when you are very upset.

0
1
2
3
4
5
6
7
8
9 or more

b) How satisfied are you with the overall level of support?

□ *6. very satisfied*
□ *5. fairly satisfied*
□ *4. a little satisfied*
□ *3. a little dissatisfied*
□ *2. fairly dissatisfied*
□ *1. very dissatisfied*