Chronic Pain and Perfectionism in a Community Sample

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Abstract
This study examined the relationship between chronic pain and two dimensions of perfectionism that have been linked to poor health outcomes, self-oriented and socially-prescribed perfectionism, in a community sample. Participants completed questionnaires assessing chronic pain, as defined by the International Association for the Study of Pain, as well as two subscales of the Multidimensional Perfectionism Scale via an online survey. Separate independent samples t-tests revealed that chronic pain was, on average, associated with significantly higher levels of both self-oriented and socially-prescribed perfectionism. This relationship was especially strong in regard to the latter dimension. These findings suggest that individuals in the community who experience chronic pain differ from those who do not in terms of maintaining higher levels of self-oriented and socially-prescribed perfectionism.

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CHRONIC PAIN AND PERFECTIONISM IN A COMMUNITY SAMPLE

A THESIS
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OF
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PACIFIC UNIVERSITY
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BY
SARAH ELIZABETH COLLINS

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OF
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Dedication

To my parents, whose love and support have always made the realization of my dreams seem possible, and to Jeff, who gave me the strength to follow through with this one.
Abstract

This study examined the relationship between chronic pain and two dimensions of perfectionism that have been linked to poor health outcomes, self-oriented and socially-prescribed perfectionism, in a community sample. Participants completed questionnaires assessing chronic pain, as defined by the International Association for the Study of Pain, as well as two subscales of the Multidimensional Perfectionism Scale via an online survey. Separate independent samples $t$-tests revealed that chronic pain was, on average, associated with significantly higher levels of both self-oriented and socially-prescribed perfectionism. This relationship was especially strong in regard to the latter dimension. These findings suggest that individuals in the community who experience chronic pain differ from those who do not in terms of maintaining higher levels of self-oriented and socially-prescribed perfectionism.

*Keywords:* perfectionism, physical health, psychological health, chronic pain
"The desire for perfection is the worst disease that ever afflicted the human mind."

--Marquis Louis Fontanes 1757 – 1821

"Perfection does not exist. To understand it is the triumph of human intelligence;
the desire to possess it the most dangerous kind of madness."

--Alfred de Musset 1810-1857

"Perfectionism is not a quest for the best. It is a pursuit of the worst in ourselves, the part that
tells us that nothing we do will ever be good enough - that we should try again."

-- Julia Cameron
Introduction

As modern medicine becomes increasingly adept at forestalling death, chronic pain has emerged as a significant health problem (Becker, Thomsen, Olsen, Sjorgren, Bech, & Erikson, 1997). As prevalence rates of chronic pain continue to rise in the population, the enormous human and economic costs associated with chronic pain have increased interest in the psychological components involved. However, the complex and elusive nature of chronic pain has made comprehensive investigations of implicated factors intractable, and fail to yield consistent explanatory results. There is a substantial body of research linking various psychosocial factors and personality variables to the development and maintenance of chronic pain symptomology (Tan, Jensen, Thornby, & Sloan, 2008; Vanderah, 2007; Wade, Dougherty, Hart, Rafii, & Price, 1992). Several of these conceptualizations that posit a specific “pain prone personality” have largely been disproved, leaving many questions of how personality characteristics interact with the underlying mechanisms of chronic pain unanswered (Goodwin & Friedman, 2006).

Although the literature to date has not consistently supported a specific personality subtype that renders one susceptible to chronic pain, investigations of individual character traits that may predispose or indirectly influence the trajectory of pain-related symptomology have become increasingly prevalent in the research. It has been long theorized and argued that specific dimensions posited by conventional models of personality are linked to both mental and physical maladjustment (Hill, Kornetsky, Flanary, & Wilder, 1952; Goodstein, 1954). Supporting this notion is an extensive body of research evidencing negative associations between certain dispositional tendencies such as neuroticism, and quality of life (Costa & McCrae, 1987; Watson, Clark, & Carey, 1988; Watson & Pennebaker, 1989; Cohen & Rodriguez, 1995;
Goodman & Friedman, 2006). Over time more modern constructs of personality, which have come to supplement conventional models, have become of increasing interest in how they may be utilized to increase our understanding of various health-related processes (Fry & Debats, 2009).

One cognitive mechanism that has recently received attention is self-efficacy, which refers to the extent a person believes they are capable of performing behaviors required to succeed in a situation (Asghari & Nicholas, 2001). Research investigating the affect of perceived competence on behavior suggests self-efficacy contributes to performance (Bandura, O’Leary, Barr Taylor, Gauthier, & Gossard, 1987). Self-efficacy appears to play a mediating role in adjustment to chronic pain, as perceptions of one’s ability to manage somatic distress and to effectively engage in adaptive health behaviors are predictive of pain-related disability (Stroud, Thorn, Jensen, & Booth, 2000).

A construct related to self-efficacy is perfectionism, which involves the tendency to impose extremely high standards on performance and to interpret perceived shortcomings as failures (Hewitt & Flett, 1991; Hart, Gilner, Handal, & Gfeller, 1998). Research has suggested that individuals who adhere to such unrealistic goals may develop the expectation they are incapable of achieving perceived standards and begin to anticipate personal failure (Dunkley, Zuroff, & Blankstein, 2003). Beliefs of inevitable failure and incompetency have been linked to the development of various types of psychopathology and the use maladaptive coping strategies, which may serve as vulnerability factors that can put an individual at increased risk for health problems (Cohen & Rodriguez, 1995; Hewitt & Flett, 1993).

Few studies have focused on the relationship between perfectionism and chronic pain. Studies that have investigated this association have mostly focused on a unique subgroup of the
population, pain clinic patients, rendering the generalizability of their findings as limited. As prevalence rates of chronic pain continue to rise in the general population it is of considerable import to further our understanding of factors involved in the development and maintenance of such conditions within the community at large. Identification and understanding of the psychological mechanisms, both causal and contributory, involved in common chronic pain trajectories would likely promote the development of more effective treatment strategies for this increasingly prevalent disability. The main purpose of the present study is to explore the relationship between chronic pain and perfectionism, specifically in terms of self-oriented and socially prescribed perfectionism, in a community sample.

Chronic Pain

Acute pain is a normal sensation that is triggered within the body’s nervous system following injury, or any number of pathological conditions, through a process called nociception. Typically, the nociceptive signals that occur from damage to visceral, somatic, or neural somatic structures diminish with a subsequent fading of the unpleasant sensory pain experience as the injury heals (Vanderah, 2007). Pain is deemed to be chronic when its presence persists beyond the normal time expected for resolution of the underlying physiological causes. Although comprehensive epidemiological data are not available, studies have estimated that at any given time, approximately 47% of the general population is likely coping with some type of chronic pain (Elliot, Smith, Penny, Smith, & Chambers, 1999). Niv and Devor (2006) state that secondary implications of chronic pain such as immobility effects, reliance on medication and social isolation add to the magnitude of the problem. These factors, combined with high prevalence rates and associated social burdens, make chronic pain a major healthcare problem that deserves significant attention.
Despite advances in modern medicine, the incidence of chronic pain has continued to rise in Western society and is now one of the most common reasons why people seek medical treatment (Von Korff, Dworkin, & Le Resche, 1990). Numerous influential variables have been implicated in chronic pain etiology including catastrophizing, learned helplessness, and socio-economic status, to name a few (Mercado, Carroll, Cassidy, & Cote, 2005). These findings suggest that pain may be initiated by injury or pathological processes but persists as a result of dynamic interactions between a multitude of factors, including sensory, behavioral, socio-cultural, and cognitive influences that must be considered within a developmental trajectory (Bursch, Walco, & Zeltzer, 1998). In recognition of this growing body of research there has been a shift in the medical community’s conceptualization of chronic pain in recent years, with the number of etiological and prognostic factors potentially involved in chronic pain conditions rendering a dichotomous, organic versus nonorganic approach ineffectual (Barnett, Ledoux, Garcini, & Baker, 2009). In response to this growing realization, integration of biopsychosocial approaches to health care has led to increased collaboration between traditional medicine and psychology.

**Psychological Components of Chronic Pain**

The enormous human and economic costs associated with chronic pain have increased interest in the psychological components of chronic pain, as there is a growing consensus that personality traits and related alterations in cognitive patterns and behaviors have important implications for health outcome. It is not unreasonable to assume that personality may have an effect on how one perceives and interprets pain, exerting influence via cognitive processing rather than sensory mechanisms. Tendencies to react to the initial onset of pain with negative emotionality and fear-avoidance beliefs are related to decreased wellbeing (Fry & Debats, 2009).
Indeed, studies have found strong associations between scores on the dimension of neuroticism, as measured by the NEO-Personality Inventory, and pain behavior, self-blame, and emotional disturbance (Wade, Dougherty, Hart, Rafii, & Price, 1992; Williams, Robinson, & Geisser, 1994).

Psychological variables have been found by several studies to be better predictors of adjustment to pain than physiological factors (Lumley, Kelley, & Leisen, 1997; Tan, Jensen, Thornby, & Sloan, 2008). Negative self-statements and other catastrophizing thoughts have been found to positively associate with psychological distress and pain-related interference in daily activities even after controlling for demographics, work status, and pain severity (Stroud et al., 2000). Studies have also found psychological stress and maladaptive thought patterns to be predictive of pain severity and disability (Asghari & Nicholas, 2006; Stroud, Thorn, Jensen, & Boothby, 2000).

One psychological mechanism that has recently received attention is self-efficacy. Self-efficacy refers to the extent a person believes they are capable of performing behaviors required to succeed in a situation (Asghari & Nicholas, 2001). Research investigating the affect of perceived competence on behavior suggests self-efficacy contributes to performance (Bandura, O’Leary, Barr Taylor, Gauthier, & Gossard, 1987). Evidence suggesting that lower control appraisals and self-efficacy beliefs can be predicted by personality vulnerability has also been cited in the literature, with one study finding that self-efficacy beliefs were negatively associated with the frequency and severity of pain-related behavior in chronic pain patients over a nine-month period (Asghari & Nicholas, 2006). Thus, it may be that certain personality traits increase vulnerability to stress and negative emotional states, predisposing one to cope with pain in less efficacious, maladaptive ways that exacerbate health problems. This notion is further supported
by the finding of Carroll and colleagues (2002) that the tendency to engage in particular types of coping strategies is predictive of subsequent health adjustment and functioning.

Self-efficacy appears to play a mediating role in adjustment to chronic pain (Arnstein, Caudill, Mandle, Norris, & Beasley, 1999; Arnstein, 2000). It has been suggested that negative pain-related cognitions serve to lower beliefs regarding self-efficacy as well as to increase the likelihood of engaging in passive, maladaptive coping strategies (Jensen, Turner, & Romano, 1991; Turner, Jensen, & Romano, 2000). Passive coping strategies such as catastrophizing, wishful thinking, learned helplessness, and negative thinking have been found to associate with poor adjustment and to predict negative health outcome in chronic pain populations (Harkapaa, 1991; Grossi, Soares, & Lundberg, 2000). Results of a longitudinal study by Mercado and colleagues (2005) suggested engagement in passive coping strategies substantially increased the risk of developing debilitating low back pain in the general population, regardless of extraneous variables such as socioeconomic status, demographics, and general level of health.

The notion that perceptions of one’s ability to manage chronic pain and to effectively engage in adaptive health behaviors predict pain-related disability has been replicated in the research (Stroud, Thorn, Jensen, & Booth, 2000). This finding has been supported by the research of Arnstein (2000), who found that self-efficacy beliefs accounted for more of the variance in pain-related disability than pain intensity, another significant mediator of chronic pain, as well as the results from a related study which found that self-efficacy accounted for 44% of the explained variance in pain-related disability in patients receiving treatment for chronic pain at an outpatient pain clinic (Arnstein et al., 1999). Evidence that self-efficacy beliefs are responsible for a significant amount of the explained variance in maladaptive behaviors
associated with pain lends credibility to the hypothesis that such beliefs likely play a substantial role in the development and maintenance of chronic pain (Asghari & Nicholas, 2001).

Research investigating the effects of self-efficacy on chronic pain and pain-related disability strongly suggests a relationship exists between these variables. A construct related to self-efficacy is perfectionism (Hart, Gilner, Handal, & Gfeller, 1998). It is defined as the tendency to impose extremely high standards on performance and to interpret perceived shortcomings as failures (Hewitt & Flett, 1991). Perfectionism has become a cultural phenomena; it is reinforced by both implicit and explicit messages in society, including language patterns, religious beliefs, and the media (Burns, 1980). Indeed, the mantra “No pain, no gain” conveys the notion that outstanding or notable performance can only be accomplished when one is pushed past their natural limits to the point of pain.

**The Personality Construct of Perfectionism**

Perfectionism has been described “as the tyranny of the shoulds” (Horney, 1950). Early theories defined the personality trait as the practice of demanding higher standards of performance from one’s self than a situation truly necessitates. Early theorists such as Adler and Horney conceptualized the trait as a particular neurotic reaction to deep-seeded feelings of inferiority and insecurity. Conceptualizations of perfectionism have shifted away from an exclusively cognitive orientation and have varied considerably in the past decade, with numerous multidimensional definitions appearing in the research. In addition to cognitive elements, such broader conceptualizations of perfectionism emphasize motivational, behavioral, and interpersonal components. However, currently there is a lack of agreement regarding the factors constituting this complex personality trait.
Historically, conceptualizations of perfectionism have been largely unidimensional in nature, focusing solely on self-directed cognitions with only implicit reference to other dimensions (Burns, 1980a). Initial analyses of the construct posited the presence of a “network of cognitions” that influenced expectations and evaluations of self and others, as well as tendencies to appraise and interpret events (Burns, 1980b). Though unidimensional conceptualizations of perfectionism may differ in their wording, all ultimately posit that the construct involves the unremitting and compulsive pursuit of self-implemented standards that are high beyond reason, perceived attainment of which providing a measurement of one’s self-worth. Shafran and colleagues (2002) called this self-imposed pursuit of unrealistic goals “clinical perfectionism”, asserting that this unidimensional construct increases the risk for developing a variety of psychopathologies, most notably eating disorders.

More recently, it has been argued that these unidimensional definitions of perfectionism, and the theoretical frameworks they are based upon, tap into multiple distinct, albeit related, dimensions, rendering them multifaceted in nature (DiBartolo, Li, & Frost, 2008). For example, critics have argued that the clinical perfectionism definition posited by Shafran and colleagues (2002) involves self-directed components as well as maladaptive elements derived from the social environment, asserting that the authors’ own phrasing contradicts the unidimensional model they argue for (Dunkley et al., 2003). Such arguments have largely shifted conceptualizations of perfectionism toward a multidimensional approach, as numerous studies have provided evidence that suggests the personality trait is a multifaceted construct that maintains motivational, behavioral, and interpersonal components (Frost et al., 1990; Hewitt, Mittelstaedt, & Wollert, 1989; Hewitt & Flett, 1991).
Further disproving unidimensional conceptualizations of perfectionism are findings that implicate both intrapersonal and social elements as constituents of the personality construct, with differing manifestations in self-presentation style being associated with a variety of negative outcomes and adjustment difficulties (Hewitt, Flett, & Mikail, 1995). This is consistent with findings that suggest both intra and interpersonal factors contribute to the development and etiology of psychopathology (Dunkley et al., 2006). Though some have continued to argue for a unidimensional definition, such as the cognitive behavioral model of “clinical perfectionism” proposed by Shafran and colleagues (2003), these simplistic conceptualizations fail to account for the complexity of personality, and, thus, obscure important information (Hewitt & Flett, 1991).

Early theorists tended to view the personality trait of perfectionism as entirely adaptive or maladaptive. For example, Adler (1956) postulated that striving for excellence is inherent to the human condition, leading to positive outcomes such as achievement and personal growth. On the other hand, others have argued that aspiring for perfection results in maladjustment and psychological distress, as those who maintain such a trait suffer constant disappointment and shame when they fail to meet unrealistic goals (Pacht, 1984). These equally valid, though contradicting, arguments lead to a more modern conceptualization of the trait, in which perfectionism is viewed as a multidimensional construct that maintains both adaptive and maladaptive components (Dunkley, Blankstein, Masheb, & Grilo, 2006).

Frost et al. (1990) stressed the multidimensional nature of perfectionism in his conceptualization of the personality trait, which he believed was comprised of six core dimensions: personal standards, concern over mistakes, doubts about action, organization, parental expectations, and parental criticism. Excessive concern over mistakes was identified as
the predominant dimension, with the authors purporting that this facet, along with Doubts about Action, has been the factor most consistently associated with significant maladjustment (Frost et al., 1990). Despite such claims, investigations of these six postulated dimensions have failed to demonstrate factorial stability across samples, indicating that a more parsimonious conceptualization is likely warranted (Stober, 1998). Subsequent analyses of the six factors lead to the realization that the robustness of factors improved when the dimensions of perfectionism were reduced to three core scales and one related scale, suggesting that the dimensions underlying perfectionism were better explained by a four factor structure that included Concerns over Mistakes and Doubts, Parental Expectations and Criticism, Personal Standards, and Organization (Stober, 1998).

Hewitt and Flett (1991) took a different approach to the conceptualization of perfectionism, postulating that the construct was comprised of core intrapersonal and interpersonal characteristics. Exploratory analysis of the personality trait led to the authors’ conclusion that for both clinical and non-clinical populations, perfectionism can be broken down into three main components: self-oriented perfectionism, socially prescribed perfectionism, and others-oriented perfectionism (Hewitt & Flett, 1991). The authors argued that these dimensions, which appear to demonstrate minimal gender differences, are better distinguished by how, and to whom, perfectionistic tendencies are attributed, rather than by cognitive or behavioral patterns associated with different facets of the trait. Though self-criticism was found to positively associate with all three subtypes of perfectionism, indicating a possible overlap of underlying factors, studies have evidenced the relatively distinct nature of these three dimensions (Hewitt et al., 2003). Such findings, along with demonstrated adequate validity and reliability estimates, provide support for this structural model (Hewitt & Flett, 1991).
While support for the others-oriented dimension of perfectionism, which involves the placement of stringent expectations and demands on the behavior of others, has been mixed, research on self-oriented and socially prescribed perfectionism has been substantial (Hewitt & Flett, 1991). These two dimensions can be differentiated by controllability and motivation.

Self-Oriented Perfectionism

Self-oriented perfectionism is intrapersonally directed and involves the tendency to set unrealistic, rigid standards for one’s behavior and to engage in stringent, critical evaluations of personal performance. Accordingly, self-ratings of high personal standards, and the importance placed upon meeting such standards, were found to demonstrate significant positive correlations with self-oriented perfectionism (Hewitt & Flett, 1991). This dimension is proactive in the sense that it is ultimately under the control of the individual (Hewitt & Flett, 1991). It is motivated by an intrinsic need to attain such goals, and is driven by compulsions to achieve perfection. This dimension of perfectionism has been shown to relate to potentially disruptive internal-based constructs that may lead to perceived discrepancies between the actual and ideal self, phenomena that have been linked to psychological distress (Hewitt & Flett, 1991).

Socially-Prescribed Perfectionism

Socially prescribed perfectionism is related to fears of negative interpersonal evaluation and concern regarding social approval and positive evaluation. Based upon social perceptions and interpretations, it involves maintaining the belief that external sources hold unrealistic expectations and standards for personal performance, which increases the likelihood of perceived failure (Hewitt & Flett, 1991). Indeed, self-ratings of the importance placed on social approval and meeting externally-derived standards of performance were found to be significantly associated with socially-prescribed perfectionism (Hewitt & Flett, 1991). This dimension of
perfectionism is reactive in that it is derived from perceived expectations and standards imposed by others. High levels of extrinsic motivation are common, as one maintains a great need or desire to please others (Deci & Ryan, 1985). As extrinsically-based motivation increases, intrinsic drive tends to decrease (Flett, Hewitt, & McGregor-Temple, 1990). The external locus of control associated with socially prescribed perfectionism may exacerbate feelings of helplessness, hopelessness, and the engagement in maladaptive coping strategies (Baumeister, 1990). Intuitively, this type of perfectionism would likely lead to feelings of inadequacy and failure, among other negative emotions. Evidence from prior research suggests that individuals who are highly self-critical tend to exhibit negative confirmation biases in social situations (Mongrain, Vettese, Shuster, & Kendal, 1998), and report experiencing negative interpersonal interactions at a greater frequency (Flett et al., 1997). Thus, it is not surprising that an association between socially-prescribed perfectionism and low levels of perceived social competence has been reported in the research (Flett, Hewitt, & DeRosa, 1996).

Factor analytic studies of multidimensional perfectionism scales developed in recent years have yielded two clear primary factors, leading some to argue that the components of perfectionism are best understood in terms of the adaptive functioning of these underlying dimensions (BiBartolo, Li, & Frost, 2008). Confirmatory factor analysis studies have provided further empirical support for the bipartite model of perfectionism (Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000; Rice, Ashby, & Slaney, 1998). This two-factor solution has largely been interpreted as reflecting the adaptive and maladaptive aspects of perfectionism, though it is largely agreed within the field that no manifestation or presentation of perfectionism is entirely problem-free (Benson, 2003).
**Positive Achievement Striving**

Positive achievement striving, or personal standards perfectionism, involves the strong inclination to set high goals and standards for personal performance, as well as the tendency to maintain adherence to stringent self-evaluative methods (Frost et al., 1993; Hewitt & Flett, 1991). Hewitt and Flett’s self-oriented perfectionism, which measures tendencies to implement high standards and expectations for personal performance, was found to be the best indicator of this factor (Frost et al., 1993). An extant amount of research has failed to yield consistent results regarding the relationship between psychological distress and positive achievement striving, or personal standards perfectionism (DiBartolo et al., 2004). When research has found significant associations between this dimension and distress, the relationship has been markedly weaker than the one seen for its Evaluative Concerns counterpart (Dunkley et al., 2000). The negligibility of relationships found between this dimension of perfectionism and distress, may be the result of it maintaining both adaptive qualities and maladaptive qualities (Chang, 2006; Frost et al., 1990).

Although tendencies to set stringent goals and personal expectations for performance likely generate intrapersonal stress, this stress may be adaptive in its ability to motivate an individual to engage in positive active coping strategies required to meet the high standards they have set. Studies have found correlations between this factor and a variety of desirable behavioral and psychological outcomes such as increased self-efficacy, success orientation, and intrinsic motivation (Cox, Enns, & Clara, 2002; Powers, Koesther, & Topciu, 2005). Thus, it may serve a partially adaptive function in that it prompts the employment of active coping strategies, which leads to perceived successes that support mastery orientation and boost self-efficacy, confidence, and self-esteem. In addition, a drive to meet high standards of performance
and to utilize active-coping methods may decrease the amount of time a perceived stressor must be endured (Dunkley et al., 2000).

However, to say that this type of perfectionism is solely adaptive would be an oversimplification, one that conflates two very different driving factors: a desire to excel and the desire to be perfect (Benson, 2003). It has been argued that the lack of agreement in the results of research investigating the link between self-oriented perfectionism and psychological distress is because the personality attribute represents a vulnerability, or risk factor, for psychopathology rather than a mental health disorder itself. Supporting the vulnerability hypothesis are studies suggesting that perfectionistic tendencies become problematic in the context of other situational and environmental factors. Dunkley et al. (2000) found that levels of perceived social support moderated distress levels for both dimensions of perfectionism. A study by Flett and Hewitt (1993) found that the relationship between personal standards perfectionism and psychological distress was moderated by context, particularly the presence of daily life stressors. Thus, self-oriented perfectionism may lead to positive, adaptive outcomes such as improved self-efficacy, but only in the absence of exposure to stress-inducing hassles. Further supporting this notion is a longitudinal study by Hewitt, Flett, and Ediger (1996), which found that self-oriented perfectionism resulted in significant emotional problems when individuals scoring highly on this dimension were exposed to life stress.

An extant amount of research on the relationship between self-oriented perfectionism and the development of psychopathology has been inconsistent, rendering an accurate understanding of the underlying mechanisms and clinical implications difficult. Some posit that maintaining high personal standards is not in and of itself maladaptive and support such an argument with findings that suggest this dimension of perfectionism is positively associated with engagement in
adaptive coping strategies, such as problem solving and learned resourcefulness (DiBartolo, Li, & Frost, 2008; Flett et al., 1996). Indeed, research has found high levels of positive achievement striving to correlate with a number of desirable behavioral and psychological outcomes, including conscientiousness, academic achievement, and success orientation (Cox, Enns, & Clara, 2002; Powers, Koestner, & Topciu, 2005). However it has also been linked to maladaptive coping tendencies, such as emotion-based coping and diminished self-acceptance in stressful situations (Flett et al., 1994).

Maladaptive Evaluative Concerns

While it is easy to hypothesize how perfectionism may exert maladaptive influences, research suggests that the maladaptive evaluative concerns component of perfectionism may be particularly involved with dysfunction. Perfectionistic tendencies that involve concern over and preoccupation with making mistakes, as well as doubts about the quality of one’s performance, concerns regarding criticism, and inclinations toward critical evaluation have been noteworthy in their ability to predict poor adjustment (Frost et al., 1993; Dunkley et al., 2000). In terms of perfectionism, maladaptive evaluative concerns refer to ones tendency to perceive the external world as exerting unreasonable and unrealistic expectations or standards on personal performance (Hewitt & Flett, 1991). The socially prescribed dimension of perfectionism, which is associated with maladaptive and emotion-focused coping as well as tendencies toward helplessness and self-blame, was the best indicator of this component (Frost et al., 1993). Thus, it is not surprising that research has found significant associations between maladaptive evaluative concerns and psychological disturbance, with relationships between the two suggesting this dimension represents a nonspecific vulnerability to distress (Dunkley et al., 2000).
The considerable amount of overlap between maladaptive evaluative concerns and psychological distress necessitates the identification of shared components and mediating mechanisms. To date, such investigations have largely been correlational in nature (Dunkley et al., 2000); however, one exception is a study conducted by Rice et al. (1998), which found that self-esteem was a partial mediator in the relationship between maladaptive evaluative concerns and depression. Further evidencing the mediating role of self-esteem is the finding that socially-prescribed perfectionism is related to lower levels of self-esteem, which has implications for the experience of distress (Flett, Hewitt, & DeRosa, 1996). However, evaluative concerns accounted for only a portion of unique variance in depressive symptoms after controlling for self-esteem, suggesting that other factors are involved in the experience of distress.

Daily hassles, avoidant coping, and perceived social support have also been found to play a mediating role in the relationship between maladaptive evaluative concerns and psychological distress (Dunkley et al., 2000). It has been posited that individuals who score highly on maladaptive evaluative concerns tend to engage in dichotomous thinking and place a marked emphasis on the negative (Benson, 2003). An inability to derive satisfaction from personal performances may develop, as minor life events and experiences tend to be interpreted as significantly distressing stressors. Not surprisingly, maintaining high levels of maladaptive evaluative concerns is thought to be associated with lower self-efficacy, as these individuals do perceive themselves as competent and feel unable to effectively cope with events they perceive to be stressful (Dunkley et al., 2000).

Perfectionists who demonstrate high levels of maladaptive evaluative concerns may develop the belief that they do not possess the resources required to overcome stressful obstacles - at least not to the extent necessary to meet personal standards or the perceived expectations of
others. This may increase the likelihood for perceived criticisms and disparaging evaluations to be internalized, a tendency which has been linked to increased engagement in coping practices that are inherently maladaptive (Dunkley et al., 2000). These findings appear consistent with Flett, Russo, & Hewitt’s (1994) suggestion that individuals scoring highly on socially-prescribed perfectionism are more likely to adopt an orientation of helplessness or hopelessness when faced with stressful situations, and to employ avoidant coping strategies that serve to prolong or exacerbate the frequency of stressors that are experienced. Research has suggested that perfectionists who score highly on evaluative concerns are more likely to employ maladaptive coping strategies to manage perceived stressors, a tendency that may increase the likelihood that daily events will be interpreted as hassles and exacerbate levels of distress (Flett et al., 1996).

Consistent with the diathesis-stress model, these results are further supported by a study that found recent life stressors were predictive of increased psychological distress (Flett, Hewitt, Blankstein, & Mosher, 1995) and results from self-regulation research, which found that poor adjustment was more likely to occur when maladaptive coping strategies were employed in an effort to meet perfectionistic standards (Baumeister, 1990). Tendencies to catastrophize the stress of daily hassles and to engage in maladaptive coping appear to be associated with poor psychological adjustment (Dunkley et al., 2000). Beliefs regarding the harsh criticisms of others may cause the evaluative concerns perfectionist to believe they have limited social support in times of stress, which can make difficult events seem even more overwhelming.

One study provided evidence that a negative relationship exists between maladaptive evaluative concerns and perceived social support, suggesting that individuals who score highly on this dimension do not believe they have sufficient access to the social resources required for effective management of stressful events (Dunkley et al., 2000). This notion is consistent with
prior research, which found that socially-prescribed perfectionists tend to report lower levels of perceived social and are more likely to perceive social criticism, feel unable to rely on others, and to report feeling disconnected from interpersonal systems (Mongrain, 1998). Fears of failure and external judgment may increase isolating behaviors, which often further impedes the likelihood of engagement in adaptive, active-coping strategies (Dunkley et al., 2000).

These results can be interpreted by the Cognitive Theory of Psychological Stress and Coping developed by Lazarus and Folkman (1984), which posits that the relation between stressful environmental events and outcome are mediated by cognitive appraisal processes and coping. Perfectionists who maintain significant maladaptive evaluative concerns have been found to appraise daily events as stressful more frequently and are more likely to evaluate such events as relevant to personal wellbeing (Dunkley et al., 2000).

**Perfectionism & Mental Health**

It should not be surprising that perfectionism is related to mental health, as the trait is considered by many to be a stress-generating mechanism that is associated with numerous psychopathologies. Historically, the trait of perfectionism has been found to correlate with depression, anxiety, eating disorders, as well as other psychological disturbances (Dunkley et al., 2000). Such symptoms may result from the dialectical cognitive style of perfectionists and their tendency to establish, adhere to, and judge personal competencies according to unrealistic standards. Dualistic patterns of thinking, overgeneralizations, and increased salience for negative cues are among the potentially harmful cognitive operations and distortions that have been identified as involved in perfectionism (Hewitt & Flett, 1991). Previous studies indicate that contingent self-worth may lead to negative health outcomes and have suggested that the low unconditional self-acceptance that is characteristic of perfectionists render them especially
vulnerable to developing a sense of self-worth that is contingent on their ability to attain goals (Cramer, 1999; DiBartolo et al., 2004). Recurrent perceptions of one’s failure to meet imposed standards and goals may come to indicate ineffectuality and worthlessness for the perfectionist. Research has suggested that the negative self-evaluative processes involved in contingent self-worth interact with daily stressors and other risk factors to produce the pernicious effects associated with poor mental health (DiBartolo, Li, & Frost, 2008).

Perfectionism & Somatic Health

The notion that emotional states and psychological processes have ramifications for physical health is not a new concept. Such speculations were reported as early as the times of Hippocrates, who linked psychological distress and disease with the hypothesis that imbalances in the four bodily humors (black bile, phlegm, blood, and yellow bile) were responsible for chronic emotional states (Merenda, 1987). The physiological basis of stress was first defined in 1936 by Hans Selye, who posited that the state involved co-activation of the sympathoadrenomedullary system and the limbic-hypothalamic-pituitary-adrenal axis (HPA) (Chrousos, 1995). Recognition of the substantial comorbidity of psychological and physical disorders in subsequent years has led to increased awareness of the physiological consequences of negative emotional experiences (Salovey, Rothman, Detweiler, & Steward, 2000). However, despite a large body of research investigating the relationship between psychological functioning and somatic health, our understanding of the mechanisms underlying such associations is still quite limited.

In an attempt to delineate mediating constituents and increase our overall understanding of implicated factors, various theories have been developed and utilized in health psychology that seek to explain how psychological experience may affect physical well-being (Watson &
Pennebaker, 1989). One factor commonly incorporated into such theories that has received substantial support is the presence of negative affectivity (NA), a general dimension of distress that is defined as “a broad dimension of individual differences in the tendency to experience negative, distressing emotions and to possess associated behavioral and cognitive traits” (Costa & McCrae, 1987). A wide range of adverse emotional states are subsumed within the NA factor including anxiety, shame, guilt, and depression. NA can be assessed as either an emotional state, which refers to transient fluctuations in mood, or as a trait, which refers to a stable predisposition to experience negative affect and to maintain corresponding cognitive and behavioral styles (Watson & Clark, 1984).

It has long been hypothesized that negative or adverse emotional experiences have a detrimental effect on physiological functioning and overall physical health, however only recently have technological advances provided the opportunity to directly test such prepositions. Over the past 25 years numerous studies have provided evidence that emotional disturbance and psychological stress can instigate disruptive changes in the immune system via communications between the central nervous system and the endocrine system (Reiche, Nunes, & Morimoto, 2004). Recent research has suggested that the stress-induced activation of, and interactions between, such stress-response systems can produce alterations in concentrations of circulating hormones that diminish immune system functioning, ultimately increasing one’s susceptibility to illness (Polk, Cohen, Doyle, Skoner, & Kirschbaum, 2005). Differences in the way one tends to perceive and react to stimuli have been demonstrated to instigate different immune responses that are likely mediated by neuroendocrine mechanisms (Segerstrom, 2000). The ramifications of disturbances to stress-response systems caused by negative emotional states are numerous, with studies linking them to infectious disease, cardiovascular dysfunction, cancer, autoimmune

On the basis of a significant amount of research denoting connections between negative affectivity and compromised physical health, it is not unreasonable to suggest that personality traits characterized by negative mood states and increased stress reactivity might well be associated with somatic ailments. Perfectionism, a stable personality trait, is one such factor that may contribute to the development of a host of negative psychological side effects including feelings of shame, guilt, and failure, as well as the compromise of physical health through communications with neuroendocrine systems (Hewitt & Flett, 1991). Despite solid support for impact of negative affectivity and personality characteristics on psychological wellbeing and physical health, few studies have focused on the relationship between perfectionism and chronic pain. Those that have largely been based on data collected from patients seeking medical treatment at chronic pain clinics, and are unlikely to be representative of the general population (Crombie & Davies, 1998). The aim of the present study was to explore the relationship between two dimensions of perfectionism that have been implicated in maladaptive health outcomes, self-oriented and socially-prescribed perfectionism, and chronic pain in a community sample.

Hypothesis

Individuals in the community who experience chronic pain will demonstrate higher levels of perfectionism, specifically on dimensions associated with maladaptive health outcomes, than those who do not experience chronic pain. This hypothesis will be assessed by examining mean group differences in self-oriented and socially-prescribed perfectionism, as measured by the
MPS and endorsed by individuals sampled from each of these two groups. More specifically, it is hypothesized that:

(a) Individuals with chronic pain will receive significantly higher scores on the self-oriented perfectionism scale of the MPS than those who do not endorse chronic pain.

(b) Individuals with chronic pain will receive significantly higher scores on the socially-prescribed perfectionism scale of the MPS than those who do not endorse chronic pain.
Method

Participants

As indicated by a power analysis conducted using G Power 3 software, a total of 176 participants were required in order to find statistically significant results using $t$-tests to explore the differences between independent means with a medium effect size. Participants were recruited from the Portland, Oregon metropolitan and surrounding areas via online advertisement at Portland Craigslist and Portland Forum as well as various internet-based social network sites, both of which provided a link to the informed consent and data collection forms located on SurveyMonkey.com.

A total of 238 participants responded to the survey. Of the 238 individuals who initially met eligibility criteria and indicated agreement to the informed consent, 179 provided complete data that was reviewed and analyzed for the purposes of this quasi-experimental research study. The majority of participants were between the ages of 25-34 ($n = 83, 46.4\%$) and had received some college education ($n = 67, 37.4\%$). The sample was primarily female ($n = 115, 64.2\%$) and Caucasian ($n = 146, 81.6\%$). The majority of participants indicated that they were employed full-time, working 35 hours or more a week ($n = 68, 38.0\%$). Table 1 provides additional descriptive information related to the participant sample.

This study utilized the International Association for the Study of Pain’s definition of chronic pain, which is described as “pain or discomfort that persists continuously for longer than 3 months” (International Association for the Study of Pain, 1986), with participants categorized by their self-report, into either the chronic pain group (CP+) or absence of chronic pain group (CP-) depending on their endorsement of simple case definition questions based on these criteria.
### Table 1

*Descriptive Statistics of Participant Sample (n = 179)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total in sample (n)</th>
<th>Percentage in sample (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>64</td>
<td>35.8</td>
</tr>
<tr>
<td>Female</td>
<td>115</td>
<td>64.2</td>
</tr>
<tr>
<td><strong>2. Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 – 24</td>
<td>27</td>
<td>15.1</td>
</tr>
<tr>
<td>25 – 34</td>
<td>83</td>
<td>46.4</td>
</tr>
<tr>
<td>35 – 44</td>
<td>22</td>
<td>12.3</td>
</tr>
<tr>
<td>45 – 54</td>
<td>22</td>
<td>12.3</td>
</tr>
<tr>
<td>55 – 64</td>
<td>20</td>
<td>11.2</td>
</tr>
<tr>
<td>65 – 74</td>
<td>55</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>3. Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>146</td>
<td>81.6</td>
</tr>
<tr>
<td>Hispanic/Latino/a</td>
<td>8</td>
<td>4.5</td>
</tr>
<tr>
<td>Black/African American</td>
<td>5</td>
<td>2.8</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>13</td>
<td>7.3</td>
</tr>
<tr>
<td>Middle Eastern/East Indian</td>
<td>4</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>4. Highest level of education received</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary school</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>High school</td>
<td>53</td>
<td>29.6</td>
</tr>
<tr>
<td>College</td>
<td>67</td>
<td>37.4</td>
</tr>
<tr>
<td>Graduate school</td>
<td>56</td>
<td>31.3</td>
</tr>
<tr>
<td><strong>5. Primary occupation status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time employment</td>
<td>68</td>
<td>38.0</td>
</tr>
<tr>
<td>Part-time employment</td>
<td>31</td>
<td>17.3</td>
</tr>
<tr>
<td>Unemployed, looking for work</td>
<td>8</td>
<td>4.5</td>
</tr>
<tr>
<td>Unemployed, not looking for work</td>
<td>4</td>
<td>2.2</td>
</tr>
<tr>
<td>Homemaker</td>
<td>8</td>
<td>4.5</td>
</tr>
<tr>
<td>Student</td>
<td>39</td>
<td>21.8</td>
</tr>
<tr>
<td>Retired</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Disabled, unable to work</td>
<td>19</td>
<td>10.6</td>
</tr>
</tbody>
</table>
Research Design & Procedure

Individuals who accessed this study’s survey on the Survey Monkey website were first presented with the online informed consent form, which provided a brief description of the study and explained that participation was completely voluntary. Participants were informed that they had the right to leave any question blank or to withdraw from the study at any time without penalization. It was also made clear that participation was anonymous, participation IP addresses would not be collected for the purposes of the study, and that individual survey results would be kept completely confidential. Subjects willing to participate in the study who endorsed basic inclusion criteria indicated their agreement by clicking “Yes, I agree and understand the Informed Consent.” They were then asked to complete a basic demographic questionnaire that included a two items used to assess for the presence of chronic pain: one that asked whether participants were currently experiencing pain on a regular basis, and if so, whether the pain had persisted for a minimum of three months time (see Appendix A). Individuals who failed to indicate agreement to the informed consent form were not able to proceed with the remainder of the survey.

Subjects who endorsed experiencing pain on a regular basis for a minimum of three months were then asked to supply qualitative data regarding their experience of pain, including information regarding types of activities that have been found to exacerbate their pain and activities that alleviate the discomfort. Participants were also asked to identify important activities that they have difficulty doing or are unable to do because of their pain. Participants who did not endorse chronic pain criteria were instructed not to complete these questions. All subjects were then asked to complete a measure of perfectionism, specifically assessing self-
oriented and socially-prescribed perfectionism. Upon completion of the survey, subjects were thanked for their participation and were exited out from data collection forms.

Measures

*Multidimensional Perfectionism Scale (MPS).* Perfectionism was assessed with two subscales of the MPS, which measure self-oriented perfectionism and socially-prescribed perfectionism (see Appendix C). The third subscale, which measures others-oriented perfectionism, was omitted from this study as no research was found that suggested this dimension would be relevant to the topic of interest (Hadjistavropoulos, Dash, & Sullivan, 2007). Each subscale is comprised of 15 items, which are rated on a 7-point Likert scale ranging from 1 = “strongly disagree” to 7 = “strongly agree.” MPS subscale scores may be interpreted individually, as they have been repeatedly shown to measure distinct dimensions of perfectionism, with elevation on each subscale being associated with unique patterns of vulnerability for various psychological and physical health problems (Hewitt & Flett, 2004; Hewitt, Flett, Turnbull-Donovan, & Mikail, 1991). Internal consistency estimates of the self-oriented perfectionism subscale have been found to range from .84 to .90, indicating a high rate of reliability (Hewitt & Flett, 2004). Studies have found the internal consistency of the second dimension of perfectionism measured by the MPS, socially-prescribed perfectionism, to be high as well, falling within the range of .80 to .87 (Hewitt, Flett, Turnbull-Donovan, & Mikail, 1991). The stability of the self-oriented and socially-prescribed dimensions of perfectionism has been evidenced by studies purporting test-retest reliabilities of .88 and .75, respectively (Hewitt & Flett, 1991). This should not be surprising, as research has found personality traits to be remarkably stable over time (Fry & Debats, 2009). The validity of the MPS subscales has been well established and supported by a variety of statistical techniques in the research, with
adequate concurrent, convergent, and discriminant validity having been reported (Hewitt, Flett, Turnbull-Donovan, & Mikail, 1991; Enns, Cox, Sareen, & Freeman, 2001; Hewitt & Flett, 2004).

**Data Coding & Analysis**

Questionnaire responses were downloaded into Microsoft Excel upon completion of data collection and were analyzed with SPSS 17. After recalculating nine reverse-scored items designed to control for response biases, preliminary raw scores on the subscales were summed independently to produce two scores that could range from 15 to 105. Response sets were examined for missing data, with more than four missing items rendering a participant’s response set as invalid, as per the instruction of the developer’s of the MPS. Prorated subscale scores were computed for response sets that contained fewer than five missing items by multiplying the preliminary raw scale score by 15 and then dividing by the number of completed items for that particular scale (Hewitt & Flett, 2004).

Inspection of the data revealed that of the 238 participants who initially consented to participate in the study, 59 provided incomplete response sets and were excluded list-wise from data analysis. The remaining 179, or 75.2%, of the response sets were deemed valid and were analyzed for the purposes of this study. Prorated subscale scores were computed for the 26 incomplete data sets that did not exceed the maximum allowable number of missing responses. Of these 26 response sets, 22 represented one missed item (84.6%), 3 represented two missing items (11.5%) and 1 represented four missing items (3.9%). The presence of pain during participation in the survey did not appear to cause subject attrition or be related to incomplete responding, as only 8 of the 58 (13.8%) subjects who failed to provide complete information endorsed items in a way that met chronic pain criteria.
The independent variable, presence of chronic pain as defined by IASP diagnostic criteria, was assessed by two questions regarding the presence and duration of pain. Participants were categorized into one of two groups based on their responses, with endorsement of both items being required to qualify for the chronic pain group. Three participants who endorsed experiencing pain on a regular basis indicated that they were unsure of whether the discomfort had persisted for a minimum of three months and were placed in the “non chronic pain” group. In preparation for data analyses this variable was dummy coded, with a score of 1 indicating that criteria for chronic pain had been satisfied (CP+) and a score of 2 indicating that criteria for chronic pain had not been met (CP-).

Data was examined for the presence of outliers through visual inspection of histograms illustrating self-oriented and socially-prescribed raw score distributions. Two scores on the self-oriented subscale of perfectionism that did not meet criteria for chronic pain were deemed to be outliers. Further investigation of the two response sets led to the experimenter’s conclusion that both extreme scores were not due to data entry errors and that the participant’s who obtained such scores were appropriate members of the population from which the sample was taken. Therefore both outliers were retained in the data and included in statistical analyses. Providing further rationale for the inclusion of such extremely low scores in data analyses is the experimenter’s hypothesis that individuals who maintain low levels of perfectionistic traits will be less likely to meet IASP diagnostic criteria for chronic pain.

It was assumed that scores on the dependent variable were independent from one another and, thus, the assumption of independence was met. Due to the large sample size, \((n = 179)\), it was assumed that the dependent variable was normally distributed in each of the two
populations; therefore, independent samples t-test analysis was deemed appropriate for statistical analyses. Homogeneity of variances was assessed by Levene’s Test for Equality of Variances.

To test the hypothesis that individuals who endorse meeting criteria for chronic pain would receive significantly higher scores on the self-oriented perfectionism scale than those who did not, an independent-samples t test was conducted to compare mean self-oriented perfectionism scores of the chronic pain and no chronic pain groups. In order to evaluate the hypothesis that individuals with chronic pain would receive significantly higher scores on the socially-prescribed perfectionism scale than those who do not, differences between group means on the corresponding scale were compared by conducting a second independent-samples t test.
Results

Chronic Pain

Chronic pain was assessed according to the IASP’s diagnostic criteria, with participants endorsing such items being categorized into the CP+ group and those who did not being categorized into the CP- group. Of the 179 participants who completed the survey, 97 (54.2%) met criteria for the presence of chronic pain. The most common types of pain reported were upper/lower back pain \( (n = 52, 53.6\%) \), musculoskeletal joint pain \( (n = 50, 51.6\%) \), and head/neck pain \( (n = 40, 41.2\%) \). Of the participants who comprised the CP+ group, 23 reported full body pain \( (23.7\%) \), 15 reported abdominal pain \( (15.5\%) \), and 6 reported chest pain \( (6.2\%) \). The number of body locations affected by pain varied among participants experiencing chronic pain, with 44 of 97 individuals \( (45.4\%) \) endorsing pain in multiple areas (see Table 2).

The CP+ group was largely comprised of females, with 73 \( (75.3\%) \) endorsing chronic pain as compared to 24 male participants. The most common types of pain among female participants were musculoskeletal/joint pain \( (52.1\%) \), upper/lower back pain \( (50.1\%) \), and full body pain \( (30.1\%) \), whereas men endorsing chronic pain most frequently reported upper/lower back pain \( (75.0\%) \), musculoskeletal/joint pain \( (58.3\%) \), and head/neck pain \( (33.3\%) \). In contrast to female participants endorsing chronic pain, full body pain was only endorsed by one male in the CP+ group. Three female participants and three male participants endorsed experiencing persistent pain that had a duration of less than three months.
Table 2

*Descriptive Statistics for Site of Pain in Participants Endorsing Chronic Pain (n = 97)*

<table>
<thead>
<tr>
<th>Location</th>
<th>Total (n)</th>
<th>Percentage in sample (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Upper/lower back pain total</td>
<td>52</td>
<td>53.6</td>
</tr>
<tr>
<td>Men</td>
<td>18</td>
<td>75.0</td>
</tr>
<tr>
<td>Women</td>
<td>37</td>
<td>50.7</td>
</tr>
<tr>
<td>2. Musculoskeletal/joint pain total</td>
<td>50</td>
<td>51.6</td>
</tr>
<tr>
<td>Men</td>
<td>14</td>
<td>58.3</td>
</tr>
<tr>
<td>Women</td>
<td>38</td>
<td>52.1</td>
</tr>
<tr>
<td>3. Head/neck pain total</td>
<td>40</td>
<td>41.2</td>
</tr>
<tr>
<td>Men</td>
<td>8</td>
<td>33.3</td>
</tr>
<tr>
<td>Women</td>
<td>32</td>
<td>43.8</td>
</tr>
<tr>
<td>4. Full body pain total</td>
<td>23</td>
<td>23.7</td>
</tr>
<tr>
<td>Men</td>
<td>1</td>
<td>4.2</td>
</tr>
<tr>
<td>Women</td>
<td>22</td>
<td>30.1</td>
</tr>
<tr>
<td>5. Abdominal pain total</td>
<td>15</td>
<td>15.5</td>
</tr>
<tr>
<td>Men</td>
<td>2</td>
<td>8.3</td>
</tr>
<tr>
<td>Women</td>
<td>14</td>
<td>19.2</td>
</tr>
<tr>
<td>6. Chest pain total</td>
<td>6</td>
<td>6.2</td>
</tr>
<tr>
<td>Men</td>
<td>1</td>
<td>4.2</td>
</tr>
<tr>
<td>Women</td>
<td>5</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Common activities that exacerbated chronic pain for participants were physical exertion/exercise (58.5%), prolonged sitting (36.2%), and prolonged standing (34.0%). Other responses included activities that involved range of motion, lifting, and stress. When CP+ participants were asked to provide information regarding things that alleviated their pain, the most commonly endorsed responses were medication (67.0%), rest/relaxation (56.4%), and heat (51.1%). Other activities stated to reduce pain included stretching, massage, ice, and light exercise. Responses to questions addressing types of activities that were prevented from pain
varied. Over three quarters of participants (75.7%) indicated that their pain condition negatively impacted their ability to engage in physical activities. Of the participants who responded to the question, 47.0% indicated that their pain interfered with recreational activities and disrupted their ability to participate in social events. Difficulties with tasks requiring mental concentration, such as school work and reading, were endorsed by 25.3% of responding CP+ participants.

Of the 97 participants who endorsed experiencing persistent pain, 63 (65.0%) indicated that they currently take medication for the pain. Opioids were cited as the most common type of medication used for management of chronic pain, with 43 (67.2%) of these respondents endorsing use of narcotics. Non-steroidal anti-inflammatories (NSAIDs) were the second most commonly endorsed medications, with 26 (40.6%) of participants who experience persistent pain indicating use of such drugs. See Table 3 for a complete list of the medications endorsed by this group for pain management.
Table 3

Descriptive Statistics for Chronic Pain Management Medications (n = 97)

<table>
<thead>
<tr>
<th>Type of medication</th>
<th>Total in group (n)</th>
<th>Percentage in group (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Narcotics/opioids</td>
<td>43</td>
<td>67.2</td>
</tr>
<tr>
<td>2. NSAIDs/aspirin</td>
<td>26</td>
<td>40.6</td>
</tr>
<tr>
<td>3. Muscle relaxants</td>
<td>13</td>
<td>20.3</td>
</tr>
<tr>
<td>4. Anticonvulsants</td>
<td>9</td>
<td>14.1</td>
</tr>
<tr>
<td>5. Antidepressants (SSRIs/tricyclics)</td>
<td>9</td>
<td>14.1</td>
</tr>
<tr>
<td>6. Naturopathic supplements</td>
<td>7</td>
<td>10.9</td>
</tr>
<tr>
<td>7. Acetaminophen</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>8. Immunosuppressants</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>9. Triptans (Imitrex)</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>10. Anxiolytics</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>11. COX-2 inhibitors</td>
<td>2</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Perfectionism & Chronic Pain

Self-oriented and socially-prescribed dimensions of perfectionism were measured using corresponding subscales of the MPS, with higher scores representing higher levels of perfectionism for both dimensions.

An independent-samples $t$ test was conducted to evaluate hypothesis ($a$), that is to determine whether individuals who experience chronic pain demonstrate higher levels of self-oriented perfectionism than those who do not. This hypothesis was supported. Levene’s test for equality of variances was not significant and, thus, equal variances between groups were
assumed. The independent-samples $t$ test was significant, $t (169) = 3.30, p = .001$, with individuals who met criteria for chronic pain endorsing higher levels of self-oriented perfectionism ($M = 56.12, SD = 11.01$) than those who did not ($M = 50.41, SD = 11.50$). The 95% confidence interval for the difference in means ranged from 2.30 to 9.14. The 95% confidence intervals for mean self-oriented perfectionism scores of the CP+ and CP- groups are presented in Figure 1. The obtained eta square value indicated a medium effect size, with approximately 6.1% of the variance in self-oriented perfectionism scores being accounted for by whether criteria for chronic pain were satisfied.

![Figure 1](image.png)

*Figure 1. 95% confidence intervals for self-oriented perfectionism scores*
A second independent-samples $t$ test was conducted to evaluate hypothesis ($b$), that is to determine whether individuals who meet criteria for chronic pain maintain endorse higher levels of socially-prescribed perfectionism than those who do not and was also supported. Equal variances between groups were assumed based on the non-significance of Levene’s test for equality of variances. Results of the independent-samples $t$ test indicated that participants who met criteria for chronic pain ($M = 55.46$, $SD = 11.17$) on average endorsed higher levels of socially-prescribed perfectionism than those who did meet criteria for chronic pain ($M = 49.16$, $SD = 10.00$). This test was significant, $t(169) = 3.82$, $p = .000$. The 95% confidence interval for the difference in means between the two groups was 3.05 to 9.56. See Figure 2 for an illustration of the 95% confidence intervals for mean socially-prescribed perfectionism scores.

![Graph showing 95% confidence intervals for socially-prescribed perfectionism scores]

*Figure 2.* 95% confidence intervals for socially-prescribed perfectionism scores
The eta square index indicated a medium effect size, with approximately 7.6% of the variance in socially-prescribed perfectionism scores being accounted for by endorsement of chronic pain criteria.
Discussion

The present study sought to examine the relationship between chronic pain and two dimensions of perfectionism that have previously been linked to negative psychological and physical health outcomes, self-oriented perfectionism and socially-prescribed perfectionism (Hewitt & Flett, 1993).

Overall the results of this study support the hypothesis that individuals in the community with chronic pain differ from those who do not experience pain on a regular basis in terms of trait levels of perfectionism. More specifically, findings from the present study suggest that individuals experiencing chronic pain in the community maintain higher levels of self-oriented and socially-prescribed perfectionism than individuals who do not.

The association between socially-prescribed perfectionism and chronic pain was found to be slightly stronger than the relationship between chronic pain and self-oriented perfectionism, with 7.6% of the variance in socially-prescribed perfectionism scores being accounted for by the presence of persistent pain. This finding, which is consistent with previous research, supports the hypothesis that socially-prescribed perfectionism encompasses maladaptive correlates of the personality trait, such as neuroticism, negative affect and passive coping, all of which have been repeatedly linked to poor health outcome (Hewitt & Flett, 2004; Molar et al., 2006; Saboonchi & Lundh, 2003). Further supporting this notion is a study by Feldman, Cohen, Doyle, Skoner, and Gwaltney (1999), who found a significant relationship between neuroticism and self-reported somatic symptoms in their sample.

Findings from studies investigating the correlates of self-oriented perfectionism have been inconsistent, with the results of some research supporting the notion that striving for attainment of self-set perfectionistic standards is adaptive and some arguing that all dimensions
of perfectionism are related to psychological distress and are thus inherently maladaptive. The present study’s finding that self-oriented perfectionism accounted for 6.7% of the variability in chronic pain seems to support the latter position. Thus, it may be that although this dimension of perfectionism works through different mechanisms of action to produce fewer self-defeating behaviors and more subtle detriments to psychological welling, it ultimately results in heightened stress levels and subsequent physiological distress. This is consistent with the finding of Saboonchi and Lundt (2003), who reported a significant negative correlation between self-oriented perfectionism and positive affect, both of which serve to buffer the negative effects of stress.

Hewitt and Flett (1993) argued that studies asserting the adaptive nature of self-oriented perfectionism and its association with positive outcomes fail to consider daily stress level as a moderator in the relationship between this dimension of perfectionism and negative affect and are, thus, misleading. This may explain the current study’s finding that individuals in the community experiencing chronic pain had significantly higher self-oriented perfectionism scores than those who do not, as the daily challenges inherent to living with persistent, unremitting pain most certainly constitute significant stressors. This is consistent with Saboonchi and Lundt’s (2003) finding that both self-oriented and socially-prescribed perfectionism were positively correlated with negative affect, tension, and somatic complaints in a community-based sample as well as Watson and Pennebaker’s (1989) finding that negative affect was significantly associated with self-reported somatic complaints. These authors went on to report that these relationships were more clearly seen among females compared to males, which is consistent with the present study’s finding that perfectionistic women were much more likely to endorse experiencing chronic pain than men.
Although both dimensions of perfectionism were endorsed to a greater degree among participants experiencing chronic pain, the finding that more of the variance in socially-prescribed perfectionism scores was accounted for by chronic pain than self-oriented perfectionism is consistent with prior research. As previously noted, stress appears to play a considerable role in the relationship between both types of perfectionism and health status (Hewitt & Flett, 2002). However, past literature has repeatedly demonstrated that self-oriented perfectionism exerts its influence on health via different pathways, the results of which are subtler and more convoluted than its socially-prescribed counterpart (Dunkley et al., 1997; Molnar et al., 2006; Saboonchi & Lundt, 2003). For example, this dimension of perfectionism has been associated with fewer self-defeating behaviors and less extreme vulnerability to psychological distress (Enns et al., 2001).

It seems likely that the constant striving, fears of negative social evaluation, distorted appraisals of failure, and hopelessness inherent to socially-prescribed perfectionism predisposes one to self-defeating behaviors and psychological distress, which serve to increase vulnerability to poor physiological functioning. This is consistent with a substantial body of research linking psychological distress and somatic health (Cohen & Rodriguez, 1995; Hewitt & Flett, 1993; Saboonchi & Lundh, 2003).

Previous research has found negative self-statements to be consistently related to less adaptive adjustment to perceived stressors (Stroud et al., 2000). It may be that while both self-oriented and socially-prescribed perfectionism result in elevated stress levels, the type and extent to which each dimension is associated with inappropriate coping strategies that serve to perpetuate such stress differ. While both types of perfectionism have a detrimental impact on one’s wellbeing, the more negative outcomes associated with socially-prescribed perfectionism
may be due to a greater reliance on maladaptive coping styles that focus on perceived shortcomings rather than dealing directly with any given stressor. Further, previous literature has emphasized the role of perceived meaning in one’s ability to manage any given stressor (Stroud et al., 2000). Although it is likely that both aspects of perfectionism involve tendencies to interpret stressors as indicative of perceived personal failure, the two dimensions differ in regard to the meaning typically ascribed to such interpretations. Whereas self-oriented perfectionism typically involves internally driven stressors, socially-prescribed perfectionism is related to externally-based stressors that one has little control over. This perceived lack of control may provoke feelings of helplessness and cause a greater amount of distress.

It has long been emphasized that once developed, chronic pain can cause profound disruptions to various domains of life, including emotional, physical, economic, and social problems (Tunks et al., 2008). The broad negative impact of chronic pain on health-related quality of life has been documented to exacerbate daily stressors and increase vulnerability to the effects of perceived shortcomings. Chronic pain has also been demonstrated to reduce access to protective factors that serve to buffer the deleterious effects of increased stress (Turks et al., 2008). Consistent with these findings are results from the present study, which indicate that the most common types of activities prevented by chronic pain were exercise (75.7%) and leisure/social activities (40.7%), both of which have been shown to buffer the negative impact of persistent pain.

The present study stresses the importance of expanding our understanding of the contributory mechanisms involved in the development and maintenance of chronic pain in the general population. Research investigating chronic pain in the community, rather than on chronic pain patients presenting for medical treatment, has been scarce and has limited our
understanding of persistent pain as it pertains to this group. This is problematic, considering that epidemiological research has estimated community prevalence rates of chronic pain to be as high as 50%, rates that are expected to continue rising in the foreseeable future (Becker et al., 1997; Elliot et al., 1999; Hardt et al., 2008). Findings from the present study support such estimations, as 54% of participants sampled from the community met criteria for the presence of chronic pain. The magnitude of these findings highlight the necessity of further investigation in the service of obtaining a level of detailed understanding necessary for the development of efficient strategies for the management of chronic pain.

Consistent with a large body of previously reported literature, the prevalence of chronic pain was found to be higher among women than men in our community-based sample (Bouhassira et al., 2008; Hardt et al., 2008; Tunks et al., 2008). Though multiple hypotheses have been proposed to explain this gender disparity, reasons underlying these differences remain unclear. It seems likely that a variety of interacting situational, biological, and socio-cultural factors are involved. However, it is interesting to note that of the 23 participants who endorsed experiencing widespread, full body pain, 22 or 95.7% were female. This may in part be due to higher prevalence rates of fibromyalgia among women and the increased likelihood of this population to seek resources online, where participants were recruited for the present study (DeSouza et al., 2009).

Although the number of participants endorsing chronic pain in our sample was slightly higher than estimated prevalence rates in the United States, the intensity/severity of persistently experienced pain was not measured by the current study and, thus, it may be that respondents endorsing chronic pain of the mildest grade served to inflate this proportion of our sample. The high proportion of participants endorsing chronic pain criteria is interesting due to the fact that
the majority of respondents were young, with 46.4% of participants between the ages of 25-34 years indicating that they experience pain on a regular basis. At first glance, this proportion appears inconsistent with findings from previous research, which suggest that the prevalence of chronic pain increases with age (Bouhassira et al., 2008; Tunks, Crook, & Weir, 2008). However, this may be due to the small size of the sample of the present study, which included a low number of older adults. On the other hand, these prevalence rates may not be as disparate from previous research as they appear, as other research suggests that this is a representative sample.

Numerous studies investigating the association between age and persistent pain have found a non-linear relationship between these two variables, with pain being shown to increase from younger to middle ages and then to level off or even decrease among older age cohorts (Hardt et al., 2008; Stewart, Ricci, Chee, Morganstein, & Lipton, 2004). As 37.4% \((n = 67)\) of participants having reportedly obtained post-secondary education and 31.3% \((n = 56)\) having attended graduate school, higher chronic pain prevalence among this age cohort may also be related to higher levels of academic striving and drive among younger participants, both of which have previously been linked to perfectionistic tendencies (Chang, 2006; Cox et al., 2002; Hadjistavropoulos et al., 2007). The relationship between academic striving and health, as mediated by self-criticism and perceived failure, was explained by the research of Wirtz et al., (2007), who found that perfectionism was associated with increased elicitation of HPA axis responses and cortisol stress reactivity, both of which have been linked to inflammation, physiological disruption, and poor health outcome. High levels of perfectionism may drive young adults to obtain advanced education, which increases their exposure to stressful academic environments. By exposing themselves to situations where personal success is contingent on the
evaluation of others, the perfectionistic student may elicit chronic activation of stress response systems that contribute to the development and maintenance of chronic pain. A future study may examine the role of cognitive appraisal in mediating the relationship between academic striving and health outcome.

Consistent with findings from previous research, the most frequently endorsed locations of chronic pain in this community sample were: upper/lower back pain (53.6%), musculoskeletal joint pain (51.6%), and head/neck pain (41.2%). The finding that 45.4% of participants with chronic pain experienced pain in multiple locations was similar to results reported by Bouhassira et al., (2008) in their study of the prevalence of various chronic pain characteristics in the general population. Also consistent with previous research was the finding that narcotic analgesics were the most popular type of medication used for treating the symptoms of chronic pain, as it replicates the results of past studies that have identified this class of drug as the most commonly prescribed for pain management (Turk, Swanson, & Gatchel, 2008). As a substantial number of participants between the ages of 18-30 endorsed chronic pain, it would be interesting to examine if trends in medication use differ between various age cohorts.

Though ethnic minorities were largely under-represented in our sample, respondents who did endorse ethnic minority status reported chronic pain much less frequently than participants who identified as Caucasian. However, the small number of Hispanic/Latino, African American, Asian/Pacific Islander, and Middle Eastern/East Indian participants in the current study may not provide an accurate reflection of chronic pain prevalence rates in minority subgroups and fail to expand on the inconsistent findings of previous research. At this time, possible reasons for variations in chronic pain prevalence rates among ethnic minorities are not well understood (Edwards & Fillingim, 1999). To improve representation of racial or ethnic minority subgroups,
future studies may wish to focus recruitment efforts on cultural community centers or through local minority-based organizations.

Research investigating the cross-cultural applicability of the MPS has been scarce. However, analyses of normative data revealed no significant differences of ethnicity or race on either self-oriented or socially-prescribed perfectionism subscales (Hewitt & Flett, 2004). These findings suggest that obtained scores on these dimensions can be generalized across different ethnic populations.

Few studies have focused on differences in perfectionism across ethnic minority subgroups or have investigated the role of generational status or acculturation on perfectionistic tendencies. Research that has investigated these relationships has been fairly consistent in reporting significantly higher scores on dimensions characteristic of socially-prescribed perfectionism across Asian American and African American populations (Castro & Rice, 2003; Chang, 1998). Asian Americans endorsed more extreme concern about meeting parental expectations, concern over making mistakes as well as increased hopelessness and negative self-evaluation (Castro & Rice, 2003). African American women scored higher than Caucasian and Asian American participants on the perfectionism subscale of the Eating Disorder Inventory (EDI) as well as perceived parental expectations (Stiegel-Moore et al., 2000; Wassennar, le Grange, Winship, & Lachenicht, 2000). These findings highlight the necessity of further investigating differences in perfectionism across ethnic minority subgroups, as high levels of the dimensions of perfectionism described above have recurrently been linked to psychological distress and compromised physical integrity (Chang, 1998; Chang, Watkins, & Banks, 2004).

It would be reasonable to conduct future research that investigates whether ethnic minority parents develop excessive demands or expectations for their children out of concern for
their future and how fears of racism or oppression contribute to the perceived pressure to be perfect.

Considerable effort has been directed toward elucidating the relationship between physical health and trait dimensions of perfectionism, with some arguing that the personality trait maintains adaptive and maladaptive qualities while others view perfectionism as solely maladaptive, associated only with negative outcomes (Adler, 1956; Hewitt & Flett, 2004; Molnar et al., 2004; Pacht, 1984). Findings from the present study question the notion that either self-oriented or socially prescribed perfectionism maintain adaptive qualities, as both were significantly associated with chronic pain. A future study might address the presence or lack thereof of positive qualities associated with perfectionism in an effort to contribute to the understanding of how the complex set of behaviors involved in this personality trait are reinforced and, thus, maintained.

The present study emphasizes the importance of considering personality as an influential contributor to one’s vulnerability to chronic pain. Despite the fact that a large body of research has been unable to consistently support a specific personality type that renders one susceptible to chronic pain, individual personality traits have been reliably linked to maladaptive health outcomes. One commonality shared by such traits is the presence of negative affectivity, a general dimension of personality that involves the tendency to experience negative affect and to maintain associated behavioral and cognitive predispositions (Costa & McCrae, 1987; Watson & Clark, 1984). Perfectionism, specifically self-oriented and socially-prescribed perfectionism, has been linked to a variety of outcomes characteristic of negative affectivity, such as low self-efficacy, guilt, shame, and generalized characterological feelings of failure (Sorotzkin, 1985). By increasing negative affect and reactivity to stressors, perfectionism may ultimately result in a
perceived loss of control. The maladaptive coping strategies that ensue may serve to further elicit physiological stress responses that lead to poor health outcome and exacerbate pain-related interference. Thus, it is not surprising that chronic pain was associated with higher levels of self-oriented and socially-prescribed perfectionism in our sample.

There were several additional limitations to this study. Data was collected via a web-based survey and, thus, results were based on the responses of self-selected participants who had access to a computer and who maintained skills necessary to navigate the Internet. These restrictions are in keeping with the basic demographics of participants in our sample, the majority of whom were younger (46.0% were between the ages of 25-34), Caucasian (86.0%), and well-educated (68.7% had received post-secondary education). Findings from the present study may not be representative of the general population, limiting the generalizability of results to minority groups, the elderly, and those with little familiarity or restricted access to the Internet. Because pain represents an internal experience that defies objective measurement, there was no way for the investigator to confirm the accuracy of participant self-report in this regard nor was it possible to verify that participants who endorsed chronic pain criteria were responding based on personal experience, as opposed to basing their responses on the perceived experience of significant others understood to suffer from persistent pain. In addition, this study did not investigate how individuals who endorsed experiencing persistent pain but did not meet the three month time criterion differed in trait levels of perfectionism.

Despite these limitations, the present study served to further expand our understanding of contributory mechanisms, specifically variability in the personality trait of perfectionism, involved in the development and maintenance of chronic pain in the community. The significance of findings that emerged in the present study further highlight the need for
additional studies to examine chronic pain within the community, a population that has rarely been studied. If the results of this study are replicated by future research, they may have important implications for our understanding of chronic pain in a broader context. It may expand our understanding of chronic pain as it pertains to individuals in the community rather than a small subset of medical patients presenting for treatment.
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