PERFECTIONISM AND SUICIDE IDEATION: AN ASSESSMENT OF THE SPECIFIC

VULNERABILITY HYPOTHESIS AND STRESS GENERATION MODEL

by

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Abstract

The relationship between trait perfectionism and suicide behaviours (see Hewitt, Flett, Sherry, & Caelian, 2006; O'Connor, 2007 for reviews) has been reported in many studies and there is very strong evidence that one interpersonal component of perfectionism, socially prescribed perfectionism (i.e., the perception that others require perfection of oneself) is particularly relevant in suicide ideation and attempt among psychiatric adolescents as well as clinical and nonclinical adults (e.g., Enns et al., 2001). However, few studies have examined the mechanism by which trait perfectionism is associated with suicidality. Hewitt and Flett (1993, 2002) suggested that perfectionism can play a moderating role in producing psychopathology by enhancing or exacerbating the aversiveness of congruent or ego-involving stressful events (i.e., Specific Vulnerability Hypothesis). Perfectionistic behaviour also can play a mediating role in its association with psychopathology by contributing to the generation of stress (i.e., Stress Generation Model). Hence, the general purpose of this paper was to examine whether perfectionism generates and interacts with life stress in influencing suicide ideation measured concurrently as well as longitudinally. The current study measured perfectionism traits, stress, depression, hopelessness, and suicide ideation among 437 community adults (mean age=58.6, men=175) six months apart. Consistent with the Specific Vulnerability Hypothesis (Hewitt & Flett, 1993), a significant Perfectionism x Stress interaction was found for self-oriented perfectionism (i.e., striving relentlessly to perfectionistic personal standards) and achievement stress in predicting Time 2 suicide ideation among female participants even after controlling for Time 1 suicide ideation and depression. Socially prescribed perfectionism, however, also interacted significantly with achievement stress to predict Time 2 suicide ideation among female participants, hence providing partial support for Specific Vulnerability Hypothesis. Furthermore,

mediational analyses via bootstrapping indicated that stress (i.e., achievement stress, interpersonal stress) mediated the relationship between socially prescribed perfectionism and subsequent levels of suicide ideation for both genders. Together, the current findings support the notion that certain perfectionism traits can act as vulnerability factors that enhance or generate stresses in influencing risk of suicide ideation. Implications of the present findings for understanding the perfectionism-suicide link and assessment and treatment for perfectionistic patients are discussed.

Preface

The research project presented in this thesis, titled "Perfectionism and Suicide Behaviour in adults", has been approved by the UBC Behavioural Research Ethics Board. The ethics certificate number is B04-0324.

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To my loving parents

1   Introduction

Suicide is a very relevant social issue in Canada that affects men and women of all age groups. It is the 9th leading cause of death in Canada killing 3,700 Canadians annually (Statistics Canada, 2008). The rates of completed suicide per 100,000 population range between 3.7 and 9.5 for women and between 16 and 26 in men, despite the fact that women are about 3 or 4 times more likely to attempt suicide than men do (World Health Organization, 2004). Moreover, rates of suicide and suicide attempts in Canada have been increasing and tend to be higher than rates in the United States (Lester & Leenaars, 1998). According to Canadian Institute for Health Information (CIHI; 2001), there was a 10 percent increase in suicides across Canada between 1997 and 1999. Suicide is the second leading cause of death for Canadians between the ages of 10 and 24 (CIHI; 2001). Seventy-three percent of hospital admissions for attempted suicide are for people between the ages of 15 and 44. Suicide among the older and senior (65+) adults is surprisingly common, particularly amongst Canadian men aged 75 years and above (i.e., 21 deaths per 100,000; World Health Organization; 2004). Even more common than suicides and attempted suicides is suicide ideation (i.e., having thoughts about committing suicide). The lifetime prevalence of suicide ideation among the general Canadian population is around 11.25%, 9.63% among males, and 12.74% among females (Weissman et al., 1999). Although most people who experience suicide ideation do not commit suicide, a significant proportion does go on to make suicide attempts (Gliatto & Rai, 1999). Suicide ideation may vary in severity depending on the specificity of suicide plans and the degree of suicidal intent (Arie, Haruvi-Catalan, & Apter, 2005) and it is one of the best predictors of suicide attempt and completed suicide (Brown, Beck, Steer, & Grisham, 2000; Leenaars, 1998).

One goal for researchers has been not only to understand predictors of suicide behaviours but also to identify risk factors and the mechanisms by which these risk factors are involved in the suicide process (Leenaars, 1998). One area of research that has shown promise involves examining personality factors, particularly perfectionism, in predicting suicide ideation (Hewitt & Flett, 1993; Hewitt, Flett, & Weber, 1994; O'Connor, 2007). The overarching goal of the current study is thus to contribute to the research on perfectionism and suicide ideation in community adults, more specifically, to better understand the mechanisms in which various dimensions of perfectionism are associated with suicide ideation in a large community sample of middle to old age adults.

Since the early 1990s, a growing body of research has shown that perfectionism is a vulnerability factor that can explain individual differences in psychological distress and symptoms including suicidality (e.g., Blatt, 1995; Chang & Rand, 2000; Flett & Hewitt, 2002; Hewitt & Flett, 1991). The research from various laboratories has emphasized the clinical importance of the construct not only in relation to various psychological disorders, including depression, anxiety, eating disorders, personality disorders, interpersonal difficulties and suicide outcomes, but also for how perfectionism can influence help-seeking attitudes, clinical assessment processes, therapeutic alliance, and treatment outcomes (Blatt, 1995; Hewitt, Flynn, Mikail, & Flett, 2001; Hewitt, Habke, Lee-Baggley, Sherry, & Flett, 2008).

1.1 Dimensions of perfectionism trait

Recently, researchers have begun to conceptualize perfectionism as a multidimensional construct, which has been predominately measured by two Multidimensional Perfectionism Scales (MPS); the 35-item FMPS (Frost, Marten, Lahart, & Rosenblate, 1990); and the 45-item HMPS (Hewitt & Flett, 1991). Frost's conceptualization of perfectionism emphasized that

perfectionists have excessively high personal standards. In addition, Frost and colleagues asserted that these standards are accompanied by tendencies for overly critical evaluations of one's own behaviour, expressed in concern over mistakes and doubts about one's actions. Moreover, they posited that perfectionists place considerable value on parental expectations and criticisms. Hence, Frost et al.'s (1990) conceptualization of perfectionism has six dimensions: concern over mistakes (CM), doubts about actions (DA), parental expectations (PE), parental criticism (PE), excessively high personal standards (PS), and organization (O). Evidence of good reliability, construct, concurrent, and discriminant validity has been reported for the FMPS (Enns & Cox, 2002).

Hewitt and colleagues have conceptualized perfectionism as a multidimensional construct that encompasses three broad domains of personality including perfectionism traits (e.g., Hewitt & Flett, 1991), perfectionistic self-presentational styles (Hewitt et al., 2003; 2011), and automatic perfectionistic cognitions (Flett, Hewitt, Blankstein, & Gray, 1998; Hewitt & Genest, 1990). These three components of perfectionism have been shown to be independent and are hypothesized to relate differentially to psychopathological outcomes (for reviews, see Hewitt & Flett, 2008; Hewitt, Flett, & Mikail, in preparation). Hence, an important goal for researchers is to assess different perfectionism dimensions in terms of their links with psychological distress and symptoms. The current project focused primarily on the Hewitt and Flett's MPS traits in relation to suicide ideation.

According to Hewitt and Flett (1991), trait perfectionism is a multidimensional construct that consists of self-oriented, other-oriented, and socially prescribed perfectionism. These trait dimensions are identified based on the source and direction of perfectionism, recognizing the distinction between achievement and interpersonal concerns. *Self-oriented perfectionism* is an

achievement-based dimension that involves the need for one's own perfection, all-or-nothing thinking, and emphasis of one's own flaws (e.g., "My goal is to be perfect in everything I do"). In contrast, *other-oriented perfectionism* involves the need for others to be perfect (e.g., "If I ask someone to do something, I expect it to be done flawlessly"). *Socially prescribed perfectionism* is an interpersonal dimension that entails the belief that others impose perfectionistic standards and expectations on the self, and others are highly evaluative and will be satisfied only when the unrealistic standards are met (e.g., "The people around me expect me to succeed at everything I do").

Perfectionism trait dimensions have been directly linked to psychological distress and can act as vulnerability factors in various forms of psychopathology (for a review, see Flett & Hewitt, 2002). Previous studies have shown that each perfectionism trait dimension is uniquely associated with various forms of psychopathology and maladjustment. For instance, socially prescribed perfectionism is the component of perfectionism that is mostly consistently linked with maladjustment including depression, anxiety disorders, low self-esteem, personality disorders, and suicide ideation and attempt (Flett, Hewitt, Blankstein, & Mosher, 1995; Hewitt & Flett, 1991, 1993; Hewitt, Flett, & Ediger, 1996; Hewitt, Flett, & Endler, 1995; Hewitt, Flett, & Turnbull, 1992; Hewitt, Flett, & Weber, 1994; O'Connor, 2007). Self-oriented perfectionism has been associated with depression (Hewitt & Flett, 1991; 1993; Hewitt et al., 1996), eating disorders (Hewitt, Flett, & Ediger, 1995; McGee, Hewitt, Sherry, Parkin, & Flett, 2005), academic and achievement problems and suicide ideation. Other-oriented perfectionism, on the other hand, has been linked with low relationship satisfaction and poor dyadic adjustment (e.g., Habke, Hewitt, Fehr, Callander & Flett, 1997; Habke, Hewitt, & Flett, 1999; Hewitt, Flett, & Mikail, 1995).

In summary, perfectionism traits can act as vulnerability factors and are differentially associated with various types of psychological distress and symptoms. Therefore, the first goal of the current study was to examine the associations between various dimensions of perfectionism trait and suicide ideation.

1.2   Theories of suicide and perfectionism

Since the 1950s, several theoretical models of suicide (e.g., Baumeister, 1990; Hewitt et al., 2006; Hollender, 1965; Horney, 1950; Orbach, 1997) have implicitly or explicitly identified perfectionism as a potential risk factor for suicidal behaviour. For instance, Hollender (1965) described that the perfectionist can become "...overburdened by the oppressive load he has heaped upon himself...." and "...no matter how well he does, he seldom performs to his complete satisfaction." Later, Hamachek (1978) described the perfectionist as "motivated not so much by desire for improvement as they are by fear of failure" and perfectionistic behaviour develops as a result of "an environment of nonapproval or inconsistent approval...or an emotional environment of conditional positive approval" (p.28), in which parental approval comes only when things are done in the right way. When speaking of the catastrophic consequences of perfectionistic behaviour, Burns (1980) stated that when people "...strain compulsively and unremittingly toward impossible goals and measure their own worth entirely in terms of productivity and accomplishment...the drive to excel can only be self-defeating" (p. 34). Blatt (1995) later suggested that the perception of failure initiates the self-destructive process including self-devaluation and intrapunitiveness, which can lead to depression and anxiety and ultimately suicidaility. Orbach (1997) also identified perfectionism as an important precursor to suicidal behaviour in a taxonomy of factors related to suicidality, as perfectionism is often associated with a variety of stressors including interpersonal rejection, failure, and losses that precede

suicidal behaviour. More recently, based on their extensive clinical work with suicidal adolescents, Arie and colleagues (2005) hypothesized that in addition to impulsivity, hopelessness and general psychopathology, perfectionism and the inability to tolerate failure and imperfection constitute one set of personality constellations that may underlie suicidality.

One of the most influential and well-studied models of suicide has been Baumeister's "escape from the self" theory. According to Baumeister (1990), the suicide process begins with the perception that current circumstances fall short of standards that are either self-imposed or perceived as imposed by significant others. Next, the individual makes negative, internal attributions for failing to meet these unrealistically high expectations. As a result of falling short of standards and engaging in self-criticisms for perceived failures, the individual develops a heightened state of painful self-awareness, perceiving the self as incompetent, undesirable, guilty, or inadequate. Suicide is then motivated by the desire to escape this aversive state of self-awareness of perceived shortcomings or failures and lack of achievements (Baumeister, 1990). According to the escape theory, self-oriented and socially prescribed perfectionism are the dimensions most relevant to suicidality. This is partly because unlike other-oriented perfectionist, self-oriented and socially prescribed perfectionists explicitly place the focus of perfectionistic expectations on the person him/herself, and thus individuals who are high on either of these dimensions will likely develop or pursue unrealistic goals and perfectionistic ideals. In summary, theories of suicide as described above are replete with references to perceived failure to meet one's own expectation or other people's expectation of oneself, as captured by the intrapersonal (i.e., self-oriented perfectionism) and interpersonal (i.e., socially prescribed perfectionism) dimensions of perfectionism.

Although perfectionistic behaviour develops as an attempt to secure approval and admiration and to avoid rejection, Horney (1950) stated that, perfectionists' maladaptive interpersonal behaviours (e.g., excessive reassurance-seeking, overdependence on others, excessive need to avoid appearing imperfect, and hypersensitivity to criticism) actually make perfectionists more vulnerable to rejection and disapproval. Therefore, the perfectionists' need to strive for perfection and their need to connect with others are fundamentally incompatible and often lead to unresolved inner conflicts (Horney, 1950). As a result of their relentless striving for perfection, individuals become "alienated from the self" or detached from his/her own feelings, wishes, and beliefs. The alienation from the real self can then give rise to feelings of inauthenticity, disconnectedness, hopelessness and self-loathing, which may eventually culminate in self-destructive impulses and actions (Horney, 1950). Similarly, Hewitt, Flett, Sherry, and Caelian (2006) proposed that the relentless pursuit of perfectionism functions as a vulnerability factor for suicide risk by creating either subjective (e.g., loneliness, perceived lack of connectedness) or objective (e.g., interpersonal conflicts, social isolation) disconnection from the social environment. Taken together, these theories suggest that individuals who have unrealistically high expectations imposed by self or others are particularly prone to suicidal thoughts, especially during stressful times and personal or interpersonal setbacks.

1.3 Perfectionism and suicide outcome: a literature review

In general, the evidence for an association between perfectionism and suicidality is robust. The perfectionism dimensions have been shown to correlate differently with self-reported suicidal ideation and suicidal risk in a number of cross-sectional studies among various clinical and nonclinical adult populations (for reviews, see Hewitt et al., 2006; O'Connor, 2007). Specifically, socially prescribed perfectionism is most strongly and consistently associated with

suicidality (e.g., Beevers & Miller, 2004; Blankstein et al., 2007; Chang, 1998; Dean & Range, 1996; 1999; Hamilton & Schweitzer, 2000; Hewitt et al., 1992; 1994; Hewitt & Flett, 1993; Roxborough et al., 2012). For instance, Dean and Range (1996) examined perfectionism and suicidal behaviour among 168 university students, and found that only SPP was significantly correlated with suicidal behaviours measured by the Suicidal Behaviours Questionnaire (SBQ; Linehan & Nielsen, 1981). Similarly, Dean and colleagues (1996) found that SPP was significantly correlated with suicide ideation in a sample of university students as assessed by Scale of Suicide Ideation (SSI; Beck et al., 1988). Furthermore, SPP and SOP together accounted for 3% additional variance in suicide ideation beyond measures of hopelessness and depression. Boergers and colleagues (1998) examined self-reported reasons for suicide attempts among 120 adolescents shortly after they were admitted to a hospital following a suicide attempt. Adolescents expressing a wish to die had substantially elevated levels of socially prescribed perfectionism when compared with adolescents deemed to have less serious motives. In another study, Hewitt and colleagues (1992) measured the perfectionism traits along with depression, hopelessness and suicide ideation in a sample of 87 psychiatric patients. Only socially prescribed perfectionism was found to correlate significantly with suicide ideation. SOP and OOP were uncorrelated with suicidality. Furthermore, SPP was a unique predictor in the suicide measures, even after controlling for levels of depression and hopelessness (e.g., Hewitt et al., 1992; Hewitt, Newton, Flett, & Callander, 1997; Hewitt, Caelian, Chen, & Flett, in preparation), which are widely regarded as the two best predictors of suicide ideation (Beck, Steer, Beck, & Newman, 1993; Beck, Steer, Kovacs, & Garrison, 1985). Indeed, Shaw and Segal (1999) suggested that perfectionism is a stronger predictor of suicide behaviour than hopelessness. Therefore, the evidence of the relationship between socially prescribed perfectionism and suicide ideation

appears to be robust across studies. In the current study, we aim to replicate the Hewitt et al.'s (1992) finding that SPP predicted suicide ideation above and beyond levels of depression and hopelessness.

The relationship between self-oriented perfectionism and suicide outcome, however, has been weak and inconsistent (see Hewitt et al., 2006; O'Connor, 2007 for reviews). Hewitt and colleagues (1994) conducted another study that replicated the Hewitt et al. (1992) study. Using two samples consisting of 91 psychiatric patients and 160 university students, Hewitt and colleagues (1994) reported that self-oriented perfectionism was positively associated with suicide ideation in both samples. Among the student and psychiatric samples, both SOP and SPP independently predicted suicide ideation measured by SSI (Beck et al., 1988) in a discriminant analysis. Moreover, participants who scored low and moderate levels of suicide ideation differed significantly on SOP and SPP in the student sample (Study 2; Hewitt et al., 1994). The link between SOP and suicidality has not been reported in other studies. For instance, Klibert and colleagues (2005) found no significant association between SOP and suicide proneness in a study involving 475 university students. Hewitt and colleagues (1997) found that while SPP was strongly correlated with suicide ideation among a sample of 66 adolescent psychiatric inpatients, SOP was not significantly related to suicide ideation. The lack of a significant association between SOP and measures of suicidality has also been reported in other studies involving both clinical and nonclinical samples of adults and adolescents (e.g., Dean & Range, 1996; Dean et al., 1996; Dean & Range, 1999, Donaldson, Spirito, & Farnett, 2000; Enns et al., 2001; Hewitt, Caelian, Sherry, & Flett, 2005; Hunter & O'Connor, 2003; Roxborough et al., 2012). Therefore, SOP does not appear to have a strong direct effect on suicide ideation. Hewitt and Flett (1993) suggested a possibility that vulnerability associated with SOP may be activated only by the

presence of certain environmental events or stressors, which may explain the lack of a robust link between SOP and suicidality as reported in the above studies (i.e., Specific Vulnerability Hypothesis). The current study examined the Specific Vulnerability Hypothesis, which will be discussed later.

Other-oriented perfectionism, on the other hand, is typically not strongly associated with psychological distress and suicide outcomes (e.g., Flamenbaum & Holden, 2007; Flett, Hewitt, Blankstein, Solnik, & Van Brunschot, 1996; see Flett & Hewitt, 2002 for a review). In fact, lower levels of other-oriented perfectionism were sometimes found to be predictive of psychopathology and suicide behaviours (e.g., Blankstein et al., 2007; Chang & Sanna, 2001; Flett et al., 1998, Study 4; Hewitt et al., 1998). With respect to suicidaility, Hewitt and colleagues (1998) reported that lower levels of OOP were predictive of suicide attempts after controlling for other dimensions of perfectionism (i.e., SOP and SPP) in a sample of 39 adult suicide attempters. This finding is consistent with the notion that individuals who are high on OOP tend to externalize generally, that is, they tend to attribute the cause of personal failures or negative events to others or factors external to the self (Hewitt & Flett, 1991). Since few studies have examined OOP in relation to suicidality, no conclusive evidence regarding this relationship can be drawn at this point. Hence, one goal of the current study is to examine the relationship between OOP and suicide ideation.

In general, these reviewed studies suggest that SPP is strongly associated with suicidality. Therefore, it appears that the belief that one has failed to meet the excessive expectations of others and the profound sense of failure, hopelessness and self-blame associated with such belief can make one particularly vulnerable to suicide ideation. The lack of consistent findings with SOP suggests the need for further investigation. Hewitt and colleagues (1993; 2002) proposed

that the link between SOP and suicide ideation may be moderated or mediated by some third variable such as stress, which will be explored in the following sections in detail. Since the majority of extant studies on perfectionism and suicidality are cross-sectional, no casual conclusion regarding the nature of any predictive relationship between perfectionism and suicide could be drawn. Hence, an important goal of the current study is to better understand the pathways or mechanisms by which perfectionism may lead to higher suicide ideation at a later time. Specifically, we aim to test the hypothesis that perfectionism, particularly self-oriented perfectionism, is a vulnerability factor that requires the activation of stressors to lead to an elevation of suicide ideation (Hewitt and Flett, 2002; Hewitt et al., 2006).

1.4 Stress processes in perfectionism and suicide

In addition to direct associations between perfectionism and suicide ideation, life stress can play an important role in understanding the relationship between perfectionism and suicidality (Blatt, 1995; Hewitt et al., 2006; Hewitt & Flett, 1992; 1993; 2002). Sandin and colleagues (1998) contended that moderating and mediating variables must be incorporated into theory and research in order to fully understand the nature of relationship between stress and suicide. Personality can influence not only one's exposure to stressful events but also one's reaction to them, both of which can be crucial in explaining the link between personality and psychopathology (Bolger & Zuckerman, 1995). Indeed, a number of studies have demonstrated that life stress is strongly associated with greater maladjustment and suicide (e.g., Bonner & Rich, 1988; Rich, Warsradt, Nemiroff, Fowler, & Young, 1991). For instance, suicide attempters reported 4 times as many traumatic negative life events prior to their suicide attempts compared to nonsuicidal persons, and significantly more traumatic life events than the depressed and control comparison groups (Motto, Heilbon, & Juster, 1985; Paykel, Prusoff, & Myers, 1975).

Furthermore, the experience of life stress interacts with personality factors to produce suicide ideation (e.g., Dixon, Heppner, & Anderson, 1991; Rich & Bonner, 1987). The possibility that personality influences one's response to external situations may help explain why some people collapse under seemingly minor losses and rebuffs whereas others seem resilient in the face of traumatic events. Perfectionists often experience significant amount of stress in their lives (e.g., Hewitt & Flett, 1991; 1993; 2002). Clearly, stress is relevant to an understanding of perfectionism and suicide ideation. The connection between perfectionism and stress in influencing suicide ideation, however, can be quite complex. In this study, we were interested in looking at two ways in which perfectionism may lead to suicide ideation via stress as proposed by Hewitt and Flett (1993; 2002): (1) perfectionism can *enhance* or exacerbate the negative effects of congruent or ego-involving stressor on one's mental health (i.e., Specific Vulnerability Hypothesis), and (2) perfectionistic behaviour can *generate* stresses in one's life, which, in turn, leads to increased psychological problems (i.e., Stress Generation Model). Each model and the relevant empirical studies are discussed as follows.

1.4.1 Specific vulnerability hypothesis

Hewitt and Flett (2002) have postulated that stress can influence the relationship between perfectionism and psychopathology via four distinct pathways: Stress Anticipation, Stress Generation, Stress Perpetuation, and Stress Enhancement. According to the Stress Enhancement Model, perfectionistic behaviour can enhance the aversiveness of stressful events, which stems from the perfectionists' tendency to interpret less-than-perfect performances, setbacks and minor mistakes as marked failure or as indicator of their worthlessness. This profound sense of worthlessness may subsequently result in suicide behaviour. Therefore, stress is considered to

moderate the relationship between perfectionism and suicide ideation in the Stress Enhancement Model.

In keeping with the Stress Enhancement Model, Hewitt and Flett (1993) proposed the Specific Vulnerability Hypothesis, which postulates that specific dimensions of perfectionism may interact with only specific types of stressors to lead to psychopathology. Hence, examining the interaction between specific dimension of perfectionism and specific type of stressful event may be especially relevant in understanding the onset and maintenance of psychological problems. The Specific Vulnerability Hypothesis is consistent with the *diathesis-stress model* by Oatley and Bolton (1985) that stressors are particularly likely to lead to depression if these stressors present a threat to a central or core aspect of the self, that is, stressors that are congruent with the diathesis are considered more ego-involving and are experienced as more stressful and aversive than non-congruent stressors (also see Robins & Block, 1988; Segal, Shaw, & Vella, 1989; Zuroff & Mongrain, 1987). Therefore, self-oriented perfectionism is hypothesized to interact only with achievement-related stressors (e.g., job loss, dropping out of school) to lead to maladjustment and psychopathology whereas socially prescribed perfectionism is hypothesized to interact specifically with interpersonal-related stressors (e.g., divorce, relationship problems) to lead to psychopathology (Hewitt & Flett, 1993). Self-oriented perfectionists primarily focus on the attainment of achievement standards, thus failure to meet these self-imposed achievement goals would be considered particularly distressing to these individuals. In contrast, individuals who are high in socially prescribed perfectionism would be most likely be distressed by interpersonally-related stressors because of their high need for approval and fear of negative evaluation from others.

A number of researchers (e.g., Chang & Rand, 2000; Enns & Cox, 2005; Enns, Cox, & Clara, 2005; Flett et al., 1995; Hewitt and Flett, 1993; Hewitt, et al., 1996; Hill, Zrull, & Turlington, 1997; Lee, 2007; Sherry et al., 2003) have provided strong support for the *diathesis-stress model* involving perfectionism as a diathesis activated by stressors in producing psychopathology. Some of the above studies have found support for the Specific Vulnerability Hypothesis as proposed by Hewitt and Flett (1993). However, most of the above studies have focused on depression as an outcome variable. Few studies have assessed whether specific perfectionism dimensions interact with specific stressors to predict suicide outcomes. In a cross-sectional study using samples of 51 depressed and 94 general psychiatric patients, patients were asked to complete measures of perfectionism (MPS; Hewitt & Flett, 1991), depression (BDI-II; Beck et al., 1987), and the Hassles Scale (Delongis, 1985) which measures the patients' appraisal of daily hassles. The Specific Vulnerability Hypothesis was examined by classifying daily hassles into achievement stressors (e.g., work load) or interpersonal stressors (e.g., relationship problem). Three independent raters indicated which of the hassles were achievement- versus interpersonally-related. Hewitt and Flett (1993) found that in both clinical samples, SOP interacted only with appraised achievement stress to predict depression scores, thus providing support for the specific vulnerability hypothesis. Socially prescribed perfectionism, however, interacted with interpersonal stress only in the sample of unipolar depression patients to predict depressive symptom scores. That is, depressed patients who were high in SPP experienced greater symptoms of depression as stress related to interpersonal hassles increased. In another cross-sectional study of children and adolescents, SOP interacted significantly with both achievement and interpersonal stress to predict depression (Hewitt et al., 2002). These studies

provide some preliminary support for the Specific Vulnerability Hypothesis in the relationship between perfectionism and depression.

However, some studies have not provided consistent support for the specific vulnerability hypothesis (e.g., Enns et al., 2005; Sherry et al., 2003). For instance, in a longitudinal study involving 139 medical students, Enns and colleagues (2005) reported a significant Perfectionism x Stress interaction to predict depression and hopelessness five months later, hence providing support for a general diathesis-stress model. However, the Perfectionism x Stress interaction was no longer significant after accounting for the variance contributed by the Neuroticism x Stress interaction in predicting depression and hopelessness over time. Similarly, Sherry and colleagues (2003) found only equivocal evidence for the perfectionism specific vulnerability hypothesis. In addition to a significant SPP x interpersonal hassles interaction for female students, a significant SPP x Achievement hassles interaction was also reported in predicting concurrent depression. Neither achievement hassles nor interpersonal hassles moderated the association between SOP and depression in the sample. It should be noted that only university students were included in these two studies. It is also plausible that the range of life experiences reported by university students is relatively narrow during a short period of time. Hence, an important goal of the current study was to provide more conclusive evidence for the specific vulnerability hypothesis using a large sample of community adults across the age span.

A more stringent test of the Specific Vulnerability Hypothesis of perfectionism and psychopathology involves the demonstration that perfectionism and stress interact to predict psychological problems over a period of time. Hence, longitudinal studies testing the interaction between perfectionism and stress in the prediction of psychopathology are important because perfectionism may confer vulnerability over time when congruent stressors are present. In a

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longitudinal study involving 173 university students, Flett and colleagues (Study 2; 1995) found that both self-oriented and socially prescribed perfectionism interacted with major life stress measured by the Life Events Survey (LES; Sarason, Johnson, & Siegel, 1978) to predict students' depression scores at Time 1; however, regression analyses revealed that only SOP predicted increased depressive scores at Time 2, after controlling for depression at Time 1. Therefore, SOP at Time 1 was associated with increases in depressive symptoms three months later for participants who had experienced a major life event. Similarly, Hewitt and colleagues (1996) provided partial support for the Specific Vulnerability Hypothesis in a longitudinal study. In this study, a sample of 103 current and former psychiatric patients completed measures of perfectionism and depression at Time 1 and measures of stress (i.e., Life Events Inventory; Cochrane & Robertson, 1973) and depression four months later. After controlling for Time 1 depressive scores, SOP interacted only with achievement stress to predict Time 2 depression. Socially prescribed perfectionism emerged as a significant main effect predictor of Time 2 depression; however, SPP did not interact with achievement or social stressor to predict depression 4 months later. Another longitudinal study of university students found evidence for a significant interaction between socially prescribed perfectionism and perceived stress to predict distress symptoms one month later (Chang & Rand, 2000). Later, in a study of 139 medical students, Enns and colleagues (2005) found that maladaptive perfectionism (i.e., a composite of SPP, concern over mistakes, and doubts about actions) interacted with negative life events (a combination of achievement and interpersonal stressors) to predict depression 5 months later. However, no support was found for the Specific Vulnerability Hypothesis in this study.

To summarize, the literature concerning perfectionism as a vulnerability factor for depression has provided strong support for a general diathesis-stress model between

perfectionism dimensions, especially self-oriented perfectionism, and both concurrent and subsequent levels of depression. However, the evidence for a specific vulnerability hypothesis has been mixed, although the evidence for a significant interaction between SOP and achievement stress predicting depression may be relatively more robust than that of an interaction between SPP and interpersonal stress.

In terms of the specific vulnerability hypothesis proposed by Hewitt and Flett (1993), no studies have assessed whether specific perfectionism dimensions interact with specific stressors in predicting suicide outcome. Hence, the existing research for the specific vulnerability hypothesis is limited for perfectionism-suicide research. Hewitt, Flett and Weber (1994) provided some preliminary support for perfectionism and general stress in suicide behaviour. The authors administered measures of perfectionism, negative life events, and suicide ideation to a sample of 160 college students in a cross-sectional design. The results indicate that both self-oriented and socially prescribed perfectionism interacted with concurrent stressors to predict increased suicide ideation, and the interaction of SOP and stress was more robust. In another study using a sample of 55 psychiatric adolescents diagnosed with depressive disorders, Hewitt and colleagues (in preparation) found that SOP as measured by adolescents' version of trait perfectionism (Child and Adolescent Perfectionism Scale; Flett et al., 2002) interacted with stress in the form of daily hassles to predict suicide potential (i.e., the overall risk of suicide behaviour). In addition, socially prescribed perfectionism in adolescents interacted with daily hassles to predict suicide potential. In sum, these findings underscore the importance of examining trait perfectionism in relation to stress in predicting suicide ideation. Self-oriented and socially prescribed perfectionism may constitute specific vulnerability factors that require congruent stressors in order to produce psychopathology including suicide ideation. However,

there are two limitations with these studies: (1) only cross-sectional analyses were conducted, and (2) no distinction about the specific types of stresses was made. Therefore, no conclusive evidence has been found for the perfectionism Specific Vulnerability Hypothesis in relation to suicide outcome.

As discussed earlier, no studies have assessed whether specific perfectionism dimensions interact with specific stressors (i.e., achievement, interpersonal) to predict suicide outcomes. In the current study, in addition to testing the direct associations between perfectionism traits, stress and suicide ideation, we were interested in testing whether perfectionism traits interact with stress to predict suicide ideation both concurrently and longitudinally. More specifically, we aimed to examine whether SOP and SPP would interact with achievement and interpersonal stressors, respectively, to predict suicide ideation measured at the same time as well as over a period of time. Furthermore, since most of the reviewed studies focused only on depression as the outcome variable, we wanted to examine whether such Perfectionism x Stress interaction would predict unique variance in suicide ideation even after controlling for depression. The current study represents one of the first empirical attempts to examine the specific vulnerability hypothesis of perfectionism and suicide ideation in an adult community sample.

1.4.2 Stress generation model

In addition to the Specific Vulnerability Hypothesis, we also considered a mediational model that involves stress as a mediator of the link between perfectionism and suicide ideation. Research over the past few decades have provided ample evidence of stress generation among depressed individuals, that is, depressed individuals tend to report greater numbers of stressful life events, at least due in part to their depressogenic cognitions and behaviours affecting interpersonal interactions, including poor interpersonal problem solving, excessive reassurance-

seeking, and hypersensitivity to rejection (e.g., Davila, Hammen, Burge, Paley, & Daley, 1995; Eberhart & Hammen, 2009; Hammen, 1991). It thus appears that depressed individuals are actively contributing to the stress they experience, which in turn, are likely to precipitate recurrent depressive episodes (for reviews, see Hammen, 2006; Liu & Alloy, 2010).

Consistent with Hammen's (1991) stress generation model in depression, Hewitt and Flett (2002) have postulated that one way in which perfectionism confers vulnerability is by generating stress in the perfectionist's life. According to the Stress Generation Model (Hewitt & Flett, 2002), perfectionists have the tendency to hold or maintain unrealistic standards and goals, evaluate themselves stringently, fixate on minor flaws and shortcomings, and derive very little satisfaction from their performance. Such perfectionistic behaviour can generate a significant number of stressful events or failures in the perfectionists' lives. Therefore, stress may serve as the mediator of the relationship between perfectionism and psychological problems. The Stress Generation Model of perfectionism is also consistent with the notion that personality influences psychological outcomes via the processes of selection and evocation, such that individuals tend to choose environment and relationships that best fit their personality, and evoke specific reactions from the people in their lives as a result of their personality style (Bolger & Zuckerman, 1995; Buss, 1987). Furthermore, the stress generation model follows the contention that certain individuals are particularly prone to psychological problems because their personality characteristic is associated with greater exposure to stress (see Depue & Monroe, 1986; Hammen, 1991; Monroe & Simons, 1991).

There are several plausible ways in which perfectionists can create stressful circumstances for themselves and for those around them. First, trait perfectionism (i.e., SOP, SPP) brings about maladaptive attitude and behaviour (e.g., excessive self-criticism, rumination, self-handicapping,

inflexibility, reassurance-seeking behaviour) when the perfectionist fails to attain an impossible goal. The perceived failure or imperfection leads to life stress which, in turn, leads to increased psychological difficulties. Such stress could stem from either intrapersonal or interpersonal sources. Self-oriented perfectionists may experience self-imposed pressure to successfully perform tasks and meet one's own standard. Alternatively, perfectionists may feel compelled to conform to others' expectations about how they ought to act, as in the case of socially-prescribed perfectionists (Hewitt & Flett, 2002; Weiten, 1988). Several studies have shown that highly perfectionistic people experience greater dissatisfaction with their performance than do people who are not perfectionistic (e.g., Flynn, Hewitt, Flett, & Weinberg, 2001; Frost & Henderson, 1991; Mor, Day, Flett, & Hewitt, 1995), even after controlling for actual performance or accomplishment. Also, both self-oriented and socially prescribed perfectionists tend to engage in self-handicapping behaviour (Hobden & Pliner, 1995; Sherry, Flett, & Hewitt, 2001) and excessive rumination about flaws and past mistakes (see Morrison & O'Connor, 2008 for reviews), thus making a distressful situation even more difficult and stressful for themselves.

Socially prescribed perfectionists' fragile self-image and hypersensitivity to criticism and rejection make them particularly vulnerable to depression and suicide ideation (Hewitt & Flett, 1991; 1993; Hewitt et al., 1994). One plausible explanation is that individuals characterized by high SPP are more likely to interpret ambiguous social interactions and feedbacks as threatening and thus will turn a relatively neutral situation into a stressful experience (Flett, Hewitt, Garshowitz, & Martin, 1997; Hewitt & Flett, 2002). Moreover, socially prescribed perfectionists' need for interpersonal dependency, as reflected by their excessive reassurance seeking behaviour, could lead to more stress in their lives (Hewitt & Flett, 1993). A previous study in the Hewitt lab (Hewitt et al., 2001) measured trait perfectionism, interpersonal problems, and

depression in a sample of 72 people undergoing group treatment for perfectionism. The analyses revealed that interpersonal problems mediated the link between socially prescribed perfectionism and depression. In a longitudinal study (Hewitt et al., 1996) involving perfectionism, depression and life stress, two independent raters indicated which events on the inventory were definitely not self-generated or *independent* (e.g., death of a family member) versus those events that were possibly self-generated or *dependent* (e.g., imprisonment, fired from a job). Hewitt and colleagues (1996) found that both self-oriented and socially prescribed perfectionism were significantly correlated with the number of dependent events but not with the number of independent events. Other-oriented perfectionism was not associated with either dependent or independent events. In general, these findings are consistent with the notion that perfectionism traits (i.e., SOP and SPP) can generate achievement and/or interpersonal stressful events, which in turn, lead to psychological problems.

A number of studies have explored the role of perfectionism and other personality constructs, specifically testing the role of life events or stress as mediators of the link between personality characteristics and psychological problems including depression and negative affect (for review, see Hammen, 2006; Zuroff, Mongrain, & Santor, 2004). For instance, Dunkley and colleagues (2000) found that a similar construct, "self-critical perfectionism" (i.e., consisting of socially prescribed perfectionism, self-criticism, and the solitude subscale of autonomy, referred to as evaluative concern perfectionism in this article) predicted higher levels of hassles and stress among a sample of students. In a later study, Dunkley, Zuroff, and Blankstein (2003) demonstrated that self-critical perfectionism was associated with higher frequencies of daily hassles and perceived stress. Using a diary study that spanned for 7 consecutive days, Dunkley and colleagues (2003) found that self-critical perfectionism in university students was associated

with maladaptive behaviour and coping strategies (e.g., avoidant coping and low perceived social support), and that SC perfectionists were emotionally reactive to stressors that imply failure, loss of control, and criticism from others. Likewise, Shahar, Henrich, Blatt, Ryan, and Little (2003) found that constructs related to SOP such as Self-Criticism, and SPP such as Dependency, were related to a higher number of negative life events. Moreover, Chang, Watkins, and Banks (2004) concluded 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. Finally, a recent study by Rasmussen and colleagues (2012) found that the perception of being a burden to others mediated the relationship between maladaptive perfectionism (i.e., defined in terms of one's perception of the discrepancy between the standards one sets for oneself and one's actual performance) and suicide ideation in a sample of university students. This suggests that perceived failure to meet unrealistic high standards for oneself may lead to stress associated with the perception of causing burden to others, thereby elevating the risk of suicide ideation for perfectionists.

In general, although the links between related personality constructs (e.g., neuroticism, self-criticism/dependency, sociotropy/ autonomy) and the stress generation have been well documented in the literature (for reviews, see Hammen, 2006, Liu & Alloy, 2010), none of the extant studies have examined perfectionism measured by Hewitt and Flett's MPS as a predictor of stress generation in a longitudinal design, and the majority of the studies have included only university student samples. To our knowledge, no study has assessed the mediational pathways among trait perfectionism, stress, and suicide outcome assessed at a later time. Therefore, another important goal of the current study was to test the Stress Generation Model by exploring

a possible mediation pathway connecting trait perfectionism, life stress and suicide ideation measured longitudinally.

1.5 Summary of study, goals, and hypotheses

To summarize, these empirical findings suggest that (1) there is a robust relationship between socially prescribed perfectionism and suicidal ideation, (2) socially prescribed perfectionism can sometimes explain additional variance in suicide ideation even after controlling for the variance accounted for by depression and hopelessness, (3) the relationships between self-oriented perfectionism, other-oriented perfectionism and suicide ideation are less clear, and (4) self-oriented perfectionism may interact with life stress in predicting suicide ideation.

As discussed earlier, several limitations exist in the literature on perfectionism and suicide ideation. First, one striking feature of the review was the relative paucity of studies focused on older adult populations. Most studies on perfectionism and suicide to date have focused on university or psychiatric samples (for a review, see O'Connor, 2007). Also, there is a paucity of suicide research from an adult life cycle perspective and we believe it is important to apply this perspective to perfectionism and suicide for several reasons. First, although perfectionism appears to remain stable over the age span, suicide ideation may vary with age and many of the environmental stressors that predict suicide may also change with age (Garrison, 1992; Flett & Hewitt, 2002; McIntosh, 1992). Second, many adult community members may be at risk for suicide ideation, including middle-aged and elderly adults. Suicide rates among elderly adults tend to be underestimated. For instance, older adults comprised about 13% of the United States population, yet accounted for 20% of all completed suicides (Mireault & Deman, 1996). Moreover, the suicide completion rate of older adults is 50% higher than the population as a

whole in the U.S. (Miller, Segal, & Coolidge, 2001). Hence, it is important to investigate suicide ideation in a community sample including older adults.

In addition, most studies on perfectionism and stress are cross-sectional. Only a few studies (e.g., Beevers & Miller, 2004; Enns et al., 2001; Enns & Cox, 2005; Hewitt et al., 2005, Lee, 2007) have followed up participants beyond one or two months. Therefore, larger-scale studies that track participants over months or even years are imperative. The current research aimed to determine the extent to which different dimensions of perfectionism predict future suicide ideation over a period of 6 months. Additionally, an important goal of the current project was to provide a preliminary investigation of the Stress Generation Model.

Finally, as discussed earlier, although socially prescribed perfectionism appears to be a robust predictor of suicidal ideation in most studies, the relationship between self-oriented perfectionism and suicidal ideation is less clear and appear to be moderated by congruent life stress (i.e., achievement stressor) that confers risk for suicide (Hewitt and Flett, 1993). Moreover, we are interested in testing whether perfectionism dimensions are unique predictors of suicide ideation after controlling for two of the most widely used predictors of suicidality such as depression and hopelessness. Depression and hopelessness were chosen as covariates in the prediction of suicide ideation due to the following considerations. First, it is widely known that the risk of suicide ideation is higher in cases of major depressive disorders in comparison to the general population (e.g., Beck et al., 1988; 1993). In a National Comorbidity Survey study involving 5877 community participants, the odds ratios for major depressive disorders ranged between 7.5 and 12.3 for lifetime suicide ideation and between 7.1-20.3 for attempts after controlling for other diagnostic variables (Kessler, Borges, & Walters, 1999). However, according to a recent study of suicidality and mental disorders in the National Comorbidity

Study-Replication (NCS-R), depression was less predictive of the occurrence of suicide attempts among ideators, when compared with other predictors of attempts such as anxiety, impulsivity, and addiction disorders (Nock, Hwang, Sampson, & Kessler, 2009). Therefore, depression may be particularly relevant in predicting prevalence of suicide ideation compared with attempts and completed suicides. Secondly, similar to depression, hopelessness is one of the strongest predictors of suicide ideation. In some studies, hopelessness was even more predictive of suicide ideation than depression (e.g., Beck et al., 1993). In one large community study, the odds ratios for hopelessness ranged between 1.6 and 4.6 for current, past, and lifetime suicide ideation and attempts after controlling for diagnostic variables, with odds ratios slightly higher for ideation than for attempt (Cox, Enns, & Clara, 2004). Moreover, hopelessness failed to consistently predict suicide attempt or eventual suicide death in some longitudinal studies (e.g., Maser et al., 2002; Suominen, Isometsa, Ostamo, & Lonnqvist, 2004). Therefore, like depression, hopelessness may be a better predictor of ideation than attempts or completed suicide deaths. Furthermore, the inclusion of the two predictors as control variables will provide a more stringent test of the perfectionism's significance on suicide ideation, especially when socially prescribed perfectionism has been consistently and strongly correlated with both depression and hopelessness (e.g., Hewitt & Flett, 1993; Hewitt et al., 1996; Sherry et al., 2003) And finally, it allows us to compare current findings to some previous studies (e.g., Hewitt et al.,1997; in prep), which suggest that the interpersonal components of perfectionism (i.e., SPP) can predict suicide outcome above and beyond measures of depression and hopelessness.

To summarize, the goals of the current study were: (1) to determine whether perfectionism traits (i.e., SOP, SPP, and OOP) are associated with suicide ideation in an older sample of community adults both concurrently and longitudinally, (2) to investigate whether

socially prescribed perfectionism can predict suicide ideation above and beyond depression and hopelessness, that is, whether SPP measured at Time 1 predicts changes in suicide ideation at Time 2 after controlling for Time 1 suicide ideation, depression and hopelessness, (3) to examine the Specific Vulnerability Hypothesis in which self-oriented and socially prescribed perfectionism, when combined with congruent stressors (achievement and interpersonal stressors, respectively), predict suicide ideation measured concurrently as well as over a period of six months, and whether such Perfectionism x Stress interaction would predict additional variance in suicide ideation above and beyond that accounted by depression, and (4) to assess the Stress Generation Model whereby perfectionism traits (i.e., SOP and SPP) can lead to more life stressors, which in turn, predicts levels of suicide ideation assessed six months later. Finally, we will assess whether there is any significant difference between male and female participants in terms of the abovementioned research questions.

2   Methods

2.1   Participants

Participants with a minimum grade 8 education and a minimum age of 35 years (no upper limit on age) were recruited via local newspaper ads from the Metro Vancouver community. The sample consists of 487 community adults (64% were female) who participated in this study. Participants were required to have obtained a minimum education level of Grade 8. No other exclusion criteria were required. The participants were compensated for their participation and parking/transportation.

The mean age of participants at Time 1 assessment was 58.57 years (SD=11.72, range= 35-90). In terms of marital status, 40% of the participants were married, 8.3% were in common-law arrangement, 18.2% were single, and 24.4% were divorced or separated from spouse, and 8.9% were widowed. In terms of income level, approximately 25% of the participants earned less than $25,000 (CAD) per year, 34% of the participants earned between $25,000 and $100,000, 32% earned between $50,000 and $100,000, and another 9% who made more than $100,000 annually. In terms of educational level, 17% of all participants had completed graduate school, about 30% had obtained a university undergraduate degree, 23% had completed college or technical school education, 28% had completed high school, and an additional 3% were without a high school education. Of the total participants, 86.5% were European Canadians (non-Hispanic), 8.3% were Asian Canadians, 1.2% were First Nations, 0.2% were Hispanic Canadians, and 3.0% were of other ethnicity. [1] Data on study variables were available for 483 individuals at Time 1, 4 participants had to be excluded from the analysis due to substantial (>90%) missing data. At

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[1] Additional analyses were conducted with only Caucasian Canadians (n=383), descriptive statistics and the patterns of correlations were comparable to those reported below using the entire sample (n=437). Results are available upon request.

Time 2, we followed up on 449 of these participants thereby yielding a response rate of 92%. An additional 12 participants at Time 2 were excluded from further analyses due to significant amounts of missing data (>90%). Only participants for whom data are available at both time periods were included. Therefore, complete Time 1 and Time 2 data were available for 437 participants, 90% of the initial sample. [2]

Power analysis. Prior to data collection, power analyses were conducted to ensure that the sample size was sufficient to detect hypothesized effects. One strategy is to utilize computer software (e.g., GPOWER) designed to calculate required sample sizes to detect effects of a particular magnitude at a specified level of power. For a medium effect size (i.e., f^2=.15), with α=.05 and power=.80, analyses with 7 predictors (i.e., age, gender, depression, hopelessness, and the three perfectionism dimensions) would require a minimum of *N*=103 (Green, 1991). Prior research conducted in the area of perfectionism, stress, and psychopathology have reported significant main effects ranging from R^2=.01 to .18 and interaction effects between perfectionism and stress ranging from R^2=.007 to .07 with sample sizes ranging from *N*=103 to *N*=225 (see Enns & Cox, 2005; Enns et al., 2005; Flett et al., 1995; Hewitt et al., 1996, O'Connor & O'Connor, 2003; O'Connor et al., 2010; Sherry et al., 2003)**.** Effect sizes in the 1% to 8% range for interactions in nonexperimental research generally yield reasonable levels of statistical power (Jaccard & Wan, 1995; McClelland & Judd, 1993).

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[2] In the current study, approximately half (51%) of the sample indicated that they were currently diagnosed with some medical condition, and the majority of them (48%) were currently taking medications. Additional analyses (i.e., one sample t-tests) were conducted on study variables, those who were taking medications were only significantly different on OOP measured at Time 1 from those were not taking medications, $t(2,435)=4.40$, $p<.05$. Since no other significant differences were found, no distinction regarding the medication status was made in subsequent analyses.

2.2 Measures

The following measures were administered at Time 1 of the study.

Demographics. Participants completed a demographics questionnaire which includes age, ethnicity, marriage status, educational level, occupation, family income, physical health status and etc.

Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991). The MPS is a 45-item scale designed to measure self-oriented perfectionism other-oriented perfectionism, and socially prescribed perfectionism. The self-oriented perfectionism (SOP) scale measures for high achievement expectations and striving for perfection (e.g., "when I am working on something, I cannot relax until it is perfect," "one of my goals is to be perfect in everything I do"). The other-oriented perfectionism (OOP) scale measures expectations of perfection from others (e.g., "I have high expectations for the people who are important to me," "if I ask someone to do something, I expect it to be done flawlessly"). Finally, the socially prescribed perfectionism (SPP) scale measures concern over meeting the expectations of others (e.g., "the people around me expect me to succeed at everything I do," "my family expects me to be perfect"). Participants were asked to rate their agreement with these items using a 7-point Likert-type scale, ranging from 1 (*disagree)* to 7 (*agree*). Higher scores on each of the scales reflect greater levels of perfectionism. Research on the MPS in clinical and nonclinical samples has shown high levels of reliability and validity. For example, scores on the three subscales have shown to reflect three empirically distinguishable dimensions, good test-retest reliability over a 3-month period (.88, .85, and .75 for SOP, OOP, and SPP, respectively), construct validity with other measures of perfectionism, and little susceptibility to response biases (e.g., Flett, Hewitt, Blankstein, & Koledin, 1991; Hewitt & Flett, 1991). In this study, the internal consistencies of the MPS

subscales (*N*=437) were as follows: SOP subscale was *α*=.82, SPP subscale was *α*=.88, and OOP subscale was *α*=82.

Scale for Suicide Ideation (SSI; Beck, Steer, & Ranieri, 1988). The SSI is a 19-item self-report measure of overall risk for suicidal behaviour including such themes as consideration of passive and active suicidal attempts, frequency and attitude toward ideation, specific plans for suicide, and final suicidal attempt. The content of SSI is similar to the clinical interview measure developed by Beck, Kovacs, & Weissman (1979). Each item in the SSI is rated on a 3-point scale from 0 to 2. The higher the total score, the greater the severity of suicide ideation. Beck and colleagues (1988) have provided extensive evidence for the scale's reliability and validity. In adult community (nonpsychiatric) samples, the scale was found to have high internal consistency (Cronbach's alpha=.89) and moderately high correlations (*r*=.70-.80) with clinical ratings of suicidal ideation and risk. For instance, scores on the SSI are sensitive to changes in the levels of depression and hopelessness and are correlated highly with clinical ratings of suicide risk with the interview measure (Beck et al., 1979). Discriminant validity has been demonstrated by the scale's ability to distinguish between respondents with varying levels of suicidal behaviour. For instance, the SSI discriminated between suicide attempters and nonattempters prior to hospitalization in adult psychiatric samples. (Beck, Brown, & Steer, 1997; Beck et al., 1979). In this study, the internal consistency of the SSI was *α*=.83.

Beck Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974). The BHS is a 20-item true-false self-report measure of extreme pessimism or hopelessness. Participants were asked to indicate either agreement or disagreement with items that assess negative expectancies for the future (e.g., "My future seems dark to me"). Higher scores on the HS are indicative of greater hopelessness. Scores on the HS have been found to correspond highly with clinical

ratings of hopelessness (Beck et al., 1974) and have also been found to predict eventual suicides (Beck, Steer, Kovacs, & Garrison, 1985). Beck et al. (1990) reported adequate reliability and validity. Test-retest reliability over 3 weeks for the HS has been reported to be .85 in an adult community sample (Holden & Fekken, 1988). In this study, the internal consistency of the BHS was $\alpha=.89$.

Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a 21-item inventory that assesses the behavioural, cognitive, motivational, and somatic symptoms of depression. It is also used widely as a measure of severity of depressive symptoms in both clinical and nonclinical samples across a wide range of age span and numerous studies have supported its reliability and validity (Beck, Steer, Garbin, 1988). The internal consistency of the BDI-II is good (Cronbach's alpha ranging between .83 and .94), as has been demonstrated in several studies (e.g., Beck et al., 1996). The measure has also been shown to have a high one-week test-retest reliability ($r=.93$), suggesting that it is not overly sensitive to daily variations in mood. Beck and colleagues (1996) have also demonstrated that the BDI-II has good concurrent validity with other self-report and clinician's ratings of depression. For instance, the BDI-II is positively correlated ($r=.71$) with the Hamilton Depression Rating Scale (HDRS), which is one of the most widely used clinician ratings of depressive symptomatology. In the current study, item #9 on the BDI-II regarding suicidal thoughts or wishes was dropped from the total score in order to prevent issues with collinearity with the measure of suicide ideation. Therefore, the BDI-II was scored by summing the ratings for the remaining 20 items. The internal consistency of the BDI-II was $\alpha=.91$.

The following measures were completed at Time 2 of the study.

Life Events Inventory (LEI; Cochrane & Robertson, 1973). The LEI is a 55-item inventory that measures specific life events that are appropriate across the adult life span (e.g., retirement, death of a spouse, etc.). The LEI has been used to measure achievement and social stress in previous perfectionism studies (e.g., Enns et al., 2005; Hewitt & Flett, 1993; Hewitt et al., 1996) and in this study, the instructions specifies that only events that had occurred since the Time 1 assessment, six months ago, should be endorsed. Therefore, participants were asked to indicate by serially scanning and ticking (true positive) if any of the 55 listed events had happened in their lives during the 6-month period. An advantage of the LEI is that it focuses on potentially distressing events from both the domestic and occupational spheres and does not limit the assessment to solely occupational sources, which makes the LEI useful in gathering a distress profile of the 'whole person'. Three independent raters categorized the items based on achievement and interpersonal themes. Consistent with previous research (Hewitt et al., 1996), stressful events that occurred in the interpersonal domain are defined as negative social interactions including conflict, criticism, arguing, and the withdrawal of affection, which can arise in any context where interpersonal relationships exist, such as school, work, church, family and community. For instance, interpersonal stressors in the context of family can arise from relationship problems and losses that involve parents, partners and children (e.g., sexual difficulties, breakup of a family, and death of an immediate family member). On the other hand, stressful events that occur in the achievement domain can include physical stressors, resulting from internal physical symptoms and diseases as well as any obstacles and stressors that can prevent one from reaching one's goals (e.g., unemployment, homelessness, and getting into debt beyond means of repayment). Items that were rated with 100% agreement by two independent

undergraduate coders were retained, resulting in a total of 10 achievement and 26 interpersonal stressful events. It should be noted that the same coding for LEI has been used in several past studies (e.g., Enns et al., 2005; Hewitt et al., 1996). A higher score indicates more negative life events. The achievement and interpersonal stress items did not differ in terms of the proportion of potentially controllable events. Please refer to the Appendix for the measure and relevant scoring information.

In addition to the above measures, participants completed the MPS, SSI, BDI-II, and BHS at Time 2. The internal consistencies of the MPS subscales (N=437) at Time 2 were as follows: SOP subscale was α=.81, SPP subscale was α=.87, and OOP subscale was α=83. The internal consistency for SSI, BDI-II, and BHS at Time 2 were α =.81, .92, and .88, respectively.

2.3 Procedure

Participants completed measures either in the lab or were mailed packages. All participants completed consent forms, provided demographic information, which may be used as covariates in analyses, and all were debriefed following participation. In addition, although we did not anticipate participants being upset by completing the measures (this has not occurred in the suicide behaviour studies we have completed thus far), we offered participants the opportunity to discuss concerns with a clinical psychologist, provided resources regarding community support, and possible referral for treatment if the participant was at risk for suicide. Moreover, in the unlikely event that anyone was imminently suicide (based on scores on the suicide measures or from discussion with the participant), he or she would be escorted to the Emergency Room of the UBC Hospital for further evaluation. No one was escorted to the ER in this study. Participants were informed of all of these possibilities on consent forms.

3   Results

3.1   Descriptive statistics and gender differences

Before conducting separate analyses for male and female participants, we wanted to examine the basic descriptive statistics and psychometric properties of the sample as a whole. Means, standard deviations, and Cronbach's alpha coefficients of the measures at Time 1 and Time 2 for the entire sample (N=437) are presented in Table 1. We first examined the psychometric properties for the variables, and the means and standard deviations are comparable to those reported previously for community adult populations (e.g., Beck et al., 1996; Flett et al., 1995; Hewitt & Flett, 1991). Additionally, coefficients alpha were acceptable for all variables (i.e., between .81 and .92). To investigate the potential impact of attrition, differences on study variables between participants who completed the Time 2 assessment and participants who dropped out of the study before Time 2 were examined using t-test comparisons. No significant differences emerged for any of the measured variables. It should be noted that data on suicide ideation and stressful life events were positively skewed. A square root transformation was used to improve the skewed distribution; however, the transformation did not significantly affect any of the results. Therefore, results are reported using the untransformed values for ease of interpretation.

Means, standard deviations, and correlation coefficients of measures at Time 1 and Time 2 for male and female participants are presented in Table 2. Prior to conducting further analyses, gender differences were also examined using independent samples t-test comparisons. Consistent with prior research (e.g., Hewitt & Flett, 1991), men scored significantly higher than women on other-oriented perfectionism measured at Time 1, with a small effect size (Cohen's d=.25), but not at Time 2. No other significant gender differences on study variables were found.

3.2 Correlations between perfectionism traits, stress, depression, hopelessness, and suicide ideation and gender comparisons

Next, to test the first goal of the study, correlational analyses were conducted to determine whether various dimensions of perfectionism trait (i.e., SOP, SPP, and OOP) were significantly associated with suicide ideation. Zero-order correlation coefficients between measures of perfectionism, achievement and interpersonal stresses, depression, hopelessness, and suicide ideation at Time 1 and Time 2 were presented separately for males and females in Table 2.

In terms of the associations between perfectionism and suicide ideation, first, consistent with our initial hypothesis and previous findings that suggest a robust relationship between SPP and various indices of suicide outcome (e.g., Dean & Range, 1996; Hewitt & Flett, 1994), SPP was moderately correlated with Time 1 and Time 2 measures of suicide ideation for both genders. Secondly, we found a small but significant correlation between SOP and suicide ideation for females at both times. Third, no significant association was found between measures of OOP and suicide ideation, which is consistent with the notion that OOP is not strongly associated with psychological distress (e.g., Flett et al., 1996). Finally, no significant gender difference was found in the associations between Time 1 and Time 2 measures of trait perfectionism and suicide ideation.

In terms of the associations between perfectionism dimensions and measures of depression and hopelessness, the size of correlations was comparable to previous research using the MPS (e.g., Hewitt & Flett, 1991). Similar to previous research (e.g., Hewitt & Flett, 1993, Sherry et al., 2003), significant correlations were observed between various perfectionistic dimensions and BDI scores. More specifically, SOP was mildly to moderately correlated with depressive scores. SPP was moderately to strongly correlated with depression measured at both times. OOP, on the

other hand, was also mildly correlated with BDI scores. It was also found that the amount of achievement stress experienced between Time 1 and Time 2 was correlated with measures of SOP and SPP, as well as interpersonal stress, measures of depression, hopelessness, and suicide ideation. Interpersonal stress, on the other hand, was also significantly correlated with measures of SOP and SPP, as well as measures of depression, hopelessness, and suicide ideation. OOP was uncorrelated with either achievement stress or interpersonal stress. In summary, these results are consistent with previous research on the MPS and fit with the conceptualization of each perfectionistic trait dimension as related but distinct features of perfectionism.

3.3 Perfectionism traits predicting suicide ideation measured concurrently and longitudinally using hierarchical regression analyses

The second goal of the study was to determine whether perfectionistic dimensions uniquely predict suicide ideation measured concurrently as well as changes in suicide ideation over the 6-month period. To address this research question, two sets of hierarchical regression analyses were conducted to assess the unique contribution of MPS in predicting suicide ideation, measured either concurrently or longitudinally for female and male participants (see Table 3). The first set of regression analyses involved measures of perfectionism and suicide ideation obtained at Time 1, and the second set of analyses involved a test of perfectionism traits measured at Time 1 predicting change in suicide ideation between Time 1 and Time 2. Since age was negatively correlated with the majority of measured variables for both genders (see Table 2), we included age as a covariate in the following analyses.

As suggested by Cohen and Cohen (1983), tests for homogeneity of covariance were conducted for all regression analyses. Tolerance statistics for the reported regression analyses ranged between .77 and 1.0, which indicates a relatively low level of multicollinearity among

predictors (Tabachnick & Fidell, 1989). A conventional alpha level of .05 was used to determine statistical significance for all of the main effects regression analyses.

In the first set of analyses with Time 1 suicide ideation as the outcome variable, age was entered in the first predictor block, followed by Time 1 perfectionism traits (i.e., SOP, SPP, and OOP). The perfectionism block contributed significant unique variance to the prediction of suicide ideation for female participants, but not for male participants (see Table 3). Regarding overall effect size, the MPS subscales accounted for 11% of unique variance in concurrent suicide ideation for female participants. In terms of the specific perfectionistic dimensions, SPP was a significant positive predictor of suicide ideation for female, and was a marginally significant predictor of suicide ideation for male participants. Similarly, OOP was a negative predictor of suicide ideation only for female participants. Finally, SOP was not a significant predictor of concurrent suicide ideation for either gender.

The second set of regression analyses involved a test of the unique contribution by perfectionism traits measured at Time 1 in predicting Time 2 suicide ideation after controlling for the variance accounted by Time 1 suicide ideation for female and male participants (see Table 4). In these analyses, age was again entered in the first predictor block of the regression analysis, followed by Time 1 suicide ideation, and finally Time 1 perfectionism traits (i.e., SOP, SPP, and OOP). The outcome variable was Time 2 suicide ideation. The perfectionism dimensions, as a block, did not account for significant additional variance in the prediction of suicide ideation for either gender beyond age and Time 1 suicide ideation, however, SPP was marginally significant for female participants.

To summarize, perfectionism accounted for more than twice as much of the variance in concurrent levels of suicide ideation in women as in men in this study, which contradicted

Blankstein et al. (2007) study wherein perfectionism accounted for twice as much of the variance in suicide ideation in men as in women. Furthermore, SPP was a unique predictor of suicide ideation for women and was only a marginally significant predictor of suicide ideation for men. Other-oriented perfectionism, on the other hand, was a unique negative predictor of concurrent and change in suicide ideation for women but not for men. SPP, however, failed to remain a significant predictor of Time 2 suicide ideation after controlling for Time 1 suicide ideation. Hence, it appears that SPP and OOP are relevant in the prediction of suicide ideation, especially for women.

3.4 Perfectionism traits predicting suicide ideation measured concurrently and longitudinally beyond depression and hopelessness using hierarchical regression analyses

Another goal of the current study was to test the incremental contribution of perfectionism trait dimensions in the prediction of suicide ideation after removing variance attributable to depression and hopelessness, separately for female and male participants. As in previous analyses, two sets of regression analyses were conducted to predict concurrent as well as change in levels of suicide ideation. In the first set of regression analyses, Time 1 suicide ideation was the outcome variable. Age was entered first in the regression equation, followed by Time 1 measures of depression and hopelessness in the second block. The three perfectionism traits (SOP, SPP, and OOP) were entered in the third predictor block. Our findings indicate that depression and hopelessness contributed to a significant portion of the variance in Time 1 suicide ideation for female and for male participants, as expected. Moreover, the three MPS subscales together explained 2% of additional variance in concurrent levels of suicide ideation beyond depression and hopelessness among female participants (see Table 5). In terms of specific perfectionism traits, OOP was again a significant negative predictor of concurrent suicide

ideation among female even after controlling for depression and hopelessness. No perfectionistic dimension emerged as significant predictors of suicide ideation for male participants.

As noted earlier, we also wanted to examine the incremental predictive utility of perfectionism traits above and beyond measures of depression and hopelessness in predicting suicide ideation over the 6-month period. Therefore, a set of hierarchical regression analyses were conducted to assess the unique contributions of perfectionism traits to the prediction of suicide ideation above and beyond depression and hopelessness, after controlling for the variance accounted by Time 1 suicide ideation (see Table 6). In these analyses, Time 2 suicide ideation was the outcome variable. Age and Time 1 suicide ideation were entered as covariates in the first and second predictor blocks, respectively, depression and hopelessness measured at Time 1 were entered in the third block, and finally Time 1 perfectionism traits (i.e., SOP, SPP, and OOP) were entered in the fourth predictor block. The findings indicate that depression and hopelessness contributed to a significant proportion of the variance in Time 2 suicide ideation among female and male participants. Furthermore, the three MPS subscales together explained 1% of additional significant variance in Time 2 suicide ideation among female participants. The MPS subscales, however, did not contribute to significant variance in the prediction of suicide ideation beyond depression and hopelessness among male participants. In terms of specific perfectionism traits, consistent with the above findings, OOP was the only significant predictor of Time 2 suicide ideation among female participants after removing the variance accounted by Time 1 suicide ideation, depression and hopelessness. No perfectionistic trait emerged as a significant predictor of suicide ideation among male participants.

In summary, contrary to some prior research (e.g., Dean & Range, 1996; Hewitt et al., 1994; 1997), neither SPP nor SOP contributed significant unique variance in the prediction of

suicide ideation measured concurrently or longitudinally above and beyond depression and hopelessness for either gender. Other-oriented perfectionism, however, was a unique negative predictor of suicide ideation measured concurrent and longitudinally for women.

3.5   Testing the specific vulnerability hypothesis

Next, to test the Specific Vulnerability Hypothesis, we conducted a series of hierarchical regression analyses, which examined the possibility that the various perfectionism traits interact with congruent life stressors to predict unique variance in suicide ideation measured concurrently and longitudinally. As in previous analyses, two sets of regression analyses were conducted to assess the specific vulnerability hypothesis. The first set of analyses involved Time 2 measures of perfectionism, stress and suicide ideation. Time 2 measures were used in these analyses because the stress measure was administered only at Time 2. Furthermore, we included depression as a covariate in these analyses, since evidence for the specific vulnerability hypothesis has been found for perfectionism and stress in some studies on depression (e.g., Hewitt & Flett, 1993; Hewitt et al., 1996; Sherry et al., 2003). Thus, we wished to assess whether any significant findings with suicide ideation were not due to the overlap between suicide ideation and depression. Therefore, the following variables were entered in the regression equation: (1) age, (2) Time 2 depression, (3) Time 2 perfectionism trait (e.g., SOP), (4) Time 2 stress (e.g., Achievement Stress), and (5) the Time 2 Perfectionism x Stress Product Vector (e.g., SOP x Achievement Stress). This analytic method allows us to determine the proportion of variance accounted for by the Perfectionism x Stress Product Vector variable after controlling for the main effects of perfectionism and stress variables (Pedhazur, 1984, p. 480).

The second set of regression analyses involved a longitudinal test of the specific vulnerability hypothesis. Again, age was entered as a covariate in the first predictor block,

followed by Time 1 suicide ideation and depression assessed by BDI in the second and third blocks. Trait perfectionism (e.g., SOP) measured at Time 1 was entered in the fourth predictor block, followed by life stress (e.g., Achievement Stress) in the fifth block, and finally the two-way interaction term (e.g., SOP x Achievement Stress) was entered in the last block. All four combinations of perfectionism trait (i.e., SOP, SPP) and stress (i.e., Achievement and Interpersonal Stress) were examined in both sets of regression analyses. Therefore, overall, we tested 8 interactions for each gender: 4 interactions in which perfectionism trait (e.g., SOP) interacted with congruent stress (e.g., Achievement Stress), 4 interactions in which perfectionism (e.g., SOP) interacted with noncongruent stress (e.g., Interpersonal Stress).

It has been suggested that when conducting hierarchical regression analyses with interactions, the alpha significance level should be raised to .10 or even .25 in order to minimize Type II error (Pedhazur, 1982). However, due to the number of regression analyses performed, there is also a need to guard against Type I error. For these reasons, we retained the alpha level of .05 for the interactions in order to minimize Type I and Type II errors (see Cohen, Cohen, West, & Aiken, 2003; Pedhazur, 1982). Following the recommended procedures outlined in Aiken and West (1991), we standardized predictor and moderator variables before forming product terms in order to minimize the problems associated with multicollinearity among the variables. Tolerance statistics for hierarchical regression analyses with interaction ranged between .88 and 1.00. A high tolerance value (i.e., approaching 1) indicates a relatively low level of multicollinearity among predictors (Tabachnick & Fidell, 1989). Interactions were tested using separate regression analyses due to problems concerning statistical power (see Chaplin, 1991).

3.5.1 Testing the specific vulnerability hypothesis for concurrent suicide ideation in female participants

Results of the regression analyses that examined Perfectionism x Stress interaction effects in the prediction of concurrent suicide ideation were presented in Tables 7 and 8 for female participants. For female participants, a significant interaction between SOP and achievement stress was found to predict concurrent levels of suicide ideation, even after removing the variance accounted by depression, SOP and achievement stress (see Table 7). This interaction indicated that the link between achievement stress and suicide ideation changes depending on the level of SOP. In terms of effect size, the significant SOP x Achievement Stress interaction accounted for 2% additional variance in the prediction of concurrent suicide ideation for female participants. In a separate regression analysis, SOP did not interact significantly with interpersonal stress to predict concurrent suicide ideation for female participants, hence providing further support for the Specific Vulnerability Hypothesis.

To probe the significant SOP x Achievement Stress interaction for females, following the recommendation made by Aiken and West (1991), regression lines of best fit were plotted at high (one standard deviation above the mean) and low levels (one standard deviation below the mean) of SOP, respectively (see Fig. 1). Next, simple slope analyses were conducted separately on the high and low SOP stress lines to determine whether they differed significantly from zero (using two-tailed test and α=.05).[3] The results suggest that the high SOP line differed significantly from zero, β=.25, $t(1,274)$=2.28, $p<.05$, whereas the low SOP stress line did not differ significantly from zero, β=.15, $t(1,274)$=.32, $p>.05$. As illustrated in Fig. 1, consistent with

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[3] Simple slopes were also calculated for the mean value of the moderator variable (i.e., SOP, SPP) in all simple slopes analyses presented below. However, the slope of the mean regression line was not significantly different from zero in these analyses and hence was omitted from discussion.

the Specific Vulnerability Hypothesis, female participants who are characterized jointly by high levels of self-oriented perfectionism and achievement stress tended to report higher levels of concurrent suicide ideation. This interaction also indicates that as achievement events increased, only those with high levels of SOP experienced elevated levels of concurrent suicide ideation.

Another set of hierarchical regression analysis was conducted by substituting socially prescribed perfectionism as the perfectionism measure in the predictor blocks (see Table 8). Contrary to the Specific Vulnerability Hypothesis, a significant interaction between SPP and achievement stress was found to predict concurrent levels of suicide ideation among female participants, even after removing the variance accounted by depression, SPP and achievement stress (see Table 8). This interaction indicates that the link between achievement stress and suicide ideation changes depending on the level of SPP. In terms of effect size, the significant SPP x Achievement Stress interaction accounted for 2% additional variance in predicting concurrent suicide ideation for female participants. In a separate analysis involving SPP and interpersonal stress in predicting concurrent suicide ideation for females, the interpersonal stressors block accounted for significant unique variance (1%) in predicting suicide ideation beyond depression and SPP. No significant interaction between socially prescribed perfectionism and interpersonal stressors was found in the prediction of concurrent suicide ideation for female participants. These results suggest that the association between interpersonal stress and suicide ideation does not appear to depend on the levels of socially prescribed perfectionism.

Next, to probe the significant SPP x Achievement stress interaction for females, simple slope analyses were conducted separately on the high and low SPP lines to determine whether they differed significantly from zero. The result suggests that the high SPP line did not differ significantly from zero, β=-.08, t(1,274)=-.32, p>.05, and the low SPP line did not differ

significantly from zero either, β=-.15, $t(1,274)$=-.60, p>.05. However, the two simple regression lines were significantly different from one another (due to the significant interaction effect). This indicates that as achievement stress increased, there was a difference in the level of concurrent suicide ideation reported by those with low SPP as compared to those with high SPP.

3.5.2 Testing the specific vulnerability hypothesis for concurrent suicide ideation in male participants

Results of the regression analyses that examined Perfectionism x Stress interaction effects in the prediction of concurrent suicide ideation were presented in Tables 9 and 10 for male participants. Contrary to the specific vulnerability hypothesis, no significant SOP x Achievement Stress interaction was found in the prediction of concurrent suicide ideation. However, a significant interaction between SOP and interpersonal stress was found to predict concurrent levels of suicide ideation (see Table 9). This interaction indicated that the link between interpersonal stress and suicide ideation changes depending on the level of SOP. In terms of effect size, the significant SOP x Interpersonal Stress interaction accounted for 3% additional variance in predicting concurrent suicide ideation for male participants. In a separate regression analysis, SPP did not interact significantly with achievement or interpersonal stress to predict concurrent suicide ideation for male participants (see Table 10).

Next, simple slope analyses were conducted separately on the high and low SOP lines to determine whether they differed significantly from zero. The result suggests that the high SOP line differed significantly from zero, β=.33, $t(1,153)$=3.43, p<.01, whereas the low SOP line did not differ significantly from zero, β=.13, $t(1,153)$=1.17, p>.05. As illustrated in Fig. 3, contrary to the Specific Vulnerability Hypothesis, male participants who are characterized jointly by high levels of self-oriented perfectionism and interpersonal stress reported higher concurrent levels of

suicide ideation. This interaction indicates that as interpersonal stress increased, only those who reported high levels of SOP experienced an elevation in concurrent levels of suicide ideation. Additionally, at low levels of SOP, no difference in suicide ideation was found for those who were experiencing high versus low levels of interpersonal stress.

Taken together, these findings provide partial support for the Specific Vulnerability Hypothesis. Consistent with the specific vulnerability hypothesis, female participants with high levels of SOP tended to report greater suicide ideation as the levels of experienced achievement stress increased. However, contrary to the specific vulnerability hypothesis, levels of SPP had no different impact on concurrent levels of suicide ideation regardless of the amount of interpersonal stress reported in either gender. Instead, a significant but noncongruent interaction was found between SPP and achievement stress to predict concurrent suicide ideation for female. Similarly, a significant SOP x interpersonal stress interaction was found in males. In order to assess the specific vulnerability hypothesis in the prediction of change, regression analyses were again conducted.

3.5.3 Testing the specific vulnerability hypothesis for suicide ideation over time in female participants

Results of the regression analyses that examined Perfectionism x Stress interaction effects in the prediction of suicide ideation over time were presented in Tables 11 and 12 for female participants. Consistent with specific vulnerability hypothesis, a significant interaction between SOP and achievement stress was found to predict suicide ideation over time (see Table 11). In terms of effect size, the significant SOP x Achievement Stress interaction accounted for 1% additional variance in the prediction of suicide ideation for female participants. In a separate

regression analysis, SOP did not interact significantly with interpersonal stress to predict suicide ideation over time, hence providing solid support for the Specific Vulnerability Hypothesis.

Next, simple slope analyses were conducted separately on the high and low SOP lines to determine whether they differed significantly from zero. The result suggests that high SOP differed significantly from zero, β=.24, $t(1, 273)$=2.34, $p<.05$, however, low SOP did not differ significantly from zero, β=.16, $t(1, 273)$=1.30, $p>.05$. As illustrated in Fig. 4, as achievement events increased, only those high levels of SOP experienced an increase in suicide ideation over time. Additionally, at low levels of SOP, no difference was found in change in suicide ideation between those who were experiencing high versus low levels of achievement stress. Therefore, our results provide an even stronger support for the conceptualization of SOP as a vulnerability factor, which interacts with achievement stress to significantly predict levels of suicide ideation over time.

Another set of hierarchical regression analysis was conducted to examine the interaction effects involving socially prescribed perfectionism and stress (i.e., Achievement Stress, Interpersonal Stress) in predicting change in suicide ideation over time (see Table 12). Contrary to the specific vulnerability hypothesis, again, a significant interaction between SPP and achievement stress was found to predict suicide ideation over time among female participants. In terms of effect size, the significant SPP x Achievement Stress interaction accounted for 1% additional variance in predicting suicide ideation over time for female participants. A separate analysis was conducted to examine the interaction between SPP and interpersonal stress to predict suicide ideation over time for female (see Table 12). Again, contrary to the specific vulnerability hypothesis, no significant SPP x Interpersonal Stress interaction was found in predicting change in suicide ideation for female participants. These results suggest that the

association between interpersonal stress and suicide ideation does not appear to depend on the level of SPP.

Next, simple slope analyses were conducted separately on the high and low SPP lines to determine whether they differed significantly from zero. The result suggests that the high SPP line differed significantly from zero, $\beta=.30$, $t(1,273)=3.23$, $p<.05$, whereas the low SPP line did not differ significantly from zero, $\beta=.17$, $t(1,273)=1.45$, $p>.05$. As illustrated in Fig. 2, contrary to the specific vulnerability hypothesis, female participants who are characterized jointly by high levels of SPP and achievement life stress tended to report an increase in suicide ideation over a six-month period. This interaction indicates that only those with high levels of SPP experienced a significant increase in suicide ideation over time as achievement stress increased. Additionally, at low levels of SPP, no difference was found in change in suicide ideation between those who were experiencing high versus low levels of achievement stress.

3.5.4 Testing the specific vulnerability hypothesis for suicide ideation over time in male participants

As for male participants, none of the Perfectionism x Stress interactions was significant ($p>.05$) in predicting suicide ideation over time (see Tables 13 and 14).

Taken together, some evidence was obtained for the specific vulnerability hypothesis. That is, female participants with high levels of SOP reported greater changes in suicide ideation over time as the levels of achievement stress increased. Similarly, in contrast to the specific vulnerability hypothesis, a significant SPP x achievement stress was found to predict greater changes in suicide ideation over the 6-month period in female.

3.6 Testing stress generation model

The following set of statistical analyses provided an examination for the Stress Generation Model proposed by Hewitt and Flett (2002), more specifically, whether stress (i.e., achievement or interpersonal) mediated the association between Time 1 perfectionism traits and Time 2 suicide ideation. It has been suggested when testing mediational models, cross-sectional designs typically generate substantially biased estimates of longitudinal parameters even under the ideal conditions (Cole & Maxwell, 2003; Maxwell & Cole, 2007). Furthermore, from a theoretical standpoint, the use of cross-sectional data implies that the effects are instantaneous whereas the causal relationships described by the mediational model take time to unfold (Cole & Maxwell, 2003; Gollob & Reichardt, 1987). The temporal-precedence or causal-ordering assumption by quantifying mediation relations among variables over time hence provides a much more rigorous mediational test than using concurrent measures (MacKinnon & Fairchild, 2009). Due to these reasons, we chose Time 1 perfectionism trait as the predictor variable, the stress experienced between Time 1 and Time 2 as the mediator variable, and Time 2 suicide ideation as the outcome variable. Hence, Time 1 suicide ideation was not included as a covariate. As in previous analyses, age was entered as a covariate in these mediational analyses. According to the procedures outlined by Baron and Kenny (1986), a significant mediation occurs when (a) a significant relationship between the predictor variable and the mediator (i.e., a significant path *a*), (b) a significant relationship between the mediator and outcome variable (i.e., a significant path *b*), and (c) a significant relationship between the predictor variable and the outcome variable (i.e., a significant path *c*) and a decrease as evidenced in the direct relationship between the predictor and outcome variable when controlling for the mediator. A complete or full mediation

model is the case where the predictor variable no longer affects the outcome variable after the mediator has been controlled and hence path *c* is no longer significant. Partial mediation occurs when path *c* is reduced in absolute size but is still different from zero when the mediator is controlled.

In the current analysis, we followed the bootstrapping procedures outlined by Shrout and Bolger (2002). Bootstrapping analysis enables the estimation of the amount of mediation or the *indirect effect*. In these analyses, random sampling with replacement was used to create 5,000 bootstrap samples from the data. The indirect effect is computed from each of these samples. Bootstrap samples were also used to estimate bias-corrected standard errors for indirect effects and 95% percentile confidence intervals for the indirect effects. Mediation was tested by examining the significance levels of indirect effects (MacKinnon, Lockwood, Hoffman, West & Sheets, 2002). Confidence intervals were also calculated around indirect effects. A mediational model is said to be significant when its indirect effect is significant at $p<.05$, which occurs when zero is not included in the 95% confidence interval for the indirect effect.

3.6.1 Testing stress generation model for female participants

In the first set of analyses involving female participants, neither achievement stress nor interpersonal stress mediated the association between Time 1 self-oriented perfectionism and Time 2 suicide ideation for female participants (see Figures 6 and 7, respectively). As illustrated in Figure 8, the association between Time 1 SPP and Time 2 suicide ideation was significant for females. Figure 8 also indicates that the associations between SPP (the predictor) and Achievement Stress (the mediator) and between Achievement Stress and suicide ideation (the outcome variable) were significant. When Achievement Stress was entered as the mediator, the association between SOP and suicide ideation remained significant. Bootstrapping was used to

obtain confidence intervals for the indirect effects, 95%CI [.01, .04]. The 95%CI does not

contain zero, thereby suggesting that the indirect effects were significant at the $p<.05$ level.

Similarly, when Interpersonal Stress was entered as a mediator in the association between Time

1 SPP and Time 2 suicide ideation for female participants (see Fig. 9), significant pathways were

found between (1) SPP and Interpersonal Stress, (2) Interpersonal Stress and suicide ideation,

and (3) SPP and suicide ideation. Again, the association between SPP and suicide ideation

remained significant after accounting for the effect of achievement stressor. Again, the 95% CI

[.01, .06] obtained from bootstrapping does not contain zero, thereby suggesting that the indirect

effects were significant at the $p<.05$ level.

3.6.2 Testing stress generation model for male participants

The second set of analyses examined the mediational models involving male participants.

The overall pattern of mediation findings was similar in both males and females. First of all,

similar to female participants, neither achievement stress nor interpersonal stress acted as a

mediator in the association between Time 1 self-oriented perfectionism and Time 2 suicide

ideation for male participants (see Figures 10 and 11, respectively). Secondly, the SPP-suicide

ideation link appeared to be significantly mediated by both achievement stress and interpersonal

stress for males, as shown previously for females. For example, when Achievement Stress was

entered as a mediator in the association between Time 1 SPP and Time 2 suicide ideation (see

Fig. 12), significant pathways were found between (1) SPP and Achievement Stress, (2)

Achievement Stress and suicide ideation, and (3) SPP and suicide ideation. The association

between SPP and suicide ideation, again, remained significant after accounting for the effect of

achievement stress. The 95% CI [.01, .03] obtained from bootstrapping does not contain zero,

thereby suggesting that the indirect effects were significant at the $p<.05$ level. Similarly, when

Interpersonal Stress was entered as a mediator in the association between SPP and suicide

ideation for males (see Fig. 13), significant pathways were found between (1) SPP and

Interpersonal Stress, (2) Interpersonal Stress and suicide ideation, and (3) SPP and suicide

ideation. The association between SPP and suicide ideation remained significant after accounting

for the effect of interpersonal stress. Again, the 95% CI [.01, .05] obtained from bootstrapping

does not contain zero, thereby suggesting that the indirect effects were significant at the $p<.05$

level. All significant mediational analyses above were partial models except for the complete

mediation model for SPP, interpersonal stress, and Time 2 suicide ideation for male participants.

As for effect size of the mediation effects, the raw correlation for the a path and the partial

correlation for the b path are often used as measures for effect size (see MacKinnon, Fairchild, &

Fritz, 2007 for a review). It should be noted that the effect sizes for the above mediation analyses

were relatively small. Alternatively, the proportion mediated, 1-(c'/c), can be used to estimate

the effect size of mediation analyses. However, the proportion mediated is often unstable unless

sample size is at least 500 (MacKinnon et al., 2007), hence the results on proportion mediated

were not presented here.

To summarize findings on the stress generation model, the results suggest that the links

between Time 1 SPP and Time 2 levels of suicide ideation was significantly mediated by

achievement stress and interpersonal stress for both genders. In other words, the findings are

consistent with the idea that SPP may generate or create stress in both achievement and

interpersonal domains, which results in suicide ideation.

4 Discussion

The main goal of this study was to examine the importance of trait dimensions of perfectionism in suicide ideation, and the diathesis-stress processes or mechanisms linking trait perfectionism, stress, and suicide ideation in a large sample of community adults. In addition, we also assessed two models of the perfectionism-suicide link: the specific vulnerability hypothesis and stress generation model. In this study, we found that both self-oriented and socially prescribed perfectionism were significantly correlated with suicide ideation. Socially prescribed perfectionism was a positive predictor of concurrent levels of suicide ideation among women, whereas other-oriented perfectionism served as a negative predictor of Time 2 suicide ideation among women even after controlling for other predictors of suicide ideation such as depression and hopelessness. We also found some support for the Specific Vulnerability Hypothesis in which SOP acts as a vulnerability factor and interacts with achievement stress to predict suicide ideation measured concurrently as well as over time. Finally, some evidence for the Stress Generation Model was also found whereby socially prescribed perfectionism could create or generate stressful life events, which in turn, results in suicide ideation at a later time.

4.1 Trait perfectionism and suicide ideation

The first goal of the study was to examine the relationships between various trait dimensions of perfectionism and suicide ideation. Specifically, we wanted to replicate findings that socially prescribed perfectionism was the trait perfectionism dimension that is most strongly associated with suicide ideation in adults (e.g., Beevers & Miller, 2004; Dean & Range, 1996; Hewitt et al., 1992; 1994; 1998). In addition, we wanted to examine the relationship between self-oriented perfectionism and suicide ideation as mixed findings about this relationship were reported in the literature (e.g., Blankstein et al., 2007; Hewitt et al., 1992; 1994). Both self-

oriented perfectionism and socially prescribed perfectionism were associated with suicide ideation in both genders, and socially prescribed perfectionism contributed unique variance in the prediction of concurrent suicide ideation among female. This suggests that both self-oriented perfectionism and socially prescribed perfectionism are relevant in predicting suicide ideation; however, as indicated in the results, socially prescribed perfectionism may be a stronger predictor of suicide ideation in adults than self-oriented perfectionism, especially for women. Moreover, in terms of effect size, consistent with the R^2 typically reported in previous research on perfectionism, stress and psychopathology (e.g., Enns et al., 2005; Hewitt et al., 1996; Sherry et al., 2003), MPS traits (i.e., SOP, SPP and OOP) together explained between 5% and 11% unique variance in the prediction of suicide ideation in the current study, compared with depression and hopelessness, which together typically accounted for 20%- 40% unique variance in suicide ideation. Notably, unlike previous findings (i.e., Blankstein et al., 2007), MPS traits typically accounted for almost twice as much of the variance in suicide ideation for female than in male participants, thereby highlighting the importance of examining gender differences in research on perfectionism.

As reported in prior research (e.g., Blankstein et al., 2007; Dean & Range, 1996; 1999; Hewitt et al., 1996; Roxborough et al., 2012; Sherry et al., 2003), socially prescribed perfectionism were moderately to strongly correlated with suicide ideation, stress, depression, and hopelessness in this study. This suggests that socially prescribed perfectionism plays an important role in understanding suicide ideation and various indicators of psychopathology in adults. Furthermore, SPP was a significant predictor of concurrent suicide ideation for women and was a marginally significant predictor for men. Consistent with previous research (e.g., Blankstein et al., 2007, Hewitt et al., 1992; 1994; Roxborough et al., 2012), those who perceive

an inability to meet unrealistically high standards and expectations imposed by others, or who believe that others will only be satisfied when these standards are met, may be particularly prone to suicidal ideation. Additionally, individuals with high SPP are prone to a pervasive sense of hopelessness and pessimism in both achievement and interpersonal domains (e.g., Blankstein et al., 2007; Hewitt et al., 2004). However, findings regarding SPP were not entirely consistent with our hypotheses and some previous research (e.g., Dean et al., 1996, Hewitt et al., 1997; Hewitt et al., in prep), that is, SPP did not predict unique variance in subsequent suicide ideation when other key predictors of suicide such as depression, hopelessness, and Time 1 suicide ideation were controlled for. However, these previous studies used either psychiatric adolescents or younger adult samples, whereas the current findings were based on a sample of older community adults. Therefore, the discrepancy in findings about SPP could be due to differences in sample characteristics. More empirical research is clearly needed to clarify the role of SPP in suicide ideation for different age groups. Nevertheless, our finding regarding SPP is consistent with Baumeister's (1990) hypothesis about suicide processes. Perceived or actual failure to meet expectations can lead to a series of negative self-evaluative processes that are common among socially prescribed perfectionists. And finally, some recent studies (e.g., Sherry, Law, Hewitt, Flett, & Besser, 2008; Roxborough et al., 2012) suggested that SPP confers vulnerability associated with depression and suicide behaviour by creating a sense of disconnection from the social environment (see Social Disconnection Model; Hewitt et al., 2006). Hence, it is not surprising that socially prescribed perfectionists tend to report higher suicide ideation as a result of the perceived discrepancy between expectations imposed by others and their ability to satisfy these demands.

In terms of the associations between SOP and suicide ideation, the literature has found mixed evidence in both adult and adolescent samples. However, contrary to some previous studies (e.g., Dean et al., 1996; Hewitt et al., 1997; in prep), SOP was significantly correlated with suicide ideation for female participants, albeit the correlations were small. Even though the correlations between SOP and suicide ideation were non-significant for male participants in our study, the sizes of correlation were not significantly different from those for females. The relatively small sample of male participants might have made it difficult to detect a significant relationship. Nevertheless, the significant association between SOP and suicide ideation suggests that the perception of falling short of one's unrealistic expectations may play an important role in the development of suicide ideation in adults. Self-oriented perfectionism involves excessive motivation for the self to be perfect, all or none thinking, and focusing on one's own flaws. It also entails the belief that one will be satisfied only when the unrealistic standards are met (Hewitt & Flett, 1991). Self-oriented perfectionism is also closely related to self-criticism and intrapunitiveness and has been thought to increase vulnerability to psychological problems by increasing perceived failures and self-punishment (Hewitt & Flett, 1991; 2002). This finding is also consistent with Baumeister's (1990) 'suicide as escape from self' model, which suggests that some suicide behaviour arise from a strong desire to escape from aversive self-awareness associated one's perceived shortcomings and lack of success. In addition, our findings are also consistent with the self-discrepancy theory proposed by Higgins (1987), that perceived discrepancies between "actual self-states" (i.e., one's perception of one's own attributes or abilities) and "ideal self-states" (i.e., what one perceives to be the ideal attributes) or "ought self-states" (i.e., attributes and abilities that one believes one should or ought to possess) can often lead to either dejection-related emotions (e.g., sadness, disappointment, and dissatisfaction)

or agitation-related emotions (e.g., fear, restlessness, and threat). Therefore, self-oriented perfectionism appears to have a direct effect on suicide ideation (e.g., Hewitt et al., 1994). And finally, the significant correlation between SOP and suicide ideation is in contrast to the notion that SOP is an adaptive or resilient form of perfectionism (c.f., Cox et al., 2002; Enns et al., 2003; Frost et al., 1993).

Notably, other-oriented perfectionism was not significantly correlated with suicide ideation, hopelessness, or any of the stress variables in both men and women. This is consistent with previous findings that indicate either a negative or non-significant association between OOP and hopelessness and suicide ideation and suicide attempt (e.g., Blankstein et al., 2007; Hewitt et al., 1998; O'Connor & O'Connor, 2003). Another notable finding is that only OOP predicted unique variance in Time 2 suicide ideation among female participants after controlling for the variance accounted by depression, hopelessness, and Time 1 suicide ideation. Again, this differs from previous findings suggesting that only SPP contributed to unique variance in suicide ideation beyond depression and hopelessness (e.g., Dean et al., 1996; Hewitt et al., 1997). One possible explanation for the finding of OOP predicting unique variance is that the majority of previous studies simply did not include OOP in their regression analyses. In addition, it is possible that participants who have unrealistically high expectations for other people's behaviour may be at a lower risk for suicide ideation because they focus on others' flaws and imperfections instead of their own. Again, this finding is in line with Baumeister's (1990) theory about suicide processes, which contends that people who focus attention away from the self are less likely to develop internalizing psychological problems such as suicide and other forms of self-destructive behaviour, compared to those who engage in internalization of blame and negative self-evaluative processes. Hence, unrealistically high expectations from either the self or from others

(i.e., SOP and SPP) or the perceived discrepancy between high self or other expectations and a reality of falling short of these expectations may play a central role in predicting suicide ideation over time.

4.2 Specific vulnerability hypothesis

Another goal of the current study was to test the Specific Vulnerability Hypothesis proposed by Hewitt and Flett (1993), which posits that SOP interacts specifically with achievement related stresses to predict suicide ideation whereas SPP interacts specifically with interpersonal stresses to predict suicide ideation (Hewitt and Flett, 1993; 2002). To our knowledge, the current study is the first that investigated the Specific Vulnerability Hypothesis in relation to perfectionism and suicide ideation in community adults. In this study, we found a significant interaction between SOP and achievement stress in predicting concurrent suicide ideation as well as suicide ideation over time in females. This finding is consistent with the idea that stressors that are perceived as more important to the self tend to elicit stronger reactions (Gruen, Fokman, & Lazarus, 1988). Furthermore, the interaction between SOP and achievement stress in females accounted for a significant albeit relatively small portion of variance (i.e., 1-2%) in suicide ideation measured concurrently and longitudinally after controlling for the variance accounted by depression. McClelland and Judd (1993) suggested that finding a significant interaction in nonexperimental research is difficult, and interactions typically account for about 1-3% of variance (also see Chaplin, 1991). Therefore, we consider the SOP x achievement stress interaction to be both statistically and substantively significant. In addition, the lack of a significant SOP x interpersonal stress interaction for female participants offers further support for the Specific Vulnerability Hypothesis whereby SOP enhances the aversiveness of only congruent or ego-involving stressful events (i.e., achievement-related

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stress), which in turn, increases vulnerability of having suicidal thoughts (for a review, see Hewitt & Flett, 2002). Taken together, the current finding supports the notion that self-oriented perfectionism acts as a vulnerability diathesis factor that usually requires the activation of congruent stressors to increase the risks of suicide ideation (for a review, see Flett & Hewitt, 2002; Hewitt & Flett, 1993).

The significant SOP x achievement stress interaction suggests that self-oriented perfectionists experience difficulties accepting failure or have strong negative reactions to the actual or perceived experience of stressful experiences in the achievement-related domain. In other words, personal setbacks or stressors (e.g., unemployment, imprisonment, or decline in physical health) may be interpreted as personal failures of great importance by the self-oriented perfectionists due to their self-defeating attitude, all-or-nothing cognitive appraisals and maladaptive coping skills. As suggested by prior research, self-oriented perfectionism were associated with fears about failure, making mistakes, and losing control (Blankstein, Flett, Hewitt, & Eng, 1993), more shame and guilt following failures (Stoeber, Kempe, & Keogh, 2008), emotional coping involving reduced self-acceptance (Flett, Russo, & Hewitt, 1994), and a tendency to make internal attributions of negative achievement outcomes (Flett, Hewitt, Blankstein, & Pickering, 1998). The present results are also in line with previous research suggesting that self-criticism, which is closely related to self-oriented perfectionism, was related to higher stress over time, which led to increased depressive symptoms (Mongrain & Zuroff, 1994; Priel & Shahar, 2000). The high levels of self-criticism in self-oriented perfectionists stem from either failing to attain an impossible goal or for spending too much effort in an attempt to reach this goal (Hewitt & Flett, 2002). In addition, self-oriented perfectionists' tendency to experience decreased satisfaction with their performance (e.g., Frost & Henderson, 1991; Flynn

et al., 2001; Mor et al., 1995), and to maintain goals and expectations even in the face of failure (e.g., Ferrari & Mautz, 1997), could all exacerbate their stressful experiences, which in turn, leads to elevated suicide ideation over time. And finally, the impact of any perceived failure may be further magnified by the self-oriented perfectionists' tendency to overgeneralize the failure and interpret it as reflection of the self-worth (Hewitt & Flett, 1991; Hewitt, Mittelsataedt, and Wollert, 1989).

In terms of the observed gender differences in the specific vulnerability analyses, the SOP x achievement congruency effect was particularly salient among women, suggesting that the vulnerability associated with having unrealistically high standards may be more relevant to women who are experiencing a great amount of achievement-related stress compared with men. This is in contrast to the notion that men tend to anchor their self-identities more in achievement-oriented domains more than women, and hence men will be generally more vulnerable to failures and stress in the achievement domain (e.g., Rosenberg, 1957; Stroud, Salovey, & Epel, 2002). Some studies have suggested that the rate of suicide for women in some developed countries has increased dramatically since the feminist movement in the late 1960s, particularly among urban women holding professional/technical careers (e.g., De Castro & Martins, 1988; Girard, 1993). One plausible explanation is that women in professional/technical careers have started to devote more time and energy in their professional lives compared to fostering deep, affective bonds with family and social networks, which typically act as strong buffers against suicide. In this study, although we did not find a significant gender difference in suicide ideation, the recent rise in suicide among women may help shed some light on the robust SOP x achievements stress interaction effect. Women who are self-oriented perfectionists place significantly more emphasis on their professional lives and personal achievement than on their family and social

relationships, such that they might not have developed close social ties to buffer stresses during personal or professional setbacks or failures. Nevertheless, future research is clearly needed to replicate the current findings and to better understand the gender-specific vulnerabilities associated with perfectionism.

Considered as a whole, we have obtained partial support for the specific vulnerability hypothesis due to the significant SOP x interpersonal stress interaction in male and the significant SPP x achievement stress interaction found in female. Furthermore, contrary to our initial hypothesis, no significant SPP x interpersonal stress interaction was found to predict suicide ideation in either gender. The significant interaction between SPP and achievement stress suggests that socially prescribed perfectionism may act as a diathesis factor in the presence of achievement stress to increase vulnerability for suicide ideation over time, particularly among females. This finding is also consistent with a number of previous studies (e.g., Enns et al., 2003; Hewitt & Flett, 1993, Sherry et al., 2003) that reported a significant SPP x achievement stress interaction in predicting depression and hopelessness among university students and psychiatric samples. It is plausible that women who are socially prescribed perfectionists may base their self-worth heavily on their personal achievements even though the source of such insecurity comes from their excessive concern about obtaining approval from others. Therefore, the vulnerability associated with high SPP can be debilitating to women when combined with stress and failure in the achievement domain. Nevertheless, more empirical research is clearly needed to further elucidate the relationships among SPP, achievement stress, and suicide outcome in women.

As discussed earlier, previous research generally failed to provide evidence for a congruency between SPP and interpersonal stress in the prediction of distress symptoms except

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for depressed psychiatric patients (e.g., Hewitt & Flett, 1993, Sherry et al., 2003). In the current study, the non-significant SPP x interpersonal stress interaction failed to offer support for the Specific Vulnerability Hypothesis which posits that interpersonal stressors or failures should be experienced as particularly aversive for socially prescribed perfectionists due to their excessive desire of seeking others' approval and reassurances (Hewitt & Flett, 1993). Several possible explanations have been proposed to explain the non-significant interaction between SPP and interpersonal stress in predicting suicide ideation. First, it is plausible that socially prescribed perfectionism is a concomitant for the overall suicide risk as opposed to suicide ideation in the presence of stress. For example, Hewitt and colleagues (in prep) found support for SPP in conjunction with stress in the form of daily hassles and major stressors to predict suicide risk, however, no significant interaction was found between SPP and stress in the prediction of suicide ideation or attempt. Hence, SPP may have different associations with various indices of suicide outcome. Second, as suggested by research described earlier (e.g., Chang & Rand, 2000; Dean & Range, 1996; Hewitt & Flett, 1993; 2002; Hewitt et al., 1996), socially prescribed perfectionism is a robust predictor for suicide ideation regardless of stress. In this study, SPP was a significant main-effect predictor of concurrent suicide ideation in female. Hence, the non-significant SPP x interpersonal stress interaction suggests that the presence of life stressor may not be necessary to activate the negative effect of SPP in contributing to suicide ideation. And finally, our measure of life stress, Life Events Inventory (Cochrane & Robertson, 1973), contains items of both daily hassles (e.g., arguments with a neighbour) and major life stressors (e.g., divorce), thereby making it difficult to assess the interactions between perfectionism and different forms of stress. Some researchers (DeLongis et al., 1982) have suggested that daily hassles are more relevant to maladaptive outcomes than are major life stressors. For instance, in a study with clinical adult

population, socially prescribed perfectionism interacted only with social daily hassles to predict concurrent levels of depression (Hewitt & Flett, 1993). Furthermore, in a study on predictors of relapse among patients who had remitted unipolar depression, Segal, Shaw, Vella, & Katz (1992) found a significant Dependency x Interpersonal stress interaction in predicting depressive relapses a year later only when perceived event stressfulness was used as the stress measure, but not for the number of life events experienced. Hence, it is possible that a significant SPP x Interpersonal stress would be present if subjective ratings of distress were used instead.

Finally, a closer examination of past research with nonclinical samples that reported a significant SPP x stress interaction suggests that SPP may be more relevant for concurrent levels of distress symptoms, as reported in the current study; whereas self-oriented perfectionism may be relevant for both concurrent and subsequent levels of distress symptoms (e.g., Hewitt et al., 1996). In the longitudinal regression analyses, Time 1 suicide ideation accounted for much more of the variance in suicide ideation scores at Time 2 (i.e., approximately 50%) than the combined contributions of depression, SOP, achievement stress and the SOP x achievement stress interaction. Furthermore, no significant difference was found between Time 1 and Time 2 suicide ideation scores. This suggests that change in suicide ideation may be too small to detect significant interaction effects. Nevertheless, the SOP x achievement stress interaction in females was still significant even after controlling for measures of Time 1 suicide ideation and depression. Taken together, the present results support the notion that self-oriented perfectionism may be best conceptualized as a diathesis factor that can be activated by the presence of achievement stress in predicting suicide ideation concurrently and longitudinally.

4.3   Stress generation model

In the current study, we also examined the Stress Generation Model which postulates that perfectionism creates or generates stressful experiences, which then results in suicide ideation (Hewitt & Flett, 2002). In the present study, both achievement and interpersonal stressful events mediated the association between Time 1 socially prescribed perfectionism and Time 2 suicide ideation for both males and females. Our findings involving SPP is consistent with the Hewitt and Flett's (2002) Stress Generation Model as well as the interpersonal model of depression proposed by Potthoff, Holahan, and Joiner (1995). This interpersonal model postulates that individuals suffering from depression tend to experience stressful events in the interpersonal domain, such as rejection and conflicts, which serve to maintain their depression (Potthoff et al., 1995). In particular, excessive reassurance-seeking behaviour predicted elevated levels of interpersonal stressful events, which subsequently contributed to increased depressive symptoms over time (Hammen, 1991; Potthoff et al., 1995). Socially prescribed perfectionists' heightened interpersonal sensitivity and excessive reassurance-seeking behaviour may beget rejections from significant others or other person-dependent stressful events, consequently leading to negative psychological outcomes such as worry, negative affect, and depression (Chang, 2000; Chang et al., 2004; Cox et al., 2009; Hewitt & Flett, 1993; 2002). High levels of dependency that are central to socially prescribed perfectionism may give rise to stressful life events that contribute to the onset of depression (Mongrain & Zuroff, 1994; Hewitt et al., 2001; Priel & Shahar, 2000; Shahar, Joiner, Zuroff, & Blatt, 2004). Furthermore, socially prescribed perfectionists' tendency to engage in excessive procrastination (e.g., Flett et al., 1992), to constantly ruminate about criticisms and failures (e.g., O'Connor & O'Connor, 2003), to worry excessively about social

disapproval (e.g., Hewitt & Flett, 1991) can all generate stress in their lives, which can lead to suicide ideation.

Contrary to our initial hypothesis, we did not find support for the stress generation model involving SOP, stress and suicide ideation for either gender.[4] Again, it is possible that the 6-month period is too short to detect any significant change in suicide ideation. And finally, the partial mediation models involving SPP, stress, and suicide ideation indicate that, in addition to stress, other mediator variables (e.g., hopelessness, psychache, conditional self-acceptance) may also help to explain the relationship between socially prescribed perfectionism and suicide outcome (see Flamenbaum & Holden, 2007; Flett et al., 2003).

In summary, the present findings provide partial support for Hewitt and Flett's (2002) Stress Generation Model and the Specific Vulnerability Hypothesis proposed by Hewitt and Flett (1993). Self-oriented perfectionism can be viewed as a diathesis vulnerability factor that *enhances* the aversiveness of achievement-related stresses, which elevates the risk of suicide ideation over time. Socially prescribed perfectionism can *generates* stressful events in the achievement and interpersonal domains, which contributes to higher suicide ideation six months later. Taken together, the current study sheds light on the complex relationships among perfectionism, stress, and suicide outcome and highlights the importance of future empirical research on this topic.

4.4 Age, gender, perfectionism and suicide ideation

To our knowledge, the current study is the first to examine perfectionism and suicide ideation across the adult age span (i.e., ranging between 35 and 90 years old). In Canada and

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[4] However, when analyzing the entire sample (*n*=437), we did find support for the Stress Generation Model involving self-oriented perfectionism, leading to more stress in both achievement and interpersonal domains, which contribute to greater concurrent levels of suicide ideation.

most countries around the world, suicide rates are higher in elderly adults for both men and women than younger age groups, and sometimes peak at the old age groups (World Health Organization, 2004). However, our study suggests that levels of perfectionism traits, depression, hopelessness, stresses, and suicide ideation seem to decrease as age increases. No significant correlation was found between age and suicide ideation when men and women were analyzed separately. Since no published research to date has examined levels of perfectionism in an elderly population (i.e., over 65 years old), our findings may not be compared to previous studies with respect to this age group. One plausible explanation for the negative correlation between trait perfectionism and age is that as age increases, people may start to shift their focus away from the self and more onto relationships with significant others (e.g., children, spouse). Moreover, it is plausible that older people may learn to be more accepting of their flaws and limitations as their self- and world-views become less rigid. More empirical studies are clearly needed to investigate these hypotheses.

In terms of gender differences, in keeping with previous research (e.g., Blankstein et al., 2007; Hewitt & Flett, 1991), men scored significantly higher on other-oriented perfectionism than women. In a study involving university students, Blankstein and colleagues (2007) found OOP as a significant negative predictor of concurrent suicide ideation in men, but not in women. In contrast, OOP seemed to offer a protective function against suicide ideation, particularly among female participants in this study. This is further supported by the unique contribution of OOP in predicting Time 2 suicide ideation in women even after controlling for Time 1 suicide ideation, depression, hopelessness, and the other perfectionism traits. Hence, female participants who hold unrealistically high expectations for others' behaviour may experience lower risks for suicide ideation. However, our findings regarding OOP should be interpreted with caution in

light of previous research showing OOP to be negatively correlated with sexual and relationship satisfaction in women (e.g., Habke et al., 1999). Hence, it remains unclear whether OOP plays different roles in different psychological problems in women. Nevertheless, these reported gender differences highlight the importance of investigating gender specific relations between perfectionism and suicide outcomes.

4.5 Limitations and future directions

Although the current study addressed many limitations of previous research by assessing suicide ideation longitudinally and by including community adults across the age span, other aspects of the study may limit the generalization of the findings. First, as described earlier, some findings were inconsistent with previous studies that reported differential relations between perfectionism, stress and suicide ideation. More research is clearly needed to further clarify the relations between these variables, especially the role of OOP in predicting suicide ideation. Second, the present findings may not be generalized to other ethnic groups since the majority of participants were Caucasian. Cultural differences in the interrelationships amongst perfectionism, stress, and suicide ideation may not be explored due to the small number of non-Caucasian participants, as cultural differences in the association between perfectionism and psychological distress have been reported in some studies (e.g., Castro & Rice, 2003; Chang et al., 2004; Wei et al., 2007). Accordingly, the present findings may not be generalized to clinical populations. Hence, more research is needed to examine the generalizability of the findings among other ethnic groups and clinical populations. Third, the present study focused on suicide ideation as the main outcome variable. Previous research (e.g., Hewitt et al., in prep; Roxborough et al., 2012) have demonstrated some differences among various suicide outcome variables, such as suicide ideation, suicide attempt, suicide risk and potential, and suicide

completion. Although suicide ideation has been identified as an important precursor to actual suicidal attempt and completion, it is important for future research to consider other indices of suicidality as outcome variables when exploring the relationships between perfectionism, stress, and suicide.

As in most extant studies that relied on subjective, questionnaire-based measures of stress, we included only the self-reported endorsement of stressful life events that were experienced in the duration of six months. The self-report, checklist measure of stress has several limitations. First, the time period between Time 1 and Time 2 may have been too short to capture the range of life experiences (i.e., not enough power to detect expected effects) encountered by the sample of community adults. Second, the stress measure used in the study, Life Events Inventory (LEI), focuses on episodic stresses, and uses a simple event count to quantify life event stress. In future research, interview-based measures (e.g., Life Events and Difficulties Schedule; Brown & Harris, 1978) of stress could be included to determine the associations among perfectionism, stress, and suicide ideation. Finally, other types of stress measures, including subjective ratings of the impact of different stressors, observer ratings, diary studies, behavioural and physiological measures of stress, may be utilized in order to fully understand the relationships among perfectionism, stress and suicide.

In addition, we did not make a distinction between life events that were independent of or at least partly dependent on the behaviours and characteristics of the person. Hammen and colleagues (1985) suggested that depression is associated with increased rates of *dependent* life events but not independent events. It is plausible that perfectionism may lead to an increased occurrence of *dependent* stressful life events (e.g., divorce, dropping out of school) due to perfectionists' excessive motivation to achieve impossible standards and their maladaptive

interpersonal behaviour. Therefore, future studies should consider making a distinction between dependent versus independent life events to determine the cause-and-effect relationships among perfectionism, stress, and suicide ideation.

Although the present study includes an overall longitudinal design, it is likely that a longer period of time would have better captured the change in suicide ideation from Time 1 and 2. Future investigations could use multiple assessments over a longer time period to help elucidate the process by which perfectionists come to experience a higher risk of suicide ideation over time.

Last but not least, a different set of biological and psychological factors may be associated with the risk of suicide for men and women of different age groups. For instance, it is plausible that achievement stress and marital difficulties (e.g., separation and divorce) are associated with suicide behaviour in both women and men; however, women may be more affected by interpersonal distress and difficulties, whereas men may be more affected by low income and occupational stress. Hence, it is important to assess the impact of specific types of stressful events on mental health outcomes for men and women. Moreover, different psychological risk factors have been proposed for various age groups. For instance, young and middle adults are working on the task of establishing intimacy and avoiding isolation (Erikson, 1980). The lack of intimate interpersonal relationships may be a particularly salient risk factor for suicide for the young to mid-age groups. In addition, marriage, child-rearing and occupational stresses may pose significant challenges and increase vulnerability to suicide for these age groups. For people in the middle to old age groups, a number of risk factors may increase the likelihood of suicide behaviour, including declining physical and mental abilities, chronic pain or illnesses, feelings of stagnation, retirement, death of loved ones, divorce, separation, loneliness, and despair (Orden &

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Conwell, 2011; for a review, see Stillion & McDowell, 1996). Therefore, rather than including age as a covariate, one direction for future research could involve delineating the mechanisms by which perfectionism increases the risk of suicide behaviour for men and women of various age groups.

4.6 Clinical implications

Notwithstanding, the current study has clear implications for clinical practice and treatment of perfectionistic individuals. First, treatment for perfectionism should focus not only on overt distress and symptoms but also the personality diathesis factors. Because such diathesis factor (i.e., SOP) may only exert deleterious effect on the perfectionists during stressful times. Hence, clinicians need to be aware of the vulnerabilities associated with SOP and SPP and variables (e.g., stress) that could moderate the relationship between perfectionism and suicide outcome, which can be a focus of intervention effort. When assessing suicide risk, it is important not only to assess self and social trait dimensions of perfectionism, but also to assess these factors as potential diathesis or concomitant factors that can generate or exacerbate the experiences of stress in the perfectionists' lives (Hewitt et al., 1994). Second, understanding how perfectionism interacts with acute or chronic life stress can be very helpful in identifying and treating those who display suicidal ideation or engage in suicide behaviour. When treating perfectionistic persons, a clinician should assess their appraisals of the ongoing stressful events and inquire about suicidal thoughts because some perfectionists may actively conceal or hide such thoughts. Therefore, the treatment goals may include identifying vulnerability factors, reducing life stress, developing adaptive coping strategies, and fostering a supportive and nonjudgmental therapeutic atmosphere that encourages disclosures and displays of genuine feelings and personally distressing information.

5　Conclusion

The present study aimed to examine links between perfectionism, stress, and suicide ideation measured concurrently as well as over a 6-month period in a sample of community adults. This investigation yielded important results that extended prior understandings of stress processes that link perfectionism and suicide ideation. Our findings suggest that the three trait dimensions of perfectionism (i.e., SOP, SPP, and OOP) are differentially related to suicide ideation. In general, our study offered partial support for the Specific Vulnerability Hypothesis (Hewitt & Flett, 1993) and the Stress Generation Model of perfectionism (Hewitt & Flett, 2002). More specifically, self-oriented perfectionism can be viewed as a specific vulnerability factor that interacts with achievement-related stress to predict suicide ideation over time. Socially prescribed perfectionism generates achievement and interpersonal stressors, which contributes to higher levels of suicide ideation. The current study represents an important step in testing the perfectionism-suicide models and provides more insight into the gender differences as well as moderating and mediating variables in the perfectionism-suicide link that can be effectively targeted in clinical intervention.

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Appendix: Life Events Inventory

Life Events Inventory

Listed below are events that happen to people from time to time. Please indicate if the event described has happened to you **since you completed the first part of this study (first questionnaire)**. Just read the event, and decide if it is an event that happened to you. If so, simply put a check in the space before the item. If the event has not happened to you **since you completed the first questionnaire**, simply go on to the next item.

Scoring instructions:
There are a total of 10 achievement, and 26 interpersonal stressors. To obtain a total score, sum the raw scores for all items. A higher score indicates more negative life events.
Negative achievement items: 1, 2, 13, 14, 16, 17, 29, 30, 31, 32
Negative interpersonal items: 11, 18, 19, 20, 21, 22, 23, 25, 28, 33, 34, 36, 39, 40, 41, 42, 44, 45, 46, 47, 49, 50, 53, 54, 55, 56

1. ____ Unemployment (of the head of household)
2. ____ Trouble with superiors at work
3. ____ New job in same line of work
4. ____ New job in new line of work
5. ____ Change in hours or conditions in present job
6. ____ Promotion or change of responsibilities at work
7. ____ Retirement
8. ____ Moving house
9. ____ Purchasing of house (taking out mortgage)
10. ____ New neighbours
11. ____ Quarrel with neighbours
12. ____ Income increased substantially (25%)
13. ____ Income decreased substantially (25%)
14. ____ Getting into debt beyond means of repayment
15. ____ Going on holiday
16. ____ Conviction for minor violation (e.g., speeding or drunkenness)
17. ____ Jail sentence
18. ____ Involvement in physical fight
19. ____ Immediate family member starts drinking heavily
20. ____ Immediate family member attempts suicide
21. ____ Immediate family member sent to prison
22. ____ Death of immediate family member
23. ____ Death of close friend
24. ____ Death of a pet
25. ____ Immediate family member seriously ill
26. ____ Gaining of new family member (immediate)
27. ____ Problems related to alcohol or drugs
28. ____ Serious restriction of social life
29. ____ Period of homelessness (hostel or sleeping rough)

30. ____ Serious physical illness or injury requiring hospital treatment
31. ____ Prolonged ill health requiring treatment by own doctor
32. ____ Sudden and serious impairment of vision or hearing
33. ____ Unwanted pregnancy (or unwanted pregnancy of spouse/ partner)
34. ____ Miscarriage (or miscarriage suffered by spouse/ partner)
35. ____ Abortion (or abortion of child carried by spouse/ partner)
36. ____ Sexual difficulties

If you have ever been in a marriage-type relationship please continue. If you have never been in a marriage-type relationship go on to item 53.
37. ____ Marriage
38. ____ Pregnancy (or pregnancy of spouse/ partner)
39. ____ Increase in number of arguments with spouse/ partner
40. ____ Increase in number of arguments with other immediate family members (e.g., children)
41. ____ Trouble with other relatives (e.g., in-laws)
42. ____ Son or daughter left home
43. ____ Children placed in the care of others
44. ____ Trouble or behaviour problems in own children
45. ____ Death of spouse/partner
46. ____ Divorce
47. ____ Marital separation
48. ____ Illicit sexual affair outside of relationship/ marriage
49. ____ Break-up of affair
50. ____ Infidelity of spouse/ partner
51. ____ Marital/ relationship reconciliation
52. ____ Spouse/ partner begins or stops work

For those who have never been in a marriage-type relationship continue on.

53. ____ Break-up with steady boyfriend or girlfriend
54. ____ Problems related to sexual relationship
55. ____ Increase in number of family arguments (e.g., with parents)
56. ____ Break-up of family

Table 1

Means, standard deviations, and Cronbach's alpha for measures of perfectionism traits, stress, depression, hopelessness, and suicide ideation for all participants (N=437).

Variables	Mean	Standard Deviation	Cronbach's Alpha
1 SOP-1	64.07	17.88	.82
2 SPP-1	49.71	16.35	.88
3 OPP-1	54.47	13.11	.82
4 SOP-2	62.96	17.65	.81
5 SPP-2	49.73	15.74	.87
6 OPP-2	54.89	12.75	.83
7 Achievement-2	.70	1.17	n/a
8 Interpersonal-2	1.35	1.72	n/a
9 Depression_1	12.19	10.58	.91
10 Hopelessness_1	6.25	6.11	.89
11 Depression-2	10.85	9.94	.92
12 Suicide Ideation_1	2.54	5.55	.83
13 Suicide Ideation-2	2.06	5.15	.81
14 Age	58.57	11.71	n/a

Note. SOP=self-oriented perfectionism; SPP=socially prescribed perfectionism; OOP=other-oriented perfectionism; Achievement=achievement stressors; Interpersonal=interpersonal stressors; 1=Time 1; 2=Time 2.

Table 2

Means, standard deviations, and correlational coefficients for measures for perfectionism traits, stress, depression, hopelessness, and

suicide ideation for men (N=157) and women (N=279), and gender differences.

Variables	*Female*		*Male*															
	M	SD	M	SD	t	1	2	3	4	5	6	7	8	9	10	11	12	13
1 SOP-1	63.42	17.78	65.22	18.06	1.07	--	.63**	.55**	.83**	.43**	.53**	.04	.05	.22**	.03	.17*	.10	.14
2 SPP-1	48.92	16.72	51.12	15.62	1.43	.63**	--	.37**	.47**	.75**	.20*	.20*	.25**	.40**	.29**	.40**	.20**	.22**
3 OOP-1	53.30	13.05	56.55	12.99	2.64**	.55**	.37**	--	.53**	.35**	.69**	.15	.15	.22**	.04	.17**	.11	.12
4 SOP-2	62.11	17.46	64.45	18.03	1.31	.78**	.48**	.45**	--	.56**	.61**	.10	.05	.18*	-.02	.14	.11	.14
5 SPP-2	49.34	16.03	50.25	15.20	.54	.52**	.77**	.34**	.60**		.40**	.28**	.25**	.41**	.27**	.40**	.36**	.28**
6 OOP-2	54.09	12.94	56.29	12.34	1.67	.45**	.28**	.70**	.57**	.43**	--	.10	.13	.08	-.10	.06	.16*	.15
7 Achievement-2	.64	1.12	.80	1.25	1.37	.15*	.24**	-.01	.11	.28**	.04	--	.52**	.44**	.29**	.43**	.28**	.22**
8 Interpersonal-2	1.32	1.75	1.38	1.66	.34	.15*	.24**	.01	.13*	.26**	.04	.52**	--	.36**	.27**	.42**	.30**	.25**
9 Depression_1	12.00	10.86	11.61	10.08	-.90	.34**	.50**	.14*	.27**	.52**	.17**	.44**	.41**	--	.55**	.83**	.50**	.44**
10 Hopelessness_1	6.37	6.10	6.04	6.15	-.57	.25**	.41**	.08	.21**	.42**	.14*	.29**	.29**	.77**	--	.63**	.36**	.39**
11 Depression-2	10.84	10.04	10.64	9.61	-.27	.24**	.41**	.13*	.25**	.48**	.18**	.44**	.36**	.83**	.65**	--	.44**	.48**
12 Suicide Ideation-1	2.75	5.83	2.16	5.01	-.69	.19**	.31**	-.04	.12*	.35**	-.02	.20**	.35**	.64**	.58**	.52**	--	.80**
13 Suicide Ideation-2	1.98	5.00	2.11	5.36	.24	.09	.24**	-.09	.10	.26**	-.07	.29**	.39**	.55**	.49**	.62**	.61**	--

Table 3

Hierarchical regression analyses predicting Time 1 suicide ideation with perfectionism traits measured concurrently for female

participants (*N*=279) *and male participants* (*N*=157).

Variable	R^2	ΔR^2	ΔF	β	t
			Female Participants		
Time 1					
Suicide Ideation					
Step 1	.03	.03	10.76**		
Age				-.18	-3.28**
Step 2	.14	.11	13.27****		
Age				-.15	-2.70**
Self-oriented				.09	1.12
Socially Prescribed				.31	4.49****
Other-oriented				-.23	-3.52***
			Male Participants		
Time 1					
Suicide Ideation					
Step 1	.04	.04	6.96**		
Age				-.20	-2.64***
Step 2	.07	.03	1.68		
Age				-.17	-2.17**
Self-oriented				-.02	-.20
Socially Prescribed				.15	1.77*
Other-oriented				.05	.55

*Note. All variables were Time 1 measures. *p<.10, **p< .05, *** p< .01, ****p<.001 (two-tailed)

Table 4

Hierarchical regression analyses predicting Time 2 suicide ideation with perfectionism traits after controlling for Time 1 suicide

ideation for female participants (*N*=279) and *male participants* (*N*=157).

Variable	R^2	ΔR^2	ΔF	β	t
			Female Participants		
Time 2					
Suicide Ideation					
Step 1	.01	.01	2.63		
Age				-.10	-2.32
Step 2	.37	.36	163.04****		
Time 1 Suicide				.61	18.87****
Ideation					
Step 3	.38	.01	1.44		
Age				-.01	-.17
Time 1 Suicide				.58	11.31****
Ideation					
Self-oriented				-.03	-.46
Socially Prescribed				.11	1.66*
Other-oriented				-.08	-1.36
			Male Participants		
Time 2					
Suicide Ideation					
Step 1	.02	.01	2.86*		
Age				-.14	-1.69*
Step 2	.64	.63	264.42****		
Time 1 Suicide				.80	16.26****
Ideation					
Step 3	.64	.00	.79		
Age				.02	.49
Time 1 Suicide				.79	15.77****

Ideation			
Self-oriented		.04	.65
Socially Prescribed		.05	.91
Other-oriented		-.01	-.23

*Note. All variables were Time 1 measures except for Time 2 suicide ideation. *p< .10, **p< .05, *** p< .01, ****p<.001 (two-tailed)*

Table 5

Hierarchical regression analyses predicting Time 1 suicide ideation with perfectionism traits, depression, and hopelessness measured concurrently for female participants (*N*=279) and *male participants* (*N*=157).

Variable	R^2	ΔR^2	ΔF	β	t
		Female Participants			
Time 1					
Suicide Ideation					
Step 1	.03	.03	10.76***		
Age				-.18	-3.28***
Step 2	.43	.40	106.35****		
Depression				.49	7.14****
Hopelessness				.20	2.95***
Step 3	.45	.02	3.00**		
Age				-.03	-.55
Depression				.49	6.89****
Hopelessness				.19	2.87***
Self-oriented				.04	.70
Socially Prescribed				.01	.12
Other-oriented				-.15	-2.89***
		Male Participants			
Time 1					
Suicide Ideation					
Step 1	.04	.04	6.96***		
Age				-.20	-2.64***
Step 2	.26	.22	25.76****		
Depression				.43	5.27****
Hopelessness				.12	1.49
Step 3	.26	.00	.05		
Age				-.02	-.30
Depression				.43	4.97****

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Hopelessness	.12	1.51
Self-oriented	-.00	-.05
Socially Prescribed	-.02	-2.27
Other-oriented	.03	.31

Note. *All variables were Time 1 measures. *p< .10, **p< .05, *** p< .01, ****p<.001 (two-tailed).*

Table 6

Hierarchical regression analyses predicting Time 2 suicide ideation with perfectionism traits, depression, and hopelessness after controlling for Time 1 suicide ideation for female participants (N=279) and male participants (N=157).

Variable	R^2	ΔR^2	ΔF	β	t
		Female Participants			
Time 2					
Suicide Ideation					
Step 1	.01	.01	2.57		
Age				-.10	-1.60
Step 2	.37	.36	162.33****		
Time 1 Suicide Ideation				.61	12.74****
Step 3	.51	.14	39.18****		
Depression				.32	5.08****
Hopelessness				.16	2.72***
Step 4	.52	.01	2.73**		
Age				.02	.40
Time 1 Suicide Ideation				.37	7.31****
Depression				.34	5.44****
Hopelessness				.16	2.85***
Self-oriented				-.01	-.14
Socially Prescribed				-.03	-.46
Other-oriented				-.11	-2.07**
		Male Participants			
Time 2					
Suicide Ideation					
Step 1	.02	.02	2.86*		
Age				-.14	-1.69*
Step 2	.64	.62	264.42****		

Time 1 Suicide Ideation				.80	16.26****
Step 3	.68	.04	8.50****		
Depression				.09	1.32
Hopelessness				.16	2.34**
Step 4	.69	.01	.64		
Age				.08	1.62
Time 1 Suicide Ideation				.70	12.98****
Depression				.08	1.08
Hopelessness				.18	2.55**
Self-oriented				.07	1.14
Socially Prescribed				-.03	-.50
Other-oriented				.00	-.05

Note. All variables were Time 1 measures except for suicide ideation. *p< .10, **p< .05, *** p< .01, ****p<.001 (two-tailed)

Table 7

Hierarchical regression analyses predicting Time 2 suicide ideation with self-oriented perfectionism and achievement and interpersonal stressors measured concurrently for female participants (N=279) after controlling for depression.

Predictors	R^2	ΔR^2	ΔF	Overall F	β	df
			Self-oriented Perfectionism			
Step 1	.01	.01	3.23*	3.23*		1, 278
Age					-.11*	
Step 2	.39	.38	172.10****	88.66****		1, 277
Depression					.63****	
Step 3	.39	.00	1.22	59.56****		1, 276
Self-oriented					-.05	
Step 4	.39	.00	.24	44.61****		1, 275
Achievement Stressors					.03	
Step 5	.41	.02	6.44**	37.68****		1, 274
Self-oriented x Achievement					.12**	
Step 1	.01	.01	2.48	2.48		1, 278
Age					-.10	
Step 2	.38	.37	165.90****	84.91****		1, 277
Depression					.62****	
Step 3	.38	.00	1.04	56.97****		1, 276
Self-oriented					-.05	
Step 4	.39	.01	6.61**	45.23****		1, 275
Interpersonal Stressors					.14**	
Step 5	.39	.00	.00	36.10****		1, 274
Self-oriented x Interpersonal					.02	

Note. *p < .10, ** p < .05, *** p < .01, **** p < .001.

Table 8

Hierarchical regression analyses predicting Time 2 suicide ideation with socially prescribed perfectionism and achievement and interpersonal stressors measured concurrently for female participants (N=279) after controlling for depression.

Predictors	R^2	ΔR^2	ΔF	Overall F	B	df
			Socially Prescribed Perfectionism			
Step 1	.01	.01	3.23*	3.23*		1, 278
Age					-.11*	
Step 2	.39	.38	172.10****	88.66****		1, 277
Depression					.63****	
Step 3	.39	.00	.88	59.38****		1, 276
Socially Prescribed					-.05	
Step 4	.39	.00	.33	44.51****		1, 275
Achievement Stressors					.03	
Step 5	.41	.02	9.53***	38.62****		1, 274
Socially Prescribed x Achievement					.16***	
Step 1	.01	.01	2.48	2.48		1, 278
Age					-.10	
Step 2	.38	.37	165.90****	84.91****		1, 277
Depression					.62****	
Step 3	.38	.00	.78	56.82****		1, 276
Socially Prescribed					-.05	
Step 4	.39	.01	6.85***	45.22****		1, 275
Interpersonal Stressors					.14***	
Step 5	.40	.01	2.65	36.92****		1, 274
Socially Prescribed x Interpersonal					.08	

Note. *$p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$.

Table 9

Hierarchical regression analyses predicting Time 2 suicide ideation with self-oriented perfectionism and achievement and

interpersonal stressors measured concurrently for male participants (N=157) after controlling for depression.

Predictors	R^2	ΔR^2	ΔF	Overall F	B	df
			Self-oriented Perfectionism			
Step 1	.02	.02	2.86*	2.86*		1, 157
Age					-.14*	
Step 2	.23	.21	42.75****	23.19****		1, 156
Depression					.50****	
Step 3	.24	.01	1.18	15.87****		1, 155
Self-oriented					.08	
Step 4	.24	.00	.06	11.85****		1, 154
Achievement Stressors					.02	
Step 5	.24	.00	.02	9.42****		1, 153
Self-oriented x Achievement					-.01	
Step 1	.01	.01	2.86*	2.86*		1, 157
Age					-.14*	
Step 2	.23	.22	42.75****	23.19****		1, 156
Depression					.50****	
Step 3	.24	.01	1.18	15.87****		1, 155
Self-oriented					.08	
Step 4	.24	.00	.71	12.06****		1, 154
Interpersonal Stressors					.07	
Step 5	.27	.03	4.93**	10.88****		1, 153
Self-oriented x Interpersonal					.16**	

*Note. *p < .10, ** p < .05, *** p < .01, **** p < .001.*

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Table 10

Hierarchical regression analyses predicting Time 2 suicide ideation with socially prescribed perfectionism and achievement and interpersonal stressors measured concurrently for male participants (N=157) after controlling for depression.

Predictors	R^2	ΔR^2	ΔF	Overall F	β	df
			Socially Prescribed Perfectionism			
Step 1	.02	.02	2.86*	2.86*		1, 156
Age					-.14*	
Step 2	.23	.21	42.75****	23.19****		1, 155
Depression					.50****	
Step 3	.24	.01	1.89	16.18****		1, 154
Socially Prescribed					.11	
Step 4	.24	.00	.01	12.06****		1, 153
Achievement Stressors					.01	
Step 5	.24	.00	.02	9.59****		1, 152
Socially Prescribed x Achievement					-.01	
Step 1	.02	.02	2.86*	2.86*		1, 156
Age					-.10	
Step 2	.23	.21	42.75****	23.19****		1, 155
Depression					.62****	
Step 3	.24	.01	1.89	16.18****		1, 154
Socially Prescribed					-.05	
Step 4	.24	.00	.49	12.22****		1, 153
Interpersonal Stressors					.14***	
Step 5	.25	.01	1.71	10.16****		1, 152
Socially Prescribed x Interpersonal					.08	

Note. *$p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$.

Table 11

Hierarchical regression analyses predicting Time 2 suicide ideation with self-oriented perfectionism and achievement and

interpersonal stressors after controlling for Time 1 suicide ideation and depression for female participants (*N=279*).

Predictors	*R²*	Δ*R²*	Δ*F*	Overall *F*	*β*	*df*
			Self-oriented Perfectionism			
Step 1	.01	.01	3.23*	3.23*		1, 278
Age					-.11*	
Step 2	.37	.36	160.74****	82.92****		1, 277
Time 1 Suicide Ideation					.61****	
Step 3	.50	.14	72.02****	93.46****		1, 276
Depression					.43****	
Step 4	.51	.01	2.53	71.11****		1, 275
Self-oriented					-.07	
Step 5	.51	.00	.79	57.01****		1, 274
Achievement Stressors					.04	
Step 6	.52	.01	5.10**	49.06****		1, 273
Self-oriented x Achievement					.10**	
Step 1	.01	.01	2.48	2.48		1, 278
Age					-.09	
Step 2	.38	.37	166.04****	84.99****		1, 277
Time 1 Suicide Ideation					.61****	
Step 3	.50	.13	67.76****	92.70****		1, 276
Depression					.41****	
Step 4	.50	.00	2.76*	70.66****		1, 275
Self-oriented Perfectionism					-.07*	
Step 5	.51	.01	2.89*	57.49****		1, 274
Interpersonal Stressors					.08*	

| *Step 6* | .51 | .00 | .07 | 47.76**** | | 1, 273 |
| Self-oriented x Interpersonal | | | | | -.01 | |

Note. *p < .10, ** p < .05, *** p < .01, **** p < .001.

Table 12

Hierarchical regression analyses predicting Time 2 suicide ideation with socially prescribed perfectionism and achievement and interpersonal stressors after controlling for Time 1 suicide ideation and depression for female participants (*N*=279).

Predictors	R^2	ΔR^2	ΔF	Overall *F*	*β*	*df*
			Socially Prescribed Perfectionism			
Step 1	.01	.01	3.23*	3.23*		1, 278
Age					-.11*	
Step 2	.37	.36	160.74****	82.92****		1, 277
Time 1 Suicide Ideation					.61****	
Step 3	.50	.14	72.02****	93.46****		1, 276
Depression					.43****	
Step 4	.51	.01	1.77	70.73****		1, 275
Socially Prescribed					-.06	
Step 5	.51	.00	.86	56.73****		1, 274
Achievement Stressors					.04	
Step 6	.52	.01	7.28***	49.57****		1, 273
Socially Prescribed x Achievement					.12***	
Step 1	.01	.01	2.48	2.48		1, 278
Age					-.09	
Step 2	.38	.37	166.04****	84.99****		1, 277
Time 1 Suicide Ideation					.61****	
Step 3	.50	.13	67.76****	92.70****		1, 276
Depression					.41****	
Step 4	.50	.00	1.85	70.20****		1, 275
Socially Prescribed					-.06	
Step 5	.51	.01	2.89*	57.12****		1, 274
Interpersonal Stressors					.08*	

Step 6	.51	.00	.45	47.58****		1, 273
Socially Prescribed x					.03	
Interpersonal						

Note. *$p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$.

Table 13

Hierarchical regression analyses predicting Time 2 suicide ideation with self-oriented perfectionism and achievement and interpersonal stressors after controlling for Time 1 suicide ideation and depression for male participants (N=157).

Predictors	R^2	ΔR^2	ΔF	Overall F	β	df
			Self-oriented Perfectionism			
Step 1	.02	.02	2.86*	2.86*		1, 156
Age					-.14*	
Step 2	.64	.62	264.42****	136.07****		1, 155
Time 1 Suicide Ideation					.80****	
Step 3	.66	.02	11.19***	100.45****		1, 154
Depression					.19***	
Step 4	.67	.01	.75	75.40****		1, 153
Self-oriented					.04	
Step 5	.67	.00	1.35	60.73****		1, 152
Achievement Stressors					-.06	
Step 6	.68	.01	3.90*	52.23****		1, 151
Self-oriented x Achievement					-.10*	
Step 1	.02	.02	2.86*	2.86*		1, 156
Age					-.14*	
Step 2	.64	.62	264.42****	136.07****		1, 155
Time 1 Suicide Ideation					.80****	
Step 3	.66	.02	11.19***	100.45****		1, 154
Depression					.19***	
Step 4	.67	.01	.75	75.40****		1, 153
Self-oriented Perfectionism					.04	
Step 5	.67	.00	.49	60.22****		1, 152
Interpersonal Stressors					-.04	

Step 6	.67	.00	3.27*	51.48****		1, 151
Self-oriented x Interpersonal					.09*	

Note. *p < .10, ** p < .05, *** p < .01, **** p < .001.

Table 14

Hierarchical regression analyses predicting Time 2 suicide ideation with socially prescribed perfectionism and achievement and interpersonal stressors after controlling for Time 1 suicide ideation and depression for male participants (N=157).

Predictors	R^2	ΔR^2	ΔF	Overall F	β	df
			Socially Prescribed Perfectionism			
Step 1	.02	.02	2.86*	2.86*		1, 156
Age					-.14*	
Step 2	.64	.62	264.42****	136.07****		1, 155
Time 1 Suicide Ideation					.80****	
Step 3	.66	.02	11.19***	100.45****		1, 154
Depression					.19***	
Step 4	.66	.00	.16	74.96****		1, 153
Socially Prescribed					.02	
Step 5	.67	.01	1.45	60.44****		1, 152
Achievement Stressors					-.06	
Step 6	.67	.00	2.88*	51.47****		1, 151
Socially Prescribed x Achievement					-.09*	
Step 1	.01	.01	2.86*	2.86*		1, 156
Age					-.14*	
Step 2	.64	.63	264.42****	136.07****		1, 155
Time 1 Suicide Ideation					.80****	
Step 3	.66	.02	11.19***	100.45****		1, 154
Depression					.19***	
Step 4	.66	.00	.16	74.96****		1, 153
Socially Prescribed					.02	
Step 5	.67	.01	.00	59.92****		1, 152
Interpersonal Stressors					-.04	

Step 6	.67	.00	.00	49.83****		1, 151
Socially Prescribed x					-.03	
Interpersonal						

Note. *p < .10, ** p < .05, *** p < .01, **** p < .001.

Figure 1

Regression lines for the interaction between self-oriented perfectionism and achievement stress in predicting concurrent suicide

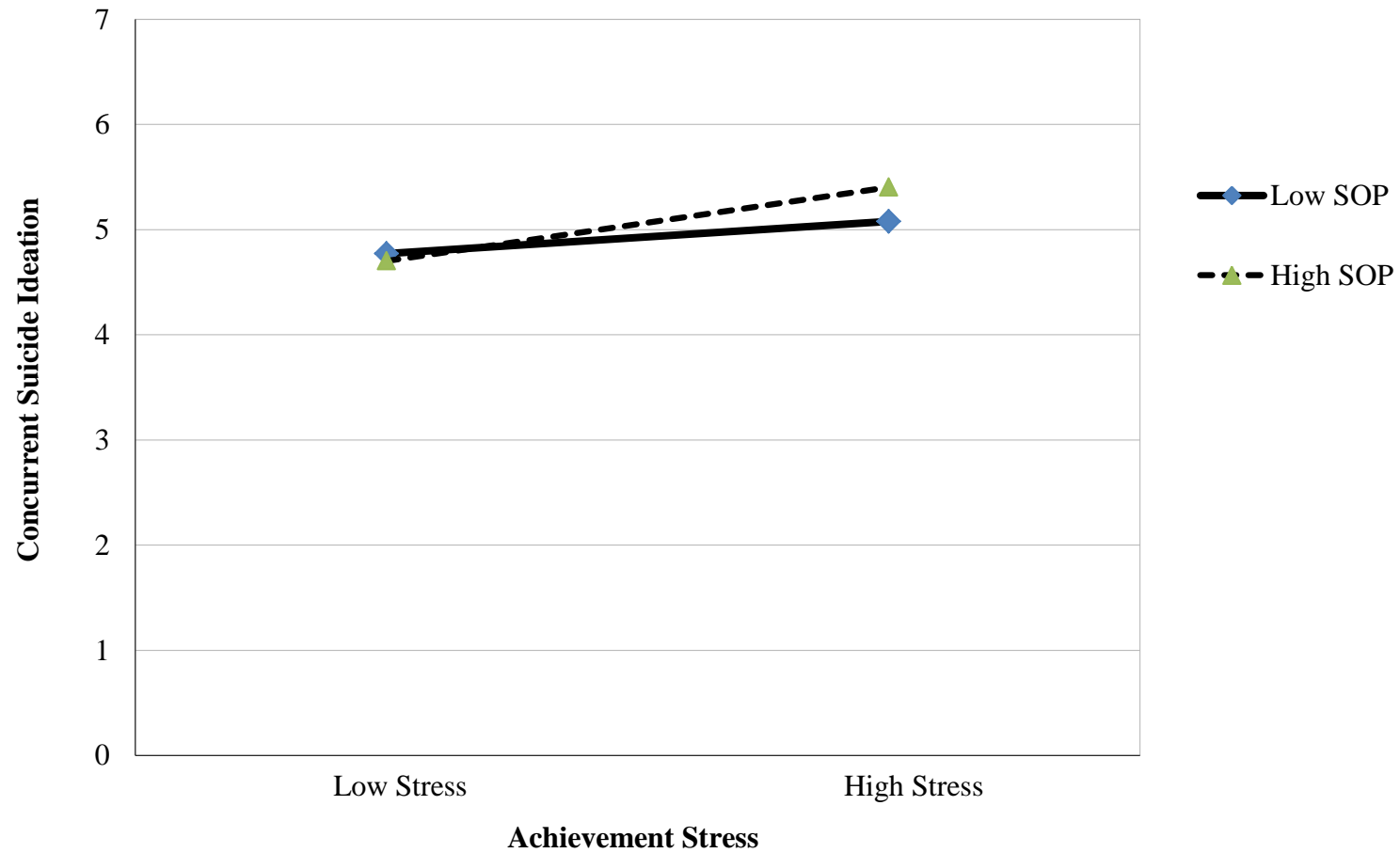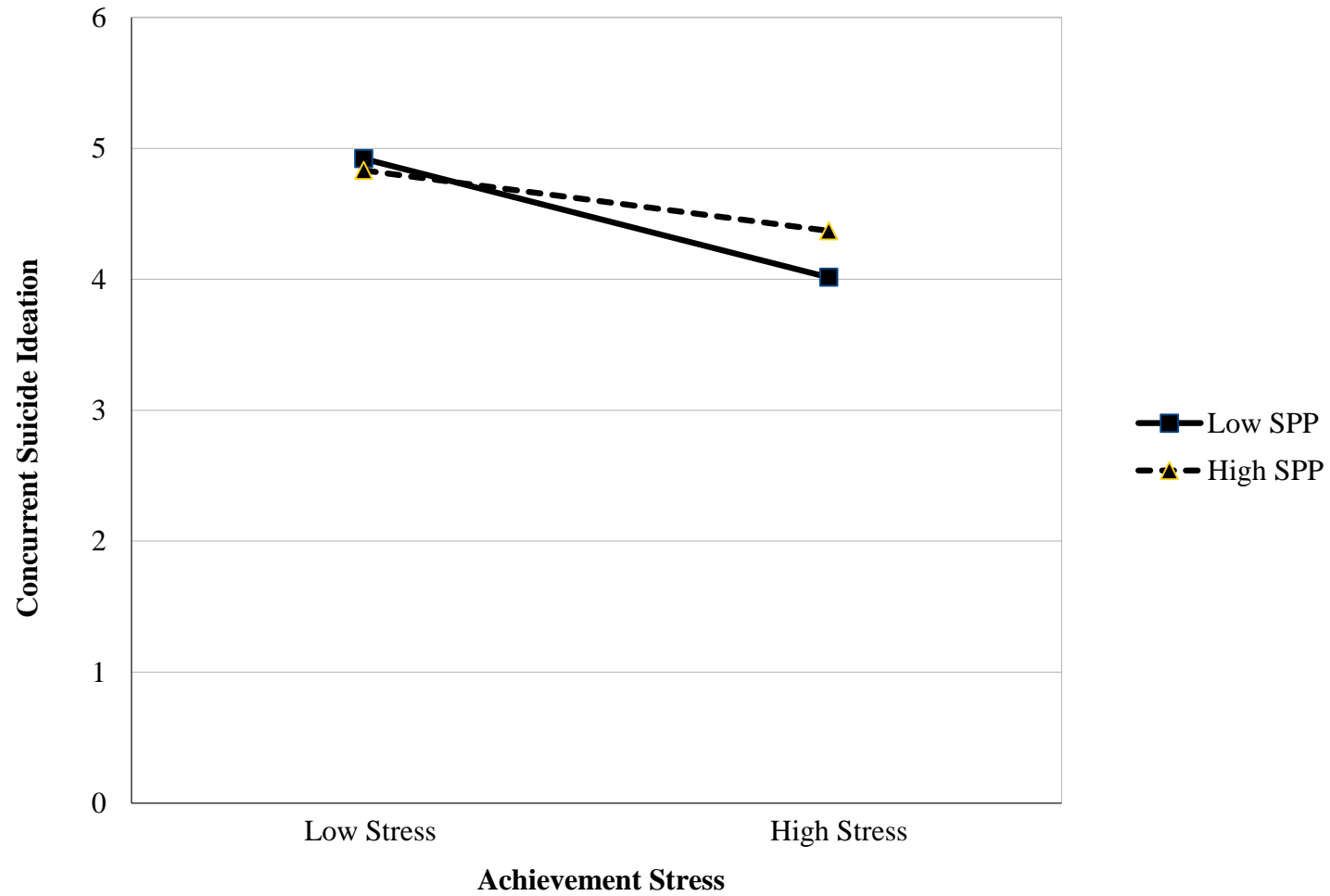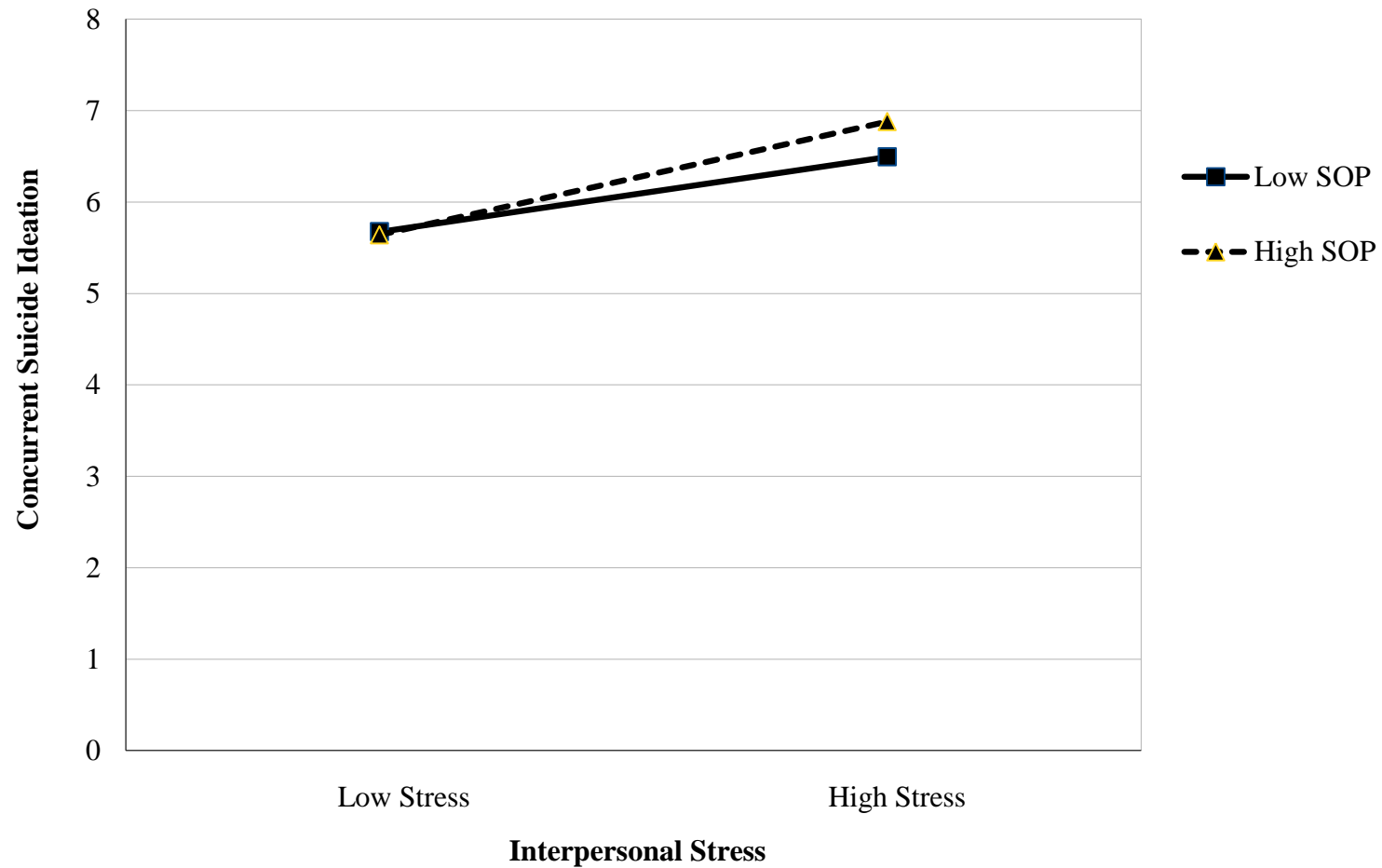*ideation after controling for depression for female participants* (*N=279*).

Figure 2

Regression lines for the interaction between socially-prescribed perfectionism and achievement stress in predicting concurrent suicide deation after controling for depression for female participants (N=279).

Figure 3

Regression lines for the interaction between self-oriented perfectionism and interpersonal stress to predict concurrent suicide

ideation after controlling for depression for male particiapnts (N=157).

Figure 4

Regression lines for the interaction between self-oriented perfectionism and achievement stress measured at Time 1 to predict Time 2 suicide ideation after controlling for Time 1 suicide ideation and depression for female participants (N=279).
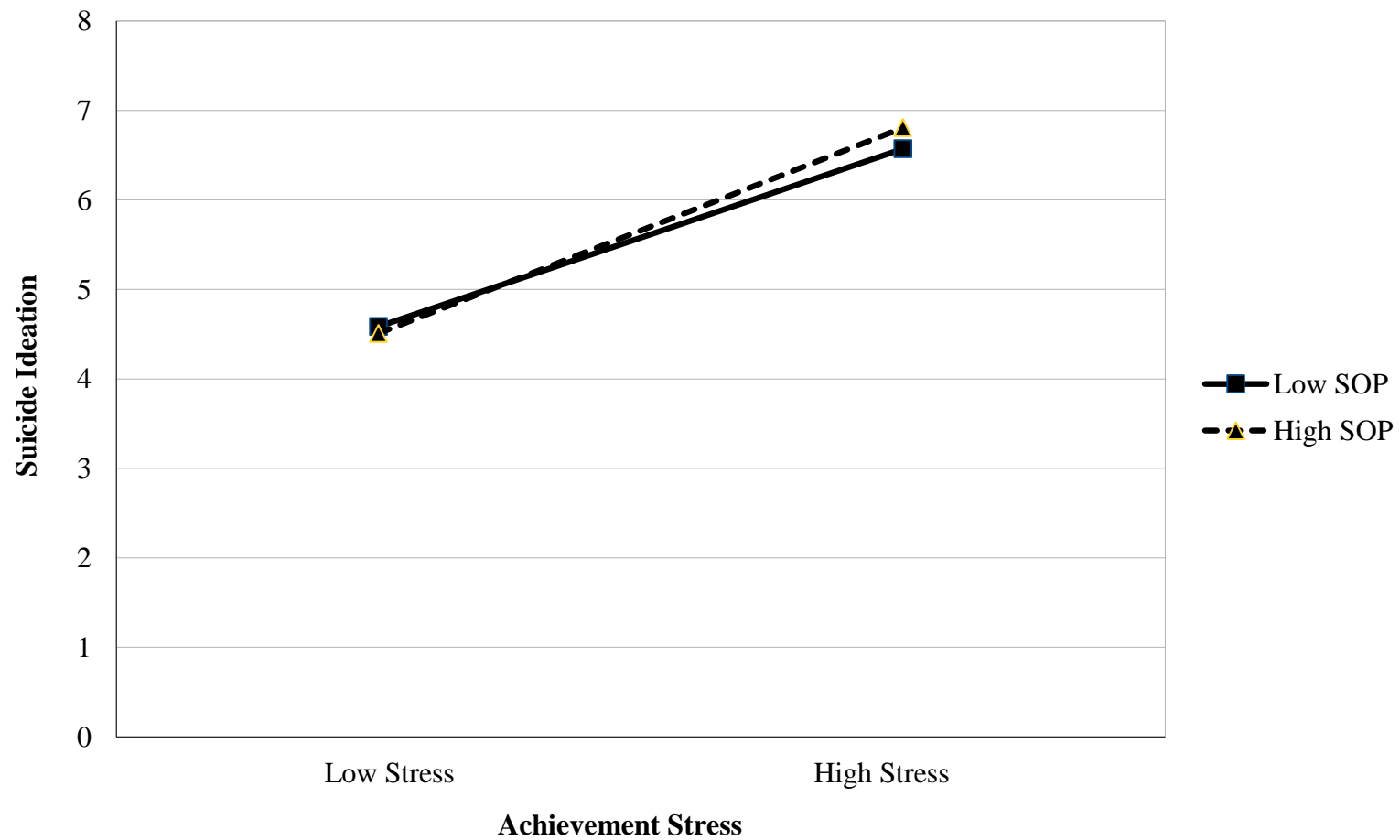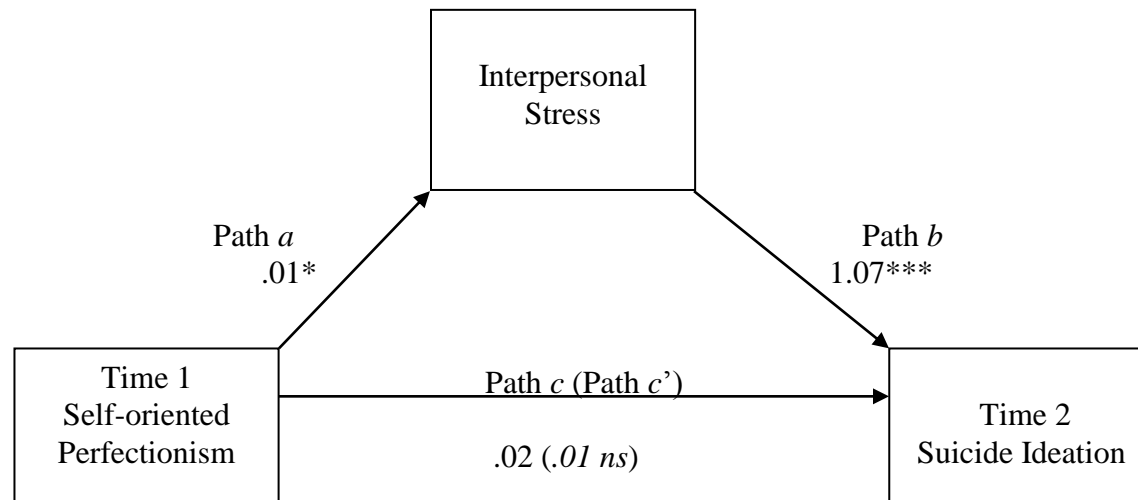
Figure 5

Regression lines for the interaction between socially prescribed perfectionism and achievement stress measured at Time 1 in predicting Time 2 suicide ideation after controlling for Time 1 suicide ideation and depression for female participants (N=279).
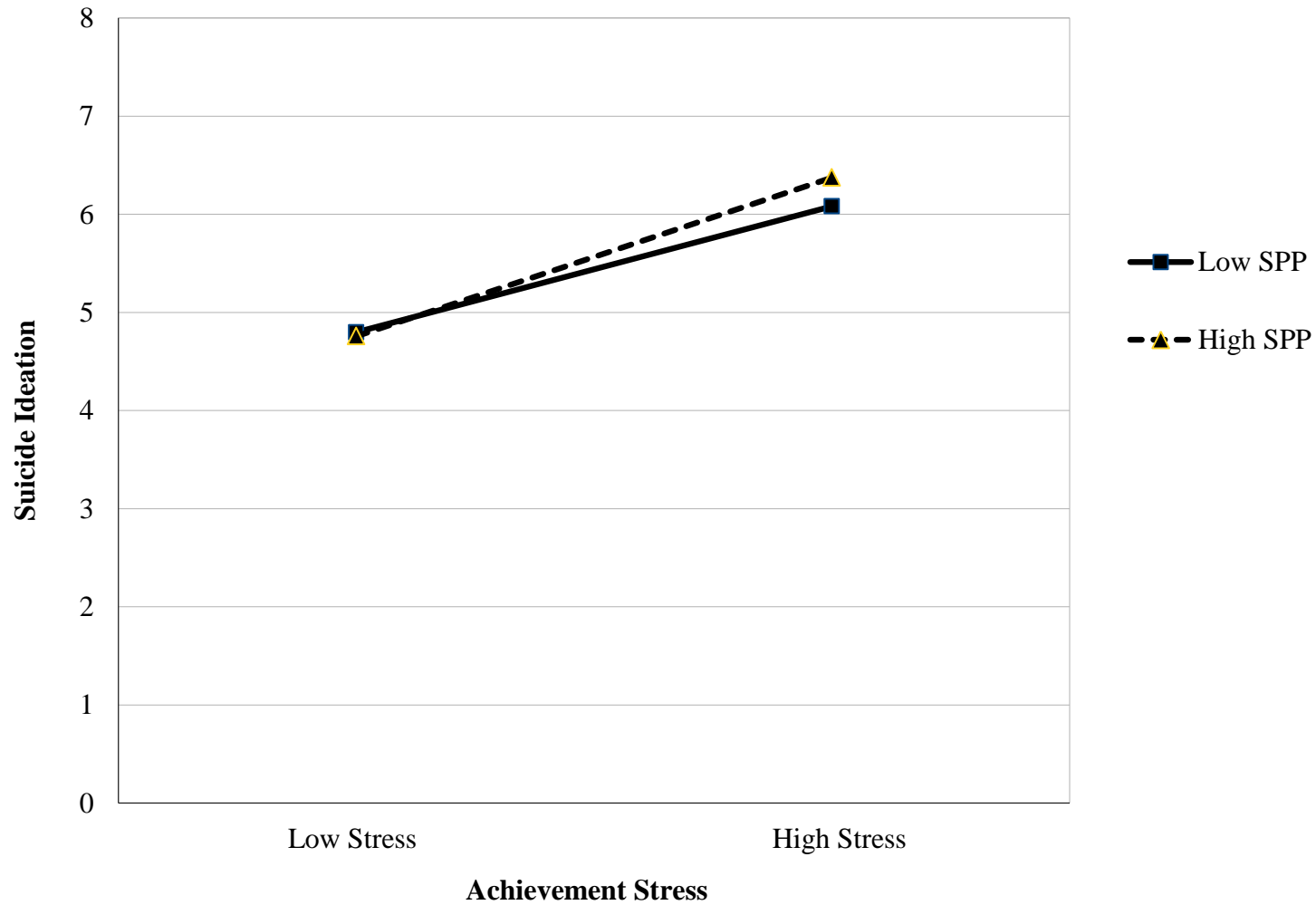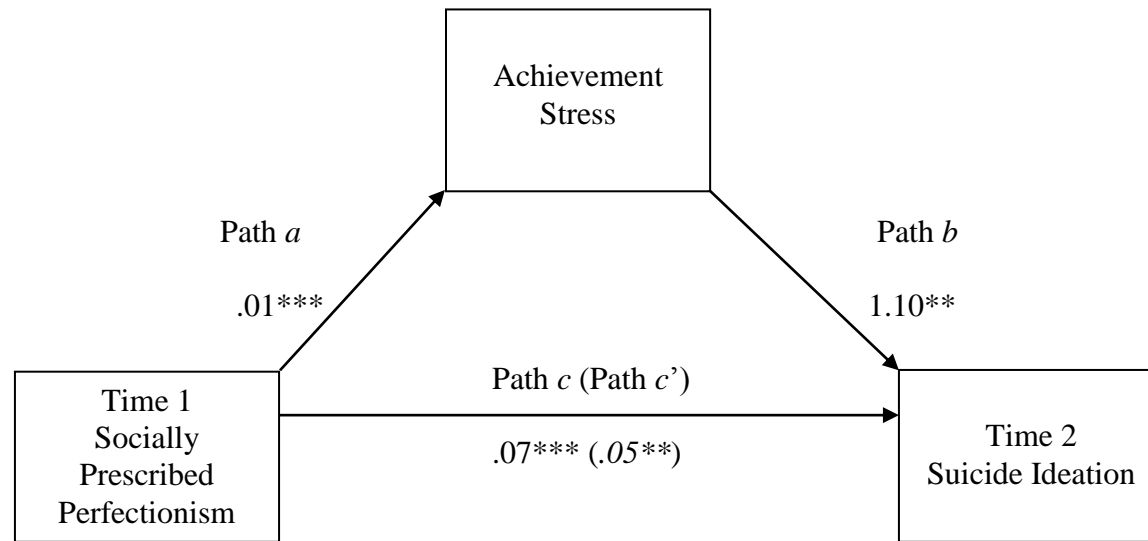
Figure 6

Mediation analyses with achievement stress as a mediator of the link between Time 1 self-oriented perfectionism and Time 2 suicide ideation for female participants (*N=279*).
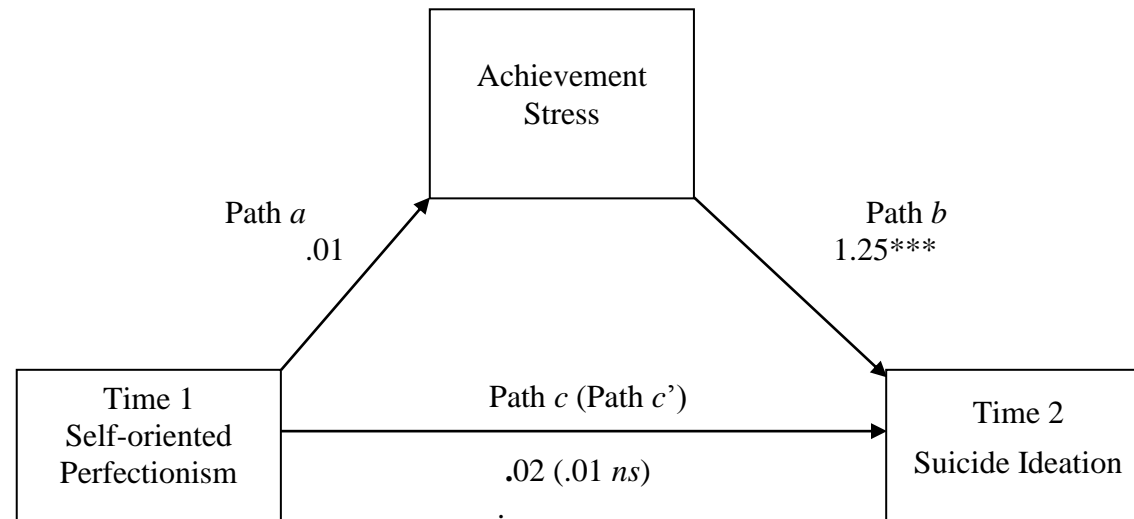
Note. All numbers represent unstandardized beta weights. *p<.05, **p<.01, ***p<.001, *ns*=non-significant.

Figure 7

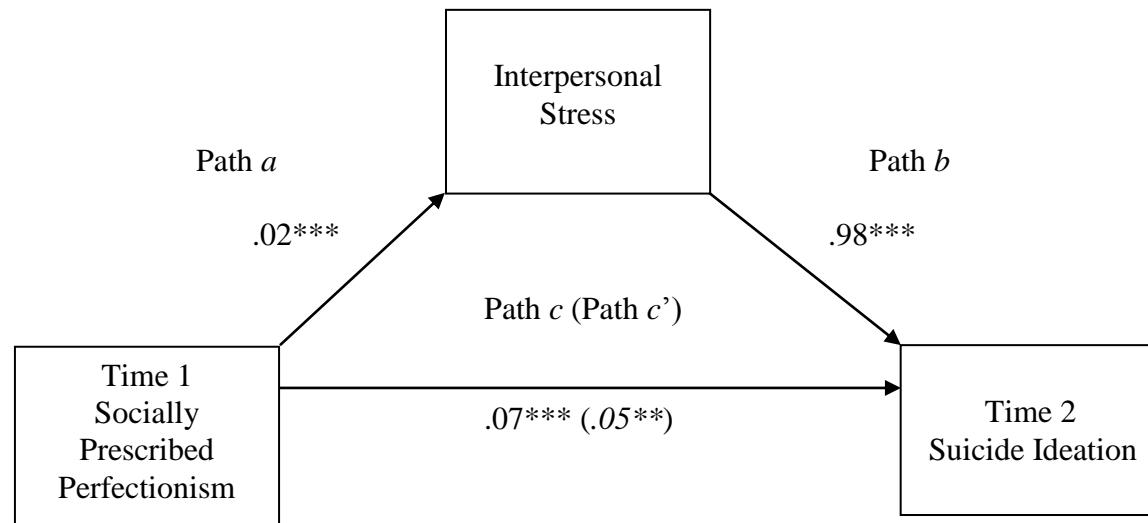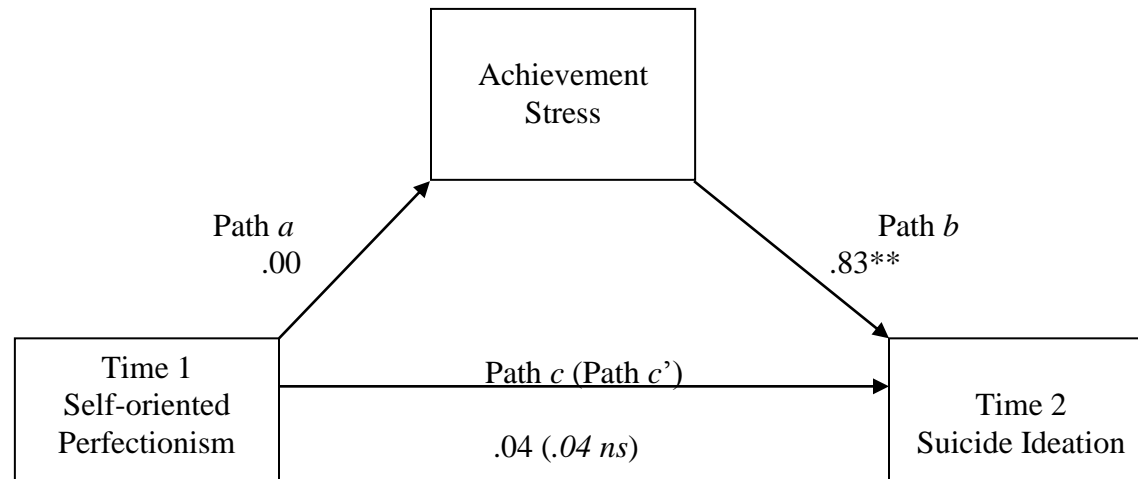*Mediation analyses with interpersonal stress as a mediator of the link between Time 1 self-oriented perfectionism and Time 2 suicide*

ideation for female participants (*N*=279).

Note. All numbers represent unstandardized beta weights. *p<.05, **p<.01, ***p<.001, *ns*=non-significant.

Figure 8

Mediation analyses with achievement stress as a mediator of the link between Time 1 socially prescribed perfectionism and Time 2 suicide ideation (*N*=279).

Note. All numbers represent unstandardized beta weights. *p<.05, **p<.01, ***p<.001, *ns*=non-significant.

Figure 9

Mediation analyses with interpersonal stress as a mediator of the link between Time 1 socially prescribed perfectionism and Time 2

suicide ideation (N=279).

Note. All numbers represent unstandardized beta weights. *p<.05, **p<.01, ***p<.001, *ns*=non-significant.
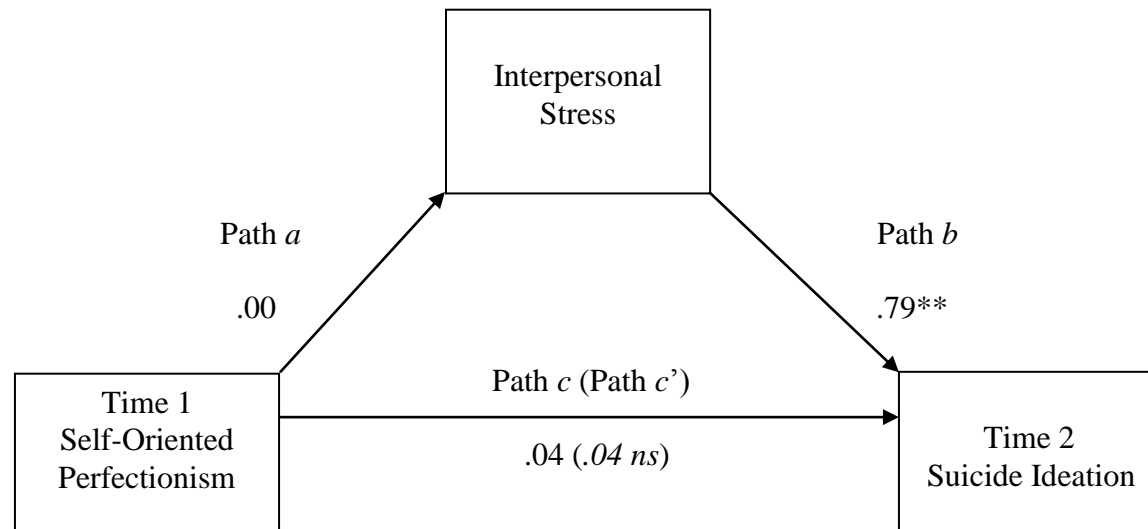
Figure 10

Mediation analyses with achievement stress as a mediator of the link between Time 1 self-oriented perfectionism and Time 2 suicide ideation for male participants (N=157).

Note. All numbers represent unstandardized beta weights. *p<.05, **p<.01, ***p<.001, *ns*=non-significant.
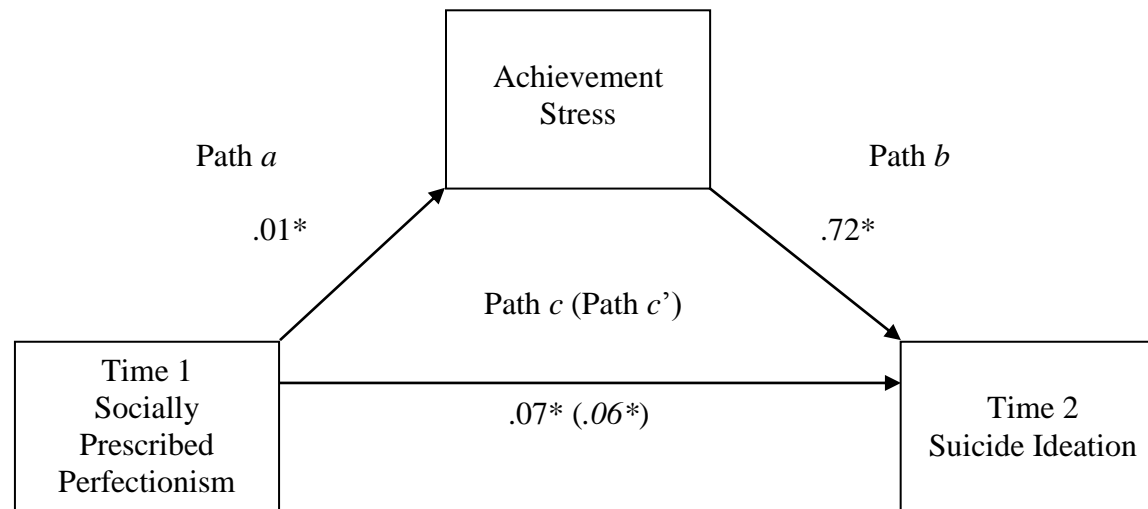
Figure 11

Mediation analyses with interpersonal stress as a mediator of the link between Time 1 self-oriented perfectionism and Time 2 suicide ideation for male participants (N=157).

Note. All numbers represent unstandardized beta weights. *p<.05, **p<.01, ***p<.001, *ns*=non-significant.
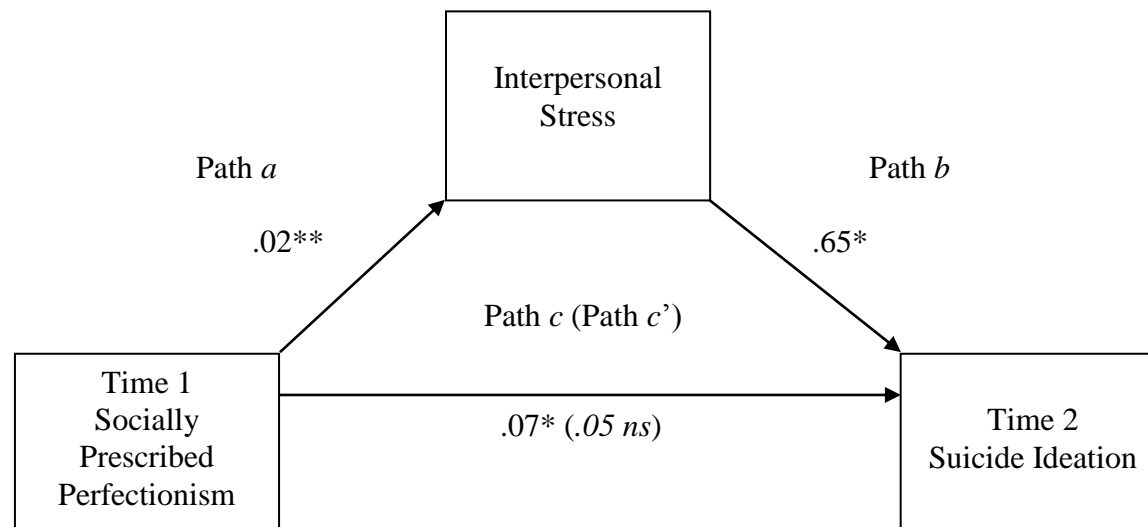
Figure 12

Mediation analyses with achievement stress as a mediator of the link between socially prescribed perfectionism and suicide

ideation for male participants (N=157).

Path *a*
.01*

Achievement
Stress

Path *b*
.72*

Path *c* (Path *c'*)

Time 1
Socially
Prescribed
Perfectionism

.07* (.06*)

Time 2
Suicide Ideation

Note. All numbers represent unstandardized beta weights. *p<.05, **p<.01, ***p<.001, *ns*=non-significant.

Figure 13

Mediation analyses with interpersonal stress as a mediator of the link between Time 1 socially prescribed perfectionism and Time 2

suicide ideation for male participants (N=157).

Note. All numbers represent unstandardized beta weights. **p<.05, **p<.01, ***p<.001, ns=*non-significant.