Understanding the Relationship between Depression, Hopelessness, Psychache and Suicide Risk

by

Michelle Munchua DeLisle

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Abstract

Two studies were undertaken to examine the relationship between suicidality and three key psychological predictors of suicide risk, namely, depression, hopelessness, and psychache. Study 1 determined the degree to which these suicide risk predictors are distinct using a sample of undergraduate students (N = 587). Because typical measures of depression, hopelessness, and psychache differ in terms of their scale format, results were compared using original items, dichotomized items, parcels of original items, and parcels of dichotomized items. Exploratory and confirmatory factor analyses indicated that depression, hopelessness, and psychache comprise three separate, but correlated factors. Psychache accounted for a greater proportion of variance in depression and hopelessness than vice versa, and psychache was also more strongly associated with a wider range of suicide criteria than depression and hopelessness, though all three predictors made unique contributions to suicidality. In order to ascertain whether suicide risk predictors interact with stress to predict suicidality, study 2 compared diathesis-stress models of depression, hopelessness, and psychache in a 4-month longitudinal study using an independent sample of university undergraduates (N = 301). When initial levels of all variables were controlled, hopelessness and psychache, but not depression, were significantly associated with suicide risk. Furthermore, negative cognitions about oneself, the world, and the future served as a common diathesis that interacted with major negative life events to precipitate increases in both hopelessness and psychache. Simple slopes analyses further indicated that among individuals with a low level of cognitive diathesis, the frequency of major life stressors was positively associated with both hopelessness and psychache. However, among individuals with a high level of cognitive diathesis, the frequency of
major life stressors was negatively associated with hopelessness and unrelated to psychache. Together, the results of the research presented in this dissertation have important implications for understanding the unique roles of depression, hopelessness, and psychache in the prediction of suicide risk.
Statement of Co-Authorship

Two manuscripts included as part of this dissertation were the result of joint collaboration. The doctoral candidate, Michelle DeLisle, was the primary author and her supervisor, Dr. Ronald Holden, was the secondary author of the works, entitled, “Differentiating depression, hopelessness, and psychache in a nonclinical population” (Chapter Two) and “Predicting suicide risk in a nonclinical population: A comparison of diathesis-stress models of depression, hopelessness, and psychache” (Chapter Three). For both works, contributions by the candidate included research conceptualization and research design, data collection, data analysis, and manuscript preparation. Dr. Holden assisted with all aspects of the research, especially providing suggestions regarding relevant literature for elaborating key issues, guidance regarding options for statistical analysis, as well as editorial assistance with respect to manuscript preparation.
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CHAPTER 1

General Introduction

Suicide is an urgent and growing problem with immense economic and human costs. Canadian estimates of the direct costs of suicide in terms of health care and judicial services, as well as the indirect costs in terms of lost productivity and discounted future earnings have ranged from approximately $500,000 to $1,000,000 per suicide death (Miller, Whiting, Kragh, & Zegeer, 1987). In Canada, suicide is among the ten leading causes of death in the general population, occurring at a rate of 14 per 100,000 people (Health Canada, 1994). In general, suicide rates also tend to be underestimated (Winter, 2003), and the impact of these deaths on the families, friends, and communities of suicide completers is likely far-reaching. Thus, understanding what leads individuals to kill themselves is of vital importance.

Although ascertaining the specific factors that predispose individuals to engage in self-destructive behavior presents a considerable challenge, such efforts are necessary in order to identify and treat individuals at risk of taking their own lives (Shneidman, 1985). Psychological approaches in the scientific study of suicide have led to substantial advances in this area. In particular, theoretical models of depression (Beck, 1967, 1987), hopelessness depression (Abramson, Alloy, & Metalsky, 1990) and psychache (Shneidman, 1993) have been elaborated in terms of potential risk factors associated with suicidality, which suggest alternative avenues for intervention.

Psychological Factors Associated with Suicide Risk

Depression is the most common psychiatric diagnosis in suicidal individuals. It has been estimated that up to 15% of individuals with major depressive disorder die by
suicide (American Psychiatric Association, 1994), with more recent lifetime estimates ranging from approximately 2% for depressed inpatient and outpatient groups to 9% for inpatients who have been hospitalized for suicidality (Bostwick & Pankratz, 2000). Moreover, among suicide completers, it is estimated that 40 to 70% were depressed at the time that they took their lives (Brent, Kupfer, Bromet, & Dew, 1988; Davis, 1989; Rihmer, Barsi, Veg, & Katona, 1990). Taken together, this suggests that some aspects of the depressive experience may be associated with a higher vulnerability to suicide.

**Beck’s model of depression.** In particular, Beck (1967) suggests that thinking negatively about oneself, the world, and the future (i.e., the negative triad), may be a primary risk factor associated with depression. In 1987, Beck posited additional causal and descriptive elements to his original theory. He argued that depression was caused by the endorsement of dysfunctional beliefs, such as the tendency to exclude positive cognitions in favour of automatic and unrealistic negative ones that focus on themes of loss (Haaga, Dyck, & Ernst, 1991). Varying degrees of support have emerged for different hypotheses based on Beck’s (1987) cognitive theory. Generally, depressed individuals have been found to think more negatively about themselves, the world, and the future, and these negative cognitions appear to be associated with hopelessness and suicidality (Haaga et al.). However, depression appears to be heterogeneous in nature, and theorists still vary regarding the extent to which they support the notion that particular groups of symptoms, including suicidality, are associated with etiologically distinct subtypes of depression.

**Abramson, Alloy, and Metalsky’s hopelessness theory.** Although Beck (1967) originally observed that hopelessness appeared to be associated with suicide risk among
his patients, Abramson, Alloy, and Metalsky (1990) restated this notion more specifically as a formal set of coherent hypotheses. First, they defined hopelessness as having two components: (1) an expectation that a negative outcome will occur or that a positive event will fail to occur, and (2) helplessness regarding one’s ability to change the probability of the outcome. Abramson et al. also posit the existence of a subtype of depression, namely hopelessness depression. They suggest that although symptoms such as sad affect, sleep disturbance, lack of motivation, and concentration difficulties partially overlap with those of major depression, other symptoms such as suicidal ideation and behavior are specific to the hopelessness depression subtype. This explanation may account for cases in which individuals display symptoms of hopelessness (i.e., suicidality), but do not meet full criteria for any type of depressive disorder. Generally, findings over the past 20 years have supported that hopelessness is a key mediator of the relationship between suicidality and depression (Abramson et al., 1998; Baumeister, 1990; Beck, Brown, & Steer, 1989; Dyer & Kreitman, 1984; Rotheram-Borus & Trautman, 1988; Salter & Platt, 1990).

*Shneidman’s psychache theory of suicide.* Shneidman’s (1993) model departs from the cognitive models of Beck (1967, 1987) and Abramson et al. (1990) in that internal states of perturbation rather than cognition are the focus. Specifically, Shneidman proposes that suicide is caused by psychache, a term he coined to refer to the anguish, hurt, angst, humiliation, or other negative emotion that is experienced as *psychological pain*. According to Shneidman, people differ in their threshold for psychological pain, and suicide is seen as the behavioral outcome that results when individuals seek to escape from a level of psychache that is subjectively judged to be unbearable, intolerable, or unacceptable. In comparison with depression, which includes physical symptoms, such as...
energy, sleep, and eating patterns, and hopelessness, which refers specifically to negative expectations about one’s future, psychache captures the essence of how hurtful one’s depression, hopelessness, or other life experience has become. Thus, Shneidman has posited that psychache is the most proximal cause of suicidality.

There is preliminary support for the notion that psychache is strongly associated with suicide. In college students, worst ever psychache experienced has been found to correlate significantly with both depression and suicidal ideation (Lester, 2000). Internal perturbation-based motivations have also outperformed hopelessness in statistically predicting suicide intent and actual attempts in male inmates and university undergraduates (Holden & Kroner, 2003; Johns & Holden, 1997). However, further work is required to evaluate the relationship between psychache, hopelessness, and depression to determine the status of psychache relative to these other pre-eminent statistical predictors of suicide risk.

*Is Psychache Distinct from Depression and Hopelessness?*

Suicide research pertaining to the overlap between these constructs has typically involved factor analyses of single inventories. Factor analytic studies using the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), which is arguably the most widely used measure of depression in the present literature, have attempted to determine whether a cluster of symptoms consistent with hopelessness can be identified. A subset of hopelessness symptoms forming a distinct dimension from major depression has been found in 1680 psychiatric outpatients and 1404 Air Force cadets (Joiner et al., 2001). However, others have not been able to replicate this finding (Haslam & Beck, 1994).
Similarly, factor analytic research with the Beck Hopelessness Scale, an extensively used measure of hopelessness (BHS; Beck, Weissman, Lester, & Trexler, 1974), has attempted to determine whether hopelessness overlaps with depression sufficiently to support the existence of a hopelessness depression subtype. Results are currently equivocal. Moreover, there is no research at present that evaluates the overlap of psychache with depression and hopelessness. Thus, an evaluation of the constructs of depression, hopelessness, and psychache using items from the BDI, BHS, and Psychache Scale, a measure developed specifically to measure psychache or psychological pain (Holden, Mehta, Cunningham, & McLeod, 2001), can add substantially to current knowledge regarding the nature of these constructs.

**Diathesis-Stress Models of Suicidality**

Alternative to the view of depression, hopelessness, and psychache as increasingly proximal causes of suicidality (see Figure 1.1), diathesis-stress models of depression and hopelessness have specified these constructs as the endpoints in a causal chain of events leading to their respective hypothesized symptoms, beginning with the interaction of life stress and cognitive vulnerability factors (Abramson et al., 1988). Beck (1967) has proposed that individuals organize information about themselves in cognitive structures called schemas that store memories, and also influence processing so that information consistent with one’s schemas are more readily attended to than information that is inconsistent with them. Beck argues that individuals with negative schemas about themselves tend to make cognitive errors, such as dichotomous thinking and overgeneralization, when they are under stress. However, such individuals are no more likely to experience depressive symptoms than those without negative self-schemas under
Increasingly proximal causes of suicidality

Figure 1.1. Model in which depression, hopelessness, and psychache are viewed as increasingly proximal causes of suicidality.
favourable or non-distressing conditions. Thus, to measure diatheses, individuals must be subjected to relevant environmental stressors to activate any underlying schemas that may be present. Beck’s model can be evaluated by assessing whether the data fit a model whereby stress and negative self-schemas or beliefs about oneself, the environment, and one’s future interact to precipitate depression, and subsequent suicidality (see Figure 1.2).

In Abramson et al.’s (1988) hopelessness depression model, the underlying diathesis consists of a depressogenic attributional style. That is, individuals tend to attribute the occurrence of negative events to stable, global, and in some cases, internal causes. It is the interaction between life stress and this depressogenic attributional style that purportedly leads to hopelessness. Hopelessness, in turn, is viewed to be the sufficient proximal cause that, when present, assures the presence of symptoms of hopelessness depression (see Figure 1.3). In contrast to the symptoms specified for Beck’s (1967, 1987) model, serious suicide attempts are seen as core symptoms of hopelessness depression while guilt and self-blame are not viewed as primary (Abramson et al., 1988). Thus, there is a large overlap in the symptoms hypothesized by Beck (1967, 1987) and Abramson et al. (1990), even though distinct pathways are predicted to result in the final condition.

Although Shneidman’s (1993) psychache model is not explicitly formulated in terms of stress and diathesis, he has found that the experience of repeated negative life events from childhood to adulthood is associated with increased suicide risk (Shneidman, 1971). He claimed that by the time that people are in their late 20’s it is possible to predict from their life history of perturbation whether they are likely to commit suicide.
Figure 1.2. Beck’s (1967, 1987) cognitive triad depression model. Diathesis-stress analyses for the present research focuses on suicidality rather than the hypothesized symptoms.
Figure 1.3. Abramson et al.’s (1988) model of hopelessness depression. Symptoms listed as part of this model were specified by Abramson et al. Diathesis-stress analyses for the present research focused on suicidality, rather than on the other hypothesized symptoms.
Later in his career, Shneidman stated more strongly that the proximal necessary cause of suicide is psychache. That is, when suicide occurs, psychache must also be present (Shneidman, 1993). While Beck (1967, 1987) and Abramson et al. (1990) allow for factors other than depression or hopelessness, respectively, to cause suicide, Shneidman (1993) does not. This suggests that the etiological pathways leading to suicidality associated with depression, hopelessness, and psychache may be distinct. Relevant to a diathesis-stress model, Shneidman (2001) asserts that psychache, in turn, is caused by unmet psychological needs (i.e., achievement, affiliation, autonomy, counteraction, order, succorance, and shame avoidance). When needs relevant to an individual’s source of self-esteem are unmet, psychache is more likely to result. Thus, based on findings from Shneidman’s (1993, 2001) previous work it is possible to specify a model in which negative life events interact with high levels of unmet psychological needs associated with psychache. In turn, increased suicide risk is thought to result, when individuals’ threshold for psychache is reached and they see death as the only means of relieving their pain (see Figure 1.4).

Overview of the Chapters

Three chapters comprising two empirical studies and a general discussion of the findings (Chapter 4) follow this first introductory chapter. In Chapter 2, I elucidate the degree of overlap between depression, hopelessness, and psychache and demonstrate their incremental validity with respect to suicidality indexed by past number of suicide attempts, suicidal motivation, suicide preparation, and self-reported likelihood of attempting suicide in the future.
Figure 1.4. Proposed model for evaluating diathesis-stress components of Shneidman’s (1993) psychache model of suicide risk. Diathesis-stress analyses for the present research focus on suicidality, rather than on the other hypothesized symptoms.
Chapter 3 extends and articulates my Master’s thesis work by investigating the interaction of life stress with the three key psychological predictors of suicide risk, namely, depression, hopelessness, and psychache, using a longitudinal design to test diathesis-stress models of suicidality. This study is the first to empirically elucidate the diathesis-stress nature of psychache in relation to suicide risk, and has direct implications for both research and clinical practice. Chapter 4 summarizes the contributions of the present studies as a whole to the suicidology field.
CHAPTER 2
DIFFERENTIATING DEPRESSION, HOPELESSNESS, AND PSYCHACHE
IN A NONCLINICAL POPULATION

Abstract

The nature of the overlap between depression, hopelessness, and psychache was investigated in a sample of 587 university undergraduate participants. Constructs were assessed using the Beck Depression Inventory (BDI), the Beck Hopelessness Scale (BHS), and the Psychache Scale. Although heuristics substantiated two- and three-dimensional models, maximum likelihood exploratory and confirmatory factor analyses of the pool of BDI, BHS, and Psychache Scale items confirmed the presence of three correlated dimensions. Canonical correlation analyses suggested that psychache accounts for a greater percentage of variance in depression and hopelessness than are accounted for by the latter variables in psychache. All three constructs demonstrated convergent validity with other suicide indices, but psychache was associated with the widest range of suicide criteria. An integrated model of suicide risk is presented and implications are discussed.
Differentiating Depression, Hopelessness, and Psychache in a Nonclinical Population

Suicide is a major public health concern. In the United States the suicide rate is 11 per 100,000 people, which translates to an average of 85 suicide deaths every day (Moscicki, 1999). The suicide rate in Canada is even higher standing at 14 per 100,000 people (Health Canada, 1994). Across North America, suicide is the second leading cause of death among young adults (Kashani & Priesmeyer, 1983; Langlois & Morrison, 2004). The enormous scope of this issue can be further understood by considering the potential impact of suicide attempts in general. Annually for every suicide death, there are up to 10 times more suicide attempts that result in hospitalization (Holley, Fick, & Love, 1998), and between 50 to 100 times more suicide attempts that result in injuries not requiring inpatient admission (Pagliaro, 1995). In order to respond to calls for broad-based national suicide prevention strategies (Weir, 2001), it is imperative to first understand the key conditions associated with suicide risk. Although suicidal behavior is complex and multiply determined, only potentially modifiable risk factors can be addressed by suicide prevention programs (Brown, Beck, Steer, & Grisham, 2000). Research over the past 40 years has emphasized the role of psychological variables in suicide risk, and of these, depression, hopelessness, and psychache have gained pre-eminence. The time is now ripe for developing more integrative models of suicidality. Understanding the degree of overlap or independence between the three key statistical suicide prediction models is an important step toward this goal.

Depression, Hopelessness, and Psychache
Beck’s (1967) cognitive model is the broadest in scope and proposes that dysfunctional beliefs about the self, the world, and the future, which together constitute a depressive triad, are the primary causes of depression. Depression also corresponds to a diagnostic category, which is characterized by a range of physical, affective, and cognitive symptoms, including but not limited to sadness, loss of the ability to derive pleasure from previously enjoyed activities, and suicidality (American Psychiatric Association, 1994). Approximately two-thirds of individuals at the time of their first hospitalization for attempting suicide are diagnosed as depressed (Langlois & Morrison, 1998). Depression has long been associated with suicide completion based on clinical observation data and empirical research (McHugh & Goodell, 1971; Robins, Schmidt, & O’Neil, 1959; Silver, Bohnert, Beck, & Marcus, 1971). However, variables other than depression have since emerged as strong statistical predictors of suicide risk.

In the early process of investigating the nature of the relationship between depression and suicide, researchers discovered that hopelessness could account for the effects of depression on suicide intent in samples of suicide attempters (Minkoff, Bergman, Beck, & Beck, 1973), general inpatients (Wetzel, Margulies, Davis, & Karam, 1980), and college students (Cole, 1988). As well, both clinical ratings (Beck, Brown, & Steer, 1989) and self-report ratings (Beck, Steer, Kovacs, & Garrison, 1985; Beck, Brown, Berchick, Stewart, & Steer, 1990) of hopelessness have been found to successfully predict over 90% of cases who commit suicide 5 to 10 years after treatment termination. Taken together these findings suggest that hopelessness is more strongly associated with suicide than is depression in a wide range of populations. Abramson, Alloy, and Metalsky (1989) have developed a streamlined model that focuses only on the
future aspect of Beck’s (1967) original cognitive triad. In their model beliefs need not be
distorted or unrealistic, but must involve an expectation that negative outcomes will
occur in the future, or that positive outcomes will not occur, as well as a sense of
helplessness about changing the probability of these outcomes. Abramson and her
colleagues propose that such attributions lead to a subtype of depression termed,
hopelessness depression, and that suicidality is a symptom of this particular subtype, but
not of depression in general.

More recently, Shneidman (1993) has proposed that suicide is caused by
psychache, a term he coined to refer to the anguish, hurt, angst, or humiliation, that leads
individuals to seek permanent escape from unbearable levels of psychological pain.
Shneidman does not conceptualize suicide as a symptom of a psychiatric disorder, but
rather as the behavioral outcome that results when individuals have a high level of
psychache, a lowered threshold for enduring psychological pain, and a perception of
death as the only solution. Evidence that psychache or internal perturbations contribute
unique explanatory variance to the prediction of suicidality, when controlling for other
factors such as hopelessness, continues to accumulate (Berlim et al., 2003; DeLisle &
Holden & McLeod, 2000; Holden, Mehta, Cunningham, & McLeod, 2001; Johns &
Holden, 1997). Yet, the place of psychache in relation to theories of hopelessness and
depression is not currently well articulated.

Scale Measurement Issues. The present study is the first to our knowledge that
clarifies the degree of empirical overlap between depression, hopelessness, and
psychache. The Beck Depression Inventory (BDI; Beck & Steer, 1987) and the Beck
Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974) were selected to measure depression and hopelessness, respectively, because of their longstanding use for theory testing by the originators of key cognitive models. In particular, the BHS is favored by Abramson et al. (1989), because its items assess generalized hopelessness and not simply circumscribed pessimism, and the BHS also provides an operational definition of hopelessness that is distinct from the symptoms of hopelessness depression proposed by their model. Likewise, the Psychache Scale (Holden et al., 2001) is the most psychometrically sound measure of psychache available, and was developed specifically to assess the latter construct.

However, the different response formats of the BDI (0 to 3), BHS (True/False), and Psychache Scale (1 to 5) are potentially problematic. They introduce method variance (Wiggins, 1962), which refers to differences in scores due to structural aspects of the instruments, such as response format, that can obscure changes in scores due to true variance in the constructs being assessed, such as real levels of depression, hopelessness, and psychache. In order to more clearly determine the impact of method variance on the overlap of BDI, BHS, and Psychache Scale items, participants completed the latter questionnaires in their standard formats, but the data were analyzed in four ways that presented different amounts of item-level variability: original items, dichotomized items, parcels of original items, and parcels of dichotomized items. Dichotomization of the BDI and Psychache Scale was performed using a median split for each item, because this method provided item endorsement frequencies that most closely approximated those of the BHS. Individual items, particularly if they are dichotomous, have low reliability, low intercorrelations, and in factor analysis low communalities that
can lead to difficulties in interpretation, but parceling items offers a potential solution to these problems (Kishton & Widaman, 1994).

A parcel is the simple sum of several items that comprise a scale. Typically, several parcels are developed from the items on a scale, with each item being assigned to a parcel only once. A common practice is to ensure that the communalities of each parcel are equal (Meade & Kroustalis, 2006). In the present study, items for each measure were parceled by maximum likelihood extraction of 1 factor, and distribution of items into 3- or 4-item parcels with approximately equivalent average factor loadings. The 21 BDI items were distributed into seven 3-item parcels, the 20 BHS items were allocated into four 3-item parcels and two 4-item parcels, and the 13 Psychache Scale items were placed into three 3-item parcels and one 4-item parcel. Parceling requires that data are normally distributed (Hau & Marsh, 2004). Because the present variables were highly positively skewed, all analyses using SPSS 14.0 were performed on both transformed and untransformed data. Conclusions based on these approaches were virtually identical, so only findings derived from untransformed scales are reported for ease of interpretation. Only analyses that were consistent across two or more data sets (i.e., of original, dichotomous, or parceled items) are discussed, as these findings were perceived to be more robust to the effects of method variance.

Maximum likelihood exploratory and confirmatory factor analysis were conducted to determine the dimensionality underlying depression, hopelessness, and psychache combined. The fit between the data and competing nested models with zero, one, two, and three correlated factors was compared. A good fit for the model with no correlated factors would suggest that depression, hopelessness, and psychache are distinct
constructs, while a good fit for the models with one, two, and three correlated factors would suggest increasing degrees of overlap. The potentially asymmetrical nature of any overlap was further examined using canonical correlation analysis with pairs of constructs. For example, Abramson et al.’s hopelessness depression model (1989) predicts that depression should account for a greater amount of variance in hopelessness than vice versa. Finally, structural equation modeling was undertaken to determine the unique contributions of depression, hopelessness, and psychache to a range of suicide criteria (i.e., number of attempts, internal perturbation-based reasons for attempting suicide, extrapunitive/manipulative motivations for attempting suicide, suicide motivation, and suicide preparation).

In particular, we proposed that depression, hopelessness, and psychache are distinct, but related constructs, and that this would be demonstrated by:

1. Three dimensions underlying depression, hopelessness, and psychache items.
2. Better fit to a model with three correlated factors than to competing models.
3. A greater proportion of variance in depression and hopelessness accounted for by psychache than vice versa in line with Shneidman’s view of these constructs as particular components of psychache. Specifically, Shneidman asserted that hopelessness is the common emotion in psychache (1985) and that depression is an illness that that may or may not be present in suicidal individuals (1993).
4. Psychache being of equal or greater importance than hopelessness and depression in the statistical prediction of suicidal manifestations.

Method

Participants
Five hundred eighty-seven voluntary participants were recruited from a first-year psychology subject pool (98%), as well as from upper-year classes in psychology (2%) at Queen’s University, Kingston, Ontario. They ranged in age from 15 to 45 years ($M = 18.72; SD = 2.49$), and 78% were women. Thirty-four participants reported having attempted suicide previously with drugs/poison being the most common method (48.5%), followed by cutting (42.2%), and gases and vapors (3.0%). Suicide attempters reported a mean of 22.63 months ($SD = 25.48$; range = .33 to 48) since their most recent suicide attempt, a moderate level of suicide intent at the time of that attempt ($M = 2.48; SD = 1.46$; range = 1 to 5), and a low likelihood of attempting suicide subsequently ($M = 1.44; SD = .70$; range = 1 to 5). No information was collected on race or ethnicity.

Materials

Beck Depression Inventory (BDI). The BDI (Beck & Steer, 1987) is a 21-item inventory that assesses depression severity in adolescents and adults. Participants are asked to respond based on their experience over the past week including the day of testing. Responses are coded on a 4-point scale on which symptoms increase in severity from 0 to 3. The test can be administered in individual or group format and takes approximately 15 minutes to complete. The BDI has generally demonstrated adequate reliability, with alpha reliability coefficients ranging from .73 to .95 and test-retest reliabilities ranging from .62 (4-month interval) to .90 (2-week interval) (Beck, Steer, & Garbin, 1988). The concurrent validity of the BDI has also been established in psychiatric and nonpsychiatric samples (Beck et al.; Spreen & Strauss, 1991), and BDI scores have also been found to correlate with self-rated suicide risk in college students (Liddell, 1994).
**Beck Hopelessness Scale (BHS).** The BHS (Beck et al., 1974) measures the extent of negative expectancies about the future, and consists of 20 true-false statements. The BHS has been demonstrated to have strong psychometric properties. Alpha reliability coefficients have ranged from .65 to .93 in student, forensic, and psychiatric samples (Beck et al., 1974; Holden, 1986), and it has also been found to be adequately stable with 3-week and 1-year test-retest reliabilities of .85 (in university students) and .61 (in prison inmates), respectively (Holden, 1986; Holden & Fekken, 1988). Its validity has also been established. Correlations of the BHS with clinical ratings of hopelessness have ranged from .66 to .74 (Beck et al., 1974), and BHS scores of 9 and above have accurately predicted actual suicide commissions in outpatients (Beck et al., 1990).

**Psychache Scale.** The Psychache Scale (Holden et al., 2001) consists of 13 items that measure psychache, or psychological pain. Responses are coded on a 5-point Likert scale. The Psychache Scale has excellent psychometric properties in university undergraduates and prison inmates, with alpha reliability coefficients generally exceeding .90 (Holden et al.; Mills, Green, & Reddon, 2005). The Psychache Scale has been demonstrated to distinguish suicide attempters from nonattempters, as well as to statistically predict suicidality when the effects of depression and hopelessness have been controlled (DeLisle & Holden, 2004; Holden et al.; Mills et al.).

**Reasons for Attempting Suicide Questionnaire (RASQ).** The RASQ (Holden et al., 1998) consists of 14 items that assess the motivation for suicide in clinical and nonclinical populations. Responses are coded on a 5-point Likert scale ranging from 1 (Completely Disagree) to 5 (Completely Agree). The RASQ yields two scales, which reflect reasons reported by patients for attempting suicide. These include a 6-item
Internal Perturbation scale and an 8-item Extrapunitive/Manipulative Motivation scale. These two factors have been substantiated in suicide attempters (Holden & DeLisle, 2006). Alpha reliability coefficients in university students and attempters have ranged from .71 to .87 for the Internal Perturbations scale and from .80 to .86 for the Extrapunitive/Manipulative Motivations scale (Holden & DeLisle; Holden & McLeod, 2000; Holden et al., 1998; Johns & Holden, 1997). Internal Perturbations has been found to correlate .41 with a previous suicide history (Holden et al., 2001).

Beck Scale for Suicide Ideation (BSS). The BSS (Beck, & Steer, 1993) is a 19-item rating scale that gauges suicidal intent, and that can monitor the quality and quantity of ongoing suicidal ideation. The BSS has yielded alpha reliability coefficients of .90 and .87 in inpatient and outpatient ideators (Beck & Steer), as well as correlations with a clinician-administered version of .90 and .94 for inpatients and outpatients, respectively (Beck, Steer, & Ranieri, 1988). The BSS has two subscales (Beck, Brown, & Steer, 1997): Motivation and Preparation. Motivation taps individuals’ ambivalence about living or dying, as well as the frequency and duration of suicidal thoughts. Preparation refers to a more active stage that involves planning the act. Holden and DeLisle (2005) found support for this two-factor structure in a sample of suicide attempters, and they reported alpha reliability coefficients of .85 and .73 for Motivation and Preparation subscales, respectively.

Procedure

Prior to initiating data collection, the research was approved by a university General Research Ethics Board. Participants who gave informed consent were asked to complete a questionnaire package consisting of the BDI, BHS, Psychache Scale, RASQ
and BSS in that order. Questionnaires with the least sensitive questions were administered first to minimize the likelihood of non-responding due to concerns about privacy or the consequences of reporting (Tourangeau & Smith, 1996) that may be prompted by items about suicide. Participants also completed a demographic sheet, in which they were asked to report their age and gender, number of previous suicide attempts, as well as the method, intent to kill oneself, and self-rated likelihood of future suicide attempts. A blank page was attached to allow participants to make additional comments. A debriefing sheet that included phone numbers of local crisis hotlines was provided. Participants from the introductory psychology subject pool received 1 credit toward their psychology course research requirement, while upper-year psychology students were entered in a draw to win $150 at the end of the term.

Results

Of the total sample of 587 participants, 267 were recruited in 2002 for a Master’s thesis project and 320 were recruited in 2005 for Doctoral dissertation research. Students in 2005 were younger ($M = 18.4$ years; $SD = 2.15$) than those who participated in 2002 ($M = 19.14$ years; $SD = 2.84$), $F(1, 572) = 13.48, p < .001$. More recent participants also reported significantly lower levels of external motivation for attempting suicide ($M = 12.87; SD = 5.70$) than less recent participants ($M = 14.04; SD = 6.25$), $F(1, 572) = 5.45, p < .02$, as well as higher hopelessness scores ($M = 4.06; SD = 3.73$) than students in 2002 ($M = 3.31; SD = 3.53$), $F(1, 572) = 6.07, p < .01$. However, age did not correlate significantly with any of the variables, $p > .05$, and the actual between-sample differences in BHS and RASQ external motivation scores were small in both magnitude (less than 2
points) and effect size (Cohen’s $d < .20$). Scores on all other variables were comparable. Therefore, subsequent analyses focused on the entire sample.

**Missing Data**

Missing data appeared to be randomly distributed with the exception of three items. The BDI item, “I am purposely trying to lose weight by eating less,” was omitted by 15.7% of participants. The latter item on the original BDI questionnaire was not numbered, so it was likely missed by participants. As well, 3.7% of participants omitted the BSS item, “What reasons could you have for attempting to end your own life?” and 6.1% omitted the BSS item, “To what degree have you openly revealed any thoughts you might have of ending your life?” The latter BSS items were omitted exclusively by individuals with no prior suicide attempts, and they were likely perceived as not applicable. For each measure, pro-rating was used to compute scale scores for each participant based on the average of their reported scores if less than 10% of data was missing.

**Descriptive Statistics**

Descriptive statistics and intercorrelations between all measures are displayed in Table 2.1. Observed scores varied across the range of possible values, and all scale coefficient alpha reliabilities exceeded .75. Mean scale scores were generally comparable to those in previous studies employing student samples (Durham, 1982; Flamenbaum & Holden, 2007; Holden et al., 2001; Velting, 1999). The BDI and BHS scores were slightly higher than those for university students in earlier studies by Cole (1988; $M_{BDI} = 6.7$; $M_{BHS} = 2.3$) and by Holden et al. ($M_{BHS} = 2.7$). Although the present BHS scores approached those for male prison inmates found by Holden and Kroner (2003; $M = 3.88$),
inmates’ scores in the latter study for the RASQ Internal Perturbations, and RASQ Extrapunitive/Manipulative Motivations scales were comparable to those typically reported in general student samples.

Correlations between statistical suicide predictors were moderately high, ranging from .62 (hopelessness and psychache) to .76 (depression and psychache). Psychache and internal perturbations were positively associated, but distinct ($r = .59$). As well, internal reasons for attempting suicide, suicidal motivation, and suicide intent were all more highly correlated with depression, hopelessness, and psychache than were externally-based reasons for attempting suicide, suicide preparation, number of previous suicide attempts, and self-reported future likelihood of attempting suicide.

**Factor Analytic Results**

*Exploratory analyses.* To determine the number of dimensions underlying BDI, BHS, and Psychache items four criteria were utilized. First, eigenvalues for item intercorrelations were computed, and those exceeding unity were considered. Because this heuristic tends toward over-extraction (Nunnally & Bernstein, 1994), a scree test, Velicer’s (1976) minimum average partial criterion (MAP), and 95th percentile values of Horn’s (1965) parallel analysis (PAR) criterion were also examined for convergence. Velicer, Eaton, and Fava (2000) recommend the use of these techniques, which were originally developed for principal components analysis, due to the dearth of equivalent tests for use in factor analysis. For instance, parallel analysis of adjusted correlation matrices with squared multiple correlations on the diagonal tend to indicate more factors than are warranted (Buja & Eyuboglu, 1992). To partially address the issue of different response formats in the BDI (0 to 2), BHS (True/False), and Psychache Scale (1 to 5), the
criteria for determining dimensionality were applied to the original questionnaire items, dichotomized items, parcels of original items, and parcels of dichotomized items.

The eigenvalue greater than one heuristic, MAP, PAR, and Scree test failed to converge for analyses of original items (2 to 11 factors) and dichotomized items (2 to 15 factors). The presence of communalities greater than 1 for these latter item formats also suggests interpretability problems. For parcels of original items, both 2- and 3-factor models were supported by the criteria. The scree test and PAR criterion converged on two factors (60.38% of the total variance), and two eigenvalues exceeded unity (8.72, 1.55). Three factors (66.08% of the total variance) were supported by the MAP criterion. For parcels of dichotomized items the 3-factor model received support. The MAP and PAR criteria converged on three factors (55.47% of the total variance), and three eigenvalues exceeded unity (6.36, 1.79, 1.29). The scree test suggested the presence of two factors comprising 47.90% of the total variance.

Based on the previous convergence on 2 or 3 dimensions, maximum likelihood extraction of 2- and 3-factor models was performed using parcels of original items and parcels of dichotomized items (see Table 2.2). Promax rotation was used to improve interpretability, and loadings less than .30 (9% of the variance) were suppressed. For parcels of original items and parcels of dichotomized items, forcing two factors resulted in less clear differentiation. For original item parcels, psychache was distinct from hopelessness, while the majority of depression items overlapped with both constructs. For parcels of dichotomized items, some depression items were associated with hopelessness while other depression items were associated with psychache, with none of the items demonstrating overlap with both. However, when three factors were forced on parcels of
original items, depression, hopelessness, and psychache all appeared to be distinct. A similar result for the 3-factor model using parcels of dichotomized items emerged, though two of the depression parcels failed to yield loadings greater than .30 on any factor.

Confirmatory Factor Analyses. Because exploratory analyses determined that the 3-factor model was more stable when item format was varied (i.e., parcels of original versus dichotomized items), the fit of four structural models based on 3 underlying dimensions was tested using maximum likelihood estimation in AMOS 6.0 (Arbuckle, 2005) to further investigate how depression, hopelessness, and psychache overlap. It has been found that conclusions based on CFA test statistics are problematic, when univariate skewness and kurtosis values exceed 2 and 7, respectively (Curran, West, & Finch, 1996). Because depression (skewness = 2.25, kurtosis = 8.86) and suicide desire (skewness = 3.43, kurtosis = 17.76) were severely nonnormal, a nonparametric bootstrapping approach was used. Bootstrapping makes no assumptions about the sample (i.e., normality), because it calculates the characteristics of the sampling distribution empirically from the data provided. In bootstrapping, the data are treated as a population, and samples of size \( N \) are randomly drawn with replacement. With each resampling the statistic of interest is calculated, so that the final distribution of this statistic can be used to generate confidence intervals and to make inferences about population parameters for significance testing (Mooney & Duval, 1993). In the present study, bootstrapping with 10,000 resamples was used to generate confidence intervals around path coefficients, covariances, and factor loadings in the structural model. AMOS 6.0 performs bootstrapping when there is no missing data in any variable. Therefore, 31 individuals
with missing data were excluded, and a total sample of 556 participants was utilized in the confirmatory factor analyses.

Guidelines suggest acceptable fit when the root mean square error of approximation (RMSEA) is .08 or less (Browne & Cudeck, 1993), and the comparative fit index (CFI) and Tucker-Lewis index (TLI) are .95 or greater (Fabrigar, 2007; Hu & Bentler, 1999). The latter indices represent complementary approaches to model fit, and have strong empirical support (Fabrigar; Klein, 1998). The correlations among latent variables, factor loadings, and fit indices for each model are displayed in Table 2.3. A model with 3 correlated factors outperformed models with zero, one, and two correlated factors. This model, in which the BDI, BHS, and Psychache Scale are correlated with each other, produced fit indices of $\chi^2(116) = 330.18, p < .001; \text{RMSEA} = .06 (90\% \text{ CI:} .05, .07); \text{CFI} = .97; \text{and TLI} = .96$. In this solution, factors comprised of parcels of BDI and BHS items correlated .74 (90% CI: .68, .80), factors comprised of parcels of BHS and Psychache items correlated .66 (90% CI: .60, .72), and factors comprised of parcels of BDI and Psychache items correlated .81 (90% CI: .78, .84). None of the other three models demonstrated good fit. Because the models were nested, it was possible to determine that each subsequent model had a significantly better fit to the data (i.e., difference in $\chi^2(1)$ exceeding 3.84) relative to each preceding model consisting of one fewer pair of correlated factors.

Similar results emerged for parcels of dichotomous data (see Table 2.3). A model with fully intercorrelated BDI, BHS, and Psychache items, produced fit indices of $\chi^2(116) = 315.57, p < .001; \text{RMSEA} = .06 (90\% \text{ CI:} .05, .06); \text{CFI} = .96; \text{and TLI} = .95$. In this solution, factors comprised of parcels of dichotomous BDI and BHS items correlated .70
(90% CI: .63, .76), factors comprised of parcels of dichotomous BHS and Psychache items correlated .61 (90% CI: .56, .67), and factors comprised of parcels of dichotomous BDI and Psychache items correlated .78 (90% CI: .74, .82). None of the other three models consistently met criteria for good fit. Again, each subsequent model offered a significantly better fit to the data relative to each preceding model with one fewer pair of correlated factors.

**Canonical Correlation Analyses.** Redundancy estimates from canonical correlation analyses were used to gain information about potential assymetrical overlap between pairs of constructs (see Table 2.4). For parcels of original items, only the first canonical correlation was significant in each analysis. When parcels of depression items were related to parcels of hopelessness items, the canonical correlation ($R_C$) was .70. In this variate pair, depression accounted for 29% of the variance in hopelessness, while hopelessness accounted for 25% of the variance in depression. When parcels of hopelessness items were related to parcels of psychache items, $R_C$ was .64. Here, hopelessness accounted for 20% of the variance in psychache, and psychache accounted for 34% of the variance in hopelessness. Finally, when parcels of depression items were related with parcels of psychache items, $R_C = .76$. Depression accounted for 35% of the variance in psychache, and psychache accounted for 51% of the variance in depression. Patterns of results were similar for the analysis of parcels of dichotomized items, with smaller coefficients likely resulting from range restriction.

**Validity Analyses.** Factor scores were derived from parcels of items using maximum likelihood extraction and promax rotation of three factors (i.e., depression, hopelessness, and psychache). Separately, each suicide criterion was simultaneously
regressed on factor scale scores for depression, hopelessness, and psychache in AMOS 6.0 (Arbuckle, 2005) to determine the unique contributions of the latter constructs (see Table 2.5). The pattern of results for parcels of original and dichotomous items was comparable, in that all regression weights fell within the 90% confidence interval of the other set. For example, the standardized association between hopelessness and internal perturbations ($\beta = .13; 90\% \text{ CI: } .04, .21$) was statistically significant for parcels of dichotomous items but not for parcels of original items ($\beta = .07$). However, the latter weight falls within the 90% confidence interval corresponding to the analysis for parcels of dichotomized items. Psychache was consistently associated with the greatest number of suicide criteria, and generally accounted for a greater proportion of unique variance in the suicide criteria than both hopelessness and depression. Nevertheless, all three variables made unique contributions to the statistical prediction of suicide risk.

Discussion

Suicide is an urgent and potentially preventable problem. Clarifying the relationship between models of depression (Beck, 1967), hopelessness (Abramson et al., 1989), and psychache (Shneidman, 1993) and the kinds of suicidal thoughts and behaviors with which they relate is a crucial step toward the development of a more integrated model for understanding suicide, and for refining current prevention programs, assessment and therapy protocols for suicidal clients.

The emergence of three factors as predicted suggests that depression, hopelessness, and psychache are empirically distinct, but highly correlated. Only the model in which all three constructs were correlated consistently met criteria for good fit. Because the findings converged using a variety of heuristics and scoring methods (i.e.,
parcels of original and dichotomous items), the resulting 3-factor structure is less likely to be attributable to differing response formats on the BDI, BHS, and Psychache Scale.

In the present study communalities exceeding 1.00 for data sets using original items and dichotomous items necessitated the use of parceling in subsequent analyses. This was unexpected, but not surprising given the mathematical advantages of using item parcels for achieving better model fit, such as: greater reliability than individual items, higher communalities, distributions that more closely approximate normality and interval scaling, a higher indicator to sample size ratio, and less item-idiosyncratic influence (Meade & Kroustalis, 2006). Although Meade and Kroustalis have cautioned that item parcels are less effective than individual items for detecting differences between conditions, such as the stability of measurement across time, populations, or raters, this was less of a concern with sample sizes exceeding 500 at which point the power to detect measurement invariance was substantially improved.

Research pertaining to key statistical predictors of suicide has typically involved factor analyses of single inventories with equivocal results. Efforts have been made to investigate whether hopelessness is a subset of depression by conducting factor analysis solely with the BDI. Joiner et al. (2001) found that a subset of BDI symptoms formed a hopelessness dimension distinct from major depression in 1680 psychiatric outpatients and 1404 Air Force cadets. However, this finding has not been replicated (Haslam & Beck, 1994). Others have explored this issue by conducting factor analysis solely with the BHS. Although the original authors reported three factors, Feelings About the Future, Loss of Motivation, and Future Expectations, it is not clear whether such a structure supports Beck’s (1967) model of depression or Abramson et al.’s (1989) model of
hopelessness depression. Between three and five BHS factors have been reported elsewhere (Holden, 1986). Thus, in the present study, the inclusion of items from measures specifically designed to tap all variables of interest is a novel approach, and one that clarifies the state of current knowledge regarding the relationship between key statistical predictors of suicide.

The overlap between depression, hopelessness, and psychache was asymmetrical (see Figure 2.1) as hypothesized. Interestingly, psychache accounted for about half of the variance in depression and a third of the variance in hopelessness. The data fail to support Abramson et al.’s (1989) model. If hopelessness was a subtype of depression, one would have expected depression to account for 100% of hopelessness, which was not the case. Figure 2.1 clearly illustrates that one can be hopeless without being depressed. The possibility of only partial overlap with psychache also diverges from Shneidman’s (1993) view that psychache fully mediates the relationship between all suicide-relevant variables and suicide (i.e., no psychache, no suicide). Based on the present findings we propose an integrative model in which: a) psychache overlaps to a large extent with depression and a moderate extent with hopelessness, b) depression and hopelessness overlap to a similar and moderate degree with each other, and c) it is possible to have high scores on only one or two of these constructs, but the individuals at highest risk for suicide are those with the highest levels of psychache.

When suicide criteria were simultaneously regressed on each statistical predictor separately, only psychache was consistently associated with all of the suicide indices, namely number of previous attempts, internal perturbation-based reasons, extrapunitive/manipulative reasons for attempting suicide, the motivation to commit
suicide, and one’s preparedness to undertake suicidal action. Depression and hopelessness also emerged as unique statistical suicide predictors, but the strength of their relationship with the criteria varied depending on whether parcels of original or dichotomous items were used, and their standardized associations with suicide criteria were often only half as strong as that of psychache. Thus, psychache was the component most consistently and clearly indicative of proneness toward self-destruction.

The present findings generally support the claim by Shneidman (1993) that psychache is the primary reason that people kill themselves. Although Shneidman first coined the term *psychache* to refer specifically to the unbearable psychological pain that arises from frustrated psychological needs, the broader concept of *mental pain* has been viewed as the root of psychopathology in psychiatry since the early twentieth century. From a psychodynamic view, mental pain has been defined as the feelings of mourning and longing for a loved one that occurs following a traumatic loss (Freud, 1917/1955). Existentialists and emotion-focused therapists have viewed mental pain as arising primarily from a sense of emptiness and meaninglessness (Frankl, 1963), as a disruption of one’s sense of wholeness (Bakan, 1968) or as a sense of self-brokenness (Bolger, 1999). More recent cognitive theorists have posited that mental pain is an extreme form of disappointment in oneself that is caused by a discrepancy between one’s actual and ideal views of oneself (Baumeister, 1990). What Shneidman has accomplished by redefining mental pain as psychache is an operationalization of this construct that both facilitates scientific inquiry in suicidology and that transcends any single theoretical point of view.
Psychological factors have been demonstrated to mediate the effects of non-psychological variables on suicide risk. For instance, hopelessness has been shown to account for the relationship between suicidality and variables such as, poor problem-solving, parental depression, and personality disorder (Abramson et al., 1989). Additionally, poor psychological quality of life, used as a proxy for psychache, has been able to eliminate the relationship between suicidality and physical, interpersonal, and environmental quality of life, even when depression and hopelessness are controlled (Berlim et al., 2003). In our integrative model of suicide risk, the potential role of environmental stressors is acknowledged, though the means by which they interact with psychological variables awaits clarification through further research.

The present findings have a number of implications for clinical practice. Suicide intervention training programs currently include psychache as an indicator of suicide risk (Ramsay, Tanney, Tierney, & Lang, 1994). Unfortunately, despite the availability of such training and of psychometrically sound assessment instruments, such as the Psychache Scale or the Beck Scale for Suicide Ideation, many physicians are still reluctant to use structured measures as an adjunct to clinical interviews, which has resulted in a failure to identify as many as 50% of suicidal ideators in medical practice (Oravecz & Moore, 2006). It is vital that standardized protocols for assessment be incorporated into clinical practice as needed, so that suicidal clients can be identified early, before their levels of psychological pain reach subjectively unbearable levels.

Consideration of psychache as a component that transcends any single therapeutic modality should also guide assessment and treatment. The Collaborative Assessment and Management of Suicidality (CAMS) protocol developed by Jobes and Drozd (2004)
identifies suicidality, not psychiatric illness, as the primary target for treatment and integrates techniques from a range of behavioral, cognitive, psychodynamic, humanistic, and interpersonal approaches to effectively assess and treat suicidal clients. Emphasis is placed on keeping the client alive by whatever means are necessary. Clinicians need not abandon the use of techniques from the treatment orientations in which they were principally trained. Rather, a shift in focus toward forming a strong therapeutic alliance, working collaboratively with suicidal clients to ascertain the source of their pain, and then helping clients to develop a repertoire of coping skills extending beyond self-annihilation are viewed as central to effective treatment. For highly suicidal clients, adjuncts to therapy such as the use of medication, hospitalization, and links to community resources, such as emergency hotlines, and establishing contacts with family and friends are all seen as potentially beneficial (Leenaars, 2006). Indeed, the development of Peer Support Team groups in prison settings, which are comprised of inmates who have been trained by Psychology staff to listen and support fellow inmates, has substantially reduced self-harming and suicidal behavior in correctional settings (Blanchette & Eljdupovic-Guzina, 1998). According to our integrative model, the high degree of overlap between psychache, hopelessness, and depression implies that relieving psychological pain in actual practice will often require creatively addressing hopelessness and depression, as well as exploring idiosyncratic life factors that contribute to or maintain distress. Both clients and health practitioners stand to benefit from greater attention to advances in suicide assessment, treatment, and management as the risk for malpractice associated with working with suicidal clients continues to rise (Jobes & Berman, 1993).
Limitations of the present study must be also considered. First, a predominantly female university sample was used, which may limit the generalizability of these results. However, there were no significant gender or age differences on any of the variables of interest in the present study. As well, findings based on analogue and clinical samples in depression and attribution research have generally been consistent (Vredenburg, Flett, & Krames, 1993). A focus on young adults is relevant given the emphasis on early intervention and suicide prevention, as well as Shneidman’s (1971) finding that prodromal life patterns associated with eventual suicide completion are set by age 30. Evidence that psychache is associated with suicide criteria even when hopelessness and depression are controlled in male prison inmates and psychiatric outpatients (Berlim et al., 2003; Holden & Kroner, 2003) suggests that the present findings may have relevance in high risk, as well as college populations. Given suggestions that prison inmates have difficulty in distinguishing negative affect dimensions, such as anxiety and depression from cognitive dimensions, such as persecutory ideas, (Mills et al., 2005) one may speculate that the relationships between depression, hopelessness, and psychache in inmates may resemble those found in university students, for whom differentiation between constructs may have been limited by range restriction in the scores obtained. However, further research is needed to ascertain how depression, hopelessness, and psychache overlap in a wider range of populations.

Second, only self-report instruments were used to measure depression, hopelessness, and psychache. Although concerns about the appropriateness of self-report over structured clinical interviews have been expressed as part of the analogue-clinical debate, studies of suicide risk using these two methods have led to the same conclusions
regarding the relationship of constructs to each other. Abramson et al. (1998) cautiously advocate the use of self-report instruments given their practical advantages. However, replication using alternative measures of depression, hopelessness, and psychache in a wider range of samples is needed to validate present findings.

In particular, analyzing existing scales as parcels of items only partially addresses concerns regarding the comparability of the BDI, BHS, and Psychache Scale. Interpretations of items and subsequent scale ratings may be influenced by the mixture of low and high frequency items on a particular questionnaire, as well as the time period of reference used (Schwarz, 2003). For instance, Schwarz found that participants tend to report more severe events, when they are asked how frequently they experienced an event over the past year, than if they are asked to rate their experience of an event including the past week. When individuals decide how often they experience a particular event, such as feeling sad, they also tend to rate that item in comparison to the frequency of the other events on the same questionnaire (Tourangeau & Smith, 1996). For example, an event (i.e., feeling sad), may be rated as less frequent if the other test items are relatively commonly endorsed (i.e., feeling tired, changes in sleep or eating habits). Conversely, the same item (i.e., feeling sad) may be rated as occurring more frequently if most of the other items on a questionnaire are relatively rare (i.e., thoughts of killing oneself). In the present study, several issues associated with scale format may have influenced participants’ ratings. The BDI and BHS ask participants to consider the frequency of various experiences over the past week, including the present day. Both of these questionnaires also include a mixture of low and high frequency events. In contrast, the Psychache Scale contains relatively rare events and does not specify a reference period.
Despite these issues, one may speculate that ratings of highly salient, concrete, and rare experiences, such as suicidal behavior are less prone to shifts in endorsement frequency simply due to variations in scale format. The floor effects obtained on the BDI, BHS and Psychache Scale support this claim. Whether a scale requires a True/False, 0 to 3, or 1 to 5 format, and regardless of the other items contained, or the reference period specified, suicidality is endorsed relatively infrequently. It is this more serious category of events that is of particular interest in the study of suicide risk. Using the original scales in the present study also allows findings to be compared with previous research. Employing equivalent scale formats to assess depression, hopelessness, and psychache would not have addressed the possibility that altering response formats may also alter the meanings that participants derive from questionnaire items. Nevertheless, the clear pattern of results in the present study highlighting the prominence of psychache would suggest that our findings are not likely attributable to method variance.

Finally, key psychological predictors of suicidality were studied in relation to proxies for suicide completion. Only 18 to 38% of suicide attempts lead to intentional death despite the fact that a history of suicide attempts increases one’s risk by at least fivefold (Clark & Fawcett, 1992). Nevertheless, it is a logical strategy to target the thoughts and painful feelings that precede self-destructive acts as a means of ultimately preventing suicidal behavior.

In summary, our results corroborate other work suggesting that psychache is the pre-eminent statistical predictor of suicide risk (Berlim et al., 2003; DeLisle & Holden, 2004; Flamenbaum & Holden, 2007; Holden et al., 2001). We have also presented an integrative model that clarifies for the first time how psychache fits in relation to other
psychological risk predictors, such as depression and hopelessness, with opportunities for future exploration of the role that additional variables play. The general pattern of findings was consistent when item format was varied. Given that psychache is distinct from hopelessness and depression, and that it is more strongly related to important suicide criteria than purely cognitively-derived risk predictors, the integration of psychache into broader, cross-theoretical models of suicide risk, as well as its use to guide suicide assessment and intervention practices appears to be warranted.
Table 2.1

*Descriptive Statistics and Correlations between Measures of Suicidality (N = 587)*

<table>
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<tr>
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<th>Observed range of scores</th>
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<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>-------</td>
<td>-----</td>
<td>-----</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>7.83</td>
<td>3.72</td>
<td>21.91</td>
<td>11.01</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>6.88</td>
<td>3.69</td>
<td>9.47</td>
<td>5.47</td>
</tr>
</tbody>
</table>

*Note.* 1 = BDI Depression; 2 = BHS Hopelessness; 3 = Psychache Scale; 4 = RASQ Internal Perturbations; 5 = RASQ Extrapunitive/Manipulative Motivations; 6 = BSS Motivation; 7 = BSS Preparation; 8 = Number of Previous Attempts; 9 = Suicide Intent; 10 = Self-reported Likelihood of Future Suicidality; *p < .05; **p < .01. Some descriptive statistics and correlations were based on fewer than 587 participants due to missing data.
Table 2.2

*Promax Rotated Factor Loadings from Maximum Likelihood Extraction of 2- and 3-Factor Models*

<table>
<thead>
<tr>
<th>Item</th>
<th>Parcels of Original Items</th>
<th>Parcels of Dichotomous Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 Factors</td>
<td>3 Factors</td>
</tr>
<tr>
<td>D1</td>
<td>.49</td>
<td>---</td>
</tr>
<tr>
<td>D2</td>
<td>.55</td>
<td>---</td>
</tr>
<tr>
<td>D3</td>
<td>.56</td>
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</tr>
<tr>
<td>D4</td>
<td>.40</td>
<td>.36</td>
</tr>
<tr>
<td>D5</td>
<td>.35</td>
<td>.42</td>
</tr>
<tr>
<td>D6</td>
<td>.40</td>
<td>.34</td>
</tr>
<tr>
<td>D7</td>
<td>.35</td>
<td>.37</td>
</tr>
<tr>
<td>H1</td>
<td>.69</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>H2</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>.67</td>
<td>---</td>
</tr>
<tr>
<td>H3</td>
<td>.61</td>
<td>---</td>
</tr>
<tr>
<td>H4</td>
<td>.68</td>
<td>---</td>
</tr>
<tr>
<td>H5</td>
<td>.61</td>
<td>---</td>
</tr>
<tr>
<td>H6</td>
<td>.67</td>
<td>---</td>
</tr>
<tr>
<td>P1</td>
<td>---</td>
<td>.91</td>
</tr>
<tr>
<td>P2</td>
<td>---</td>
<td>1.01</td>
</tr>
<tr>
<td>P3</td>
<td>---</td>
<td>.91</td>
</tr>
<tr>
<td>P4</td>
<td>---</td>
<td>.97</td>
</tr>
</tbody>
</table>

*Note.* Items D1 to D6 refer to parcels of BDI items; Items H1 to H6 refer to parcels of BHS items; Items P1 to P4 refer to parcels of Psychache Scale items.
Table 2.3

Confirmatory Factor Analyses for 3-Factor Models with Bootstrapping (10 000 Resamples)

<table>
<thead>
<tr>
<th>3-Factor Model</th>
<th>Correlations</th>
<th>BDI</th>
<th>BHS</th>
<th>PS</th>
<th>$\chi^2$</th>
<th>RMSEA</th>
<th>CFI</th>
<th>TLI</th>
<th>$\Delta \chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parcels of Original Items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI, BHS, and PS uncorrelated</td>
<td>---</td>
<td>.69 to .79</td>
<td>.65 to .73</td>
<td>.87 to .95</td>
<td>$\chi^2(119) = 1105.31^{***}$</td>
<td>.12</td>
<td>.84</td>
<td>.82</td>
<td>---</td>
</tr>
<tr>
<td>BDI &amp; BHS correlated</td>
<td>.74**</td>
<td>.69 to .78</td>
<td>.62 to .73</td>
<td>.87 to .95</td>
<td>$\chi^2(118) = 812.05^{***}$</td>
<td>.10</td>
<td>.89</td>
<td>.87</td>
<td>$\chi^2(1) =$</td>
</tr>
<tr>
<td>PS uncorrelated</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2(117) = 570.24^{***}$</td>
<td>.08</td>
<td>.93</td>
<td>.91</td>
<td>$\chi^2(1) =$</td>
</tr>
<tr>
<td>BDI &amp; BHS correlated</td>
<td>.40**</td>
<td>.65 to .74</td>
<td>.64 to .73</td>
<td>.87 to .95</td>
<td>$\chi^2(116) = 450.81^{***}$</td>
<td>.06</td>
<td>.97</td>
<td>.96</td>
<td>$\chi^2(1) =$</td>
</tr>
<tr>
<td></td>
<td>Correlation Coefficient</td>
<td>χ²(119) =</td>
<td>χ²(1) =</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BHS &amp; PS correlated</td>
<td>.66**</td>
<td>330.18***</td>
<td>240.06***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI &amp; PS correlated</td>
<td>.81**</td>
<td></td>
<td></td>
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**Parcels of Dichotomous Items**

<table>
<thead>
<tr>
<th></th>
<th>Correlation Coefficient</th>
<th>χ²(119) =</th>
<th>χ²(1) =</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI, BHS, and PS uncorrelated</td>
<td>---</td>
<td>.52 to .74</td>
<td>.53 to .74</td>
</tr>
<tr>
<td></td>
<td>.65 to .73</td>
<td>.62 to .74</td>
<td>.64 to .73</td>
</tr>
<tr>
<td></td>
<td>.78 to .91</td>
<td>.78 to .91</td>
<td></td>
</tr>
<tr>
<td></td>
<td>χ²(118) =</td>
<td>933.00***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>.11</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td>.83</td>
<td>.86</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI &amp; BHS correlated</td>
<td>.70**</td>
<td>704.46***</td>
<td>228.54***</td>
</tr>
<tr>
<td>PS uncorrelated</td>
<td>---</td>
<td>.48 to .67</td>
<td>.49 to .67</td>
</tr>
<tr>
<td></td>
<td>.64 to .73</td>
<td>.64 to .73</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.78 to .91</td>
<td>.78 to .91</td>
<td></td>
</tr>
<tr>
<td></td>
<td>χ²(117) =</td>
<td>508.34***</td>
<td>196.12***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.08</td>
<td>.08</td>
</tr>
<tr>
<td></td>
<td>.92</td>
<td>.90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BHS &amp; PS correlated</td>
<td>.67**</td>
<td>315.57***</td>
<td>192.77***</td>
</tr>
<tr>
<td>BDI &amp; PS uncorrelated</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI &amp; BHS correlated</td>
<td>.70**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BHS &amp; PS correlated</td>
<td>.67**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI &amp; PS correlated</td>
<td>.78**</td>
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*Note.* Items PS = Psychache Scale; **p < .01; ***p < .001.
Table 2.4

*Unrotated Canonical Correlation Analyses*

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<th></th>
<th>Parcels of Original Items</th>
<th>Parcels of Dichotomous Items</th>
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<tr>
<td><em>Depression and Hopelessness</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% variance</td>
<td>.60</td>
<td>.40</td>
</tr>
<tr>
<td>Redundancy</td>
<td>.29</td>
<td>.14</td>
</tr>
<tr>
<td>Hopelessness:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% variance</td>
<td>.53</td>
<td>.41</td>
</tr>
<tr>
<td>Redundancy</td>
<td>.25</td>
<td>.15</td>
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<tr>
<td>$R_C$</td>
<td>.70</td>
<td>.60</td>
</tr>
<tr>
<td>Chi Square $\chi^2(42) = 405.63, p &lt; .001$</td>
<td>$\chi^2(42) = 258.77, p &lt; .001$</td>
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*Hopelessness and Psychache*

<table>
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<th>Parcels of Original Items</th>
<th>Parcels of Dichotomous Items</th>
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<td></td>
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<tr>
<td>% variance</td>
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<td>.52</td>
</tr>
<tr>
<td>Redundancy</td>
<td>.20</td>
<td>.19</td>
</tr>
<tr>
<td>Psychache:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% variance</td>
<td>.85</td>
<td>.78</td>
</tr>
<tr>
<td>Redundancy</td>
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<td>.29</td>
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<tr>
<td></td>
<td>$R_C$</td>
<td>.64</td>
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<tr>
<td>----</td>
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<td>-----</td>
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<tr>
<td>Chi Square</td>
<td>$\chi^2(24) = 300.82, p &lt; .001$</td>
<td>$\chi^2(24) = 281.52, p &lt; .001$</td>
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</table>

### Depression and Psychache

<table>
<thead>
<tr>
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<th>Depression: % variance</th>
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<th>.42</th>
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<tbody>
<tr>
<td>Redundancy</td>
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<td>.35</td>
<td>.17</td>
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<table>
<thead>
<tr>
<th></th>
<th>Psychache: % variance</th>
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<th>.75</th>
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<tbody>
<tr>
<td>Redundancy</td>
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<td>.51</td>
<td>.31</td>
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<table>
<thead>
<tr>
<th></th>
<th>$R_C$</th>
<th>.76</th>
<th>.64</th>
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</thead>
<tbody>
<tr>
<td>Chi Square</td>
<td>$\chi^2(28) = 519.71, p &lt; .001$</td>
<td>$\chi^2(28) = 280.80, p &lt; .001$</td>
<td></td>
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<tr>
<td>Statistical Predictor^a</td>
<td>Criterion</td>
<td>Multiple $R^2$</td>
<td>Depression</td>
</tr>
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<td>-------------------------</td>
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<tr>
<td><strong>Parcels of Original Items</strong></td>
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</tr>
<tr>
<td>Number of Attempts</td>
<td></td>
<td>.10***</td>
<td>.20</td>
</tr>
<tr>
<td>RASQ Internal Perturbation-Based Reasons</td>
<td></td>
<td>.34***</td>
<td>.16*</td>
</tr>
<tr>
<td>RASQ Extrapunitive/Manipulative Motivations</td>
<td></td>
<td>.16***</td>
<td>.11</td>
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<tr>
<td>BSS Motivation</td>
<td></td>
<td>.38***</td>
<td>.18</td>
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<td>BSS Preparation</td>
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<td>.23***</td>
<td>.15</td>
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<td><strong>Parcels of Dichotomous Items</strong></td>
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<tr>
<td>Number of Attempts</td>
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<td>.06***</td>
<td>.05</td>
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<td>RASQ Internal Perturbation-Based Reasons</td>
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<td>.15*</td>
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<tr>
<td>RASQ Extrapunitive/Manipulative Motivations</td>
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<td>.16*</td>
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<td>------------------</td>
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</tr>
<tr>
<td>BSS Motivation</td>
<td>.29***</td>
<td>.09</td>
<td>.28***</td>
</tr>
<tr>
<td>BSS Preparation</td>
<td>.18***</td>
<td>.07</td>
<td>.14*</td>
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</table>

*Statistical predictors are factor scores; *p < .05; **p < .01; ***p < .001.*
Figure Caption

*Figure 2.1.* Proposed relationship between depression, hopelessness, and psychache.
CHAPTER 3

PREDICTING SUICIDE RISK IN A NONCLINICAL POPULATION:
A COMPARISON OF DIATHESIS-STRESS MODELS OF DEPRESSION,
HOPELESSNESS, AND PSYCHACHE

Abstract

Diathesis-stress models of depression, hopelessness, and psychache or unbearable psychological pain were evaluated in a sample of 301 university undergraduates to investigate the etiological development of three pre-eminent psychological predictors of suicide risk. Consistent with previous literature, depression no longer statistically predicted suicide ideation, when hopelessness and psychache were included in the analyses. Contrary to hypothesized models, increases in both hopelessness and psychache were predicted solely by the interaction between initial levels of negative triad cognitions (diathesis) and the frequency of major negative life events experienced in the 4 months between assessments (stress). Follow-up tests indicated that hopelessness and psychache were both more likely to occur after experiencing stress for individuals with a low level of diathesis. For individuals with a high level of diathesis, hopelessness was less likely to result after experiencing stress, and psychache was unrelated to the occurrence of stress. Findings suggest that the same etiological pathway may be shared by multiple predictors of suicide risk.
Predicting Suicide Risk in a Nonclinical Population: A Comparison of Diathesis-Stress Models of Depression, Hopelessness, and Psychache

Suicide is a major public health concern that accounts for over 3500 deaths in Canada and over 30 000 deaths in the United States annually (Health Canada, 1994; Maris, Berman, & Silverman, 2000). The personal, economic, and social costs of suicide in terms of loss of life, decreased productivity, and suffering among friends and families of suicide victims is immense (Clayton & Barceló, 2004). In the interest of finding a means of preventing further suicides, a number of biological, social, psychological, and environmental correlates of suicidality have been identified, including genetic-level disruptions in serotonin transport (Mann et al., 2000), single, widowed, or divorced status (Sederer, 1994), depression (Beck, 1967), hopelessness (Beck, Steer, Kovacs, & Garrison, 1975), mental pain (Frankl, 1963; Orbach, Mikulincer, Gilboa-Schechtman, & Sirota, 2003), and negative life events (Paykel, Prusoff, & Myers, 1975). Of these, psychological correlates have shown the most promise, and have the added advantage of being relatively amenable to change. Psychache or unbearable mental pain (Shneidman, 1993) has recently been found to be at least as important as hopelessness and depression in predicting suicide risk in nonclinical, psychiatric, and forensic samples (Brown, Beck, Steer, & Grisham, 2000; DeLisle & Holden, 2004; Holden & Kroner, 2003).

Insofar as these psychological variables lead to suicide risk, it is vital to understand their etiological development. The role of increased stress in the precipitation of depression and hopelessness has already received support (Abramson et al., 1998; Olinger, Kuiper, & Shaw, 1987), but the underlying vulnerabilities and stressors involved in the development of psychache are not yet well understood. To the extent that
psychache is a proximal predictor of suicide risk, examining its etiological development would fill an important gap in the literature, and guide the refinement of assessment, intervention, and prevention protocols for work with suicidal individuals.

*Diathesis-Stress Models of Suicide Risk*

Because theories of how underlying cognitive vulnerabilities interact with environmental stressors to cause depression and hopelessness have been elaborated over the past three decades, it is possible to evaluate a diathesis-stress model of psychache in relation to these existing models. In Beck’s (1967) cognitive model, negative thoughts about oneself, the world, and the future, referred to as the negative cognitive triad, were originally identified as comprising the key diathesis for depression. Abramson, Alloy, and Metalsky (1990) have proposed an alternative cognitive model of suicide risk, in which the underlying diathesis consists of a depressogenic attributional style. This refers to the habitual ascribing of stable and global causes to negative events that are experienced. Although the original hopelessness model (Abramson, Metalsky, & Alloy, 1989) also included negative internal attributions, these were later found to contribute to low self-esteem and dependency rather than to hopelessness directly. Consequently, the internality dimension was dropped in the revised model (Abramson et al., 1990).

Empirical support for the diathesis-stress components of the cognitive negative triad and hopelessness depression models has underscored the importance of priming for the detection of underlying cognitive vulnerabilities (Clark & Beck, 1999).

Shneidman’s (1993) psychache model of suicide risk diverges sharply from the theories of Beck (1967, 1987) and Abramson et al. (1990) by emphasizing affective rather than cognitive factors as central to suicidality. Specifically, Shneidman has
proposed that psychache or unbearable psychological pain is the necessary and sufficient cause of suicide. That is, when suicide occurs, psychache must also be present. No psychache, no suicide. Shneidman has also asserted that other potential suicide risk predictors are important only insofar as they relate to psychache, which purportedly mediates the relationship between all other variables and suicide.

However, before the etiological processes underlying psychache can be explored relative to Beck’s (1967, 1987) and Abramson et al.’s (1990) models, a number of elements from Shneidman’s theorizing must be clarified. Shneidman has made substantial revisions to his model of suicide over time, which makes the task of arriving at a precise definition of diathesis and stress more challenging. For instance, in his earlier work delineating the commonalities among suicides, Shneidman (1985) stated that the common stressor in suicide is frustrated psychological needs. Using Murray’s classification of needs as a starting point, he later identified a subset of these, namely, achievement, affiliation, autonomy, counteraction, order, succorance, and shame avoidance as critical for considerations of suicide risk (Shneidman, 2001). For example, a high-ranking politician who commits suicide by gunshot because of a scandal that compromised his reputation could be viewed as motivated by the need to avoid shame (Shneidman, 1980). However, Shneidman’s (1993) more recent discussion of these vital unmet needs as coming into play when individuals are under threat or duress, and his recommendation for asking clients about their reactions to failures, losses, or rejections in order to determine which needs are active in particular clients together suggest a revised view of unmet psychological needs as a diathesis, rather than a stressor, in relation to psychache.
Shneidman identified both chronic life instability and sudden negative life changes as key stressors associated with suicide. In one study based on longitudinal data from gifted individuals (Stanford-Binet IQ’s over 140) provided by Lewis Terman, Shneidman was able to tag several life stressors whose presence by subjects’ late 20s’ predicted eventual suicide completion by age 55. Childhood-onset stressors included parental rejection and early instability (i.e., parental divorce), whereas adult-onset stressors consisted of sudden drops in income, conspicuous lack of success, sexual difficulties, crippling physical disability, multiple marriages, and a hostile spouse (Shneidman, 1971).

To explicate the interplay between suicidogenic elements, Shneidman (1987) initially proposed a cubic model of suicide risk, with three independent dimensions: psychache (psychological pain resulting from thwarted psychological needs), perturbation (distress and accompanying cognitive constriction and penchant for action), and press (aspects of the internal or external environment that impinge on the individual). Each dimension formed a separate axis on a 5 x 5 x 5 cube, with the corner 5-5-5 cubelet representing the highest levels of psychache, perturbation, and press, from which all suicides were purported to occur. Shneidman (1993) subsequently streamlined this model, eliminating two of the three dimensions, leaving psychache as the sole predictor of suicide. Based on this conceptualization of psychache as separate from environmental pressure or stress (1987, 1993), it is possible to test whether unfulfilled psychological needs serves as a diathesis that interacts with major negative life stressors to predict future suicide risk.

Methodological Considerations in Testing Diathesis-Stress Models
Monroe and Simons (1991) have raised a number of important issues regarding the precision of current methods of assessing and conceptualizing diathesis and stress that are highly relevant to suicide research. First, they note the importance of timing in the assessment of stressors in etiological models. From a review of the depression literature, Alloy, Hartlage, and Abramson (1988) suggest that events occurring 3 months prior to the onset of depression are likely to have contributed to its onset. Given the strong association between depression and suicidality, it appears that adopting Alloy et al.’s guideline is a reasonable approach to take in studies of suicide risk. In the present study a 4-month interval was utilized in conformance to the fall/winter semester structure.

Second, Monroe and Simons (1991) reason that a comprehensive inclusion of all types of possible stressors is impractical. Instead they recommend a more focused exploration of the key stressors in a given area of interest. For example, there is evidence that stressful life events that are partially dependent on an individual’s own behavior, such as divorce or incarceration, may trigger the onset of major depression, whereas independent life events over which individuals typically have no control, such as the death of a parent from cancer or loss of property due to a natural disaster, are less likely to serve as triggers (Monroe, Slavich, Torres, & Gotlib, 2007). By extension, the role of dependent and independent life events on additional proposed vulnerabilities to suicide risk, such as hopelessness and psychache, is of considerable theoretical and practical interest.

Monroe and Simons (1991) also recommend the use of objective or interview-based stress measures that consider contextual factors in the rating of life stress. However, practical considerations, such as the need for large samples and the availability
of trained raters, may render self-report measures a reasonable alternative when interview-based options are not feasible. Concerns of bias associated with self-report ratings of perceived stress associated with much of the early research in this area (Bonner & Rich, 1988; Bonner & Rich, 1990; Dixon, Heppner, & Anderson, 1991; Dixon, Rumford, Heppner, & Lips, 1992; Schotte & Clum, 1987) may be partially addressed by counting the frequency of life events reported instead of utilizing participants’ ratings of perceived stress, and by incorporating objective stress indices in addition to checklists.

A final methodological consideration in suicide research is that past suicidal behavior is related to future suicidal behavior, so it is important to demonstrate that additional risk predictors have effects beyond those of past suicidality (Joiner, 2002). The applicability models that explore the interaction between life stress and cognitive vulnerability among individuals, who do not currently have any history of suicidality, but who may develop suicidal thoughts or behavior at some future time, remains to be demonstrated.

The first aim of the present study was to verify which of the three pre-eminent psychological risk predictors (depression, hopelessness, and psychache) are most strongly associated with suicide risk in a nonclinical sample. Our second goal was to examine the diathesis-stress components implicated in the development of significant predictors of suicide risk. The impact of different categories of major negative life events (total events; dependent versus independent) on underlying diatheses (cognitive triad, attributional style, and unmet psychological needs) in relation to suicide ideation were explored, controlling for previous levels of the latter variable. Although suicide risk or suicidality may be manifested in terms of a variety of outcomes (i.e., ideation, intent or motivation,
preparation, perturbation, and attempts), ideation was selected as the primary index of suicidality in the present study due to its high base rate relative to other suicide phenomena. Attention to methodological issues, such as the use of a longitudinal design, priming of negative mood, and the assessment of stressors in the 4 month interval between testing periods strengthen the ability of findings to articulate the processes relevant to suicide risk. Although a self-report measure of stress was employed in the present study to obtain a sufficiently large sample to test models of interest, attempts to minimize the impact of bias were undertaken by utilizing event frequency rather than perceived stress scores, and by using an objective measure (i.e., discrepancy between perceived failing grade and actual grade) as the indices of stress. Consistent with theoretical models of suicide risk (Abramson et al., 1990; Beck, 1967, 1987; Shneidman, 1993), and empirical evidence from the literature, we proposed several hypotheses:

1. In terms of the relationship between the psychological risk predictors and suicide ideation, when initial levels of all variables are controlled, the relationship between suicide ideation and both depression and hopelessness would be statistically eliminated or reduced, when psychache, hopelessness, and depression are analyzed simultaneously.

2. Of the stressors, dependent life events would interact with underlying vulnerabilities, but independent events would not be significantly associated with any variables relevant to suicide risk.

3. In terms of the diathesis-stress relationship with suicide risk predictors, the negative cognitive triad would interact with stress to predict increases in depression, global and stable attributions for negative events would interact with stress to predict
increases in hopelessness, while unmet psychological needs would interact with stress to predict increases in psychache.

4. Significant diathesis-stress interactions were also followed up with exploratory simple slope analyses to determine the effect of major negative life events on suicide risk predictors for individuals at low and high levels of cognitive vulnerability. Because there is currently no theoretical framework for explicating these relationships, no specific predictions were made regarding simple slope results.

Method

Participants

Participants from the first-year psychology subject pool at Queen’s University in Kingston, Canada were recruited to take part in a longitudinal study over the fall (Time 1) and winter (Time 2) terms. Of the 362 students who initially completed Time 1 measures, 301 returned at Time 2. Based on students’ feedback to the primary investigator, attrition was due primarily to: a) completion of all required research credits by the winter term, b) prior commitments, such as impending examinations, that interfered with scheduling a second session, c) inability of researchers to contact participants, and d) in five cases, distress was reportedly experienced from the mood induction. However, there were no significant differences on any of the Time 1 variables between participants who completed the entire study and those who declined to continue after the fall term, Wilk’s lambda = .96, $F(10, 312) = 1.37$, $p > .05$. Analyses are based on the 301 participants who completed Time 1 and Time 2 measures. They ranged in age from 17 to 41 years ($M = 18.32; SD = 1.93$), and 78% were women. Thirteen participants reported having attempted suicide previously with drugs/poison being the most common method (76.9%).
followed by cutting (15.4%), and jumping/driving in front of a locomotive (7.7%).

Suicide attempters reported a mean of 45.54 months ($SD = 41.19$; range = 5 to 168) since their most recent suicide attempt. No information was collected on race or ethnicity.

Participants were treated in accordance with the ethical guidelines established by the Queen’s University Research Ethics Board.

**Procedure**

In the fall term, participants were provided with a letter of information, a consent form, which asked them to provide contact information so that they could be reached at Time 2, and a questionnaire package, in which materials were presented in a set order. Participants were first asked their age and gender, as well as what grade they would consider to represent a personal failure in their Introductory Psychology course.

Life stressors were assessed using the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978). In order to reduce the impact of bias on the reporting of stressors, participants completed the LES prior to completing measures of purported suicide risk, namely, the Beck Depression Inventory (Beck & Steer, 1987), the Beck Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974) and the Psychache Scale (Holden, Mehta, Cunningham, & McLeod, 2001), and finally, the Beck Scale for Suicide Ideation (Beck, & Steer, 1993). Participants were tested individually in single offices equipped with a cassette tape player and headphones to minimize distraction.

Because cognitive diatheses, such as negative self-schemas or attributional styles may be latent until activated by an event or feeling similar to that experienced when the original cognitions were being formed (Hammen, 1988), a mood induction was carried out at this point in the study. Negative moods can be effectively induced by asking
participants to listen to a sad piece of music while recalling a sad memory (Gemar, Segal, Sagrati, & Kennedy, 2001). This priming task is not expected to affect individuals who do not have any underlying cognitive diatheses. Therefore, participants were asked to listen to sad music (“Adagio for Strings” by Barber) for 9 minutes while recalling a sad memory in as much detail as possible. Participants then completed 5-point Likert scales assessing the degree to which they were able to recall a sad memory and the amount of effort with which they engaged in the mood induction task. The Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988) also served as a manipulation check, and these scales were completed immediately before and after the mood induction.

A second questionnaire package was then administered to assess cognitive diatheses using the Cognitive Triad Inventory (Beckham et al., 1986), the Extended Attributional Style Questionnaire (Metalsky, Halberstadt, & Abramson, 1987), and the Psychache Needs Questionnaire (Munchua & Holden, 2002). At the conclusion of the study, in order to neutralize any negative mood that was induced, participants were asked to write about a happy event that they had experienced in the past in as much detail as possible. A blank page was attached to allow for any additional comments that participants wished to share. The Time 1 portion of this study took about 1 hour to complete. Participants received one credit toward their PSYC 100 course research requirement for participating at Time 1, and were invited to return in winter term to complete the measures at Time 2. The same procedure was followed, but students were also provided with a written debriefing sheet, when they completed the second portion of the study. At Time 2, participants were asked to indicate the grade that they actually received on their December mid-year introductory psychology examination. The resulting
grade discrepancy (perceived failing grade minus actual grade) served as an objective index of stress. Participants were granted either another credit toward their course research requirement or $10. There was no significant difference between any of the measures for students who received credit or payment, Wilk’s lambda = .90, \( F(20, 235) = 1.24, p > .05 \).

**Materials**

*Beck Depression Inventory (BDI).* The BDI (Beck & Steer, 1987) is a 21-item inventory that assesses depression severity in adolescents and adults in which participants respond based on their experience over the past week. Responses are coded on a 4-point scale with symptoms increasing in severity from 0 to 3. Alpha reliability coefficients for the BDI have ranged from .73 to .95 (Beck, Steer, & Garbin, 1988). The concurrent validity of the BDI has also been established in psychiatric and nonpsychiatric samples (Beck et al.; Spreen & Strauss, 1991), and BDI scores have also been found to correlate with self-rated suicide risk in college students (Liddell, 1994). Meta-analytic research over the past 20 years has shown that the average correlation of the BDI with clinical ratings and with the Hamilton Rating Scale for Depression is .72 and .73, respectively, for psychiatric patients, and .60 and .74, respectively for nonpsychiatric patients (Beck et al.).

*Beck Hopelessness Scale (BHS).* The BHS (Beck et al., 1974) measures the extent of negative expectancies about the future, and consists of 20 true-false statements. Alpha reliability coefficients have ranged from .65 to .93 in student, forensic, and psychiatric samples (Beck et al.1974; Holden, 1986), and it has also been found to be adequately stable with 3-week and 1-year test-retest reliabilities of .85 (in university students) and
.61 (in prison inmates), respectively (Holden, 1986; Holden & Fekken, 1988).

Correlations of the BHS with clinical ratings of hopelessness have ranged from .66 to .74 (Beck et al., 1974), and BHS scores of 9 and above have accurately predicted eventual suicide completion in outpatients (Beck et al., 1990).

*Psychache Scale.* The Psychache Scale (Holden et al., 2001) was specifically developed to assess Shneidman’s (1993) conceptualization of psychache or psychological pain. It consists of 13 items that measure psychache, or psychological pain, on which responses are coded on a 5-point Likert scale. Alpha reliability coefficients generally exceed .90 (Holden et al.; Mills, Green, & Reddon, 2005). The Psychache Scale has been demonstrated to distinguish suicide attempters from nonattempters, and to statistically predict suicidality when the effects of depression and hopelessness have been controlled in university undergraduate and male inmate samples (DeLisle & Holden, 2004; Holden et al.; Mills et al.).

*Beck Scale for Suicide Ideation (BSS).* The BSS (Beck & Steer, 1993) is a 19-item rating scale that gauges suicidal intent, and that monitors the quality and quantity of ongoing suicidal ideation. Each item is comprised of three statements, which are scored based on increasing intensity from 0 to 2. The BSS has yielded alpha reliability coefficients of .90 and .87 in inpatient and outpatient ideators (Beck & Steer). The BSS has two subscales (Beck, Brown, & Steer, 1997): *Motivation* and *Preparation.* *Motivation* taps individuals’ ambivalence about living or dying, and the frequency and duration of suicidal thoughts. *Preparation* refers to a more active stage that involves planning the suicidal act. Support for this two-factor structure in a sample of suicide
attempters has been found (Holden & DeLisle, 2005), with alpha reliability coefficients of .85 and .73 reported for Motivation and Preparation subscales, respectively.

Although relatively low levels of Preparation were reported in the present sample, the BSS total score was used instead of the subscale scores in the index of suicidality to maximize scale reliability. Correlations between the BSS and the interview-based version of this instrument, the Scale for Suicide Ideation have ranged from .90 to .94 in inpatient and outpatient samples, respectively (Stewart, 1998), which supports the use of the BSS as a primary index of suicidality.

*Life Experiences Survey (LES).* The LES (Sarason et al., 1978) comprises 47 items for general use, and 10 items for students that indicate relatively frequently occurring life events. The LES has demonstrated adequate reliability (6-week test-retest $r > .63$) and validity (Sarason et al.). In order to minimize bias (Simons, Angell, Monroe, & Thase, 1993) in the present study, the LES was treated as a checklist. Participants were asked to rate the impact of events that they had encountered in the past 4 months on a scale from -3 (extremely negative) to +3 (extremely positive). Each of these scores was subsequently recoded as a 1 to represent a simple count of each life event. For example, if Participant A rated “failing an important examination” as -3, and Participant B rated the same event as 0, both of these individuals would receive a recoded score of 1 to record their experience of exam failure. The total LES score represented the sum of negative life events that were experienced by each participant.

Additionally, Monroe et al. (2007) have found that dependent major negative life events, but not independent major events, are clearly implicated in depression, a variable that is strongly related to suicidality (Monroe et al., 2007). In the present study, the
inventory of LES life events was reviewed by two researchers to determine which were clearly major and negative, and of these, which were primarily dependent and independent in nature. Only those events which received 100% agreement between the researchers were scored, for a total of 14 negative major life events, 8 dependent events (items 17, 18, 23, 32, 38, 53, 55, 57) and 6 independent events (items 3, 5, 8, 15, 39, 43). Items comprising the derived dependent and independent scales are shown in Appendix D.

**Positive and Negative Affect Scales (PANAS).** The PANAS (Watson et al., 1988) is a 24-item self-report scale assessing two major affective domains. Items that reflect Positive Affect (PA) assess the extent to which a person feels enthusiastic, active, and alert. In contrast, items that tap the Negative Affect (NA) domain measure subjective distress and aversive mood states, including anger, contempt, disgust, guilt, fear, and nervousness. Low Positive Affect, specifically, has been implicated in depression (Watson et al., 1995). The PANAS has demonstrated adequate reliability, with coefficient alphas ranging from .86 to .90 for the PA scale and ranging from .84 to .87 for the NA scale in a variety of clinical and nonclinical samples (Crawford & Henry, 2004). The factor structure of the PANAS as hypothesized has also been found to be stable across demographic subgroups and to be generally consistent with the tripartite model of anxiety and depression (Crawford & Henry). The PA and NA scales along with participants’ ratings of their effort and ability to visualize a sad past event on the mood induction task served as the manipulation checks in the present study.

**Cognitive Triad Inventory (CTI).** The CTI (Beckham et al., 1986) is a 30-item measure consisting of 30 items that tap one’s view of the self, world, and future and 6
filler items. Responses are coded on a Likert scale that ranges from 1 (Totally Agree) to 7 (Totally Disagree). The total score is calculated by summing all scoreable items (items 1, 2, 4, 7, 14, and 22 are not scored) and adding 128 to this sum (Beckham et al.). The CTI has adequate reliability (alpha > .79 for all scales; overall alpha = .92). It has also been shown to support the factorial validity of Beck’s model, which considers views of the self, world, and future to be correlated, but distinct constructs in a sample of university undergraduates (Anderson & Skidmore, 1995). The total CTI score was used as the index of vulnerability derived from the negative triad.

*Extended Attributional Style Questionnaire (EASQ).* The EASQ consists of 12 hypothetical negative events. Six of the events are interpersonal in nature, and six are achievement-oriented. Participants are asked to write down one major cause of each event, and then to rate the cause on a scale from 1 to 7 on each of three dimensions: internal-external, stable-unstable and global-specific. Adequate reliability (alphas of .86 for achievement events and .82 for interpersonal events) has been demonstrated in a sample of university undergraduates (Abela & Brozina, 2004). Although the Internality, Stability, and Globality scales of the EASQ have received support as distinct factors (Joiner & Metalsky, 1999), the most recent revision of the hopelessness theory considers only the latter two subscales as diatheses (Abramson et al., 1990). Consistent with the revised hopelessness depression theory, scores for each participant on the Stability and Globality subscales were summed to provide a Generality score, which was used in the present study as the index of attributional style-based vulnerability.

*Psychache Needs Questionnaire (PNQ).* The PNQ (Munchua & Holden, 2002) is a 35-item questionnaire designed to tap the key psychological needs hypothesized by
Shneidman (2001) to be associated with suicide. These needs comprise seven subscales, *Achievement, Affiliation, Autonomy, Counteraction, Order, Infavoidance, and Succorance*. Respondents are asked to indicate the degree to which they actually possess the characteristic described by each item, as well as the extent to which they would ideally like to possess the characteristic on separate scales from 1 (*slightly*) to 4 (*extremely*). The discrepancy between actual and ideal needs is seen to represent greater levels of psychological need, and the absolute value of the difference scores for each item is summed to produce the total PNQ score, which served as the measure of unmet psychological needs in the present study. The PNQ has demonstrated adequate reliability (coefficient alpha = .82), and an ability to differentiate between suicide attempters and non-attempters in a university undergraduate sample (DeLisle & Holden, 2004).

*Other measures.* In order to compare findings from an objective measure with those from the modified LES, the discrepancy between the actual grade that participants received on the mid-year (December) introductory psychology examination and the grade perceived to represent failure reported by these students at the beginning of the study was used as an additional index of achievement stress. Students’ actual grades were subtracted from their perceived failing grade to allow larger scores to represent greater distress. For example, a student who indicated 80% as their perceived failing grade, but who actually received a grade of 50% would receive a score of +30.

**Results**

*Preliminary Analyses*

Descriptive statistics for the main variables are presented in Table 3.1. There were no statistically significant differences on any of the main measures between Time 1 and
Time 2, with three exceptions. Participants’ scores on the CTI, \( t(299) = 2.96, p < .01 \), the Psychache Scale, \( t(299) = 2.93, p < .01 \), and the BSS, \( t(288) = 2.24, p < .05 \), were all significantly lower in the winter than in the fall term. Correlations between the variables are displayed in Table 3.2. Generally, correlations were consistent with previous research using university undergraduate samples (Flamenbaum & Holden, 2007; Holden et al., 2001; Munchua, 2003), though Time 2 correlations between psychache and unfulfilled psychological needs, and between psychache and hopelessness were comparably lower. The latter findings appear to reflect the lower level of distress experienced by participants during their second term relative to the beginning of the academic year.

**Manipulation Check**

All manipulation check measures suggested that the mood induction was successful in causing participants to experience a more negative mood. At Time 1, the PANAS NA scores were significantly higher, \( t(297) = -7.14, p < .001 \), and the PA scores were significantly lower, \( t(298) = 20.65, p < .001 \), after listening to the sad music than they were prior to the mood induction. These findings are consistent with the tripartite theory (Watson et al., 1995), in which high NA and low PA levels are viewed to be characteristic of depression. Although depression and suicidality are not mutually co-extensive, it is reasonable to assume that both constructs are associated with negative, rather than positive affect. Participants reported expending moderate effort on the induction task (\( M = 3.32; SD = 1.10 \)), and experiencing a moderate ability to recall a sad event from their past (\( M = 3.60; SD = .98 \)). Similarly, at Time 2, the PANAS NA scores were significantly higher, \( t(299) = -8.26, p < .001 \), and the PA scores were significantly lower, \( t(300) = 12.31, p < .001 \), after the mood induction. Again, participants reported
expending moderate effort on the induction task \((M = 3.13; SD = .98)\), and having a moderate ability to recall a sad past event \((M = 3.25; SD = 1.07)\). Together, these data support that underlying cognitive vulnerabilities relevant to suicide risk were successfully activated by the mood induction task.

**Test of the Contributions of Depression, Hopelessness, and Psychache to Suicidality**

To assess whether a rise in suicide ideation over time can be accounted for by increases in depression, hopelessness, and psychache, a regression model consisting of these variables with Time 1 scores used as covariates was analyzed using maximum likelihood estimation in AMOS 6.0 (Arbuckle, 2005) to take advantage of this program’s bootstrapping capabilities for dealing with data nonnormality. Curran et al. (1996) have established that conclusions based on test statistics with univariate skewness and kurtosis values that exceed 2 and 7, respectively, are problematic. In the present study, BSS scores at Time 2 were severely nonnormal \((skewness = 2.25, kurtosis = 9.24)\). Unlike parametric tests, which require that the sampling distribution of a statistic of interest meet set assumptions (e.g., normality), bootstrapping has no such requirements. The latter procedure derives the sampling distribution empirically from the available data by treating it as a population from which a large number of samples are drawn with replacement. For each “resample” the statistic of interest is calculated. The resulting frequency distribution of this statistic is used as an empirical estimate of its sampling distribution from which inferences about population parameters and confidence intervals for significance tests are based (Mooney & Duval, 1993). In the present study, bootstrapping was used to construct confidence intervals around path coefficients using...
10 000 resamples. Of the total sample, 268 cases with complete data were used in the model.

The regression model (see Figure 3.1) indicated that, when initial levels of the variables were controlled, increases in both hopelessness ($\beta = .21, p < .01; 95\% \text{ CI: } .06, .37$) and psychache ($\beta = .16, p < .05; 95\% \text{ CI: } .02, .29$) were significantly associated with increased suicide ideation. However, the relationship between Time 2 depression, controlling for Time 1 levels, and suicide ideation was not statistically significant ($\beta = .01, p = .88; 95\% \text{ CI: } -.11, .14$).

Of the Time 1 variables, previous suicide ideation ($\beta = .79, p < .001; 95\% \text{ CI: } .72, .85$) was the best predictor of suicide ideation at Time 2. As well, there was a significant negative association between Time 1 depression ($\beta = -.15, p < .05; 95\% \text{ CI: } -.27, -.02$) and Time 2 suicide ideation. However, secondary analyses using only Time 1 variables in the model found that psychache alone ($\beta = .50, p < .001; 95\% \text{ CI: } .33, .64$) was significantly associated with suicide ideation. Because neither Time 1 depression and Time 1 suicide ideation, nor Time 2 depression and Time 2 suicide ideation were significantly associated, and the relationship between initial depression and suicide ideation 4 months later can be explained by regression to the mean, depression was not determined to be a proximal predictor of suicide risk, and it was dropped from consideration in subsequent analyses.

**Test of the Diathesis-Stress Components of Hopelessness and Psychache**

Structural equation modeling using maximum likelihood estimation within the bootstrapping procedure was also used to investigate how hypothesized vulnerability factors interact with major life stressors to precipitate increases in hopelessness and
psychache over time. Measures were centered prior to creating interaction terms (Aiken & West, 1991). In each analysis initial levels of hopelessness and psychache were included as covariates, and these variables were the strongest predictors of subsequent hopelessness and psychache, respectively. Diathesis-stress models accounted for 39% to 43% of the variance in hopelessness and 34% to 38% of the variance in psychache. Differences in the contribution of diathesis-stress interactions to suicide predictor variables varied according to how stress was defined (see Table 3.3).

Stress as the frequency of negative major life events. When stress was defined in terms of the total number of negative major life events experienced, the interaction with the negative triad had a significant, positive association with hopelessness at Time 2 (β = .21, p < .05; 95% CI: .06, .38). Negative triad cognitions also interacted significantly with stress to predict increases in both hopelessness (β = -.25, p < .05; 95% CI: -.43, -.05) and psychache (β = -.18, p < .05; 95% CI: -.31, -.05). Neither dysfunctional negative attributions, nor unmet psychological needs interacted significantly with stress, regardless of how stressors were defined.

Simple slopes analyses were conducted according to the procedure described by Aiken and West (1991) to determine the levels of hopelessness and psychache, respectively, given the frequency of major negative events experienced for different levels of cognitive diathesis (see Figure 3.2). Because larger scores on all measures represent greater distress, scores at one standard deviation below the mean on the Cognitive Triad Inventory (CTI) at Time 1 (M = 200.72, SD = 25.93) represent a low level of diathesis, which is characterized by a relatively positive cognitive style. Scores at the mean CTI score are descriptive of participants with average levels of negative
thinking. Finally, scores at one standard deviation above the mean CTI score represent a high level of diathesis, which is characterized by a relatively negative style of thinking about oneself, the world, and the future.

For individuals with a relatively positive thinking style, the total number of negative life events experienced was positively associated with hopelessness ($\beta = .18, p < .05; 95\% \text{ CI}: .05, .30$). Among individuals with an average level of negative thinking, the total number of negative life events was unrelated to hopelessness ($\beta = -.03, p = .57; 95\% \text{ CI}: -.12, .07$). Finally, for participants with relatively high levels of negative triad cognitions, the total number of negative life events was negatively associated with hopelessness ($\beta = -.24, p < .05; 95\% \text{ CI}: -.40, -.03$). For psychache, the pattern of findings was similar to that for hopelessness among individuals with low and average levels of diathesis. For relatively positive thinkers, the total number of negative life events was positively associated with psychache ($\beta = .21, p < .01; 95\% \text{ CI}: .08, .35$). As well, for individuals with an average level of negative thinking, the total number of negative life events was unrelated to psychache ($\beta = .06, p = .25; 95\% \text{ CI}: -.04, .19$).

However, in contrast with results for hopelessness, among participants with a relatively high level of negative triad cognitions, the total number of negative life events was not significantly related to psychache ($\beta = -.10, p = .27; 95\% \text{ CI}: -.26, .07$). Simple slopes of the relationship between psychological suicide risk predictors and negative major life events at low (1 SD below the mean) and high (1 SD above the mean) levels of the negative cognitive triad are displayed in Figure 3.2. Patterns of the simple slopes for significant interactions with hopelessness and psychache for alternative definitions of stress were similar to those as illustrated unless otherwise indicated.
Stress as the discrepancy between participants' actual grade and their perceived failing grade. Stress was also defined in terms of the discrepancy between the actual grade that participants received on their mid-year (December) introductory psychology examination and the grade that they identified as representative of failure for the latter course at the beginning of the study (See Table 3.3). It was anticipated that the greater the size of this discrepancy, the greater the stress that would be experienced by the participant. The negative cognitive triad interacted significantly with grade discrepancy to predict an increase in psychache ($\beta = -.17, p < .05; 95\% \text{ CI: } -.29, -.05$). As well, the cognitive triad-stress interaction for hopelessness was marginal ($\beta = -.15, p = .07; 95\% \text{ CI: } -.31, .01$). Follow up analyses to explore this marginal effect showed that none of the simple slopes differed significantly from zero.

Stress as the frequency of dependent versus independent major life events. The comparison of findings when stressors were classified as either dependent or independent events was striking (see Table 3.3). For the model with stress comprised of only dependent events, the pattern of relationships among all of the variables with the suicide risk predictors was identical to that found when stress was defined as the total number of negative life events. In this case the negative cognitive triad interacted significantly with stress to predict increases in both hopelessness ($\beta = -.28, p < .01; 95\% \text{ CI: } -.45, -.12$) and psychache ($\beta = -.16, p < .05; 90\% \text{ CI: } -.30, -.03$).

However, for the model with stress comprised of only independent stressors, none of the stress or interaction measures were significant. Independent events did not appear to have any effect by themselves or through interactions with diatheses on either
hopelessness or psychache. These findings suggest that it is the dependent nature of negative life events that account for their impact on proximal predictors of suicide risk.

Discussion

The present study contributes in several ways to the current understanding of how psychological variables that predict suicide risk develop over time. First, we determined which psychological suicide risk predictors were most strongly associated with suicide ideation. Our findings support the status of psychache, along with hopelessness, as proximal predictors of suicide risk. Although the association between suicide ideation and hopelessness was not completely residualized by psychache as Shneidman (1993) would have predicted, psychache did account for unique variance in suicide ideation. It is worth noting that, at Time 1, psychache was the only predictor associated with suicide ideation, accounting for 25% of the variability in suicide risk. By comparison, 0.4% and 0.5% of the variability in suicide ideation at Time 1 was accounted for by depression and hopelessness, respectively. That eventual psychache accounted for additional variability even after controlling for its initial strong association with suicide ideation attests to the strength of subjectively experienced unbearable psychological pain as a suicide risk predictor. Shneidman’s Psychological Distress Questionnaire describes psychological pain more explicitly as the opposite of peace of mind, and as the degree to which individuals hurt (non-physically) as a human being (Leenaars, 2004). Others have also found psychache or internal perturbations to perform at least as well as or better than hopelessness in university undergraduate (DeLisle & Holden 2004), community (Holden et al., 2001), and forensic (Holden & Kroner, 2003) samples.
The pre-eminence of hopelessness over depression in the present study is also consistent with previous research employing clinical (Chochinov, Wilson, Enns, & Lander, 1998) and nonclinical community participants (Kuo, Gallo, & Eaton, 2004), although studies using student samples have been more equivocal, with depression sometimes emerging as a stronger statistical predictor of suicide risk than hopelessness (DeLisle & Holden, 2004; Konick & Gutierrez, 2005; Rudd, 1990). However, methodological aspects of the latter studies, such as the lack of diathesis-stress interactions and the use of cross-sectional designs, limit their ability to test hypothesized models of suicide risk. The present investigation addresses these particular methodological concerns and offers some preliminary evidence for continuity between the suicide risk factors in student samples, with hopelessness and psychache emerging as particularly relevant targets for assessment and treatment.

Given the importance of these suicide risk predictors, we investigated potential factors that might increase individuals’ vulnerability to experiencing hopelessness and unbearable psychological pain. Interestingly, the negative cognitive triad, which is viewed by Beck (1967; 1983) as the diathesis underlying depression, also predicted hopelessness and psychache directly, as well as through interactions with different types of negative major life stressors. Contrary to our hypothesis, stress failed to interact significantly with unmet psychological needs to precipitate psychache, as would have been anticipated by Shneidman (1993). The same findings emerged whether each diathesis was evaluated separately, or whether all three diatheses (i.e., negative triad cognitions, global and stable attributions, and unmet needs) were included together as observed variables in the same measurement model. Together, this evidence suggests that
in university students, negative thoughts about oneself, the world, and the future constitute a salient vulnerability toward suicide risk.

The robustness of the negative cognitive triad relative to the other hypothesized vulnerability factors merits further consideration. There has been strong support for the role of the negative triad in depression. In their review of this literature, Haaga, Dyck, and Ernst (1991) conclude that empirical results are highly consistent with the triad hypothesis, and different studies have found that depressed clients relative to nondepressed individuals are lower in self-esteem, more self-critical, more hopeless about the future, and more discrepant from their ideal selves. Interestingly, the latter two results are consistent with the pre-eminent role of negative triad cognitions in precipitating hopelessness and psychache in the present study.

Unfulfilled psychological needs have been previously shown to be related to psychache (Flamenbaum & Holden, 2007), though the current research is the first to test whether unmet needs interact with stress. The null finding for the role of unmet psychological needs may have arisen partly, because both unmet psychological needs and negative triad cognitions result from discrepancies between actual and ideal perceptions of how people feel they relate to their environment. Haaga et al. (1991) suggest that a negative view of the world can be defined in a relational sense, as an experience whereby external demands exceed one’s personal resources. A focus on specific unmet needs (Shneidman, 1993) may be less able than the negative cognitive triad, which has a much broader scope, to fully capture the distress generated by actual-ideal discrepancies in aspects of life functioning among participants. Additionally, Shneidman’s (2001) rationale for selecting the domains of achievement, affiliation, autonomy, counteraction,
shame avoidance, order, and succorance to represent the vital needs associated with suicide risk is unclear. Empirical work is needed to verify whether all, a subset, or a completely different set of needs are essential to suicide risk. Our findings suggest that a modification of Shneidman’s (1993) model of psychache is warranted, to recognize that negative triad cognitions rather than unfulfilled psychological needs, as assessed here, are more central to the development of psychache.

Because the future leg of the negative cognitive triad is defined in terms of pessimistic predictions about one’s fate, it is not surprising that the negative cognitive triad, as a whole, also predicted eventual hopelessness in the present study. Our finding that dysfunctional attributions did not interact significantly with stress to increase hopelessness even when diatheses were evaluated separately failed to support Abramson et al.’s (1989) model. However, the latter findings are consistent with more recent work demonstrating the pre-eminence of negative triad cognitions and dysfunctional thinking over attributional style in predicting suicide risk (Doxey, 2006; Lewinsohn, Joiner, & Rohde, 2001) even when researchers matched interpersonal and achievement stressors with attributions in these domains (Spangler, Simons, Monroe, & Thase, 1993).

In recognition of the possibility that only a subset of life stressors may be relevant to suicide risk, we explored the interaction between vulnerability factors and different categories of major life events, namely, dependent and independent stressors. As hypothesized, dependent events were found to have a stronger effect on negative triad cognitions than were independent events in precipitating both hopelessness and psychache. These results with respect to psychache are novel and mirror those in the depression literature, which have established that dependent events in general are
strongly associated with the onset of depression in adults (Skärsäter, Ågren, & Dencker, 2001). For instance, in their investigation of the occurrence of several classes of stressful life events and the onset of major depression over a 1-year period in female twins, Kendler, Karkowski, and Prescott (1999) found that the probability of an onset of depression was approximately 80% greater for dependent than for independent stressful events. In comparison with the depression literature, there is a dearth of research on the relative importance of different types of life stressors in the suicidology field. The present findings suggest that dependent events are also the type of stressors that trigger suicidality in cognitively vulnerable adults.

Follow-up explorations of significant interactions between negative triad cognitions and major life stressors led to additional novel findings. In general, relatively positive-thinking people were more likely to experience increased hopelessness and psychache in the face of major life events. In contrast, people who already had relatively negative thoughts about themselves, the world, and the future appeared to experience psychache independently of stress, and they were less likely to experience further increases in hopelessness, when they dealt with additional stressors. On the surface, these findings suggest that there is more opportunity for negative occurrences to cause incremental distress in people, who are in a positive frame of mind, but that misfortunes can cause relatively minor changes in distress among people, who are either accustomed to dealing with multiple stressors, or who are already feeling at their worst.

Regression to the mean, could only partially account for the simple slope results. Although hopelessness, $t(48) = 2.23, p < .05$, and psychache scores, $t(48) = 2.66, p < .05$, were significantly lower in the winter than in the fall term for individuals with a high
level of cognitive vulnerability, the scores for all variables of interest remained stable over time for individuals with a low level of cognitive vulnerability. Thus, although regression to the mean cannot be entirely ruled out as a basis for findings in the high cognitive vulnerability group, the positive association between stress and both hopelessness and psychache in the low cognitive vulnerability group cannot be attributed to statistical artifact.

Present findings have the potential to inform the development of more effective interventions. While stress management may be appropriate for individuals at all levels of suicide risk, those with a particularly high level of cognitive risk may require separate therapeutic approaches depending on whether their condition is acute or chronic. Given the strong association between the negative cognitive triad with depression, hopelessness, and psychache, findings from the depression treatment literature may also have relevance for work with suicidal individuals. Cognitive therapy (CT), which was originally developed by Beck (1967), has been shown to be effective for helping clients with acute episodes of depression to experience improvements in mood by restructuring their thoughts and evaluating the validity of their dysfunctional rules or beliefs (Whisman, 1993). However, relapse rates remain high (i.e., 37%) even after the treatment of acute episodes (Segal et al., 2002). Mindfulness-based cognitive therapy (MBCT), which was developed by Segal et al. to specifically target depressive relapse has been found to significantly reduce relapse rates in clients with three prior episodes of depression, but not in those with fewer previous episodes (Ma & Teasdale, 2004; Segal et al.). MBCT combines elements of CT with mindfulness-based practices, such as the training of attention and awareness through meditation and yoga. Its primary mechanism involves
helping clients to adopt an orientation toward personal events, such that experiences are welcomed and acknowledged non-judgmentally to counteract their tendency to ruminate and over-react to relatively minor life events. Thus, learning to change one’s appraisals of major life events appears to be central to treating acute depression, while responding in a non-reactive fashion to minor difficulties appear to be more critical for achieving lasting prophylactic benefits.

Beck’s adaptation of CT for acutely suicidal individuals has been found to significantly reduce suicide attempts and self-reported depression scores, but not hopelessness scores, compared to a treatment-as-usual condition after 18 months (Brown et al., 2005). Because participants whose hopelessness scores do not remit after treatment have been found to be at greater risk for future suicide attempts and completion (Dahlsgaard, Beck, & Brown, 1998), there appears to be merit in developing an alternative program based on MBCT that specifically targets relapses in suicidality.

In interpreting the present findings, a number of limitations must be considered. First, only negative major life events were assessed. This subset of events (major negative life events) was selected based on assumed parallels between suicide and depression research regarding the primary role of negative major life events relative to chronic difficulties in the onset of depression. In order to minimize the confounding of stress and depression in the present study, we removed LES items that were also symptoms of depression (e.g., “Major changes in sleeping habits – much more or much less sleep”). However, the categorization of events as dependent or independent was made primarily based on item content rather than the consideration of contextual factors. Although care was taken to eliminate ambiguous LES items, a number of events arguably
remain equivocal in terms of the degree to which individuals may be the agents of the presented situations. The degree of stress associated with a given negative life event is difficult to gauge in the absence of information about each participant’s particular life circumstances. For instance, the endorsement of an item, such as “trouble with employer (in danger of losing job, being demoted, etc.)” may be associated with greater levels of stress for the sole breadwinner of a large family, than for a college student whose living and tuition expenses are paid by his/her parents. Thus, the present findings regarding the relative importance of dependent events as suicide risk factors must be seen as tentative.

It is essential that future research take advantage of more sophisticated, interview-based measures of life stress, such as the Life Events and Difficulties Schedule (LEDS-II; Bifulco et al., 1989), which provide more precise definitions of events in terms of their level of severity, minor or major category status, and chronicity than was possible in the present study. Although we were able to explore the differential impact of dependent and independent events to some extent, results also did not control for the potential influence of chronic stress on diathesis-stress interactions.

Second, in order to facilitate large-scale data collection, the measures were primarily self-report. Although attempts to minimize reliance on subjective ratings of stress were made by scoring only the frequency of LES items and including an objective measure of stress, the impact of potential biases on the present findings must be considered. Among currently depressed participants, the presence of active negative cognitive schemas may lead to biased responding by causing individuals to perceive their experiences more negatively, as well as by lowering their thresholds for distress (Simons et al., 1993). In the present study, asking participants to complete the outcome measures
(i.e., BDI, BHS, and Psychache Scale) prior to the mood induction and the diathesis measures (i.e., CTI, EASQ, and Psychache Scale) would have provided an adequate safeguard against biased reporting in nondepressed individuals. However, to the extent that participants in the present sample were currently depressed, a confounding of the diathesis and outcome measures would be anticipated. Of the 301 participants, 10 indicated that they were depressed at Time 1 and 6 indicated that they were depressed at Time 2. However, diagnostic interviews were not conducted, so information about participants’ past history and current depression status could not be confirmed.

A third limitation is the use of the total BSS score, which captures suicide ideation, as the sole index of suicidality. Other potential indices of suicidality, namely, number of attempts, suicide intent during most recent attempt, and self-rated future likelihood of attempting suicide were not included in the generation of a suicidality index because: a) approximately half of the attempter cases had clearly unreliable data (e.g., indication of a previous suicide attempts at Time 1 and no previous attempts at Time 2), and b) when an index comprised of the latter ratings in addition to the BSS total score was generated, Time 1 and Time 2 indices of suicidality correlated .93, which left little variance to be predicted by other variables of interest. The present findings are consistent with those of Joiner et al. (2005), but also highlight the need for caution in interpreting studies based on measures of self-reported suicide risk.

Finally, a number of limitations relate to our use of a nonclinical student sample, which may limit the generalizability of these results to community or clinical samples. Because psychache is more strongly associated with suicide criteria in attempters than in university undergraduates (DeLisle & Holden, 2004), the associations between psychache
and hypothesized diatheses that we obtained are likely underestimates. Floor effects on measures of depression, hopelessness, psychache, and suicidality in the present student sample were addressed in the analyses using bootstrapping techniques that do not require normality. Yet, participants were primarily female (78%), and gender effects were observed on a number of variables. Women had significantly higher scores than men on Time 1 depression, as well as Time 2 depression, LES achievement, and psychache. In contrast, the perceived failing grade was significantly higher for men than for women.

We combined scores across groups, because the variability accounted for by gender among these variables (partial eta squared ranged from .01 to .03) was small. However, it is conceivable that the consistent gender differences in the manifestations of suicidality in terms of methods used, and rate of attempts and completions (Health Canada, 1994) may be associated with different trajectories of suicide risk for men and women. Although the present study focused on the impact of stressors that are commonly experienced by both sexes, understanding the kinds of events that are most predictive of suicide risk for men and women would greatly facilitate the tailoring of therapeutic efforts.

In summary, the present study makes a number of important theoretical and practical contributions to suicide research. The pre-eminence of hopelessness and psychache as proximal predictors of suicide risk was supported. Present findings also highlight for the first time that negative triad cognitions may serve as a common risk factor that interacts with major dependent life stressors regardless of one’s type of underlying cognitive vulnerability (i.e., negative triad thinking, dysfunctional attributional style) in the precipitation of suicidality. Thus, we have shown how diathesis-stress models proposed by Beck (1967; 1983), Abramson et al. (1990), and Shneidman
(1993), interrelate as a starting point for building a more integrated model of suicide risk. Finally, the differential effectiveness of interventions, such as CT and MBCT, for individuals with high and low levels of cognitive vulnerability offer a promising area for future exploration.
Table 3.1

*Descriptive Statistics for Main Measures at Time 1 and Time 2 (N = 301)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible Range</th>
<th>Observed Range</th>
<th>Mean</th>
<th>SD</th>
<th>Reliability</th>
</tr>
</thead>
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<td>Cognitive Triad Inventory1</td>
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<td>159-285</td>
<td>200.72</td>
<td>25.93</td>
<td>.95</td>
</tr>
<tr>
<td>EASQ Generality Subscale1</td>
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<td>57-153</td>
<td>113.17</td>
<td>18.49</td>
<td>.85</td>
</tr>
<tr>
<td>Psychache Needs1</td>
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<td>1-66</td>
<td>24.76</td>
<td>10.01</td>
<td>.84</td>
</tr>
<tr>
<td>#Negative Life Events1</td>
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<td>0-6</td>
<td>.96</td>
<td>1.13</td>
<td>--</td>
</tr>
<tr>
<td>Beck Depression Inventory1</td>
<td>0-63</td>
<td>0-42</td>
<td>8.05</td>
<td>6.57</td>
<td>.88</td>
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<tr>
<td>Beck Hopelessness Scale1</td>
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<td>0-18</td>
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<td>3.39</td>
<td>.82</td>
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<tr>
<td>Psychache Scale1</td>
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<td>.94</td>
</tr>
<tr>
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<td>.80</td>
</tr>
<tr>
<td>Cognitive Triad Inventory2</td>
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<td>158-276</td>
<td>197.91**</td>
<td>24.96</td>
<td>.95</td>
</tr>
<tr>
<td>EASQ Generality Subscale2</td>
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<td>.86</td>
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<td>0-20</td>
<td>3.36</td>
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<td>.95</td>
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<tr>
<td>Beck Scale for Suicide Ideation2</td>
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<td>0-29</td>
<td>3.82*</td>
<td>3.60</td>
<td>.77</td>
</tr>
</tbody>
</table>
Note. *p < .05, **p < .01, ***p < .001 indicating differences between measures at Time 1 and Time 2. Some descriptive statistics are based on N < 301 due to missing data.
Table 3.2

*Intercorrelations between Main Measures at Time 1 and at Time 2*

<table>
<thead>
<tr>
<th>Variable</th>
<th>CTI</th>
<th>GEN</th>
<th>PNQ</th>
<th>LES</th>
<th>BDI</th>
<th>BHS</th>
<th>PS</th>
<th>BSS</th>
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</thead>
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<td>.74</td>
<td>.69</td>
<td>.49</td>
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<tr>
<td>GEN</td>
<td>.43</td>
<td>--</td>
<td>.36</td>
<td>.11</td>
<td>.38</td>
<td>.29</td>
<td>.35</td>
<td>.17</td>
</tr>
<tr>
<td>PNQ</td>
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<td>.25</td>
<td>--</td>
<td>.12</td>
<td>.42</td>
<td>.37</td>
<td>.41</td>
<td>.23</td>
</tr>
<tr>
<td>LES</td>
<td>.17</td>
<td>.05</td>
<td>.22</td>
<td>--</td>
<td>.23</td>
<td>.08</td>
<td>.21</td>
<td>.15</td>
</tr>
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<td>BDI</td>
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<td>.34</td>
<td>.21</td>
<td>--</td>
<td>.62</td>
<td>.77</td>
<td>.47</td>
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<tr>
<td>BHS</td>
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<td>.34</td>
<td>.07</td>
<td>.64</td>
<td>--</td>
<td>.56</td>
<td>.40</td>
</tr>
<tr>
<td>PS</td>
<td>.63</td>
<td>.31</td>
<td>.28</td>
<td>.12</td>
<td>.74</td>
<td>.50</td>
<td>--</td>
<td>.57</td>
</tr>
<tr>
<td>BSS</td>
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<td>.17</td>
<td>.25</td>
<td>.05</td>
<td>.37</td>
<td>.37</td>
<td>.49</td>
<td>--</td>
</tr>
</tbody>
</table>

*N*ote. Time 1 correlations are on the upper half of the diagonal, and Time 2 variables are on the lower half. CTI = Cognitive Triad Inventory; GEN = EASQ Generality Subscale; PNQ = Psychache Needs Questionnaire; LES = Number of Negative Life Events; BDI = Beck Depression Inventory, BHS = Beck Hopelessness Scale; PS = Psychache Scale, BSS = Beck Scale for
Suicide Ideation. For both Time 1 and Time 2, \( p < .05 \) for correlations \( \geq .11 \); \( p < .01 \) for correlations \( \geq .14 \); \( p < .001 \) for correlations \( \geq .21 \).
Table 3.3

*Standardized Regression Weights for the Relationships between Diatheses, Life Stressors, and their Interactions for Predictors, Time 2 Hopelessness, and Time 2 Psychache (N = 301)*

<table>
<thead>
<tr>
<th>Stress Operationalized as:</th>
<th>#Total</th>
<th>Grade</th>
<th>Dependent</th>
<th>Independent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures</td>
<td>NLEs</td>
<td>Discrepancy</td>
<td>NLEs</td>
<td>NLEs</td>
</tr>
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<td>.58***</td>
<td>.58***</td>
<td>.57***</td>
</tr>
<tr>
<td>CTI1</td>
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<td>.22*</td>
<td>.20*</td>
<td>.20*</td>
</tr>
<tr>
<td>EASQ1</td>
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<td>-.03</td>
<td>-.04</td>
<td>-.01</td>
</tr>
<tr>
<td>PNQ1</td>
<td>-.01</td>
<td>-.01</td>
<td>-.01</td>
<td>-.01</td>
</tr>
<tr>
<td>Stress^2</td>
<td>-.03</td>
<td>-.05</td>
<td>-.10</td>
<td>-.03</td>
</tr>
<tr>
<td>CTI1 x Stress^2</td>
<td>-.25*</td>
<td>-.14†</td>
<td>-.28**</td>
<td>-.11</td>
</tr>
<tr>
<td>EASQ1 x Stress^2</td>
<td>.00</td>
<td>.01</td>
<td>.00</td>
<td>-.03</td>
</tr>
<tr>
<td>PNQ1 x Stress^2</td>
<td>.05</td>
<td>.02</td>
<td>.07</td>
<td>.00</td>
</tr>
</tbody>
</table>

| R^2                       | .43    | .41   | .47   | .47 |
## Relationships with Time 2 Psychache by Type of Stress

### Stress Operationalized as:

<table>
<thead>
<tr>
<th>Measures</th>
<th>#Total</th>
<th>Grade</th>
<th>Dependent</th>
<th>Independent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NLEs</td>
<td>Discrepancy</td>
<td>NLEs</td>
<td>NLEs</td>
</tr>
<tr>
<td>PS1</td>
<td>.56***</td>
<td>.53***</td>
<td>.53***</td>
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<td>.13</td>
<td>.19*</td>
<td>.15</td>
<td>.15</td>
</tr>
<tr>
<td>EASQ1</td>
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<td>.05</td>
<td>-.05</td>
<td>.07</td>
</tr>
<tr>
<td>PNQ1</td>
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<td>-.04</td>
<td>-.03</td>
<td>-.05</td>
</tr>
<tr>
<td>Stress(^a)</td>
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<td>.02</td>
<td>.05</td>
<td>-.01</td>
</tr>
<tr>
<td>CTI1 × Stress(^a)</td>
<td>-.18*</td>
<td>-.14*</td>
<td>-.16*</td>
<td>-.02</td>
</tr>
<tr>
<td>EASQ1 × Stress(^a)</td>
<td>-.05</td>
<td>-.07</td>
<td>-.09</td>
<td>-.06</td>
</tr>
<tr>
<td>PNQ1 × Stress(^a)</td>
<td>.02</td>
<td>.01</td>
<td>.12</td>
<td>-.08</td>
</tr>
<tr>
<td>R(^2)</td>
<td>.38</td>
<td>.34</td>
<td>.36</td>
<td>.36</td>
</tr>
</tbody>
</table>

### Note.
NLE = Negative Life Events; BHS = Beck Hopelessness Scale; PS = Psychache Scale; CTI = Cognitive Triad Inventory; EASQ = Extended Attributional Style Questionnaire – Generality Subscale; PNQ = Psychache Needs Questionnaire; \(^p < .10\), \(^* p < .05\), \(** p < .01\), \(*** p < .001\); 1 = Time 1 measure; 2 = Time 2 measure; \(^a\) Number of stressors were measured between Time 1 and Time 2 assessments; 90% Confidence Intervals from 10 000 bootstrapped resamples are in parentheses. Some analyses are based on \(N < 301\) due to missing data.
Figure Captions

Figure 3.1. Standardized regression weights for the relationship between psychological predictors of suicide risk and suicidality controlling for Time 1 measures.

Figure 3.2. Simple slopes for the relationship between psychological predictors of suicide risk and frequency of negative major life events (stress) at low and high levels of the negative cognitive triad (diathesis).
Note. 1 = Time 1 measure; 2 = Time 2 measure. *p < .05, **p < .01, ***p < .001.
CHAPTER 4

General Discussion

Psychache or unbearable psychological pain is a relatively new construct that has shown great promise in terms of its ability to statistically predict suicide risk (Berlim et al., 2003; DeLisle & Holden, 2004; Flamenbaum & Holden, 2007; Holden et al., 2001). The two studies in this dissertation were designed to first, ascertain the degree to which psychache is distinct from more established psychological predictors of suicide risk, such as depression and hopelessness (Chapter Two), and second, to determine whether psychache operates in a diathesis-stress fashion to precipitate suicide risk over time (Chapter Three). From the results of the research presented in this dissertation, four general conclusions related to the hypotheses proposed in these studies are evident.

General Conclusions

1. Psychache is distinct from depression and hopelessness.

The present work demonstrates the first evidence from exploratory and confirmatory factor analyses (Chapter Two) that depression, hopelessness, and psychache are best conceptualized as three distinct, but correlated variables. Although correlations between these three predictors are typically over .60 in university undergraduates and over .75 in suicide attempters (Munchua, 2003), their differential associations with each other and with suicide criteria suggest that they are not completely collinear. Because psychache accounts for a greater proportion of variance in depression and hopelessness than these variables account for in psychache, we can ascertain that the phenomenological experiences, which characterize depression and hopelessness, are moderately captured by the broader construct of psychological pain. However, psychache...
also gives unique consideration to the notion of unbearableness (Shneidman, 1993). It is conceivable that a person in a subjective condition of intolerable psychological pain may experience sadness or despair, as well as a myriad of negative affective and cognitive states beyond it. Not surprisingly, the sense of “can’t-take-it-ness” that is tapped by psychache was more strongly associated with suicide criteria than were depression or hopelessness (Chapter Two). The present studies provide a clearer sense of how psychache (mental pain that cannot be borne), hopelessness (expectations that positive events will not occur or that negative events will occur), and depression (symptoms, including pervasive sadness or an inability to feel pleasure) relate to each other and to suicide risk.

2. Psychache is at least of equal importance as depression and hopelessness for statistically predicting suicide risk.

Several lines of evidence support the pre-eminence of psychache as a suicide risk predictor. The standardized regression weights between internal perturbations, external/manipulative reasons for attempting suicide, suicide motivation, and suicide preparation were often twice as strong for psychache as those for depression and hopelessness (Chapter Two). In the study of diathesis-stress models of suicide risk, psychache also emerged as the only variable associated with suicide ideation at baseline (Chapter Three). These findings are consistent with other work demonstrating the ability of psychache to account for the influence of a wide range of variables on suicide risk, including social and physical well-being (Berlim et al., 2003) and perfectionistism (Flamenbaum & Holden, 2007).
However, Shneidman’s claim that psychache mediates the relationship between all risk factors and suicidality was not substantiated. In our evaluation of diathesis-stress models of suicide risk (Chapter Three), hopelessness continued to interact significantly with stress, even when psychache was considered. When each suicide criterion was regressed on all three predictors simultaneously (Chapter Two), depression and hopelessness also accounted for unique variance in internal perturbations and suicide motivation, respectively. Overall, these findings make it clear that psychache is an important component relevant to determining if an individual is at risk for attempting suicide, but that it is not the only factor that must be considered.

3. The negative cognitive triad constitutes a common diathesis relevant to suicide risk.

An advantage of the work presented in Chapter Three is that for the first time, three competing diathesis-stress models of suicide risk could be compared, which also allowed for initial levels of all hypothesized variables of interest to be controlled. Previous research has found that negative thoughts about oneself, the world, and the future leads to increased risk for depression (Haaga et al., 1991), and that attributing the occurrence of negative events to stable and global causes is associated with higher levels of hopelessness (Abramson et al., 1998). Our evaluation of the models proposed by Beck, Abramson et al., and Shneidman (1993) as part of a single integrated model uncovered that negative triad cognitions actually served as a common vulnerability that precipitate increases in psychache, as well as hopelessness and depression in the presence of stress. Of note, the relationship between depression and suicide ideation became nonsignificant, when hopelessness and psychache were considered in the model. Thus, among university undergraduates, it appears that the presence of negative triad cognitions heightens one’s
risk for depression, but that suicide risk is increased primarily when cognitively vulnerable individuals construe life stresses in a way that causes them to lose hope and/or to experience unbearable psychological pain.

4. Dependent stressors appear to be the most potent precipitants of increased suicidality.

The present work also examined the impact of different types of life stress on suicide risk (Chapter Three). Borrowing from the depression literature, we examined the interactions of cognitive vulnerabilities (i.e., negative cognitive triad, dysfunctional attributions, and unmet needs) with the frequency of major life stressors reported by participants. Stressors included the frequency of total major negative life events, achievement and interpersonal events, as well as dependent and independent events. Consistent with previous work in adults (Kendler et al., 1999; Shih, 2006; Skärsäter et al., 2001), we found that dependent events, which constitute events resulting partially from individual’s own behaviors, were the type of stressors that interacted most strongly with underlying cognitive vulnerabilities to precipitate hopelessness and psychache. Although independent stressors have been implicated in depression onset in adolescent samples, events such as separation of parents or moving residences that are rated as independent occurrences in younger individuals would likely qualify as dependent events in adults (Harkness, Bruce, & Lumley, 2006). In line with the depression research (Seligman, Abramson, Semmel, & von Baeyer, 1979), our findings suggest that encountering uncontrollable events is less important to the development of suicide ideation than individuals’ construals of such experiences, and that suicide risk, in particular, is heightened among individuals who perceive that their actions habitually generate further conflict and distress rather than satisfactory resolutions.
General Limitations and Future Research

Interpretations based on the present studies must be considered in the context of a number of general limitations. In terms of design issues, suicide motivation and preparation were employed as proxies for suicide completion, which may limit the applicability of our findings to more severely distressed populations. Given the relatively low base rate of suicide deaths, and the likelihood that suicide ideation and planning precede actual attempts, it is reasonable to identify the latter, more frequent criteria as relevant targets of study. However, in order to determine whether the pattern of relationships between suicide risk predictors and criteria are equivalent across groups at varying levels of suicide risk, routine comparisons of results based on less lethal indices of suicidality with those based on longitudinal (Beck et al., 1989; 1990) and population-based (Skärsäter et al., 2001) studies that are capable of tracking suicide completion should be undertaken, particularly, as these larger-scale endeavors incorporate more current psychological risk predictors, such as psychache.

Although the use of self-reported incidents of stress rather than perceived stress represented an advance in the attempt to tease apart diathesis-based and stress-based influences on suicidality and facilitated the collection of a large sample, the absence of an objective measure of event severity did not allow for a full exploration of the mechanisms underlying suicide risk. Future studies would greatly benefit from the use of more refined, interview-based stress measures, such as the Life Events and Difficulties Schedule-II (Bifulco et al., 1989), which permits interviewers to categorize events as minor or major, acute or chronic, or dependent or independent according to stringently set criteria. Research designs that assess the differential effects of the latter types of stress
are essential for determining whether: a) timing (i.e., intermittent versus constant) influences the effects of stress on suicide risk, b) different types of stress interact with each other, and c) the hypothesized diathesis-stress models of depression, hopelessness, and psychache are valid under different types of stressful life conditions.

As well, differences in response scale format among measures of depression (BDI; 0 to 3), hopelessness (BHS; true/false), and psychache (Psychache Scale; 1 to 5) were only partially addressed by comparing results based on scale totals comprising original items, dichotomized items, parcels of original items, and parcels of dichotomized items (Chapter Two). Discrepancies in item-level variability among the predictor measures were not diminished by parceling original items, which generated maximum total parcel scores for the BDI, BHS, and Psychache Scale of 9, 4, and 20, respectively. However, parceling dichotomized items did result in more equivalent maximum total parcel scores for the BDI, BHS, and Psychache Scale of 3, 4, and 4, respectively. Because findings in Chapter Two converged for parcels of original and dichotomized items, the resulting three-factor structure based on parcel loadings was not viewed to be wholly attributable to method bias, and the subsequent use of the BDI, BHS, and Psychache Scale to assess the effects of diathesis-stress interactions on suicide risk predictors in Chapter Three was deemed to be appropriate. Nevertheless, the role of method variance may be more fully resolved by undertaking a multitrait-multimethod analysis to observe whether high correlations between multiple measures of each suicide predictor result from similarities in scale format or construct validity.

Limitations pertaining to sample characteristics must also be noted. Results from both studies were derived from university undergraduates comprised primarily of well-
adjusted, young, female, Caucasian students. Floor effects on measures of interest likely led to attenuated relationships between variables of interest. Previous work has shown that depression, hopelessness, and psychache relate more weakly with suicide criteria in university undergraduates than in community-based suicide attempters (DeLisle & Holden, 2004). Thus, present findings await validation in community- and clinically-based populations.

In the present studies, weak gender effects also emerged in Chapter Three ($N = 301$), but not in Chapter Two ($N = 587$), suggesting that differences between men and women on suicide-relevant variables among undergraduate participants were marginal overall. However, epidemiological data indicate clear gender differences in patterns of suicidality. It has been shown that women are more likely than men to present with depression and to attempt suicide, while men are more likely to die by suicide due to their choice of more violent means, such as firearms, explosives or hanging (Buda & Tsuang, 1990; Health Canada, 1994). Additional research using male samples is essential to determine whether the development of gender-specific assessment and treatment methods are warranted.

Although age did not correlate with any variable of interest in Chapter Two, a cohort effect was evident, with participants in 2005 being significantly younger and more hopeless than those in 2002. The latter finding may be partially attributed to increased competition and stress among first-year undergraduates in 2005 as a consequence of the changeover from a five-year to a four-year high school program by the government of Ontario in 2003, resulting in increased post-secondary enrollment over the succeeding years. Replication of the present factor analytic and diathesis-stress research using
student samples in the post “double-cohort” era would increase confidence in the robustness of these findings.

Finally, there has been a dearth of research on the cultural factors associated with suicidality. Although the present studies comprised primarily Caucasian students, there is growing evidence that in North America, differences in suicide rates and the perceived acceptability of suicide as a means of dealing with stress may be declining in adolescents and young adults due to increased cultural integration (Joe, Romer, & Jamieson, 2007). However, ethnic differences may exert a strong influence in people whose cultural identity differs markedly from that of the dominant group. For example, in one mixed sample of geriatric medical patients and outpatients with substance abuse, diagnosable psychiatric disorders were associated with suicide risk for White, but not African Americans patients (Vanderwerker et al., 2007). This underscores the importance of understanding how nonpsychiatric factors, such as hopelessness and psychache, interact with the unique stressors faced by minority groups (i.e., intergenerational family conflict) to precipitate suicide risk in ethnically diverse populations (Leong, Leach, Yeh, & Chou, 2007).

Summary and Conclusions

This research helped to delineate the factors that impact suicide risk in a nonclinical adult population and contributes to the literature in several ways. Chapter Two elucidates how the three pre-eminent predictors of psychological risk, depression, hopelessness, and psychache, relate to each other. The research presented in Chapter Three overcomes several limitations (i.e., longitudinal design, priming, scoring of the frequency rather than the perceived impact of major negative life events, controlling for
past suicide ideation) to provide a better understanding of how cognitive vulnerability factors interact with stress to precipitate increases in depression, hopelessness, and psychache, and subsequent suicide ideation. The latter findings were remarkable given that the disattenuated correlation for Time 1 and Time 2 suicide ideation was .99 (Schumacker, 1996), leaving only 1% of true and error variability in suicide ideation to be accounted for by any additional variables of interest. Continued focus on variables that are amenable to therapeutic change is essential for refining current suicide prevention and intervention programs.

Together, the results of these studies have several implications. This research increases our understanding of: 1) psychache as a component of suicidality that is distinct from depression and hopelessness, 2) the particular importance of psychache and hopelessness as proximal predictors of suicide risk, and 3) the means by which cognitive vulnerability factors interact with major negative life events to heighten hopelessness and psychache. That the negative cognitive triad serves as a common pathway in the etiology of suicide risk is a finding of consequence. The next step for researchers is to determine how this knowledge replicates in a wider range of samples. In sum, this research highlights the complexity of self-destructive behavior, while clarifying how environmental and personal factors can interact, bringing researchers ever closer to understanding the processes underlying suicide risk.

References


African American and White patients vulnerable to suicide risk. *Suicide and Life-Threatening Behavior, 37*, 1-9.


### Appendix A

**Intercorrelations of Main Measures at Time 1 and Time 2**

<table>
<thead>
<tr>
<th>Variable</th>
<th>CTI1</th>
<th>GEN1</th>
<th>PNQ1</th>
<th>LES1</th>
<th>BDI1</th>
<th>BHS1</th>
<th>PS1</th>
<th>BSS1</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTI2</td>
<td>.81</td>
<td>.33</td>
<td>.38</td>
<td>.10</td>
<td>.57</td>
<td>.61</td>
<td>.53</td>
<td>.37</td>
</tr>
<tr>
<td>GEN2</td>
<td>.36</td>
<td>.66</td>
<td>.27</td>
<td>.06</td>
<td>.27</td>
<td>.26</td>
<td>.23</td>
<td>.08</td>
</tr>
<tr>
<td>PNQ2</td>
<td>.38</td>
<td>.33</td>
<td>.68</td>
<td>.13</td>
<td>.37</td>
<td>.27</td>
<td>.34</td>
<td>.18</td>
</tr>
<tr>
<td>LES2</td>
<td>.17</td>
<td>.05</td>
<td>.22</td>
<td>.48</td>
<td>.21</td>
<td>.07</td>
<td>.12</td>
<td>.05</td>
</tr>
<tr>
<td>BDI2</td>
<td>.58</td>
<td>.30</td>
<td>.28</td>
<td>.13</td>
<td>.67</td>
<td>.49</td>
<td>.55</td>
<td>.32</td>
</tr>
<tr>
<td>BHS2</td>
<td>.57</td>
<td>.22</td>
<td>.27</td>
<td>-.01</td>
<td>.46</td>
<td>.66</td>
<td>.34</td>
<td>.25</td>
</tr>
<tr>
<td>PS2</td>
<td>.50</td>
<td>.29</td>
<td>.25</td>
<td>.12</td>
<td>.56</td>
<td>.38</td>
<td>.62</td>
<td>.43</td>
</tr>
<tr>
<td>BSS2</td>
<td>.42</td>
<td>.15</td>
<td>.18</td>
<td>.07</td>
<td>.34</td>
<td>.33</td>
<td>.43</td>
<td>.78</td>
</tr>
</tbody>
</table>

*Note.* 4-month (approximate) test-retest reliability coefficients appear on the diagonal. 1 = Time 1 measure; 2 = Time 2 measure. CTI = Cognitive Triad Inventory; GEN = EASQ Generality Subscale; PNQ = Psychache Needs Questionnaire; LES = Number of Negative Life Events; BDI = Beck Depression Inventory, BHS = Beck Hopelessness Scale; PS = Psychache
Scale, BSS = Beck Scale for Suicide Ideation. $p < .05$ for correlations $\geq .11$; $p < .01$ for correlations $\geq .17$; $p < .001$ for correlations $\geq .21$. 
Appendix B

Materials for Study 1
Letter of Information 1 (Introductory Psychology Students)

[*Note. Because the present researcher and a colleague in the same laboratory were using several common measures, data for both projects was collected together to facilitate the efficient use of the introductory psychology subject pool.]*

These studies are being conducted by Michelle DeLisle and Melanie Edwards and are sponsored by the Queen’s Department of Psychology.

These studies are being conducted to examine how thoughts and feelings are associated with suicide risk and life meaning. By understanding the psychological factors related to self-harm, it is hoped that people at risk for self-harm may be understood, identified, and treated more effectively. You will be asked to complete a questionnaire booklet in a classroom setting. The entire session should last approximately 60 minutes.

There are no known physical, psychological, economic, or social risks associated with this research. Your participation in this procedure is completely voluntary and you may withdraw from the studies at any time without any consequences on your academic standing at Queen’s University. It would be greatly appreciated if you would answer **ALL** questions as honestly as possible. However, you should not feel obligated to answer any questions that you find objectionable or that make you feel uncomfortable. You will be awarded a course credit for your participation in the studies whether you complete them or not.

The only information we will be recording about you is the information from the questionnaire booklet in these studies. Please do **NOT** put your name, address, or any personally identifying information on the questionnaires. The only individuals who will have access to this information are the researcher, her supervisor, and academic colleagues with scholarly interests in self-harm. The data will be stored in a secure area in a locked office. Any publications or presentations at scientific conferences based on this research will be of general findings only, and will not breach personal confidentiality.

If you would like further information about these studies, if you have additional questions or concerns, or if you would like a summary of the general research results (available in the fall of 2007), please feel free to contact the researchers, Michelle DeLisle, at 0mmm1@qlink.queensu.ca, or Melanie Edwards, at 7mje@qlink.queensu.ca, Department of Psychology, Queen’s University, Kingston, Ontario, K7L 3N6. Concerns may also be addressed by contacting our supervisor, Dr. Ronald Holden, email holdenr@post.queensu.ca, the Head of the Department of Psychology at Queen’s University, Dr. Vernon Quinsey, email psychead@post.queensu.ca, or the Vice Chair of the Queen's University General Research Ethics Board at 533-6081.
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There are no known physical, psychological, economic, or social risks associated with this research. Your participation in this procedure is completely voluntary and you may withdraw from the studies at any time without any consequences on your academic standing at Queen’s University. It would be greatly appreciated if you would answer ALL questions as honestly as possible. However, you should not feel obligated to answer any questions that you find objectionable or that make you feel uncomfortable. You will have an opportunity to enter your name and contact information into a draw, whether you complete the study or not. The winner whose name is drawn will be contacted in April 2006 at the latest, and will receive $150. Names and contact information will be obtained only so that the prize winner can be contacted, and they will not be associated with any of the research materials. After the winner is contacted, all entries will be shredded.

The only information we will be recording about you is the information from the questionnaire booklet in this study. Please do NOT put your name, address, or any personally identifying information on the questionnaires. The only individuals who will have access to this information are the researcher, her supervisor, and academic colleagues with scholarly interests in self-harm. The data will be stored in a secure area in a locked office. Any publications or presentations at scientific conferences based on this research will be of general findings only, and will not breach personal confidentiality.

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Consent Form

I, ____________________________, have volunteered to participate in the study titled, “Understanding the Diathesis-Stress Relationship between Depression, Hopelessness, Psychache and Suicide Risk – Study 1,” as well as the study titled “The Dimensionality and Construct Valid Measurement of Life Meaning – Study 3”.

I have read the letter of information and any questions or concerns I had (if any) have been answered satisfactorily. I consent to the above information and understand what is required for participation in these studies. I understand that my involvement in this research will entail completing a questionnaire booklet in a classroom setting. I am aware that the purpose of this research is to explore how feelings and thoughts relate to self-harm and life meaning.

I understand that my participation in these studies is completely voluntary and that I am free to withdraw at any time. I also understand that my confidentiality will be protected throughout the study, and that the information I provide will be available only to researchers with scholarly interests in self-harm.

Should I have further questions or complaints I understand that I can contact any of the following individuals: the researchers, Michelle DeLisle, email 0mmm1@qlink.queensu.ca, Melanie Edwards, email 7mje@qlink.queensu.ca, our supervisor, Dr. Ronald Holden, email holdenr@post.queensu.ca, the head of the Department of Psychology, Dr. Vernon Quinsey, email psychead@post.queensu.ca, the Queen’s University General Research Ethics Board at 533-6081, or the Chair of the General Research Ethics Board, Dr. Joan Stevenson, (613) 533-6000 ext. 74579, email stevensj@post.queensu.ca.

Signature: __________________________________________

Date: __________________________________________
Demographic Sheet

Have you ever attempted suicide (circle one)? YES NO

If YES, how long ago was your most recent attempt?
___________________________________

If YES, how did you attempt to kill yourself in this attempt?
______________________________________________________
______________________________________________________

If YES, how intent were you on killing yourself in this most recent attempt (circle one)?

<table>
<thead>
<tr>
<th>NOT VERY INTENT</th>
<th>SOMEWHAT INTENT</th>
<th>MODERATELY INTENT</th>
<th>QUITE INTENT</th>
<th>EXTREMELY INTENT</th>
</tr>
</thead>
</table>

If YES, how likely are you to attempt suicide in the future (circle one)?

<table>
<thead>
<tr>
<th>NOT VERY LIKELY</th>
<th>SOMEWHAT LIKELY</th>
<th>MODERATELY LIKELY</th>
<th>QUITE LIKELY</th>
<th>EXTREMELY LIKELY</th>
</tr>
</thead>
</table>

How many suicide attempts have you made in your entire lifetime?
___________________________________

Have you been diagnosed with any medical or psychological conditions that may account for thoughts and feelings described in these questionnaires (i.e., hypothyroidism, hypoglycemia, mood disorder, anxiety disorder, drug/alcohol abuse, etc.)? Please circle either: YES or NO

IF YES, please indicate which conditions apply?
______________________________________________________
______________________________________________________
This questionnaire consists of 21 groups of statements. After reading each group of statements carefully, circle the number (0, 1, 2, or 3) next to the one statement in each group which best describes the way you have been feeling the past week, including today. If several statements within a group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

1. 0 I do not feel sad.
   1 I feel sad.
   2 I am sad all the time and I can’t snap out of it.
   3 I am so sad or unhappy that I can’t stand it.

2. 0 I am not particularly discouraged about the future.
   1 I feel discouraged about the future.
   2 I feel I have nothing to look forward to.
   3 I feel that the future is hopeless and that things cannot improve.

3. 0 I do not feel like a failure.
   1 I feel I have failed more than the average person.
   2 As I look back on my life, all I can see is a lot of failures.
   3 I feel I am a complete failure as a person.

4. 0 I get as much satisfaction out of things as I used to.
   1 I don’t enjoy things the way I used to.
   2 I don’t get real satisfaction out of anything anymore.
   3 I am dissatisfied or bored with everything.

5. 0 I don’t feel particularly guilty.
   1 I feel guilty a good part of the time.
   2 I feel quite guilty most of the time.
   3 I feel guilty all of the time.

6. 0 I don’t feel I am being punished.
   1 I feel I may be punished.
   2 I expect to be punished.
   3 I feel I am being punished.

7. 0 I don’t feel disappointed in myself.
   1 I am disappointed in myself.
   2 I am disgusted with myself.
   3 I hate myself.

8. 0 I don’t feel I am any worse than anybody else.
   1 I am critical of myself for my weaknesses or mistakes.
   2 I blame myself all the time for my faults.
   3 I blame myself for everything bad that happens.

9. 0 I don’t have any thoughts of killing myself.
   1 I have thoughts of killing myself, but I would not carry them out.
   2 I would like to kill myself.
   3 I would like to kill myself if I had the chance.
10. 0 I don’t cry any more than usual.
   1 I cry more now than I used to.
   2 I cry all the time now.
   3 I used to be able to cry, but now I can’t cry even though I want to.

11. 0 I am not more irritated now than I ever am.
   1 I get annoyed or irritated more easily than I used to.
   2 I feel irritated all the time now.
   3 I don’t get irritated at all by the things that used to irritate me.

12. 0 I have not lost interest in other people.
   1 I am less interested in other people than I used to be.
   2 I have lost most of my interest in other people.
   3 I have lost all of my interest in other people.

13. 0 I make decisions about as well as I ever could.
   1 I put off making decisions more than I used to.
   2 I have greater difficulty in making decisions than before.
   3 I can’t make decisions at all anymore.

14. 0 I don’t feel I look any worse than I used to.
   1 I am worried that I am looking old or unattractive.
   2 I feel that there are permanent changes in my appearance that make me look unattractive.
   3 I believe that I look ugly.

15. 0 I can work about as well as before.
   1 It takes an extra effort to get started at doing something.
   2 I have to push myself very hard to do anything.
   3 I can’t do any work at all.

16. 0 I can sleep as well as usual.
   1 I don’t sleep as well as I used to.
   2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
   3 I wake up several hours earlier than I used to and cannot get back to sleep.

17. 0 I don’t get more tired than usual.
   1 I get tired more easily than I used to.
   2 I get tired from doing almost anything.
   3 I am too tired to do anything.

18. 0 My appetite is no worse than usual.
   1 My appetite is not as good as it used to be.
   2 My appetite is much worse now.
   3 I have no appetite at all anymore.

19. 0 I haven’t lost much weight, if any, lately.
   1 I have lost more than 5 pounds.
   2 I have lost more than 10 pounds.
   3 I have lost more than 15 pounds.

   I am purposely trying to lose weight by eating less.   Yes_______    No ________

20. 0 I am no more worried about my health than usual.
   1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
   2 I am very worried about physical problems and it’s hard to think of much else.
   3 I am so worried about my physical problems that I cannot think about anything else.
<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>I have not noticed any recent change in my interest in sex.</td>
</tr>
<tr>
<td>1</td>
<td>I am less interested in sex than I used to be.</td>
</tr>
<tr>
<td>2</td>
<td>I am much less interested in sex now.</td>
</tr>
<tr>
<td>3</td>
<td>I have lost interest in sex completely.</td>
</tr>
</tbody>
</table>
This questionnaire consists of 20 statements. Please read the statements carefully one by one. If the statement describes your attitude for the past week including today, circle the ‘T’ indicating TRUE in the column next to the statement. If the statement does not describe your attitude, circle the ‘F’ indicating FALSE in the column next to the statement. Please be sure to read each statement carefully.

1. I look forward to the future with hope and enthusiasm. T F
2. I might as well give up because I can’t make things better for myself. T F
3. When things are going badly, I am helped by knowing they can’t stay that way forever. T F
4. I can’t imagine what my life would be like in 10 years. T F
5. I have enough time to accomplish the things I most want to do. T F
6. In the future, I expect to succeed in what concerns me most. T F
7. My future seems dark to me. T F
8. I expect to get more of the good things in life than the average person. T F
9. I just don’t get the breaks, and there’s no reason to believe I will in the future. T F
10. My past experiences have prepared me well for my future. T F
11. All I can see ahead of me is unpleasantness rather than pleasantness. T F
12. I don’t expect to get what I really want. T F
13. When I look ahead to the future, I expect I will be happier than I am now. T F
14. Things just won’t work out the way I want them to. T F
15. I have great faith in the future. T F
16. I never get what I want so it’s foolish to want anything. T F
17. It is very unlikely that I will get any real satisfaction in the future. T F
18. The future seems vague and uncertain to me. T F
19. I can look forward to more good times than bad times. T F
20. There’s no use in really trying to get something I want because I probably won’t get it. T F
Psychache Scale

The following statements refer to your psychological pain, NOT your physical pain. By circling the appropriate number, please indicate how frequently each of the following occur.

1 = Never; 2 = Sometimes; 3 = Often; 4 = Very Often; 5 = Always

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel psychological pain.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I seem to ache inside.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. My psychological pain seems worse than any physical pain.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. My pain makes me want to scream.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. My pain makes my life seem dark.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I can’t understand why I suffer.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Psychologically, I feel terrible.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I hurt because I feel empty.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. My soul aches.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Please continue this inventory using the following scale:

1 = Strongly Disagree; 2 = Disagree; 3 = Unsure; 4 = Agree; 5 = Strongly Agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. I can’t take my pain any more.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Because of my pain, my situation is impossible.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. My pain is making me fall apart.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. My psychological pain affects everything I do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
RASQ

Please rate how much you agree with each of these statements. They describe reasons you may have had for considering an attempt to end your life. In answering, please circle one option per statement.

1. Punish myself.
   - Completely Agree
   - Disagree A Little

2. I seemed to lose control and have no idea why I behaved that way.
   - Completely Agree
   - Disagree A Little

3. Make people sorry for the way they treated me.
   - Completely Agree
   - Disagree A Little

4. Frighten someone.
   - Completely Agree
   - Disagree A Little

5. Because I was angry with someone and wanted to get back at him (her).
   - Completely Agree
   - Disagree A Little

6. Seek help from someone for my nerves and my difficulties.
   - Completely Agree
   - Disagree A Little

7. Make people understand how I was feeling and how distressed I was.
   - Completely Agree
   - Disagree A Little

8. Show how much I love someone.
   - Completely Agree
   - Disagree A Little

9. To find out if someone loves me or not.
   - Completely Agree
   - Disagree A Little

10. Try to influence or change someone’s mind.
    - Completely Agree
    - Disagree A Little

11. The situation was so unbearable I felt I had to do something and did not know what else to do.
    - Completely Agree
    - Disagree A Little

12. Escape for a while from an impossible situation.
    - Completely Agree
    - Disagree A Little

13. To get relief from a terrible state of mind.
    - Completely Agree
    - Disagree A Little

14. Because I am not good enough to have accomplished anything worthwhile, I am a failure.
    - Completely Agree
    - Disagree A Little
BSS

Please carefully read the following 19 statements and, for each, circle the most appropriate response for you.

1. How strong is your wish to live?
   a) Moderate to strong.
   b) Weak.
   c) None.

2. Do you have any wish to die?
   a) None.
   b) Some weak desire.
   c) Moderate to strong desire.

3. In considering your reasons for living and dying:
   a) the reasons for living outweigh the reasons for dying.
   b) the reasons for living equal the reasons for dying.
   c) the reasons for dying outweigh the reasons for living.

4. Do you have any desire to attempt to end your life?
   a) None.
   b) I have some weak desire.
   c) I have at least moderate desire.

5. If for any reason your life was endangered and you were in a position to intervene, would you:
   a) take the necessary action to save your life?
   b) leave the final result of life and death to chance?
   c) avoid any steps which could be taken to save your life?

6. For what duration have you had thoughts of taking your own life?
   a) If at all, they have been at the most brief, passing thoughts.
   b) They have persisted longer than the occasional passing thought.
   c) They are continuously on my mind.

7. How frequently have you thought of taking your own life?
   a) If at all, only on rare occasions.
   b) Fairly frequently.
   c) Quite often, almost all the time.

8. How do you feel about any thoughts of ending your life you might have?
   a) I reject them.
   b) I am unsure about them.
   c) I accept them.

9. Do you feel you can control any thoughts of ending your life you might have?
   a) I feel they are under my control.
   b) I am unsure that I control them.
   c) I have no sense of control over these wishes.

10. Do you feel deterred from taking action to end your life by certain inhibiting factors (e.g., family, religious beliefs) within it?
    a) I would not attempt to end my life because of deterrents.
    b) I am moderately inhibited from ending my life by deterrents.
    c) I am unconcerned about any deterrent.
11. What reasons could you have for attempting to end your own life?
   a) Only to get attention or revenge.
   b) To get attention and to escape my problems.
   c) To escape from my problems and solve them.

12. Have you ever contemplated ending your own life to the extent of making a plan or choosing a method with which to do so?
   a) No, I have not considered it.
   b) Yes, but not to the extent of working out the details.
   c) Yes, I have considered and worked out a plan to do so.

13. What opportunity would you have to end your own life?
   a) Very little, there is no available method or opportunity.
   b) Some, but getting an opportunity and acquiring a means to do so would take some effort.
   c) Considerable, an opportunity and means to do so are readily available.
   d) Considerable, although opportunity and means are not currently available, they would be in the future.

14. How capable could you feel in carrying out an attempt to end your life?
   a) I would be too afraid, hesitant or incompetent.
   b) I would be unsure of my courage and competence.
   c) I would be quite sure of my courage and competence.

15. Do you anticipate that you will ever make an actual attempt to end your life?
   a) No.
   b) I don’t know; I am not quite sure.
   c) Yes.

16. Have you ever made any preparation for any attempt to end your life?
   a) No, none whatsoever.
   b) Some, but not complete preparation.
   c) Yes, complete preparation for an attempt.

17. Have you ever formulated a suicide note for yourself?
   a) No.
   b) I thought about one but only started composing or writing it.
   c) Yes, I completed one.

18. Have you ever taken any actions (e.g., insurance, will) in anticipation of attempting to end your own life?
   a) None at all.
   b) Some, I have thought about such action and made preliminary arrangements.
   c) Considerable, I have made a definite plan or completed such arrangements.

19. To what degree have you openly revealed any thoughts you might have of ending your life?
   a) I have revealed any ideas openly.
   b) I have held back on revealing any thoughts of this nature.
   c) I have kept them to myself or taken measures to conceal their knowledge from others.
THANK YOU. YOU HAVE NOW COMPLETED ALL QUESTIONS. IF THERE IS ANYTHING ELSE YOU WOULD LIKE TO SAY ABOUT YOUR EXPERIENCE, PLEASE DO SO ON THE FOLLOWING PAGE.

COMMENTS:
Debriefing Sheet

Please read this AFTER you have completed the Questionnaire Booklet. We thank you for your participation.

Study A will examine the overlap between depression, hopelessness, and psychological pain or psychache, which are the three psychological variables most strongly associated with suicide risk. Assessing the how the thoughts and feelings associated with self-harm are related with each other and with suicide risk is a critical issue for mental health practitioners and researchers. Understanding how important statistical predictors of self-harm overlap with each other will help researchers to develop more streamlined and effective methods for assessing suicide risk.

Study B will examine the relationship between mood and meaning in life. We will be using your responses, along with the responses of other participants, to examine the validity of a new, multidimensional measure of life meaning. Meaning in life is believed to be integral to one’s well-being, and a dearth of meaning has been linked to substance abuse, suicide ideation, and anxiety, while higher meaning is associated with self-esteem, sense of control, and extraversion.

Individual results of this research are anonymous and cannot be provided. However, if you would like a GENERAL SUMMARY of findings from either study, you may obtain them by contacting (after July, 2007):

**Study A:** Michelle DeLisle by email at 0mmml@qlink.queensu.ca, or by regular mail at: Michelle DeLisle, Department of Psychology, Queen’s University, Kingston, ON K7L 3N6

**Study B:** Melanie Edwards by email at 7mje@qlink.queensu.ca, or by regular mail at: Melanie Edwards, Department of Psychology, Queen’s University, Kingston, ON K7L 3N6

If you have concerns or complaints about this research, please contact either of the above individuals, or our supervisor, Dr. Ronald Holden (holdenr@post.queensu.ca, 533-2879). If your concerns are not resolved, you may contact Dr. Vern Quinsey, Head of the Department of Psychology (533-2492) or the Chair of the General Research Ethics Board (533-6081).

If the recounting of your experiences has led you to feel distressed and you would like to speak to someone about your thoughts, you are encouraged to contact a local health practitioner (i.e., your physician) in your community. Alternatively, please contact any of the following (in Kingston, Ontario):

**Student Counseling, Queen’s University**….Telephone: (613) 533-2893

**Canadian Mental Health Association**……. Telephone: (613) 549-7027

**Distress Centre**…………………………..….Telephone: (613) 544-1771

We would ask you to maintain confidentiality about the purpose of the experiments since any pre-knowledge of the purpose will bias the data for that person, and thus cannot be used.

If you are interested in finding out more about these research areas, suggested readings include:


Appendix C

Materials for Study 2

Note. The BDI, BHS, Psychache Scale, BSS, Demographics Sheet, and Comments Sheet utilized in Study 1 were also administered in Study 2. Because the EASQ is copyrighted, it was not included in the Appendix.
This study is being conducted by Michelle DeLisle and is sponsored by the Queen’s Department of Psychology.

This study is being conducted to examine how life stress, particularly achievement-related stress, interacts over time with peoples’ characteristic ways of thinking and feeling. By understanding how these factors interact, it is hoped that early intervention programs can be developed to address issues most relevant to self-harm. There are two parts to this study. Part I, this session, will involve completing a questionnaire booklet in a laboratory setting, then listening to a song in a quiet office and completing a second questionnaire booklet in a laboratory setting. The entire session should last approximately 60 minutes. Part two will require you to return next semester after January 2006 to complete similar questionnaires. Should you decide to participate in this study, the researcher will contact you next semester to book a time for you to complete Part II. Because the difference between my reported mid-year (December) PSYC 100 mark at Time 1 and my actual mid-year (December) PSYC 100 mark at Time 2 will serve as an important index of stress, the accuracy of this mark will be verified at the end of the study by personnel in the Department of Psychology who already have access to these marks. The researcher will not have access to the actual PSYC 100 marks at any time in order to maintain confidentiality.

The only known risk factor is that recounting your experiences may cause psychological stress, such as feeling sadness or depression in people who may be prone to these feelings. However, if the recounting of your experiences leads you to feel distressed, and you would like to speak to someone in confidence about your thoughts or feelings, I am qualified to assess the situation further and can provide you with a list of appropriate resources if necessary (i.e., Student Counseling Centre – (613) 533-2893, 24-Hour Crisis Line – (613) 544-4229, Hotel Dieu Emergency (Psychiatry) – (613) 546-1240, Distress Centre – (613) 544-1771, Canadian Mental Health Association – (613) 549-7027. Your participation in this procedure is completely voluntary and you may withdraw from this study at any time without any consequences to your academic standing at Queen’s University. It would be greatly appreciated if you would answer ALL questions as honestly as possible. However, you should not feel obligated to answer any questions that you find objectionable or that make you feel uncomfortable. You will be awarded 1 course credit for your participation in Part I of this study whether you complete it or not. Next semester, you would be awarded another 1 course credit for your participation at that time in Part II.

The only information we will be recording about you is the information from the questionnaire booklet in this study. Please do NOT put your name, address, or any personally identifying information on the questionnaires. However, we ask for your phone number and e-mail address on the Consent Form so that we can contact you for Part II of the study. The only individuals who will have access to this information are the researcher, her supervisor, and academic colleagues with scholarly interests in stress and mood. The data will be stored in a secure area in a locked office. Any publications or presentations at scientific conferences based on this research will be of general findings only, and will not breach personal confidentiality.

If you would like further information about the study, if you have additional questions or concerns, or if you would like a summary of the general research results (available in the fall of 2007), please feel free to contact the researcher, Michelle DeLisle, at 0mmm1@qlink.queensu.ca, Department of Psychology, Queen’s University, Kingston, Ontario, K7L 3N6. Concerns may also
be addressed by contacting her supervisor, Dr. Ronald Holden, email holdenr@post.queensu.ca, the Head of the Department of Psychology at Queen’s University, Dr. Vernon Quinsey, email psychead@post.queensu.ca, or the Vice Chair of the Queen's University General Research Ethics Board at 533-6081.
Consent Form

I, ____________________________, have volunteered to participate in the study titled, “Understanding the Diathesis-Stress Relationship between Depression, Hopelessness, Psychache and Suicide Risk – Study 2.”

I have read the letter of information and any questions or concerns I had (if any) have been answered satisfactorily. I consent to the above information and understand what is required for participation in the study. I understand that this study involves two parts. My involvement in Part I, this session, will involve first completing a questionnaire booklet in a laboratory, then listening to a song in a quiet office while thinking of a sad experience, followed by completing a second questionnaire booklet in a laboratory setting. I am aware that the purpose of this study is to explore how feelings and thoughts interact with stress over time. Next semester, I agree to return to complete Part II of this study, which will involve the same procedure. I am aware that the researcher will be contacting me after classes begin in January 2006 to set up a time for me to complete Part two of this study. I am aware that this study will take about 60 minutes and that I will receive 1 course credit for participating in each part of the study. Because the difference between my reported mid-year (December) PSYC 100 mark at Time 1 and my actual mid-year (December) PSYC 100 mark at Time 2 will serve as an important index of stress, the accuracy of this mark will be verified by personnel in the Department of Psychology at the end of the study who already have access to these marks. The researcher will not have access to the actual PSYC 100 marks at any time in order to maintain confidentiality.

I understand that my participation in both parts of this study is completely voluntary and that I am free to withdraw at any time. I also understand that my confidentiality will be protected throughout the study, and that the information I provide will be available only to researchers with scholarly interests in stressful life events and mood.

Should I have further questions or complaints I understand that I can contact any of the following individuals: the researcher, Michelle DeLisle, email 0mmm1@qlink.queensu.ca, her supervisor, Dr. Ronald Holden, email holdenr@post.queensu.ca, the head of the Department of Psychology, Dr. Vernon Quinsey, email psychead@post.queensu.ca, the Queen’s University General Research Ethics Board at 533-6081, or the Chair of the General Research Ethics Board, Dr. Joan Stevenson, (613) 533-6000 ext. 74579, email stevensj@post.queensu.ca.

Signature: __________________________________________
Date: ____________________________

Contact Information (so I can be contacted for Part 2 of the study in Winter Term)

Phone: __________________________________________
Email: __________________________________________
Grade Discrepancy Measure

TIME 1:

Please begin by providing the following information:

Age: __________  Gender: __________  Today’s Date: __________________

Often people have personal standards about achievement that differ from those set by teachers in a class. Reflecting on your own standards, what grade (between 0 and 100 %) would you consider a personal failure on an examination in general? ______% On a PSYC 100 examination? ______%

TIME 2:

Please begin by providing the following information:

Age: __________  Gender: __________  Today’s Date: __________________

What grade (between 0 and 100 %) did you receive on your mid-year (December) PSYC 100 exam? _____%

Note. The above self-reported grade was checked against their official class grade.
Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social readjustment. Please check those events which you have experienced in the **PAST 4 MONTHS**. If you have experienced an event, also circle the number that indicates the *extent to which you viewed the event as having either a positive or negative impact on your life* at the time the event occurred in the middle column, and rate the *importance of the event to you* in the rightmost column. If you have not experienced the event, skip that item and continue on to the next item.

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Event Impact</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marriage/start of common-law or live-in relationship</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>Detention in jail or comparable institution</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
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<tr>
<td>Death of a spouse</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>Major change in sleeping habits (much more or much less sleep)</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
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<tr>
<td>Death of a close family member:</td>
<td></td>
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<tr>
<td>a. mother</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>b. father</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>c. brother</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>d. sister</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>e. grandmother</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>f. grandfather</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>g. other: specify</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>Major change in eating habits (much more or much less food intake)</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td>0 1 2 3 4</td>
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<td></td>
<td>Event Description</td>
<td>-3</td>
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<td>7.</td>
<td>Foreclosure on mortgage or loan</td>
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<tr>
<td>8.</td>
<td>Death of a close friend</td>
<td>-3</td>
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<tr>
<td>9.</td>
<td>Outstanding personal achievement</td>
<td>-3</td>
</tr>
<tr>
<td>10.</td>
<td>Minor law violations (traffic tickets, disturbing the peace, etc.)</td>
<td>-3</td>
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<tr>
<td>11.</td>
<td>Male: Partner’s pregnancy</td>
<td>-3</td>
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<tr>
<td>12.</td>
<td>Female: Pregnancy</td>
<td>-3</td>
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<tr>
<td>13.</td>
<td>Changed work situation (different work responsibility, major change in working conditions, working hours, etc.)</td>
<td>-3</td>
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<td>14.</td>
<td>New job</td>
<td>-3</td>
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<td>15.</td>
<td>Serious illness or injury of close family member:</td>
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<td></td>
<td>a. father</td>
<td>-3</td>
</tr>
<tr>
<td></td>
<td>b. mother</td>
<td>-3</td>
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<td></td>
<td>c. sister</td>
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<td>e. grandfather</td>
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<td></td>
<td>f. grandmother</td>
<td>-3</td>
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<td></td>
<td>g. spouse/common-law/live-in</td>
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<td>h. other: specify________</td>
<td>-3</td>
</tr>
<tr>
<td>16.</td>
<td>Sexual difficulties</td>
<td>-3</td>
</tr>
<tr>
<td>17.</td>
<td>Trouble with employer (in danger of losing job, being suspended, demoted, etc.)</td>
<td>-3</td>
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<tr>
<td>18.</td>
<td>Trouble with in-laws</td>
<td>-3</td>
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<tr>
<td>19.</td>
<td>Major change in financial status (a lot better off or a lot worse off)</td>
<td>-3</td>
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<tr>
<td>20.</td>
<td>Major change in closeness of family members (increased or decreased)</td>
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<tr>
<td>21. Gaining a new family member (birth, adoption, family member moving in, etc.)</td>
<td>-3</td>
<td>-2</td>
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<tr>
<td>22. Change of residence</td>
<td>-3</td>
<td>-2</td>
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<tr>
<td>23. Separation from mate (due to conflict)</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>24. Major change in church activities (increased or decreased attendance)</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>25. Reconciliation with mate</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>26. Major change in number of arguments with partner (a lot more or a lot less)</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>27. Male: Change in partner’s work outside the home (beginning work, ceasing work, changing to a new job, etc.)</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>28. Female: Change in partner’s work outside the home (loss of job, beginning new job, retirement, etc.)</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>29. Major change in usual type and/or amount of recreation</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>30. Borrowing more than $10,000 (buying home, business, etc.)</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>31. Borrowing less than $10,000 (buying car, TV, getting a school loan, etc.)</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>32. Being fired from job</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>33. Male: Partner having abortion</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>34. Female: Having abortion</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>35. Major personal illness or injury</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>36. Major change in social activities</td>
<td>-3</td>
<td>-2</td>
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<tr>
<td>Event</td>
<td>Scale</td>
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<tr>
<td>Major change in living conditions of family (building new home, remodeling, deterioration of home, neighborhood, etc.)</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
</tr>
<tr>
<td>Divorce</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
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<tr>
<td>Serious injury or illness of close friend</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
</tr>
<tr>
<td>Retirement from work</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
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<tr>
<td>Son or daughter leaving home (due to marriage, college, etc.)</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
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<tr>
<td>Ending of formal schooling</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
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<tr>
<td>Separation from partner (due to work, travel, etc.)</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
</tr>
<tr>
<td>Engagement</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
</tr>
<tr>
<td>Breaking up with boyfriend/girlfriend</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
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<tr>
<td>Leaving home for the first time</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
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<tr>
<td>Reconciliation with boyfriend/girlfriend</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
<td></td>
</tr>
<tr>
<td>Other experience:</td>
<td>-3 -2 -1 0 +1 +2 +3</td>
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<td>Other experience:</td>
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<tr>
<td>51. <strong>Beginning a new school experience at a higher academic level (college, graduate school, professional school, etc.)</strong></td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>52. <strong>Changing to a new school at same academic level (undergraduate, graduate, etc.)</strong></td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>53. <strong>Academic probation</strong></td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>54. <strong>Being dismissed from dormitory or other Residence</strong></td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>55. <strong>Failing an important exam</strong></td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>56. <strong>Changing a major</strong></td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>57. <strong>Failing a course</strong></td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>58. <strong>Dropping a course</strong></td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>59. <strong>Joining a fraternity/sorority</strong></td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>60. <strong>Financial problems concerning school (in danger of not having sufficient money to continue)</strong></td>
<td>-3</td>
<td>-2</td>
</tr>
</tbody>
</table>
PANAS

Below are a list of words that describe feelings and emotions. For each word, indicate to what extent you feel this way **RIGHT NOW**, that is, **AT THIS PRESENT MOMENT**.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Interested</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
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<tr>
<td>Distressed</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Upset</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Strong</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Guilty</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Scared</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Hostile</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Enthusiastic</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Proud</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Irritable</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Alert</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Ashamed</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
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<tr>
<td>Inspired</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
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<tr>
<td>Nervous</td>
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<td>🌊</td>
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<tr>
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<td>🌊</td>
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<td>🌊</td>
<td>🌊</td>
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<tr>
<td>Attentive</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
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<tr>
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<tr>
<td>Active</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Afraid</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Depressed</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Pained or Anguished</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Hopeless</td>
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<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Sad</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
<td>🌊</td>
</tr>
</tbody>
</table>
Manipulation Check Ratings

How much effort did you invest in *trying* to recall a sad memory? (Circle one).

<table>
<thead>
<tr>
<th>NO EFFORT</th>
<th>SOME EFFORT</th>
<th>MODERATE EFFORT</th>
<th>A GOOD DEAL OF EFFORT</th>
<th>GREAT EFFORT</th>
</tr>
</thead>
</table>

To what extent were you *able* to recall a sad memory? (Circle one).

<table>
<thead>
<tr>
<th>NOT AT ALL</th>
<th>SOMEWHAT VIVIDLY</th>
<th>MODERATELY VIVIDLY</th>
<th>QUITE VIVIDLY</th>
<th>EXTREMELY VIVIDLY</th>
</tr>
</thead>
</table>
CTI

This inventory lists different ideas that people sometimes have.

For each of these ideas, show how much you agree with it by circling the answer that best describes your opinion. Be sure to choose only ONE answer for each idea. Answer the items for what you are thinking about RIGHT NOW.

<table>
<thead>
<tr>
<th>TA = Totally agree</th>
<th>SD = Slightly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA = Mostly agree</td>
<td>MD = Mostly disagree</td>
</tr>
<tr>
<td>SA = Slightly agree</td>
<td>TD = Totally disagree</td>
</tr>
<tr>
<td>N = Neutral</td>
<td></td>
</tr>
</tbody>
</table>

1. I have many talents and skills.   TA   MA   SA   N   SD   MD   TD
2. My job (housework, schoolwork daily duties) is unpleasant.   TA   MA   SA   N   SD   MD   TD
3. Most people are friendly and helpful.   TA   MA   SA   N   SD   MD   TD
4. Nothing is likely to work out for me.   TA   MA   SA   N   SD   MD   TD
5. I am a failure.   TA   MA   SA   N   SD   MD   TD
6. I like to think about the good things that lie ahead for me.   TA   MA   SA   N   SD   MD   TD
7. I do my work (job, schoolwork, housework) adequately.   TA   MA   SA   N   SD   MD   TD
8. The people I know help me when I need it.   TA   MA   SA   N   SD   MD   TD
9. I expect that things will be going very well for me a few years from now.   TA   MA   SA   N   SD   MD   TD
10. I have messed up almost all of the Important relationships I have ever had. TA   MA   SA   N   SD   MD   TD
11. The future holds a lot of excitement for me. TA   MA   SA   N   SD   MD   TD
12. My daily activities are fun and rewarding. TA   MA   SA   N   SD   MD   TD
13. I can’t do anything right. TA   MA   SA   N   SD   MD   TD
14. People like me. TA   MA   SA   N   SD   MD   TD
15. There is nothing left in my life to look forward to. TA   MA   SA   N   SD   MD   TD
16. My current problems or concerns will always be there in one way or another. TA MA SA N SD MD TD
17. I am as adequate as other people I know. TA MA SA N SD MD TD
18. The world is a very hostile place. TA MA SA N SD MD TD
19. There is no reason for me to be hopeful about my future. TA MA SA N SD MD TD
20. The important people in my life are helpful and supportive. TA MA SA N SD MD TD
21. I hate myself. TA MA SA N SD MD TD
22. I will overcome my problems. TA MA SA N SD MD TD
23. Bad things happen to me a lot. TA MA SA N SD MD TD
24. I have a spouse or friend who is warm and supportive. TA MA SA N SD MD TD
25. I can do a lot of things well. TA MA SA N SD MD TD
26. My future is simply too awful to think about. TA MA SA N SD MD TD
27. My family doesn’t care what happens to me. TA MA SA N SD MD TD
28. Things will work out well for me in the future. TA MA SA N SD MD TD
29. I am guilty of a great many things. TA MA SA N SD MD TD
30. No matter what I do, others make it difficult for me to get what I need. TA MA SA N SD MD TD
31. I am a worthwhile human being. TA MA SA N SD MD TD
32. There is nothing to look forward to in the years ahead. TA MA SA N SD MD TD
33. I like myself. TA MA SA N SD MD TD
34. I am faced with many difficulties. TA MA SA N SD MD TD
35. I have serious flaws in my character. TA MA SA N SD MD TD
36. I expect to be content and satisfied as the years go by. TA MA SA N SD MD TD
For each question, please rate the extent to which you believe you **ACTUALLY** possess *and* the extent to which you **WOULD IDEALLY LIKE** to possess each characteristic. For every question, circle a response for *each* of the two columns. As well, please indicate your gender and age in the spaces to the right: **GENDER:** ______  **AGE:** ______

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>Extent to which you ACTUALLY possess the characteristic</th>
<th>Extent to which you would IDEALLY like to possess the characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ambition to succeed.</td>
<td>slightly   moderately   a great deal   extremely</td>
<td>slightly   moderately   a great deal   extremely</td>
</tr>
<tr>
<td>2. Loyalty to friends.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>3. Breaks free from rules.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>4. Tries again after a failure.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>5. Avoids potentially humiliating situations.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>6. Keeps things neat and tidy.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>7. Actively seeks support.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>8. Aims to surpass oneself.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>9. Seeks to affiliate with others.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>10. Strives for autonomy.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>11. Seeks to overcome weakness.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>12. Leaves embarrassing situations.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>13. Highly organized.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>14. Attempts to remain close to devoted protector.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>15. Strives for mastery.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>16. Joins groups with people who are like oneself.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>17. Defies convention.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>18. Acts to maintain self-respect.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td>19. Seeks to escape others’ scorn.</td>
<td>1              2               3                 4</td>
<td>1              2                3               4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>20. Places high priority on precision.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21. Seeks advice and counsel from trusted others.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>22. Seeks to excel at tasks.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>23. Adheres to those who are supportive.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>24. Quits activities arranged by domineering authorities.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>25. After being humiliated, acts to turn circumstances around.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>26. Avoids facing unconcerned or uncaring people.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>27. Likes to keep things in order.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>28. Seeks forgiveness from others.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>29. Likes learning independently.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>30. Puts family first.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>31. Acts freely on impulses.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>32. Maintains high level of pride.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>33. Avoids critical people.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>34. Arranges ideas in a balanced, clear way.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>35. Desires guidance from others.</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Final Mood Induction

In the space provided below, think of a **pleasant** or **happy** event that you have experienced and describe it. When was it? Where was it? Who was with you? What was the experience like?
Debriefing Sheet

Please read this AFTER you have completed the Questionnaire Booklet. Thank you very much for your participation. Your sharing of personal experiences in this research investigation is greatly appreciated.

Not everyone who experiences life stress becomes depressed, hopeless, or affected by intense psychological pain. This study examined how life stress, particularly achievement-related stress, interacts with the kind of thinking patterns that may make people especially vulnerable to experiencing depression, hopelessness, or psychological pain. In order to measure cognitive vulnerabilities, they need to be primed or brought to awareness. We primed negative thinking by having participants listen to a sad song and recall a sad memory. To see if this manipulation worked, we measured participants’ mood before and after the listening to the audio recording and asked how much effort participants placed in the task. In order to have participants leave the laboratory feeling at least in a neutral mood, we asked participants to describe a happy or pleasant event at the end of the questionnaire package. In terms of our research questions, we were particularly interested in learning whether Shneidman’s (1993) model of psychache can be conceptualized in terms of a diathesis-stress model— that is, whether psychache interacts with stress over time in order to lead to suicidal thoughts and feelings. This is a critical issue for mental health practitioners and researchers, because understanding how stress and factors like psychache, hopelessness, or depression interact with important risk factors over time may lead to the development of targeted early intervention programs to reduce self-harm.

Individual results of this research are anonymous and cannot be provided. However, if you would like a GENERAL SUMMARY of findings from this study, you may obtain them by contacting (after August, 2007) Michelle DeLisle by email at 0mmm1@qlink.queensu.ca or by regular mail at: Michelle DeLisle, Department of Psychology, Queen’s University, Kingston, ON K7L 3N6.

If you have concerns or complaints about this research, please contact the researcher, Michelle DeLisle, or her supervisor, Dr. Ronald Holden (holdenr@post.queensu.ca or 533-2879). If your concerns are not resolved, you may contact Dr. Vern Quinsey, Head of the Department of Psychology (533-2492) or the Chair of the General Research Ethics Board (533-6081).

If the recounting of your experiences has led you to feel distressed and you would like to speak to someone in confidence about your thoughts, you are encouraged to contact a local health practitioner (i.e., your physician) in your community. Alternatively, please contact any of the following (in Kingston, Ontario):

Student Counseling, Queen’s University…Telephone: (613) 533-2893
24-Hour Crisis Line……………………………Telephone: (613) 544-4229
Hotel Dieu Emergency – Psychiatry ………Telephone: (613) 546-1240
Canadian Mental Health Association……. Telephone: (613) 549-7027
Distress Centre………………………………Telephone: (613) 544-1771

We would ask you to maintain confidentiality about the purpose of this experiment since any pre-knowledge of the purpose will bias the data for that person, and thus, it will not be usable.

If you are interested in finding out more about this research area, suggested readings include:


Protocol and Supports

We have an obligation to take some steps to intervene if we notice a problem based on participants’ responses to measures, such as the BDI. As a regular part of my Parts I and II of this study, I will take the following precautions. First, I will review every participant’s BDI. If a participant endorses a score of 2 or 3 on the suicide item, I will then contact the student. Through my clinical training in suicide assessment, I would be capable of further assessing the nature of the situation for any at risk students. Second, students are provided with the phone number for the Student Counseling and Disability Centre in both the Letter of Information and the Debriefing Form. In addition, we will have a list of treatment referrals, including the Student Counseling and Disability Centre, available in the lab to provide any students who express an interest or appear to be distraught. Finally, I will offer to accompany these participants to the Counseling Centre if such assistance is desired.
Appendix D

LES Items Categorized as Dependent and Independent Events

**Dependent Items**

17. Trouble with employer (in trouble of losing job, being suspended, demoted, etc.)

18. Trouble with in-laws

23. Separation from mate (due to conflict)

32. Being fired from job

38. Divorce

53. Academic probation

55. Failing an important exam

57. Failing a course

**Independent Items**

3. Death of a spouse

5. Death of a close family member

8. Death of a close friend

15. Serious illness or injury of close family member

39. Serious illness or injury of close friend

43. Separation from partner (due to work, travel, etc.)