An Investigation of Cultural Influence upon Depressive Symptomatology and Its Comorbid Anxiety Symptoms among Chinese Canadian University Students

by

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Abstract

The first goal of the current study was to comprehensively assess depressive and anxiety symptomatology, and examine the resultant symptom structures among 206 Caucasian Canadian and 251 Chinese Canadian university student samples in relation to the tri-partite conceptual model put forth by Clark and Watson (1991). The current study used 14 symptom measures assessing the affective (e.g., low positive affect), the cognitive (e.g., worry), and the somatic aspects (e.g., autonomic hyperarousal) of depressive and anxiety symptomatology. Items that were found to function differently across the current two samples via the techniques of item response theory were considered to be culturally biased and were subsequently removed from these 14 measures so that the true structural relations among measures of depressive and anxiety symptomatology could be illustrated. The current study identified differences in symptom structures between Chinese and Caucasian samples (e.g., worry and autonomic hyperarousal), as well as differences

between these two samples' symptom structures and the structures of the original tripartite model (e.g., lack of depression specific element). After the cross sample differences and similarities in symptom structures of anxiety and depressive symtomatology were identified, the second primary goal of the current study was to further investigate cultural influences on between-group similarities and differences in the resultant symptom structures of anxiety and depression. Symptom factor scores were found to relate only to specific but not generic indicators of an individual's cultural experiences (e.g., Negative Acculturating Experiences). Furthermore, among 201 items of the 14 symptom measures included in the current study, 52 items (about 26%) were found to be culturally biased, with about one half of them being more likely endorsed by the Chinese sample and about the other half more likely endorsed by the Caucasian sample. The phenomenon of cultural bias at an item level was common, because all scales used in the current study contained culturally biased items, and because bias responding tendency was found within both Chinese and Caucasian samples. Cultural contrast response tendency, a composite variable of all cultural biased items, was found to relate to some but not all aspects of cultural orientations (e.g., Canadian External Orientation). It also showed a greater relation than symptom factors with cultural orientation measures. The third goal of the current study was to explore individuals' cultural and depressive experiences with a qualitative approach using a semi-structured interview, in order to discover new culturally relevant themes that may link individuals' cultural background with psychopathology. Three themes were identified among the interviews of Chinese Canadian university students, portraying the role of Chinese

culture in understanding an individual's depression, illustrating the mechanism linking culture with psychopathology, and highlighting the significance of a qualitative research approach in understanding a Chinese individual's experiences. Clinical implications for assessing depression and anxiety symptomatology, especially for individuals with Chinese origin, were discussed.

Table of Contents

List of Tables

List of Figures

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來自台灣，久居北美的我，能以中文表達我心中的感謝，是我相當珍惜，也是我身為我的一部分．這一路走來，時間滴滴答答過去，我們的年少與父母的白髮，雖收穫很多，但也是辛苦且漫長的．藉此感言表達對支持我的父母，賈鴻業先生與賈菊英女士，我心中的感謝．

-謹將此論文獻給我的先生與愛女-

CHAPTER 1: INTRODUCTION

Research on the relation between depression and anxiety has proceeded at a rapid pace since the 1980s, which has led to a better understanding about the similarities and differences between these two clinical phenomena. Many investigators have argued that the boundaries between mild-moderate depression, anxiety, and somatoform disorders are arbitrary and that these conditions should be subsumed under the broader rubric of a "general neurotic syndrome", which is continuous with normal functioning (Andrew, Stewart, Morris-Yates, Holt, & Henderson, 1990). Others have generated models to explain their comorbid relations; one of the most widely studied structural models is Clark and Watson's tripartite model (1991), which receives substantial empirical support. The subsequent reviews begins with an overview of depressive symptomatology and its overlap with anxiety syndrome in the general population, followed by a section of critiques as well as proposed strategies in improving upon the original tripartite model.

A theoretical model may be limited when being applied to different settings or groups. Cultural influences on anxiety and especially depression have been widely documented, including among the Chinese people (Kleinman & Good, 1985). The application of the tri-partite model to the Chinese people anticipates difficulties due to Chinese individuals' unique symptom presentations. The second section of the following review examines the comorbidity between anxiety and depression within the context of Chinese Canadians, looking at how depression is conceived and expressed in a traditionally Chinese cultural context and what cultural factors are relevant to Chinese Canadians in their experiences of depression. This section ends with a critical examination regarding applying the tri-partite model to Chinese Canadians, and a

proposal of improving this model for this specific population.

The third and last section of the review concerns the methodological improvements adopted by the current study, contrasting the past research as well as providing opportunities for generating new research paradigms in bridging general cultural models to refined psychopathology models within a specific cultural context. Instead of using principles from classical test theory (CTT), the current study will begin analyzing data using techniques of item response theory (IRT). IRT models specify the relation between item responses and the latent trait or construct thought to underlie the response or ratings (Embretson & Reise, 2000). Due to IRT's capability in separating characteristics of the measurement items and of the individuals under review, it becomes particularly promising in cross-cultural research (López & Guarnaccia, 2000), especially in examining culture-based biases. Therefore, the current study will apply techniques from IRT to identify items that are culturally biased and then only include bias-free items in the main structural analyses that examine whether the structures of anxiety and depression are similar across Chinese and Caucasian Canadian samples.

Another methodological improvement made by the current study is to supplement the aforementioned quantitative approach with a qualitative element in a semi-structured personal interview, aiming to discover individuals' perspectives about their own cultural and depressive experiences. Existing cultural models of psychopathology for ethnic minority individuals are generic primarily concerning an individual's ethnic and host cultural orientations. Specific cultural factors that influence individuals' psychological experiences within their cultural contexts would be better captured by a qualitative research approach (Okazaki, 1998). Furthermore, identifying these factors can point to a

new direction for future researchers and practitioners embracing the complexity of these human experiences.

Overall, the goals of the current study are three-fold. The first goal is to examine the relations among symptoms of anxiety and depression in relation to the original tri-partite model among the Caucasian Canadian and Chinese Canadian samples. The IRT techniques will be applied prior main structural analyses to ensure that no biased items are included in each measure. The second goal is to investigate cultural influences on the between-group differences in the resultant symptom factors, including those of Chinese cultural orientation, Canadian cultural orientation (i.e., level of acculturation), and negative acculturative experiences and collective self-esteem. The third goal is to explore individual's cultural and depressive experiences from a qualitative approach via semi-structured individual interviews, in order to discover new culturally relevant themes that have led to depression among this specific population.

CHAPTER 2: LITERATURE REVIEW

Depressive Symptomatology and Comorbid Anxiety

Broadly speaking, depressive symptomatology or syndrome is characterized by a cluster of affective (e.g., sadness; depressed mood), cognitive (e.g., concentration problems; thoughts of guilt and worthlessness), and physiological or somatic symptoms (e.g., lack of energy; disturbances in sleep, appetite, and psychomotor activity). Current diagnostic systems, including the 10th revision of the International Classification of Diseases (ICD-10; World Health Organization, 1992), and the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-txt; American Psychiatric Association, 2000), use these symptoms as criteria to diagnose depressive experiences and functional impairment. In the DSM-IV, major depressive disorder (MDD) is characterized by either depressed mood or markedly diminished interests or pleasure in most activities, while five out of nine additional symptoms are required. These symptoms also impact an individual's functioning in social and interpersonal domain, such as being more withdrawn and avoidant of interpersonal contacts.

The most recent data in the prevalence rate of MDD in the United States are based on DSM-III-R criteria, with 10% current prevalence rate, and approximately 17% lifetime prevalence rate (Kessler et al., 1994). According to a recent Canadian Community Health Survey (Statistics Canada, 2002), 4.8% reported current prevalence of MDD, compared to 5% with diabetes and 5% heart disease. Although only one in three depressed individuals seek formal treatment (Greenberg, Stiglin, Finkelstein, & Berndt, 1993), MDD is actually one of the most common complaints encountered by mental health professionals (Zheng et al., 1997). Similarly, in a primary care clinic, an estimate

of 12% of patients meets criteria for major depression (McQuaid, Stein, Laffaye, & McCahill, 1999). Note that depending on types of symptoms, criteria used, and characteristics of the sample groups, the prevalence of depressive symptoms ranged from about 2% when considering loss of interests to 33% regarding feeling of dysphoria (Kaelber, Moul, & Farmer, 1995). For the current study, when exploring the inter-relationship among these constructs across samples, the emphasis is not on any particular mood or anxiety disorder, but on the syndromal constructs of depression and anxiety as they occur in the targeted samples. This syndrome-level (but not disorder-level) approach is similar to that taken in past work on examining comorbid symptom structures between anxiety and depression among children and adolescents (e.g., Joiner, Catanzaro, & Laurent, 1996), and in adult samples (e.g., Watson et al., 1995).

When co-morbidity is examined at a disorder level, clinical symptomatology for each distinctive disorder is already defined according to respective diagnostic systems, and the frequency of co-occurrence between mood and anxiety disorders evidences comorbidity. Studies using diagnoses as the units of analysis are implicitly accepting the nosology they are evaluating (Brown, Chorpita, & Barlow, 1998). For the current study, as further illustrated below, depressive and anxiety syndromes are not comprehensively assessed by the existing diagnostic systems. Furthermore, these two clinical phenomena, instead of being distinctive from each other as implied by a "disorder" concept, are different from each other in some aspects but similar in others. Thus, a dimensional perspective is better suited for examining the inter-relations among symptoms and syndromes, and the latent structures of these features which may shed light on the structure forwarded by major diagnostic systems such as DSM-IV. Note that the term of

comorbidity usually refers to the co-occurrence of two disorders, whereas the co-occurrence of two clinical syndromes is usually described as "overlap" or "correlation" (Dobson & Cheung, 1990). Although the emphasis of the current study is on the syndromal levels, the terms of "comorbidity" or "co-occurrence" will be used interchangeably to describe the co-occurring phenomenon between anxiety and depression.

Comorbid Anxiety Symptoms in Relation to Depression

Increasing evidence indicates that seeing several psychiatric disorders appear in the same individuals is not infrequent. A study on lifetime and 12-month prevalence of psychiatric disorders among adults in the United States (Kessler et al., 1994) found that 13% had two and 14% had three or more disorders in their lifetime, whereas only 21% of all the lifetime disorders occurred in individuals with a lifetime history of just one disorder. In other words, these findings suggested that the vast majority of lifetime disorders in this sample (79%) were comorbid disorders. In fact, a greater proportion of 12-month disorders (82%) occurred in respondents with a lifetime history of comorbidity. Across psychiatric disorders, the most common co-occurrence was between depression and anxiety, with nearly half of the cases of depression and anxiety appearing in the same patients and at the same time, according to a recent WHO study on psychological problems in primary health care setting (Sartorius, Üstün, Lecrubier, & Wittchen, 1996). Despite their greater comorbidity with each other, the symptomatology of anxiety and depression does differ in syndrome levels. In the descriptive rating data, the two syndromes that are most clearly differentiated are panic disorder and endogenous depression (Mineka, Watson, & Clark, 1998). The former is characterized by panic

attacks, agoraphobic avoidance, and autonomic symptoms in general, whereas the latter is characterized by loss of interest, suicidal behaviour, psychomotor retardation, early morning awakening, and pessimism.

The clinical features of anxiety and depression can be best understood when their overall symptomatology has been considered comprehensively in affective, cognitive, and somatic dimensions. Our current knowledge in psychopathology has been relatively scattered with regards to a variety of depression and anxiety disorders or syndromes. For instance, we can describe fairly well the affective and cognitive features in depression, as well as the somatic symptoms of panic disorder, such as autonomic hyperarousal. However, we have a somewhat limited understanding of cognitive features in panic disorder, or somatic symptoms in non-panic anxiety disorders such as generalized anxiety disorder (GAD). This is perhaps partially due to the nature of each disorder; for instance, a reasonable proportion of patients with panic disorder fail to report any cognition surrounding their anxiety states (Rachman, Levitt, & Lopatka, 1987). With self-report scales assessing concurrent symptoms of anxiety and depression, there may be a differential ability to detect these signs and states. Anxiety states involving physiological excesses such as panic symptoms may be easier to detect than physiological deficits typically associated with depressive states (Dobson & Cheung, 1990). However, full coverage of symptoms can help us better understand each disorder or syndrome and especially certain aspects of the disorders that often occur in several clinical syndromes. These patterning of clinical features can serve as a basis for psychiatric assessment and classification.

Compared with cognitive aspects, the mood-based symptoms are less

differentiating and more central to the relation between anxiety and depression (Norvell, Brophy, & Finch, 1985). Therefore, a study using affective descriptors to assess the constructs of anxiety and depression may find these two highly comorbid, whereas a study using anxiety and depression-specific cognitions based on cognition-specificity model (Clark, Steer, & Beck, 1994) may more likely find these two as separate constructs. When researchers aim at comparing depression and anxiety symptoms, it is essential to draw comparisons on the same domain of symptoms. For instance, when cognitive symptoms of depression (e.g., hopelessness) are compared with somatic symptoms of anxiety (e.g., shortness of breath), depression and anxiety are more likely to be distinctive from each other. Thus, researchers need to start with a comprehensive conceptualization and assessment of anxiety and depression across affective, cognitive, and somatic domains, before a clear understanding about comorbid features between these two can be reached.

Another methodological issue in depression and anxiety comorbidity research concerns the use of the rating scales for both constructs. Many studies have shown that self-report measures of anxiety and depression are often highly correlated, with coefficients typically in the range of .45 to .75 (Clark & Watson, 1991). Dobson (1985a) found that self-report anxiety and depression scales are so highly correlated that the average correlation across constructs (i.e., .61) almost approximates the average correlation within each construct (i.e., .66 among 8 anxiety disorders, and .69 among 30 depression scales). Similarly, from the perspective of diagnosing disorders, overlapping criteria may create high comorbidity between disorders (Klein & Riso, 1993). For instance, in both the DSM and ICD classification systems, depressed mood or affect is

described as a part of several disorders. Depressed affect can occur independently of any other identified disorder, or it can occur in association with other forms of psychopathology.

Researchers developing rating scales or clinicians generating diagnostic criteria are typically most interested in maximizing construct validity; therefore, the overlapping diagnostic criteria or high inter-correlational values between anxiety and depression rating scales may be of a true reflection of the nature of these constructs. When somewhat "pure" scales were created through a process of theoretical definitions and empirical derivation of factor analyses, Dobson (1985b) still found that the average correlation between depression and anxiety rating scales was .41. Therefore, the overlapping aspects of depression and anxiety may indeed reflect what they are; nevertheless, they are not completely overlapped such that some aspects of the symptomatology are specific to anxiety and depression. What we lack is the maximization of discriminative validity between the constructs of anxiety and depression via unique features in distinguishing anxiety from depression or vice versa.

A Phenomenological Model of Anxiety and Depression

When anxiety and depression are strongly related even after efforts were made to address the above methodological issues, researchers began to emphasize that depression and anxiety are characterized by both common and distinctive features. Tellegen's seminal work on a two-factor model (1985) explained that affective experiences are characterized by two basic dimensions: negative affect (NA) and positive affect (PA). NA reflects the extent to which a person is experiencing negative mood states, such as fear and guilt, whereas PA reflects the extent to which one experiences positive feelings,

such as joy and energy. These two dimensions are hypothesized to differentially relate to depression and anxiety. That is, depression and anxiety both relate to NA, whereas PA is negatively related to depressive symptomatology but unrelated to anxiety symptomatology. Earlier work on differentiating anxiety from depression often found empirical support for this two-factor model (e.g., Blumberg & Izard, 1986; Watson, Clark, & Carey, 1988). The importance of this research on PA and NA by Tellegen (1985) and Watson and Tellegen (1985) is that it employed constructs that have been developed for research on the basic structure of human emotions, and applied them to the affective component of psychopathology using a self-report approach.

Clark and Watson (1991) extended Tellegen's two-factor model and proposed a tri-partite model, which has become one of the most researched models in linking and differentiating between depression and anxiety. This model groups symptoms common to anxiety and depression into a shared element of negative affectivity (NA), symptoms specific to anxiety into physiological arousal, and symptoms specific to depression into low positive affect (PA). NA is a general factor of subjective distress, and subsumes a broad range of negative mood states, including fear, anxiety, hostility, scorn, and disgust. Low PA in the tri-partite model is considered as a depression-specific element that differentiates depression from anxiety. PA is a dimension reflecting one's level of pleasurable engagement with the environment. Thus, high PA is composed of terms reflecting one's enthusiasm, energy level, mental alertness, interest, joy, and determination, whereas low PA is best defined by descriptors reflecting lethargy and fatigue. Trait PA is a corresponding predisposition conducive to positive emotional experience; it reflects a generalized sense of well-being and competence, and of effective

interpersonal engagement (Watson, Clark, & Carey, 1988). Finally, the anxiety-specific component is characterized with somatic tension and autonomic hyperarousal symptoms, including shortness of breath, dizziness and light-headedness, dry mouth, and trembling or shaking (Clark & Watson, 1991). The proposal of this tri-partite model has stimulated a new wave of research in differentiating depression from anxiety using a phenomenological perspective. This model has been empirically examined mostly via factor or structural analyses, and received empirical support from a variety of samples, including university students, community and clinical adult, and clinical samples of children and adolescents (Joiner et al., 1996; Watson et al., 1995).

This tri-partite model shares some similarities with other conceptual models that could be applied to distinguish depression from anxiety. Russell (1980) proposed that the valence dimension refers to the hedonic quality or pleasantness of an affective experience, and the arousal dimension refers to the perception of arousal associated with such an experience. Thus, anxiety and depression are at the extreme end of displeasure in the valence dimension but they differ in arousal: low for depression and high for anxiety. Arousal focus could be related to the tendency to attend to internal physiological cues when labelling affective experiences (Feldman, 1995), which connects to the predominant role of autonomic hyperarsoual in anxiety. The two separate dimensions of valence and arousal also seem consistent with our current understanding about the distinction among disorders characterized with affective disturbances (e.g., GAD, non-endogenous depression), those characterized with panic symptoms (e.g., agoraphobia and panic disorders), and those with de-activation symptoms (e.g., endogenously flavoured depression characterized with severe anhedonia and retarded activities).

The bioinformational model of emotions (Lang, 1978) extends the research by Russell with an additional dimension of "dominance" or "control." Anxiety is characterized by negative valence, high arousal, and low dominance or control, whereas depression is characterized also with negative valence and low dominance of control, but with low level of arousal. The control dimension was found to account for much less variance (Bradley & Lang, 1994), and has not been considered in subsequent research (e.g., Hutchison et al., 1996). However, this dimension might compliment the tri-partite model due to its emphasis on perception of control from a cognitive perspective. Note that perception of uncontrollability plays a central role in creating vulnerability to both anxiety and depression (Mineka, Watson, & Clark, 1998), and it particularly characterizes some anxiety disorders that the anxiety-specific factor in the tri-partite model fail to fully capture, such as GAD.

Critiques to the Tri-partite Model: Proposal of a Revised Model

Clark and Watson's tri-partite model (1991), which is an extension from Tellegen's two-factor model (1985) in NA and PA, receives empirical support in the structure of the three major components across a variety of samples. However, this model is not without limitations; some of those are measurement-based while others concern conceptualization of this model. The following reviews these limitations in its components and in the applications of this model to diverse samples.

Low positive affect and anhedonia. Low positive affect (PA) is often assessed by the absence of self-descriptors characterizing high PA, such as feeling enthusiastic and happy, having a lot of energy, and leading an interesting and exciting life. In other words, low PA is not assessed directly but indirectly through the opposite of high PA (i.e., a

person is considered having low PA when s/he reports not having high positive affect after their scores are reverse-coded to reflect low PA). Assessing higher positive affect directly is probably more desirable because these high-end items tend to be stronger and purer markers of the underlying factor than items reflecting anhedonia and low positive affect (Watson & Kendall, 1989). Similarly, Watson and Tellegen (1985) considered the low end of PA factor to be mostly clearly and strongly defined by terms reflected by a relative absence of affective involvement.

From a measurement perspective, some researchers recommend a balanced mixture of positively and negatively worded items so that inclusion of negative items will guard against response biases caused by an agreement response tendency. Furthermore, having methodological heterogeneity has typically been recommended for exploring convergent and discriminant validity of constructs (Kenny, 1995; Nunnally & Berstein, 1994). On the other hand, other researchers conclude that item reversals should be avoided, and that reverse-coded items might result in impaired reliability and validity of measurement (Samuelstuem, 2003; Schriesheim, Eisenbach, & Hill, 1991). Indeed, low endorsement on a likert scale over a positive statement does not necessarily mean the opposite of the negatively worded statement. For instance, on a four-point likert scale ranging from "rarely" to "almost always" on an item of "I felt happy", endorsing "almost always" means that a person almost always felt happy, rather than rarely feeling unhappy when this item is reverse-coded. Similarly, endorsing "rarely" means a person rarely felt happy, which is not "almost always unhappy" when scores on this item are being reversed. Schriescheim et al. (1991) pointed out that the inclusion of recoded items could result in inconsistent dimensionality and a cluster of negative item scores. Note that

researchers supporting the use of a mixture of negative and positive items have done so for the benefits of having heterogeneity, rather than for the exclusive use of negatively worded items. Response bias is likely to occur when all items are in the same direction, no matter whether positive or negative.

In depression research, these negatively worded items for capturing low positive affect are indeed strong items, because they consistently formulate their own factor to which they load highly, rather than splitting into different factors, across samples or studies (e.g., Radloff, 1977; Iwata & Buka, 2002). Thus, the empirical evidence seems consistent with what Watson and Kendall (1989) have proposed in that these higher-end items of positive affect are purer and stronger in how they relate to each other to represent the construct they assessed. The question remains whether the construct they assess is the construct of low positive affect. From a conceptual and measurement perspective, only assessing the higher ends does not seem to represent the full model put forth by Watson and Tellegen (1985) in their investigation of structure of the mood. They found two rotated independent factor dimensions of positive affect and negative affect, and both factors showed two poles (i.e., low-end and high-end positive affect). Nemanick and Munz (1994) also found that positive affect is better represented in their factor analysis when both low-end (e.g., lethargy) and high-end (e.g., lively) were assessed, thus concluding the insufficiency of high-end assessment approach in capture the full range of mood.

A proper assessment should directly assess low positive affect, rather than solely relying on reverse coding scores for the higher ends of positive affect. In other words, rather than relying on reverse coding items of "I felt cheerful", comparable item for a

direct assessment of low positive affect should be included, (e.g., "I do not feel cheerful"). When both direct and reverse coded assessments of low positive affect are included, how well each captures the targeted construct and how well each relates to other variables of interests could then be evaluated. In addition to these affect-based descriptors, Clark and Watson (1991) defined that PA is a dimension reflecting one's level of pleasurable engagement with the environment. Thus, low PA can also be defined by descriptors reflecting lethargy and fatigue such as lack of engagement. This echoes Russell (1980) and Lang (1978)'s proposals in assessing depression that is characterized by low levels of arousal, which differs from high levels of arousal in anxiety. Symptoms of low arousal, representing a direct assessment of low positive affect, show a striking resemblance to those characterizing the physical aspects of anhedonia, which will be introduced below.

In addition to low PA, "anhedonia" plays an important role in the assessment of depression. Research using the tri-partite model has focused on assessing low positive affect to represent the overall construct of low positive affect and anhedonia as a defining feature of depression, while anhedonia has received little individual attention. Watson and his colleagues (1995) created the Mood and Anxiety Symptom Questionnaire (MASQ) in order to address the measure-based limitations for assessing anxiety and depression specific components according to the tri-partite model. The loadings of low positive affect items (assessed via reverse coding of positive affect) were consistent with the expectations, but only three out of nine anhedonia items loaded moderately on the depression-specific factor and the rest six items loaded strongly on the negative affectivity factor. Watson et al. (1995) concluded that items assessing anhedonia were not

strongly related to the depression-specific factor, and recommended that further refinements on depression-specific components are necessary. Nevertheless, very few studies have done so. It became apparent that most subsequent studies only used reverse-coding of positive affect to represent depression-specific factor in the tri-partite model (e.g., Joiner et al., 1996).

Burns and Eidelson (1998) found that anhedonia, when assessed via loss of interest (e.g., loss of interests in people; loss of satisfaction) and vegetative symptoms (e.g., things take extra effort), was a comparable indicator of the second-order depression factor. They interpreted this seemingly inconsistent finding to Watson et al.'s (1995) study in that the MASQ Anhedonia measure included a large unique variance component distinct from depression, which may result in part from mixing reverse keyed and normally keyed items. In other words, when anhedonia is properly assessed by focusing on vegetative symptoms for example, it does relate to an underlying construct of depression. Akiskal (2000) argued that inquiring whether the client has given up previously enjoyed activities is more diagnostically meaningful than whether the client has lost the sense of pleasure. When mild anhedonia is evidenced with decreased interests in life, severe anhedonia is accompanied by losing all interests as a pervasive inability to experience emotions, which in itself is experienced as extremely painful. It was also found that physical anhedonia evolved with the severity of depression, whereas physical displeasure did not (Loas, Salinas, Pierson, Guelfi, & Samuel-Lajeunesse, 1994). Thus, anhedonia can be properly assessed when including items capturing loss of pleasure or interests in previously enjoyed activities, and physical aspects of anhedonia, such as lethargy, fatigue and sluggishness. Note that physical aspects of anhedonia also capture

the lack of engagement with the environment and the low level of arousal in depression, reflecting a direct assessment of low positive affect.

Somatic tension and hyperarousal. In addition to the measurement and construct-based limitations associated with assessing low positive affect and anhedonia as a depression-specific factor, similar concerns are raised regarding the anxiety-specific factor (i.e., somatic tension and hyperarousal). The measures assessing the somatic tension and hyperarousal factor often performed less satisfactorily (Mineka et al., 1998); the anxious hyperarousal factor of the tri-partite model was not generally characteristic of all anxiety disorders but rather of panic disorder (Brown et al., 1998). Substantial research exists on the relationship between anxiety and activity of the autonomic nervous system (ANS). Traditionally, these investigations have focused more on the hyperactivity of the sympathetic branch of the ANS in persons with anxiety disorders. According to Akiskal (1985), ANS hyperactivity includes symptoms like tension, headaches, palpitations, hyperventilation, dry mouth, clammy hands, urinary and bowel urgency, whereas symptoms of arousal and vigilance include feeling on edge, difficulty concentrating, and insomnia. Individuals with panic disorder, for instance, display a wide range of somatic symptoms that indicate sympathetic hyperactivity. It is evident that having hyperarousal to represent the full spectrum of anxiety symptoms, instead of the autonomic hyperarousal in panic disorders, may fail to capture other symptoms that better characterize non-panic anxiety syndromes.

Reporting somatic symptoms in the context of depression and anxiety was common across studies and samples. Depression was found to have an overall impact on reporting of somatic and psychological symptoms (Kroenke & Spitzer, 1998); after

controlling for demographic and depression, anxiety symptoms were independently associated with somatic complaints (Jolly et al., 1994). Based on the traditional psychoanalytic perspective, reporting physical symptoms was reviewed as resulting from an altered presentation of psychiatric disorders as the functions of defences in allowing some expression of distress while keeping unacceptable wishes out of awareness. A review by Kellner (1990) concluded that somatization is not a true depressive equivalent, and that psychological and physical symptoms are alternative channels of expression of distress. Empirical evidence often found that psychiatric disorders, especially anxiety and depression, were strongly associated with physical symptom-reporting among clients (Kroenke & Spitzer, 1998). Somatic symptoms decrease in number and severity when an anxiety or depression disorder remits, suggesting that somatic symptoms are actually an integral part of these emotional experiences (Kellner, 1990). Because reporting somatic symptoms was so common, especially in depressive symptomatology, Silverstein (1999) considers such reporting as a sub-type of depression (i.e., "somatic depression") in comparison with "pure depression" which generally did not involve somatic symptoms.

One explanatory model proposed by Simon (1991) for somatic symptom reporting among psychiatric samples considers somatization as a non-specific amplification of distress. Somatic depression was found associated with high rates of anxiety disorders (Silverstein, 2002), providing support to this amplification model where somatic, anxiety, and depressive symptom reporting was amplified during a high level of distress. Simon (1991) also proposed that individuals with a greater tendency to experience aversive emotional states (i.e., negative affectivity) were found to report more somatic symptoms. Watson and Pennebaker (1989) examined the central role of NA in reporting physical and

psychological symptoms across six different samples, and concluded that the distinction between psychological and physical complaints was quite arbitrary. Instead, self-reported distress represents a single pervasive trait that is expressed through a broad range of negative affective states and somatic complaints.

As aforementioned regarding the types of somatic symptoms in anxiety research, it is important to look beyond those characteristic of autonomic nervous system hyperarousal in order to fully capture anxiety and depressive symptomatology. Certain somatic symptoms are specific to depression which can capture the somatic aspect of depression. Sleep disturbances, pain, and fatigue were commonly reported among individuals with depression (Piccinelli, Rucci, Üstün, & Simon, 1999); some studies described somatic aspects of anhedonia, including loss of initiative and decreased libido (DeSouza, Othmer, Gabrielli, & Othmer, 1988); other studies used measures specifically assessing the level of retardation in sleep and motor activities (Katz, 1984; Wildlöcher, 1983). When differentiating depression from anxiety, Akiskal (1985) suggested that anxiety and depression coexist in a subtype of non-retarded affective disorder which is qualitatively different from retarded conditions. In other words, strictly from a somatic symptom perspective, the hyper-arousal of autonomic central nervous system as a response to perceived threats of danger can characterize somatic aspects of certain anxiety disorders (e.g., panic disorder), whereas the under-arousal and a resultant retardation in speech and motor activities can describe somatic aspects of certain types of depression (e.g., retarded/ melancholic type).

Generalized anxiety disorder or syndromes did express themselves with somatic symptoms which have been considered as less distinguishable symptoms than cognitive

features such as worry (Brown et al., 1998). To better respond to threatening situations via a flight-or-fight response, individuals exhibit signs of autonomic hyperarousal when their central nervous systems are activated. However, in the case of chronic rather than acute stress, such as among individuals with GAD, instead of showing a heightened response due to the chronicity of their condition, they exhibited signs of autonomic inhibition or a diminished autonomic flexibility, such as a narrower range in skin conductance and heart rate than controls (Hoehn-Saric, McLeod, & Zimmerli, 1989). Responses of diminished autonomic arousal or flexibility in GAD patients were later confirmed in two studies, which led to the authors of both studies to hypothesize that the GAD-specific feature (i.e., worry) functions to suppress autonomic arousal in order to decrease the level of arousal and anxiety experienced (Borkovec, Lyonfields, Wiser, & Deihl, 1993; Brown et al., 1998).

Despite that the somatic aspect of GAD has been less researched, additional studies are available on somatic symptoms among individuals experiencing chronic anxiety. It has been found that the majority of patients with chronic anxiety disorders exhibit increased muscle tension when at rest (Hoehn-Saric & McLeod, 2000). When research on the role of autonomic hyperarousal in GAD has been more or less inconclusive, muscle tension has been found a consistent indicator, according to studies using laboratory-based physiobehavioural measures (Hoehn-Saric et al., 1989), and those using diagnostic interviews based on DSM criterion (Marten et al., 1993). Muscle tension has also been found as significant physical indicator of high level of stress in studies using self-report measures (Smith & Siebert, 1984).

Watson et al. (1995) found that the specific anxiety factor in the tri-partite model

was somewhat broader than expected and included several somatic symptoms that do not clearly reflect sympathetic arousal (e.g., nausea, diarrhea). In fact, these symptoms may be a part of more gradual gastrointestinal responses to provide adequate protection against more immediate dangers. This set of defence operations of the slower-acting autonomic nervous system includes nausea, vomiting, and diarrhea (Beck, 1985). Although these symptoms could be related to urinary and bowel urgency due to autonomic nervous system hyperactivity (Akiskal, 1985), they could appear to be the somatic consequence of chronic general anxiety. Overall, muscle tension and gradual gastrointestinal responses as a part of a slow-acting autonomic nervous system may capture the somatic aspect, an ignored aspect, in GAD symptomatology.

Cognitive aspects of anxiety and depression. The previous sections provided tentative critiques to the tri-partite model along the affective and somatic dimensions of anxiety and depression. Beck's cognitive theory of psychopathology differentiates anxiety from depression in the form and content of the dysfunctional thoughts. In depression, one finds a predominance of negative cognitions that take the form of pervasive, absolutistic statements about past personal loss and failure, whereas in anxiety the cognitions reflect possible harm and danger in a more situational, probabilistic fashion (Beck, 1976). As predicted by Beck's cognitive specificity hypothesis, the cognitive measures of anxiety and depression loaded uniquely on their respective anxiety and depression factor (Beck, Brown, Steer, Eidelson, & Riskind, 1987).

Due to its demonstrated cognitive specificity, recent studies begin examining these anxiety- and depression-specific cognitions in relation to the tripartite model. The cognitive specificity model differs the most from the tripartite model by having two sets

of cognitions as depression and anxiety-specific ones, without a set of cognitions that could be shared by both. A recent meta-analytic review of the cognitive content specificity research (Beck & Perkins, 2001) indicated that anxious cognition content has generally performed poorly in discriminating depression and anxiety, whereas depressive cognitions have consistently been found to be unique to depression. Individuals with mixed anxiety and depression were found to be characterized by having both anxiety-specific and depression-specific cognitions (Clark, Beck, & Stewart, 1990), rather than a unique cognition that is only evident among individuals reporting both anxiety and depression syndromes. When examining cognitions in relation to the tripartite model (Clark, Steer, & Beck, 1994; Jolly, Dyck, Kramer, & Wherry, 1994), depression-specific cognition related to symptoms of anhedonia and low positive affect. However, anxiety-specific cognitions related most significantly to the negative affectivity factor, rather than to items of hyperarousal and somatic tension. Jolly and Dykman (1994) suggested that a three-factor model, similar to the tripartite model, might be employed to describe the cognitive content in anxiety and depression. However, no consensus has emerged yet regarding the stability, the nature, and the validity of the claim of the three-factor cognitive model.

The cognitive dimension of anxiety is characterized by worry and anxious apprehension that is carried out with verbal ruminations, typically about possible negative outcomes of future events. Although traditionally thought to be a unique feature of certain anxiety disorders, such as obsessive-compulsive and generalized anxiety disorders, cognitive rumination and worry has recently been considered as shared with depression (see a review by Borkovec, Ray, & Stober, 1998). Although conceptually

worry distinguished itself from negative affect on their corresponding cognitive and affective dimensions, it showed strong associations with scales measuring general distress (Nitschke, Heller, Imig, McDonald, & Miller, 2001). Empirical studies have found that worry is a cognitive correlate of negative affectivity (Beck & Perkins, 2001), and that rumination predicted both anxiety and depressive symptoms, particularly characterizing individuals with mixed anxiety and depressive symptoms (Nolen-Hoeksema, 2000).

When worry and apprehensive rumination is considered as a shared cognitive component of anxiety and depression, and the depressive cognition involving hopelessness and worthlessness represents a depression-specific cognitive component, the last unresolved question is to clarify the nature of anxiety-specific cognitions. While both anxiety and depression evidenced an increased accessibility of maladaptive cognitions and a dysfunctionally high level of self-focused attention, anxiety appears to be characterized by cognitive structures exemplifying themes of physical or psychological threat to the self, negative appraisals that are specific, tentative, and future oriented. The content of anxiety-specific cognition involves threats and danger. Therefore, greater cognitive resources in anxiety are devoted to the possible detection of threatening information in the environment and an avoidance of further elaboration of this information (Ingram & Malcarne, 1995). Ellis (1962) suggested that anxiety is the product of basic irrational beliefs that lead to perception of danger in many ordinary situations. The belief that one must be competent in all activities in order to be a worthy person in the eyes of others would lead to the perception of danger in losing positive evaluation by others, especially in situations where one is not experienced or skilled.

Rehm (1990) reviewed a number of factors that would be theoretically and possibly uniquely linked to anxiety, including primary appraisal of situations and efficacy expectations. Lazarus (1974) described primary appraisal as an assessment of dangers of the situations in terms of what is at stake and what resources are available. Relating to anxiety as perceived danger and potential harms, when assessing dangers, an individual is actually assessing how likely the danger is going to harm oneself (in a futuristic and probabilistic sense) and whether one is capable of coping (thus relating to appraisal of one's competence). These tie to efficacy expectations proposed by Bandura (1977). Efficacy expectations are related to the beliefs that one is capable of producing certain performances, which Bandura argued is accurate predictors of anxious behaviours.

A central theme derived from these theoretical frameworks in relation to anxiety is the appraisal of one's sense of preparedness for perceived dangers. Individuals with certain beliefs that they have to be competent in all activities to be worthy, when evaluating themselves as less prepared and the situations as more threatening, are more likely to experience pure anxiety. This is similar to Alloy et al.'s proposal (1990) that the interplay of three cognitive components of helplessness and hopelessness may help separate whether a person experiences pure anxiety, a mixed anxiety-depression syndrome, or hopeless depression. Specifically, individuals uncertain about their ability to control important outcomes (uncertain helpless) would be more likely to experience pure anxiety. Those who feel certainly being helpless but uncertain about whether negative outcomes will occur (uncertainly hopeless) would be more likely to experience a mixed anxiety-depressive states. Finally, those who are certainly helpless and also certain about having negative outcomes would more likely experience hopelessness depression.

Overall, the cognitive features of anxiety and depression may differ in quantity (as suggested in Clark et al., 1990) so that individuals having both anxiety and depressive symptoms will report greater frequency of both anxiety- and depression-specific cognitions. It is similarly possible that depression and anxiety share some (e.g., worry) but differ in other cognitions (hopelessness vs. perceived threats). Proper assessment of depression- and anxiety-related cognitions will improve the cognitive specificity hypothesis in relation to the tri-partite model, will facilitate the formation of a relatively more comprehensive symptomatology by adding a cognitive element to the affective and somatic based tripartite model, and will subsequently paint a clear picture about how similar and different anxiety and depression are with each other.

Application of the tri-partite model across diverse groups. One final critique of the original tripartite model is its limited applications to selected samples. As previously reviewed, the tri-partite model has been validated across a variety of sample groups, including university students, community adults, and adult and adolescents clinical population. One important question to this cross-sample validation is whether sample-specific characteristics may influence the interrelationship among components, which in turn impacts the overall structure of the tripartite model. The current study aims at exploring whether each component is adequately assessed across samples, and whether these components relate to one another differently across samples to the extent of challenging the overall structure of the tri-partite model.

Epidemiological studies in anxiety and depression found that participants from different socio-economic status may have a qualitatively different factorial structure of their symptom patterns than those from other social classes (Derogatis, Lipman, & Covi,

1971; Prusoff & Klerman, 1974). To date, studies of socio-demographic or cultural variables across the domains of anxiety and depression are almost nonexistent, constituting one area where studies are very needed (Dobson & Cheung, 1990). The current study anticipates potential problem areas when applying the original tripartite model across cultural groups, especially among Chinese Canadians, based on our current understanding about cultural influences on depressive symptomatology among the Chinese individuals, which will be reviewed next.

Depressive Symptomatology and Its Comorbid Anxiety Symptoms: A Case of Chinese Canadians

According to the 2001 Census (Statistics Canada, 2003), about one-fourth of British Columbians are immigrants or belong to visible minority groups. Chinese Canadians account for 3.5% of the total national population and 26% of the visible minority population as the largest visible minority group in Canada. Investigating depression among Chinese Canadians is important because, according to one recent study by the World Health Organization, depression is not only one of the most debilitating health problems worldwide (Murray & Lopez, 1996), but also particularly prevalent among individuals experiencing the stresses associated with immigration, acculturation, and discrimination (Vega & Rumbaut, 1991). In Canada, immigrants with diverse ethnic background are often grouped together among studies examining mental health among immigrants. When Chinese Canadians are studied as a group, similar to most other visible minority groups, they report lower levels of depression than English Canadians (Wu, Noh, Kaspar, & Schimmele, 2003). Many questions remain unresolved in fully

understanding cultural factors that contribute to this picture of better mental health or different symptom-reporting style among Chinese Canadians.

Chinese Canadians are a very suitable target group for studies on comorbidity between depression and anxiety symptoms for several reasons. First, the Chinese people as the largest visible minority group has exceeded one million in Canada, among which about 75% are first generation foreign-born immigrants (Statistics Canada, 2003). Owing to the recency of their immigration to Canada and continued espousal of Chinese culture, Chinese Canadians may tend to conceive and express their depression according to the traditional Chinese conception of depression, which differs tremendously from the Western model of depression. In Western mental health, depression is primarily understood as a psychological difficulty accompanied by a few somatic symptoms. However, in traditional Chinese culture, somatic symptoms are significant and common in clinical presentations of depression (Kleinman & Good, 1985; Tseng & Wu, 1985). The clinical presentation among Chinese Canadians might correspond to either Chinese or Western models or both, a situation about which we have limited understanding.

Second, the term "neurasthenia" (or literally translated as "nerve weakness or exhaustion") is diagnosed instead of depression in the psychiatric and primary care settings in several Chinese countries (Lee, 1998). The clinical presentations of this illness include features of anxiety, depression, and additional somatic complaints (CCMD-2-R; CMA & NMU, 1995), which does not seem to distinguish depression from anxiety but welcomes an encompassing generic category for both. This inclusive label for both depressive and anxiety syndromes may reflect a realistic comorbid understanding about these two among the Chinese people. Thus, the clinical phenomenon of neurasthenia

makes Chinese Canadians an appropriate target group to examine the issues of comorbidity between depressive and anxiety syndromes.

Third, in Western mental health research, the tripartite model is one of the most common models to explain the comorbidity between anxiety and depression, despite the limitations previously reviewed. Based on our current understanding of the significance Chinese individuals place on somatic complaints in depressive symptomatology and their tendency in inhibiting expression of positive emotions, both to be reviewed below, the potential obstacles in applying the tri-partite model to the Chinese Canadians are likely. After the aforementioned limitations in the original tri-partite model are being addressed, Chinese Canadians will be a very suitable sample to test the applicability of the revised tripartite model.

In brief, the next section begins with a review of depressive symptomatology among the Chinese people, followed by examining several cultural factors that may influence symptom expression among the Chinese Canadians. Potential obstacles when applying the tri-partite model to the Chinese Canadians will be described, which ends with a prospect of how the revised tri-partite model might be applicable to this ethnic group.

Depression and Anxiety among the Chinese People

A study by World Health Organization (WHO) on depressive disorders using a diagnostic interview schedule across four countries found a basic core of symptoms that are common to all research sites involved, among which anxiety and tension are the most frequently reported symptoms in depressive patients (Sartorius, Jablensky, Gulbinat, & Ernberg, 1980). Despite this finding of core symptoms of depression, prevalence rates

across countries vary widely with those in Chinese countries seemingly being at the lowest end. In a recent epidemiological study of comorbidity across 10 nations (Weissman et al., 1996), the lifetime rates for Major Depressive Disorders range from 1.5% as the lowest in Taiwan to 19% as the highest in Lebanon, whereas the lifetime comorbidity rates of MDD with Panic Disorder and with Obsessive Compulsive Disorder were the lowest in Taiwan, 5.9% and 5.4% respectively, compared to 10.7% with PD and 10.3% with OCD in the US. When using the same diagnostic protocol, a low lifetime prevalence rate of MDD was found in other two Chinese countries, including .19% in Shanghai city in China (Wang et al., 1992) and 1.97% in Hong Kong (Chen, Wong, & Lee, 1993). On the other hand, few studies found relatively comparable rates between those in Chinese countries and in the US. For instance, the lifetime comorbid rates in Taiwan between MDD and some anxiety disorders, e.g., PD and Agoraphobia, were comparable to those in the US ECA data, whereas other anxiety disorders such as Social Phobia and OCD were significantly lower (Hwu, Chang, Yeh, Chang, & Yeh, 1996). Compton et al. (1991) found the rate of Generalized Anxiety Disorder in Taiwan was comparable to the rates in some sites in the US.

Certain cultural factors might act as protective factors for psychiatric disorder associated with life stressors, including a long-standing tradition of withstanding hardship, a high tolerance for distressing circumstances, and a sense of determination and purpose (Xu, 1987). Personality traits such as quiescence and stoicism allow the individuals to "accept" life stresses with a sense of destiny (Song, 1985), which could reinforce a high tolerance for depression among the Chinese people. Certain Chinese social structures, such as individuals' reliance on traditional communal orientation, may

help alleviate the impact of loss and provide strong social support during the crises. Furthermore, lower prevalence rate may not be a result of better coping but help-seeking styles. For instance, openly discussing one's feelings, especially negative feelings to a non-family member, may inhibit spontaneous reporting of psychological symptoms to clinicians (Lin, 1985). Mental illnesses, as evidence of a character weakness and a cause for family shame, are still quite stigmatized in traditional Chinese culture (Parker, Cheah, & Roy, 2001). Symptom reporting may interact with help-seeking behaviours, when somatic, not psychological, symptoms justified seeking and securing help in a medical setting (Cheung, Lee, & Chan, 1983). This would be particularly relevant in developing countries when the availability of psychiatric services only available for the most severely ill makes people emphasize somatic symptoms in coming to the doctor to ensure receiving appropriate attention (Kawanishi, 1992).

Within North America, very little information is available about the rates or correlates of depressive disorders among the Chinese people; the existing ones are from treatment studies where the Chinese are under-represented in mainstream mental health facilities (Sue, Fijino, Hu, Takeuchi, & Zane, 1991), or from investigations that use symptom rating scales but not diagnostic interviews (e.g., Ying, 1988). Chinese people's under-utilization of mental health services in North America has been consistently documented (see a review by Uba, 1994a). This relatively infrequent usage of mental health services may reflect specific barriers in the existing system for this particular population. In fact, one study found that compared to Canadian-born groups, immigrants were less likely to use medical services for a mental health problem, and even much less likely to resort to mental health services (Kirmayer, Gaulbaud du Fort, Young, Weinfeld,

& Larsy, 1996). As such, the prevalence rate of psychiatric disorders based on clients receiving treatment from mainstream mental health services may be underestimated. One exception to the rating scale or treatment studies is a community-based epidemiological study using a diagnostic interview schedule adapted for Chinese individuals (Takeuchi et al., 1998). They found 6.9% lifetime and 3.4% annual rates of major depression among Chinese Americans, consistent with findings from treatment or symptom-scale studies, which documented a much lower rate of major depression among Chinese Americans than a national estimate of 17% lifetime rate among contemporary Americans. No epidemiological and community studies have been conducted regarding the comorbid prevalence rate between MDD and any anxiety disorder among the Chinese people in North America.

Knowing Chinese people residing in North America have a lower rate of major depression provides us little understanding about factors contributing to such findings, except for a between group difference in the prevalence rates. Several scholars (Okazaki & Sue, 1995; Van de Vijver & Leung, 1997) in cross-cultural research argue that the use of culture, ethnicity or race, as an explanatory variable is not satisfactory, and culture must be "unpacked" and decomposed into a set of psychologically meaningful constructs, which are then included and empirically tested to account for the observed cultural differences. The cultural factors that are particularly relevant to Chinese Canadians will be reviewed next.

Cultural Factors Impacting Depressive Symptomatology

Cultural models have not reached a balanced platform with other psychological or behavioural models to understand psychopathology (Miller, 1999). Often times, ethnic

minorities are under-represented in psychology research, despite the formation of a consensus that cultural factors are closely linked to the aetiology, prevalence, symptomatology, course, and outcome of psychopathology. One possible reason is that cultural psychopathology research may lack grounding in sophisticated theoretical framework for a hypothesis-driven research, and most importantly may fail to identify and measure the aspect of a group behaviour specifically with the support of a hypothesis-driven research goal (Betacourt & Lopez, 1993). A review by Iwamasa on Asian Americans (1997) discussed the between- and within-group similarities on issues such as cultural emphasis on family, community, and interpersonal harmony and cooperation. He concluded that two factors best characterizing the between- and within-group differences are ethnic identity and acculturation, in addition to their demographic backgrounds (e.g., generational and immigration status; socio-economic or educational/ occupational status). The conceptualization and assessment of ethnic identity and acculturation are briefly reviewed below.

Acculturation and Ethnic Identity

One of the most extensively examined cultural factors in relation to mental health research among the Chinese people residing in North America is acculturation. Acculturation is generally viewed as a process of change that occurs as a consequence of continuous, first-hand contact between two or more distinct cultural groups (Berry, 1980). Early acculturation research (late 1970s to early 1980s) focused on the effects of exposure to a host culture on behaviours, especially in the domain of language. In addition, early research focused on how ethnic groups lose their ties with their culture of origin, leading to the gain of the host culture. In more recent acculturation research (from

1987 to the present), the relationship between the ethnic culture and the host culture is considered orthogonal, and psychologically oriented dimensions of acculturation have been examined in addition to behavioural dimensions (Roysircar-Sodowsky & Maestas, 2000).

The most widely researched orthogonal model has been Berry's (1980) four-fold model of acculturation strategies, including integration, assimilation, separation, and marginalization. In this model, *integration* involves maintaining one's cultural heritage while also endorsing intergroup relations; *assimilation* involves relinquishing one's cultural heritage and adopting the beliefs and behaviours of the new culture; *separation* involves maintaining one's heritage culture to the exclusion of pursuing intergroup relations; and *marginalization* involves non-adherence to either the old or new culture. Empirical research generally supports the utility of Berry's model to describe individuals' acculturation experiences in their host country. Foreign-born immigrants more strongly identify with their ethnic culture and show a lower level of acculturation into host culture than US-born generations (Cuéllar, Arnold, & Maldonado, 1995; Sanchez & Fernandez, 1993). Consistently, a longer length of residence and a younger age at the time of immigration to the host country are related to a higher level of acculturation into host culture among immigrants (Richman, Gaviria, Flaherty, Birz, & Wintrob, 1987; Ryder, Alden, & Paulhus, 2000). The integrated acculturation strategy is endorsed by a majority of foreign-born immigrants whereas the assimilated strategy is seldom preferred (Berry, Kim, Power, Young, & Bujaki, 1989); immigrants who do prefer assimilation tend to have the longest length of residence in the host country (Liem, Lim, & Liem, 2000).

Regarding the psychological and behavioural dimensions *within* the process of

acculturation, some earlier acculturation models did propose a similar two-dimensional paradigm that includes internal and external dimensions (e.g., Szapocznik, Kurtines, & Fermandez, 1980; Marin, 1992). Nevertheless, the internal aspects of acculturation, such as a sense of emotional attachment and connectedness to different cultures, have not been researched as often as the external (behavioural) aspects of acculturation (Tropp, Erkut, Coll, Alarcon, & Garcia, 1999). Possibly, the process of acculturation is often described within a stress-coping paradigm, in which experiences associated with immigration are evaluated as stressors which may be dealt with by employing various coping strategies. As such, this stress-coping paradigm tends to focus on how individuals meet the external demands of different situations, rather than on how long-lasting changes in identity occur (Schonpflug, 1996). The present study will adopt this two-dimensional paradigm to conceptualize and assess both the psychological and behavioural aspects of acculturation (i.e., Canadian cultural orientation).

In a similar vein, when examining the process of individuals' identifications with their ethnic culture, two major improvements upon earlier research have been made in this study, including treating ethnic identification as an independent construct from acculturation (Oetting & Beauvais, 1991; Roysircar-Sodowsky & Maestas, 2000) and considering ethnic identification as a multidimensional construct including psychological and behavioural domains (Kwan & Sodowsky, 1997; Verkuyten & Lay, 1998). Despite different dimensions being considered across studies, a common theme of a two-dimensional framework, including internal and external dimensions, can be identified in the ethnic identity literature (e.g., Elias & Blanton, 1987; Isajiw, 1990). Parallel to the two-dimensional model for acculturation, the internal dimension refers to the

psychological aspect of an individual's identification with the ethnic culture (e.g., sense of belongingness; identity achievement as an ethnic group member), whereas the external dimension refers to behavioural customs and practices. This two-dimensional model has been validated among Chinese Americans (Kwan & Sodowsky, 1997) and Chinese Canadians (Chia & Costigan, 2006a). Overall, the present study will adopt this two-dimensional paradigm to conceptualize and assess the psychological and behavioural aspects of ethnic identity (i.e., Chinese cultural orientation). Both Chinese and Canadian cultural orientations will be conceptualized and assessed as two separate constructs encompassing two parallel internal and external dimensions.

Cultural Orientations and Well-being

In previous research examining the relationship between psychological well-being and acculturation, the process of acculturation is often considered as inherently stressful (Berry & Annis, 1974), especially when loss of ethnic culture is an indicator of a greater acculturation in earlier research. Under this paradigm, the ethnic culture is considered to be a trigger to problems a person might encounter when moving from their ethnic culture to the host culture (Oetting & Beauvais, 1991). A person making the transition from one culture to another is caught between two cultures, losing strength derived from his or her original culture and unable to utilize the assets of the newly acquired culture before the point of total assimilation. Stress arising from the process of acculturation has been linked to overall mental health (Szapocznik, Scopetta, Kurtines, & Arandale, 1978), to self-esteem (Padilla, Wagatsuma & Lindholm, 1985), and to cultural conflict (Kwan & Sodowsky, 1997). However, the assumption of inevitable cultural conflict and thus poor adjustment has been recently challenged. For some individuals, successful integration of

the ethnic and host cultures can be achieved. These individuals show a higher level of psychological flexibility that enables them to adapt to different demands, and therefore avoid cultural conflict (Rogler, Cortes, & Malgady, 1991; Rosenthal, 1984).

When individuals' psychological well-being is examined by considering both ethnic identity and acculturation, several studies for the overseas Chinese individuals find a relatively consistent pattern between cultural orientations and well-being. Integrated individuals, who are acculturated in both ethnic and host cultures, show fewer psychological problems than individuals who are acculturated into the ethnic or the host cultures only (Eyou, Adair, & Dixon, 2000). Individuals who are assimilated into and separated from the host culture report greater well-being than those who are marginalized from both ethnic and host cultures (Pawliuk, Grizenko, Chan-Yip, Gantous, Mathews, & Nguyen, 1996; Sam, 2000). Overall, marginalized individuals tend to have the poorest psychological outcomes (Chia & Costigan, 2006b; Sam, 2000; Verkuyten & Kwa, 1996).

In addition to the general orientation to ethnic and host cultures, some studies focus on the mental health outcomes of encountering specific negative experiences that are unique to ethnic minority individuals. For instance, on an individual level, encountering negative acculturation experiences, such as discrimination, related to increased psychopathology among Chinese immigrant women (Lalinec-Michaud, 1988). It has been argued that depression is a direct consequence of experiences of racism (Fernando, 1984). Racism can impact an ethnic minority individual in many ways, including causing fear and sense of powerlessness, undermining an individual's self-concept as being insignificant, and overcoming stereotypes at work or other settings even as a "model minority" (Uba, 1994b). Negative acculturation experiences as a major

source of stresses was related to greater depressive symptomatology as a manifestation of stress among Korean immigrants in Canada (Noh & Avison, 1996).

In addition to personally encountering negative acculturation experiences, individuals' experiences with the host culture as members of their ethnic group may have bearing on their sense of well-being. Research has shown that perceived negative evaluations about one's ethnic group are related to poorer well-being (Parham & Helms, 1985), and that greater collective self-esteem (i.e., sense of worth as a group member) was associated with enhanced well-being (Lay & Verkuyten, 1999; Zea, Reisen, & Poppen, 1999). The importance of group identity is considered stronger for people with more collectivistic values than for people with individualistic values (Luftanen & Crocker, 1992). In Chinese culture, the self, the importance of one's public image, and the importance of feelings and evaluations of others are often intertwined (Markus & Kitayama, 1991). As expected, how the Chinese people perceive their group is being evaluated by others has been found to be highly related to how they see themselves as a Chinese, and how well they feel about themselves. In fact, Chinese individuals' perception of how their group being evaluated by Canadian society was found to be the most consistent and strongest predictor of well-being (Chia & Costigan, 2002). In sum, personal negative acculturation experiences, and collective well-being derived from how one's ethnic group being evaluated by the host culture will be included as important cultural correlates to symptoms reported among the Chinese Canadians.

Impact of Cultural Orientations on Depressive Symptom Reporting

Foreign-born immigrants and the Chinese born in host country have typically been found to have distinct patterns of cultural orientations. Immigrant Chinese may

relinquish some aspects of their ethnic cultures in order to acquire those in their host culture, thus their ethnic and host cultural orientations compete with one another. Chinese born in host country may be more able to develop multiple aspects of ethnic and host cultural orientations across different contexts, thus having two co-existing cultural orientations (Tsai, Ying, & Lee, 2000). Although this generational status may summarize within-group patterns of cultural orientations, a greater level of complexity can be appreciated by directly examining patterns of cultural orientations. In fact, individuals do cross over the boundary set by their generational status to show varying degrees of identifications with their ethnic and host cultures. In a study on Asian American university students (Abe-Kim, Okazaki, & Goto, 2001), based on their ethnic and host cultural orientations, relatively equal numbers of foreign-born students were assimilated (30.6%) and bicultural (27.1%), which was greater than the bicultural among US-born students. Canadian-born Chinese participants in a study by Chia and Costigan (2006b), rather than clustering together, were further divided into three groups with various cultural orientation profiles. Over half of the foreign-born Chinese participants shared similar cultural orientation profiles with the Canadian-born Chinese participants. Furthermore, different dimensions of within ethnic and host cultural orientations may show quite different relationships for immigrant and US-born generations. Ying, Lee, and Tsai (2000) found that immigrants and US-born generations were similar in psychological aspects of their cultural orientations (i.e., cultural prides) but not in behavioural aspects (i.e., language use & social affiliation).

Identifying differences within cultural groups in models of cultural orientation is essential to understanding how cultural variables mediate the expression of emotional

distress such as depression and its comorbid anxiety syndromes. Chinese Americans as a group may express their depressive symptoms in a way similar to the Chinese people in Chinese countries, for instance by reporting more somatic symptoms (Chang, 1985), and different to the Caucasian participants in having a combined expression of somatic and psychological symptoms (Kuo, 1984). Chinese American university students, due to their greater level of host cultural orientation may approximate their expression of depression with White Americans' (Ying, Lee, Tsai, Yeh, & Huang, 2000). Based on a similar rationale, the present study hypothesizes that Chinese Canadians with a greater Canadian cultural orientation will express their depressive symptomatology similarly to Caucasian Canadians, and that those with a greater Chinese cultural orientation will express their symptomatology that greatly differs from that of Caucasian Canadians. Particular negative experiences, such as personally encountering racism or perceiving one's ethnic groups negatively valued, might hinder individuals' developing a stronger host cultural orientation, thus indirectly impacting individuals' reporting their symptomatology that will show greater differences to the symptomatology of Caucasian Canadians. Specific aspects of Chinese traditional views of depression (i.e., somatic presentation; inhibition of expressing positive affect) will be reviewed next, including their impact on applying the original tri-partite model to Chinese Canadians.

Challenges in Understanding Depression of Chinese Canadians via the Tripartite Model

Watson and Clark's tri-partite model, as reviewed earlier, has been one of the most researched models in linking depression and anxiety. However, the application of the original tripartite model to diverse population has been limited, including adult

university student sample of Chinese Canadians. Furthermore, in Chinese countries, neurasthenia, instead of depression per se, is frequently diagnosed, suggesting the presence of somatic symptoms to the conceptualization and expression of depression for this particular ethnic group (Kleinman & Good, 1985). Recent studies assessing depression among Chinese people have identified an additional specific response pattern (i.e., reluctance in responding positively to items of positive affect), and therefore have questioned the utility of positive affect items in assessing depression (Yen, Robins, & Lin, 2000). Overall, foreseeable problems in assessing symptoms of autonomic hyperarousal and positive affect, respectively, as anxiety- and depression-specific components among Chinese Canadians may pose serious limitations on the application of the original tripartite model to this ethnic group in discriminating depression from anxiety. The following section will begin with a review on neurasthenia and somatization, as well as their impact on assessing depression and anxiety syndromes. Specific difficulties in assessing positive affects among the Chinese will be discussed. At the end of the next section, the applicability of the revised tripartite model to the Chinese Canadians, taking into account the aforementioned critiques and proposed areas of improvement, will be discussed.

Somatic Tension and Hyperarousal: Neurasthenia in Chinese

One of the most common discussions about cultural impact on depressive symptomatology among the Chinese people, either among those in Chinese countries or residing in Western societies, is the phenomenon of somatization. Spontaneously reporting somatic symptoms and nominating somatic symptoms as chief complaints (Parker et al., 2001) are quite common among the Chinese people. This phenomenon may

come from the Chinese view of an individual's health that reflects a balance between positive and negative forces according to the traditional Chinese medicine. Five emotions correspond to five internal organs whose unbalanced "qi" conditions prompt specific emotional states (Tseng, 1973). Furthermore, the Confucian tradition of exhibiting correct social behaviours and inhibiting excessive emotional expressions may influence how the Chinese express their psychological distress (Ots, 1990). On the other hand, Western biomedicine subscribes to the Cartesian separation of mind and body (Kleinman & Good, 1985). The expectation for patients is that they should be able to distinguish psychological from physical complaints. Western psychology also emphasizes individual responsibility in causation and recovery from illnesses, and discourages somatic expression.

The significance of somatization in Chinese mental health has often been discussed in the context of the usage of alternative diagnoses, such as neurasthenia, that reflect indigenous conception of mental illness. Neurasthenia, literarily translated as "nerve weakness and exhaustion", has a long history in itself with a diverse symptomatology, including affective, somatic, and cognitive symptoms. A study on a psychiatric outpatient clinic in China found that, if a depressed patient's symptoms were predominantly somatic, the patient was more often than not given a diagnosis of anxiety disorders or neurasthenia, despite many patients being able to verbalize affective disturbances such as sadness and tearfulness (Altshuler, Wang, Qi, Hua, Wang, & Xia, 1988). Thus, somatic symptom reporting may contribute to a greater co-occurrence of depression and anxiety syndromes, or may prompt clinicians to diagnose neurasthenia instead of depression.

Neurasthenia: historical accounts. The term neurasthenia was defined and popularized by an American neurologist George Beard in 1869, and was widely used in America and United Kingdom until the first decade of the 20th century. Furthermore, this term was quite present in early psychoanalytic literature; for instance, Jean-Martin Charcot made an extensive use of the diagnosis of neurasthenia while Sigmund Freud regarded neurasthenia as physical exhaustion secondary to psychosexual problems which he attempted to treat with psychoanalysis (Lin, 1992). This diagnosis was still widely used during World War I, which was followed by a loss of interest in this concept among American and British medical professionals by 1960. The DSM-I was published in 1952, giving no formal recognition to neurasthenia, except for placing it under the title of "psychophysiologic nervous system reaction", with an attached footnote indicating what is to be done with those cases diagnosed as neurasthenia. The neurasthenia diagnosis was included in DSM-II as a formal diagnostic entity as a subtype of neuroses. Some scholars considered its inclusion not as a renewed interest of American psychiatry in this diagnosis but as an attempt in making DSM-II compatible with the ICD-8 (Lin, 1992). The diagnosis was dropped out from the DSM-III and subsequent editions of DSM, although it has been kept since in the ICD-8 to the most recent version of the ICD-10 of the WHO.

The term neurasthenia was imported by Westerners as shenjing shuairuo (SJSR) to China in the early 1900s, and was diagnosed widely by both psychiatric and medical practitioners up to the early 1980s until the use of contemporary Western diagnostic systems (i.e., DSM) became dominant among mental health professionals. Neurasthenia was originally associated with a heterogeneous symptom cluster, including excessive

physical and mental fatigue, muscle weakness, insomnia, lack of concentration, depression, and fears and irritability (Ferraro, 1954). Symptoms such as weakness and exhaustion are important in Chinese traditional medicine; therefore, the connotation of nervous weakness in SJSR is easily grasped by Chinese people, including health professionals (Lee, 1998). Today, the term SJSR has blossomed into a highly fashionable diagnostic concept among traditional Chinese medicine doctors as well as ordinary people in Chinese societies.

Neurasthenia: current status. The WHO Primary Care Study (Sartorius et al., 1996) found that an average of 5.3% of general practice patients met criteria for neurasthenia according to the ICD criteria, and this condition has been frequently diagnosed in Europe, particularly some Eastern European countries (Bankier, Aigner, & Bach, 2001). In a recent Australian national survey using ICD-10 criteria (Hickie, Davenport, Issakidis, & Andrews, 2002), the 12-month prevalence rate is 1.5%, when only 20% who met criteria during the year were not current cases, suggesting the chronic nature of this condition. Neurasthenia was also highly comorbid with anxiety (64.9%) and affective (53.7%) disorders, and people with neurasthenia alone (less than 0.5% of the population) were less disabled. Although the current DSM-IV does not include neurasthenia as a formal psychiatric diagnosis, it is included in the ICD-10, which is commonly used among medical professionals across the world, and also included in the Chinese Classification of Mental Disorders (CCMD-2-R; CMA & NMU, 1995) which is predominantly used in China.

Neurasthenia has been widely used in Chinese countries of Hong Kong, Taiwan, and China, among lay people, paraprofessionals, and medical and psychiatric service

providers (Lee, 1998). Especially prior to 1980s, the prevalence rates were reported to range from 6% in community epidemiological studies and up to 80% in psychiatric outpatients (Lee, 1994). Although the use of neurasthenia as a psychiatric diagnosis has decreased in recent years even among the Chinese professionals, many individuals were reported to suffer from this condition. Among a random sample of 70 patients from four psychiatric clinics in Taiwan (Rin & Huang, 1989), half considered themselves to be suffering from neurasthenia. Interestingly, a survey on younger generation physicians among these four clinics found that one-third of neuropsychiatrists and 40% of general physicians reported using this term in their practice to establish good rapport with the clients and to improve treatment, although very few used it as a formal diagnosis. Using the ICD-10 criteria, Zheng, Lin, and their colleagues (1997) found that, among their Chinese American community adult sample, neurasthenia is the most prevalent and also a distinctive clinical condition overlapping only partially with other better recognized DSM-III-R diagnosable disorders, including mood and anxiety disorders. Despite its high prevalence rate and popularity, this diagnosis is not without controversies, most of which come from the discrepancy in its diagnostic criteria between ICD-10 and CCMD-2-R (including its absence among the DSM system), and from disagreements regarding its place in Chinese psychiatry.

Neurasthenia in the ICD-10 has two types: a) persistent complaints of increased fatigability after mental effort, and, b) persistent complaints of bodily or physical weakness and exhaustion after minimal effort. Several unpleasant physical feelings are common, including muscular aches and pains, dizziness, tension headaches, sleep disturbances, inability to relax, irritability, and dyspepsia. If any autonomic or depressive

symptoms are present, they should not fulfill the criteria for the anxiety and depression disorders (WHO, 1992). The diagnostic criteria of the ICD-10 overlapped substantially, but not completely, with the CCMD-2-R (Zheng et al., 1997). The ICD-10 picked out fatigue or weakness as the dominant feature in neurasthenia from a hierarchical perspective, whereas no such consideration was made in Chinese conceptualization of SJSR (Liu, 1989). Therefore, the neurasthenia in ICD-10 does not have the same clinical presentation as the SJSR in Chinese diagnostic system as of CCMD-2-R. In fact, it was not SJSR in CCMD-2-R but chronic fatigue syndrome (CFS) that was strikingly similar to that of contemporary Western neurasthenia (WHO, 1992), which has inspired many observers to contend that CFS is neurasthenia revived (Abbey & Garfinkel, 1991). Note that CFS has become increasingly popular in the English-speaking countries since 1980s and is characterized by chronic impairment-producing fatigue as defined by the criteria put forth by Center for Disease Control in 1994. CFS is not an official diagnosis in the CCMD-2-R, the ICD, nor DSM diagnostic systems; furthermore, many symptoms have been examined in the context of fatigue, such as fibromyalgia syndrome and myalgic encephalomyelitis, i.e., ME (Wessely, 1994). Note that the traditional Chinese medical notion of "xu" (usually translated as "weakness" or "deficiency") may be easily confused with medical complaints of "weakness", which is the core symptom in the ICD-10 definition of neurasthenia. However, "xu" in Chinese medicine is a primarily etiological category which may give rise to a diversity of symptom complexes that include, but by no means confined to, weakness. Thus, Chinese clients rarely make a spontaneous chief complaint of "xu" even though they do accept that they are "xu" (Lee & Wong, 1995).

One implication in accepting SJSR as a formal psychiatric diagnosis in Chinese

countries is reflected by the assumption held by North American mental health professionals to view SJSR or neurasthenia as a somatized form of depression or anxiety. A large literature argues for the Chinese people to express depression somatically, although it remains unclear whether the rate of reporting somatic symptoms when experiencing depression is truly greater among Chinese population than among Western population. Some studies found evidence of somatization (e.g., Parker et al., 2001), and others do not (e.g., Cheng, 1989), while the prevalence of somatization in psychiatric, especially among patients with anxiety or depression (Kroenke & Spitzer, 1998), or in primary care settings among the general population has been estimated to be quite high (Piccinelli, Rucci, Üstün, & Simon, 1999). Although the word "neurasthenia" sounds neurological in English, its Chinese translation (i.e., SJSR) actually carries the connotation of nervous excitement (due to excessive stress in individuals with nervous disposition) and its resultant various symptoms (Lee, 1998). It is not a pure etiological concept (i.e., symptoms resulted from neurological conditions), but a concept of symptomatology almost like a product of the diathesis-stress model.

A notable example is Kleinman's study (1982) on re-diagnosing 100 Chinese neurasthenic patients using DSM-III criteria with SADS diagnostic interview adapted for use with Chinese patients. He reported 87% of the 100 patients suffering from various forms of clinical depression. Most of these patients spontaneously reported somatic symptoms of depression, such as headaches and insomnia, while only acknowledging the presence of affective symptoms when being specifically asked by the assessors. Kleinman's study has generated a great deal of interest as well as controversy among Chinese and Western psychiatrists, regarding the diagnosis of neurasthenia in China.

Inasmuch as neurasthenia was the most common psychiatric diagnosis made in China at that time, the high rate of re-diagnosis might insinuate that Chinese psychiatrists had blatantly missed "severe depression", which is the literal Chinese translation of major depression. This interpretation would be unfortunate because Kleinman's emphasis was much less on whether neurasthenia as a culturally constructed concept was misdiagnosed as depression, but rather on the relationship between culture and illness behaviours (Lee, 1996). Nevertheless, the "somatization" of neurasthenia (i.e., neurasthenia referred as somatized symptomatology for some underlying psychiatric conditions such as depression) in Western psychiatry became predominant.

In fact, the CCMD-2-R criteria for neurasthenia (CMA & NMU, 1995) included not only somatic but also affective symptoms that are grouped under five collateral groups, including *weakness* symptoms (e.g., mental fatigue; lack of energy; slowness in thinking; poor memory or concentration), *emotional/ dysphoria* symptoms (e.g., worried, easily irritable, distressed), *excitement* symptoms (e.g., mentally easily excitable, as manifested in uncontrollable increase of recollections and thought associations, accompanied by unpleasant feelings but not with increased psychomotor activities), *nervous pain* symptoms (e.g., tension headache; myalgia), and *sleep disturbances* (e.g., difficulties falling asleep, frequent awakening, chaotic sleep-wake schedule). Furthermore, in the CCMD system, neurasthenia is (and has always been) classified as a subtype of neurotic disorders which also include GAD, phobia, panic disorder, neuroses of hysterical, hypochondriacal, and depressive, and other neuroses. While keeping neurasthenia as a subtype of neurotic disorders, emotional symptoms can occur as a small part of the illness. Note that the CCMD-2-R does have an affective (mood) disorder

diagnosis, which maintains a single notion of depression without any sub-classifications. The diagnosis of depression, with a similar 2-week duration criteria seen in the DSM and ICD systems, requires depressed mood as the main characteristic of the condition, in addition to any four out of nine familiar symptoms of depression, which differs from ICD-10 or DSM-IV. Note that ICD-10 requires two out of three symptoms of depressed mood, loss of interests/enjoyment, and increased fatigability, whereas DSM-IV requires either depressed mood or loss of interests/pleasure as the main core symptoms. Therefore, a client may receive a diagnosis of depression in the absence of depressed mood according to Western systems but not according to the Chinese system.

Relating neurasthenia to comorbid anxiety and depression. From the above review regarding the differences between Chinese and Western diagnostic systems, several observations are made in relation to the goal of the current study, i.e., examining the comorbid anxiety and depression syndrome among Chinese Canadians. First, discrepancy in the prevalence rates across disorders may result from how affective and somatic aspects of anxiety and depression are classified for diagnosing specific disorders. To re-iterate, exploring the patterns of syndromes, not the prevalence rate of any specific disorder, is more appropriate to understand the comorbid features of depression and anxiety. Second, according to the Chinese diagnostic system, the diagnosis of neurasthenia includes not only somatic, but also affective and cognitive features that resemble those characterizing anxiety and depression from a Western perspective. Thus, examining anxiety and depressive symptoms from a comprehensive symptom-based approach can shed light on the utility of neurasthenia among the current sample.

For example, several weakness symptoms in neurasthenia could be viewed as

somatic manifestation of anhedonia, such as fatigue, low energy, slowness in thinking, and poor memory and concentration. Emotional symptoms seem to reflect emotional distress and vulnerability, similar to the concept of negative affectivity shared by anxiety and depression. Some excitement symptoms, especially its emphasis on having increasing thoughts or recollections, might carry the flavour of apprehensive worry and rumination that is hypothesized to be shared by anxiety and depression in the current study. Sleep disturbance and nervous pain, such as headaches, although not included in the original tri-partite model to distinguish depression from anxiety or vice versa, are common among individuals with depression and anxiety, and will be included in the revised tripartite model proposed by the current study.

Overall, understanding the historical account of neurasthenia can shed light on its earlier significance in Western psychiatry and a recent switch of focus to affective disturbances thought to characterize anxiety and depression. As an imported concept from the West to the Chinese society, neurasthenia took a different path to include a variety of psychiatric conditions including depression, anxiety, and somatization. The majority of its symptomatology can be integrated into the original tri-partite model, while some specific somatic symptoms will only be pertinent to the proposed revised tri-partite model. It is evident that Western and Chinese psychiatry, respectively, highlights the affective and somatic aspects as core symptoms, while the overall symptomatology in fact is far more comprehensive. One missing aspect of neurasthenia symptomatology concerns depression- and anxiety-specific cognitions, which will be reviewed next.

Cognition in Depression and Anxiety among the Chinese

Research on the role of cognition in distinguishing depression from anxiety

according to a cognitive-specificity model among the Chinese has been nearly non-existent. There are a few exceptions of studies examining cognitive features of depression among the Chinese people. In a cross-cultural study on depressive symptomatology (Parker et al., 2001), Malaysian Chinese were found distinctly less likely to affirm cognitive items of depression (e.g., hopelessness, helplessness), compared to Caucasian Australians, thus resulting in a lower overall score of depression. Other studies found no differences between Caucasian Americans and Chinese Americans or Chinese in China in reporting cognitive features of depression (Chang, 1985; Simon, VonKorff, Piccinelli, Fullerton, & Ormel, 1999).

Some studies, although not aiming at examining the role of cognition, use self-report measures of anxiety and depression that include items with cognitive features. Many of these measures have been validated among the Chinese in Chinese countries or overseas, suggesting the significance of cognitions in the clinical presentation among the Chinese people. Examples include the pessimism item of the Chinese version of Beck Depression Inventory among Chinese in China (Zheng, Wei, Goa, Zhang, & Wong, 1988) and among Chinese Americans (Yeung et al., 2002), items about the sense of hopelessness of the Chinese Health Questionnaire among community and clinic samples in Taiwan (Cheng, Wu, Chong, & Williams, 1990), and items about excessive worrying of the Chinese version of the Hospital Anxiety and Depression Scale among Hong Kong university students (Leung, Ho, Kan, Hung, & Chen, 1993). Furthermore, the cognitive aspects have been a part of diagnostic criteria for depressive and anxiety symptomatology among the Chinese people. In the CCMD-2-R to diagnose neurasthenia, the excitement symptoms as previously discussed show resemblance to the apprehensive worry and

rumination as the cognitive aspects shared by anxiety and depression. Regarding the mood disorder and depressive neurotic disorder in the CCMD-2-R, several cognitive items are included as diagnostic criteria, including sense of guilt, self-reproach, and hopelessness about the future.

Despite of some limited evidence for assessing cognitions among the Chinese people, some questions still remain. Most validation studies on specific measures focus on establishing the structural equivalence across samples or on convergent and divergent validity using bivariate correlation, thus paying less attention to between-group differences at each individual item (e.g., Gupta & Yick, 2001; Rankin, Galbraith, & Johnson, 1993). Therefore, specific items may fail to perform in accordance to researchers' expectations despite the overall scale is concluded to be appropriate thus valid for cross-cultural applications (e.g., Cheung & Bagley, 1998; Ying, 1988). Regarding cognition in anxiety or depression for instance, hopelessness has sometimes been assessed with a single item which is reverse-coded from a positive worded item as in the case of CES-D scale (e.g., "hopeful about future"). Thus, when such an item was found problematic (e.g., Lin, 1989), it is difficult to determine whether it is due to the "cognitive" or "reverse-coding" aspect of this item.

Another question on assessing anxiety and depressive cognitions among the Chinese people concerns worry. Worrying, when translated into Mandarin Chinese as "Fan Nao", is characterized by conscious subjective feelings of being worried and distressed by conflicting thoughts and unfulfilled desire. Fan Nao has been described as the primary complaint of neurasthenia distinct from affective disturbances characterizing depression and anxiety (Liu, 1989). As the cognitive aspect of depression and anxiety has

begun to receive attention especially in its role of comorbidity between anxiety and depression in Western psychopathology research, its similar role among the Chinese can be explored. A study among the Chinese in Hong Kong (Leung et al., 1999) found that items assessing worrying loaded on both anxiety and depression factors. Although this equivocal finding has been interpreted as a semantic ambiguity that prompts respondents to interpret worry as either depression or anxiety-related experiences, it might in fact reflect its being shared by both syndromes among the Chinese sample. Thus, Fan Nao, or apprehensive worrying or rumination, as hypothesized by the current study to be shared by anxiety and depressive syndromes among the general population according to the proposed revised tri-partite model, will be examined regarding whether it similarly functions as a shared cognitive component among the Chinese sample.

Role and Assessment of Positive Affect and Anhedonia

In addition to the aforementioned potential somatization tendency among the Chinese people which might impede accurate assessment of depression, researchers have identified another ethnicity-specific response pattern that poses further challenges in assessing depression. That is, compared to Caucasian groups, Asian ethnic groups tended to inhibit the expression of positive affect by endorsing low on positive-worded items of positive affect; they tended not to highly endorse positive-worded items of positive affect, compared to their responses on negative affect items. When positively worded items (e.g., "I felt happy") are reversed-scored and included as a summary score of "low positive affect", an artificially inflated higher score of depression is likely to result. This response pattern was found among several Asian ethnic groups, including Koreans in South Korea (Cho & Kim, 1998), Korean immigrants in Canada (Noh, Avison, & Kasper,

1998), Japanese in Japan (Iwata, Roberts, & Norito, 1995), Chinese Americans (Ying, 1989), and Chinese in China (Yen, Robins, & Lin, 2000).

Due to the extent and the consistency of this response pattern across studies, cultural explanations that contrast Western and Eastern cultures may offer some insight into this phenomenon. Western culture is often characterized by the themes of independence and individualism with an emphasis on individuals' awareness of their internal emotional experiences. These emotional experiences are expressed to others in order to differentiate oneself from others and to create a cultural ideal of uniqueness. The Eastern interdependent-based culture differs from Western culture in its emphasis on things outside the individual, especially the conceptualization of the person as the social being. Within this inter-dependent Chinese cultural emphasis, attention is directed away from the psychological processes of individuals especially their feelings, but toward the appropriate expression of shared inter-subjective agreement about moral values and social world (Bagozzi, Wong, & Yi, 1999). Thus, reporting feeling happy and enjoying life, although salient features in North America mainstream culture, might be viewed as signs of immodesty and frivolousness that are not positively valued in Chinese culture (Ying, 1989), whereas moderation of positive affect by itself is valued (Russell & Yik, 1996).

Due to this Chinese-specific response pattern, some researchers (e.g., Lin, 1989) suggested dropping these higher-end positive affect items as a solution to accurately assess depression among the Chinese people. On the other hand, low positive affect has been successfully incorporated into the diagnostic criteria of the CCMD-2-R (CMA & NMU, 1995), suggesting its clinical applicability to the Chinese people. Despite the

problematic nature of using higher-end items to assess low positive affect among the Chinese people, dropping these items without proposing alternative assessment strategy may fail to capture the significance of low positive affect in depression, and furthermore may cause additional problems when studying the issue of comorbidity between anxiety and depression using the most researched original tri-partite model.

Application of the Proposed Revised Tri-Partite Model to Chinese Canadians

A research project that aims at detecting depression in relation to its comorbid anxiety symptoms among Chinese people will shed light upon Western psychopathology research on the comorbidity between anxiety and depression. The aforementioned two Chinese-specific symptom expression patterns (i.e., tendency in reporting more somatic symptoms; reluctance in expressing positive affect) introduce culture-specific difficulties in separating depression from anxiety syndromes according to the original Clark and Watson's (1991) tri-partite model. If Chinese Canadians over-report somatic symptoms in comparison to Caucasian Canadians, regardless of their level of depression, their overall presentations would then appear to be more in line with anxiety than with depression symptomatology. Including additional somatic symptoms (e.g., muscle tension, gastrointestinal disturbances) thus may lead to a better differential assessment of anxiety or depression based on their specifically associated somatic symptoms. Although somatic symptom reporting might be particularly salient among Chinese Canadians, affective disturbances are expected to be an essential part of depressive and anxiety symptomatology. Negative affectivity will still be considered as central affective disturbances shared by both anxiety and depressive syndromes among Chinese Canadians.

If Chinese Canadians under-report positive affect, when low positive affect is only assessed via reverse-coding higher end of positive affect, the severity of depression would be over-estimated due to their responses tendency. Thus, the resultant factor will likely be weakly related to other factors such as negative affectivity. However, when the broader constructs of low positive affect and anhedonia, rather than simply reverse-coding positive affect items, are considered as the depression-specific component in the revised tri-partite model, this culture-specific response style can be overcome. Thus, rather than using reverse coding of positive affect items, low positive affect and anhedonia will be assessed with a direct assessment of low positive affect (e.g., "I do not feel cheerful"), loss of interests, and physical aspects of anhedonia (e.g., slowed speech and movement). Similarly, assessment including hopelessness and worthlessness as a depression-specific cognition, fears of perceived threats as an anxiety-specific cognition, and their shared cognition (i.e., apprehensive worrying and rumination) will become essential when detecting depression.

In sum, as discussed above, it is proposed that the original tri-partite model by Clark and Watson (1991) must be revised in order to adequately distinguish anxiety and depressive syndromes among Chinese Canadians. Specifically, additional items are needed to assess 1) a broader scope of somatic symptoms (e.g., muscle tension and gastric disturbances); 2) a broader scope of low positive affect and anhedonia (e.g., loss of interest; psychomotor retardation); and 3) additional cognitive elements in the shared cognition between anxiety and depression, and in anxiety-specific and depression-specific cognitions.

Two Methodological Improvements

The applicability of the original tri-partite model across samples has often been examined by determining whether the structures and the inter-relations of the constructs are identical across groups. Common methods to demonstrate the equivalence of structure include factor analyses, analysis of covariance structures or linear structural models, or even multidimensional scaling (Van de Vijver & Leung, 1997). The current study, rather than just confirming a priori factorial structure, will begin with exploratory factor analysis, which will be subsequently validated with confirmatory factor analyses using the techniques of structural equation modelling. In addition to this main structural analysis, the current study will approach data-analyses with two methodological improvements: using techniques derived from item response theory prior to performing structural analyses, and supplementing quantitative analyses with a qualitative component in a semi-structured individual interview.

Item Response Theory

Item response theory (IRT) has become the psychometric method of choice in educational assessment because it is more informative than classical test theory (CTT), especially regarding the psychometric characteristics of test items. In the CTT measurement model, the predictive validity of a particular test across socio-demographic groups typically is based on summative scale scores, and is usually judged from regression statistics in examining between-group differences (e.g., regression lines, slopes, intercepts). As Embretson and Reise (2000) note, classical measurement theory conceptually cannot separate the characteristics of the persons from the characteristics of the test items. Yet, these person-level characteristics might differentially shape individuals' responses to test items, such as their ethnicity and cultural background.

One line of research that shows particular promise in understanding cultural influences to psychopathology is IRT. IRT models specify the relation between item responses or ratings, and the latent trait or construct thought to underlie the responses or ratings. Essentially, IRT is based on the premise that both the examinee's latent traits or abilities and item characteristics can be described separately; as a result, IRT can be used to assess both person and item characteristics. In IRT models, both person abilities and item characteristics are inferred separately from examinee's performance on test items. Persons with high scores on the items that make up a test are assumed to have "higher trait levels" and conversely, those with low scores have "low trait level." Items are "less endorsable" if people at every trait level less frequently give high responses, and "more endorsable" if people give high responses more frequently. In particular, the meaning of the item responses is not tied to the distribution of the latent trait in a population; thus IRT models are most capable of detecting whether measures or test items are valid cross-culturally (López & Guarnaccia, 2000).

The first step in an IRT analysis involves selecting the appropriate IRT model to fit the data. The current study chose the one-parameter logistic (1PL) model, which is also called Rasch analysis, developed by Rasch in 1960 (Rasch, 1980). The Rasch model, similar to other more complex IRT models, explains examinees' responses to items by examining the relation between respondents' trait levels and the properties of a given test. In the Rasch model, the property of the test items is completely determined by the parameter of item difficulty. More complex models include other parameters, such as item discrimination and guessing. The Rasch analysis allows for sample independent calibration of item endorsability for a unidimensional scale. When item data fit the Rasch

mathematical model, the generality of the findings is assured regardless of sample size or sample characteristics (Wright & Stone, 1979). The Rasch model has been extended to include procedures for analyzing Likert-type data (Andrich, 1978).

IRT has been recommended to reduce cultural and gender biases in tests (Hartung & Widiger, 1998; Helms, 1997). The techniques associated with IRT include the comparison of latent trait parameters or item characteristic curves across groups (Kim, Pilkonis, Frank, Thase, & Reynolds, 2002), and the cross-group comparisons of difficulty and discrimination indices (Santor, Ramsay, & Zuroff, 1994). IRT also has been used to assess whether items within an assessment instrument vary in their discriminative validity at different levels of the construct being assessed (Santor & Coyne, 2001), and whether the discriminative validity of an item varies for males and females, for instance, at the same level of the construct being assessed (Lange, Thalbourne, Houran, & Lester, 2002). When items are considered biased, in IRT terms their measurement qualities are then affected by external variables, such as culture. As such, the probability of endorsing a test item depends on both an individual's trait level and these external variables, resulting in a non-meaningful comparison of group differences on a common scale. This type of item bias is also called "Differential Item Functioning" (DIF).

In IRT terms, DIF occurs when an item is more discriminating, more difficult to endorse, or even more extreme in some focal groups as compared to some reference group when the different sub-groups have been matched on the latent trait under investigation (Kim et al., 2002). On the basis of item parameters derived from the specific IRT model employed, a variety of graphical displays can be generated, including the item characteristics curve (ICC). The ICC, a plot of probability of a positive response

at each person trait level, provides a visual summary of an item's *endorsability* (reflected in its general elevation-a higher elevation illustrates greater ease of endorsement at any level of depression), and an item's *discriminating power* (reflected in its slope, with a steeper slope illustrating greater ability to distinguish between lower and higher levels of depression). Therefore, DIF occurs when an item's ICC estimated for two or more groups of examinees do not perfectly overlap, so that the item difficulty and/or discrimination parameters are different across the groups. When an item performs differently, individuals in different groups with the same level of latent construct may endorse the item with different raw scores, leading to the possibility of misleading group effects as an evident consequence of DIF. Note that DIF techniques other than IRT-based are available to detect biased test items (see the review by Millsap and Everson, 1990). However, Preito, Barbero, and San Luis (1997) found that measures based on IRT are considered better indicators of DIF than other commonly used methods, including Mantel and Hanszel statistics (1959) or logistic regression (Swaminathan & Rogers, 1990).

In two- and three-parameter IRT models, comparing ICCs directly across groups may not be an adequate approach for the study of DIF. The major problem lies in the indeterminacy between the scale of the item and person parameters in IRT modelling. In each separate item parameter calibration, the scale of the latent variable is typically defined to have a mean of 0 and a standard deviation of 1 in an arbitrary manner. Therefore, the item parameter estimates calibrated separately in two groups are not on the same scale and cannot be compared directly. Therefore, before comparing ICCs across groups to detect DIF, it is essential to place item parameters on the same scale, a procedure known as "linking" (Vale, 1986). However, in case of the one-parameter

model as chosen in the current study, item performance only differs in the item difficulty which has invariant meanings in terms of underlying trait across groups. Therefore, in this particular case of the one-parameter model, a direct comparison can be made on item parameter without using the linking or anchoring procedure.

One major limitation of two- and three-parameter IRT models is that they require large examinee samples for accurate and stable parameter estimation. Test lengths as short as 30 items requires a sample size of 500 examinees for two-parameter data or 1000 for three-parameter data for accurate estimation of ICCs (Hulin, Drasgow, & Parsons, p. 105, 1983). For a smaller sample size such as 100 examinees per group, applying the one-parameter model with only the item difficulty parameter, as in the Rasch model, is the only practical alternative. Although the Rasch's model assumptions are stricter than more complex models, these assumptions can be empirically tested to see if the empirical data fit the model.

A last issue regarding DIF is about the differences between uniform and non-uniform DIF. Uniform DIF occurs when the difference in item endorsability is the same for the two groups over all levels of the latent construct. As such, an item is consistently easier (or more difficult) for one group to endorse regardless of the severity of, for example, depression. In this case, the ICCs for these two groups will be approximately parallel, differing mainly in their endorsability parameters. On other hand, non-uniform DIF is present when the ICCs are not parallel, meaning that one group finds it easier to endorse an item at low levels of depression but more difficult to endorse at high levels of depression (Santor & Coyne, 2001). The ICCs would then differ mainly in the second or discriminability parameter. In the Rasch model, item performance only differs in the item

difficulty parameter, whereas the item discrimination parameter is examined only in complex models. As such, item discriminability is expected to be invariant over specific participants used to calibrate the items, regardless of the respondents' underlying trait levels. The DIF identified in the Rasch model will thus be uniform DIF. Non-uniform DIF in the context of the Rasch model could, however, be detected by failure of an item to fit the model for one group, or by differing in item difficulty calibrations for high versus low trait levels within one group.

In addition to the above DIF analysis via the IRT approach, other approaches are available to identify DIF items, including the analysis of variance model (Cleary & Hilton, 1968), which was likely the first technique for detecting DIF, and the Mantel-Haenzel statistic (Holland & Thayer, 1988), as probably the most popular method. In the analysis of variance (ANOVA) model, a test is administered to individuals belonging to different cultural groups. The first step is to divide the participants into score level groups. Individuals with approximately equal scores are assumed to have equal levels of underlying trait, thus being grouped together. The split of the score distribution into score levels should be based on the score of ALL cultural groups together; quite often an attempt is made to divide the groups in a way that the number of participants in each group is approximately the same. Both score level and cultural group (plus their interaction term) will be independent variables in data analyses, whereas item score is the dependent variable. Based on the results, an item is said to be *uniformly biased* (or showing uniform DIF) when the main effect of culture is significant. That is, participants from one cultural group have a consistently higher score on an item than those with the same level of underlying trait from another cultural group. A significant effect of the

interaction term suggests the presence of *non-uniform bias* (or showing non-uniform DIF), indicating that this item is endorsed differently by the two groups, such that one group is more likely to endorse this item at a lower level but less likely to endorse it at a higher level of the underlying trait. Van de Vijver and Leung (1997) have specifically clarified the difference between this ANOVA approach and other studies that use ANOVA procedure to compare group differences in scale scores. ANOVA-based item bias analysis tests whether there are intergroup differences per score level (i.e., whether individuals from one group with a particular trait level have the same average score on a particular item as individuals from another group with the same trait level). In contrast, studies directly comparing two groups in overall scale score simply test whether there are overall intergroup differences in the total score.

The most popular technique to detect DIF is likely the Mantel-Haenszel statistic (Holland & Thayer, 1988). The rationale behind the Mantel-Haenszel statistic is similar to the ANOVA approach described above, whereas the ANOVA approach is based on interval data, the Mantel-Haenszel statistic works with dichotomous data. Specifically, after participants are matched on an observed variable (such as total test score), the counts of participants in both cultural groups getting the studied item correct or incorrect are compared in an analysis of contingency tables with an associated chi-square test of significance. Evidently, the Mantel-Haenszel statistic can only detect uniform, not non-uniform, DIF. Although a modification to the standard Mantel-Haenszel procedure has been proposed to overcome this particular limitation, techniques derived from item response theory are still found to achieve a higher detection rate with both uniform and non-uniform DIF (Prieto, Barbero, & San Luis, 1997).

In summary, the current study will detect DIF items between Caucasian and Chinese student samples, for each targeted construct being measured (e.g., negative affectivity; autonomic hyperarousal). The identified DIF items will be set aside and not included in the subsequent structural analyses. These DIF items derived from the Rasch model will be further analyzed in relation to cultural experience variables, so that cultural explanations for the presence of DIF can be fully explored.

Qualitative Component

A qualitative component using a semi-structured individual interview will be added to the aforementioned quantitative analyses in order to understand individuals' cultural and depressive experiences from their subjective perspectives. Due to the heterogeneity of immigrants in their demographic background and cultural experiences, researchers have already begun to pay attention to specific factors that are unique to each ethnic group and that go beyond the generic model of acculturation assessing psychological and behavioural domains of ethnic and host cultural orientations. For instance, for individuals with Chinese origin, societal evaluation toward the Chinese group (i.e., collective self-esteem) has been found especially important in understanding their private evaluation and identification with the group (Crocker, Luhtanen, Blaine, & Broadnax, 1994). Factors such as discrimination that have often been examined in racial identity literature but not in current models of cultural orientations among Asian or Chinese ethnic individuals have begun receiving attention in recent studies (Alvarez & Helms, 2001).

In addition to a general framework of cultural orientations, specific cultural and ethnic processes that influence individuals' psychological experiences within their

cultural contexts will be better captured by a qualitative research approach (Okazaki, 1998). Studies using a qualitative approach such as an interview found that the balance between being independent and relating to other Chinese university students is important for their adjustment (Swagler & Ellis, 2003), and that mental health beliefs are held differently when applying to one's own vs. others' conditions (Tabora & Flaskerud, 1996). When analyzing responses to open-ended questions about sources of acculturative stresses, Chinese students from Taiwan, differing from those from Hong Kong and China, described greater parental expectations for academic excellence (Chia, 2004). Note that the current study does not intend to build theory based on participants' reporting of their experiences; instead, using a phenomenological approach, the current study aims to explore culturally- and depression-relevant elements that are meaningful for their adjustment. Therefore, results derived from this approach will provide important insights and observations for the development of new research paradigms, especially for bridging psychopathology research with cultural research.

Compared to other qualitative traditions, the phenomenological approach is selected due to its emphasis on "bracketing" in its data-analysis process, and due to its focus on the meaning of experiences among individuals who have experienced the phenomenon under investigation (Creswell, 1998). Bracketing refers to researchers' holding their own preconceived ideas about the phenomenon and to understanding it through the voices of informants without presuppositions. Therefore, the researchers would "bracket" their preconceptions so as not to inject hypotheses, questions, or personal experiences into the study. This position is selected due to the potential overlap in the cultural background between the primary investigator and prospective participants

in the current study, as well as due to the primary investigator's prior research experiences in cultural orientations and mental health among immigrants and Chinese ethnic individuals.

Furthermore, participants will be prompted to reflect critical incidents that are meaningful each time they re-negotiate their cultural orientations and when they encounter experiences of depression. In critical incidents methodology, those incidents are brief descriptions of vivid events that people remember being meaningful in their experiences (Cushner & Brislin, 1996). This method has been found effective in capturing individuals' cross-cultural transitions (Arthur, 2001) and for examining events associated with changes in identity status (Kroger & Green, 1996). This methodology is consistent with principles of the phenomenological approach in maintaining the centrality and uniqueness of individuals' experiences, which could not have been captured from a general cultural orientation framework.

CHAPTER 3: PRIMARY RESEARCH GOALS

The first goal of the current study is to examine the symptom structure of depression and anxiety among the Caucasian Canadian and Chinese Canadian university student samples, in relation to the original tri-partite model.

Among the Caucasian Canadian student sample, it is expected that specific affective (i.e., NA) and cognitive (i.e., worry and rumination) components will form one factor as a shared factor between anxiety and depression. Low positive affect and anhedonia will be expected to relate to cognitive and physical aspects of depression, all of which formulate a higher-order factor of depression. This higher-order depression factor, instead of being independent, will be expected to correlate with the aforementioned shared factor between anxiety and depression. Similarly, autonomic hyperarousal will be expected to relate to the cognitive aspect (e.g., fear and danger cognitions) and non-panic physical aspects (e.g., gastric disturbances; muscle tension) of anxiety, all of which formulate a higher-order anxiety factor. This anxiety factor will be expected to correlate with the shared factor between anxiety and depression. No specific hypotheses about the specific structure among the Chinese Canadian student sample will be proposed.

The second goal of the current study is to evaluate whether the symptom structures derived from Caucasian and Chinese Canadian student samples are equivalent, and to further investigate cultural influences on the between-group similarities or differences in the resultant symptom structures of anxiety and depression. If the structural relation is equivalent across groups, further investigation will be made to examine if such findings are impacted by participants' cultural orientations. If the structural relation is not

equivalent, in addition to concluding ethnicity impacting this finding, further investigation will be carried out to evaluate which aspects of participants' cultural background related the most to the resultant factorial structures across groups.

The third goal of the current study is to explore individuals' cultural and depressive experiences from a qualitative approach through a semi-structured interview, in order to discover new culturally relevant themes that link culture with psychopathology.

CHAPTER 4: METHODOLOGY

Procedure

The targeted sample groups included Caucasian and Chinese Canadian university students between age 18 and 40, with the intent to recruit a minimum of 200 participants for each group. Issues related to depression and anxiety have become significant mental health concerns among university students. The range of symptoms reported by university students was found to be similar to those reported by a US representative sample of community adults (Rosenthal & Schreiner, 2000). The tri-partite symptom structure of anxiety and depression has been considered convergent between university student and clinical samples (e.g., Watson et al., 1995). Thus, the sample of university students is suitable for the current study's attempts in examining symptom structures of anxiety and depression.

The reasons for the chosen age range between 18 and 40 as one of the participant inclusion criteria are three-fold. First, depression and anxiety are often characterized by an overarching dimension of negative affectivity in a younger population, and they likely begin to differentiate into respective depressive and anxiety syndromes during late adolescence or young adulthood (Cole, Truglio, & Peeke, 1997). Second, most theories about life cycles or stages typically consider the ages between 20 and 40 as young adulthood, where 40 to 45 is considered as a transitional stage into older adulthood that begins with the age of 45 (Levinson, 1986). Other depressogenic factors (e.g., loss of significant others) may be more significant among the older adults, and the manifestation of depression among this population may not be fully captured by the existing diagnostic criteria (Futterman, Thompson, Gallagher-Thompson, & Ferries, 1995). Third, most

recent ethnic identity and acculturation studies begin to highlight the significance of basic demographic factors (Phinney, Horenczyk, Liebkind, Vedder, 2001; Tsai, Ying, & Lee, 2001), which have been relatively ignored compared to other cultural-related demographic factors, such as generational status. Allowing a relatively wider age range but not going beyond the scope of young adulthood will allow the current study to focus on examining age-related and also culture-related influences to symptom structures of anxiety and depression.

For Chinese Canadian university students, those who were foreign-born in Asian countries with one of their parents as an ethnically Chinese individual, and who have resided in Canada for at least two years were recruited in the current study. Nativity status, as reviewed earlier (e.g., Chia & Costigan, 2006a; Cuéllar et al., 1993), has consistently been identified as a significant predictor for ethnic or host cultural orientations and adjustment among ethnic minority individuals. According to the 2001 Census (Statistics Canada, 2003), about three-fourth of the Chinese individuals in Canada were foreign-born. Thus, specifically targeting those Chinese students who were foreign-born (i.e., excluding the Canadian-born Chinese) ensures nativity status of the sample reflecting that of the Chinese individuals in Canada. Doing so also prevented from introducing extensive within-group difference in reporting anxiety and depression due to participants' nativity status. On the other hand, certain amounts of variations in participants' cultural background are essential because the current study aims to examine cultural influences on symptom structure of anxiety and depression. The Chinese individuals who receive university education in Canada are most likely to have varying degrees of immersion into both Chinese and Canadian cultures, due to their academic

activities as well as their home environment. Within the sample of foreign-born Chinese individuals, their varied length of residence in Canada is likely to influence their Canadian cultural orientation (e.g., Ryder et al., 2000). Therefore, targeting Chinese university students who were foreign-born is suitable for the current study. Lastly, those Chinese students who have just arrived in Canada within two years' time may likely be at an acute adjustment stage. Inviting them to participate in a research study may potentially bring about undue burden and, therefore, these recently arrived Chinese students were excluded from the study.

For the group of Caucasian Canadian university students, those who were born in Canada with two Caucasian parents, and who have resided in Canada for at least 12 years were recruited. Targeting those with Caucasian background was employed to ensure the comparability of this sample to that of previous studies adopting the tri-partite model to examine symptom structure (e.g., Watson et al., 1995). As previously reviewed, nativity status as a significant predictor for cultural orientations, the current study only recruits Caucasian participants who were Canadian-born. A more stringent criterion on the length of residence in Canada for this sample (i.e., 12 years) is to ensure participants having adequate amount of exposure with Canadian culture.

Overall, recruiting university students between age 18 and 40 as the targeted sample of the current study facilitated exploring the relation between anxiety and depression, both of which are common mental health concerns among this population. Foreign-born Chinese university students likely have varying degrees of both Chinese and Canadian cultural orientations. Such variations are significant with regards to the current study's goal in examining the impact of participants' cultural background on the

symptom structures of anxiety and depression. The inclusion criteria for the Caucasian Canadian university students ensure that this sample is comparable with previous studies and adequate in their contact with Canadian culture.

Eligible participants were recruited through psychology and other undergraduate courses, through student clubs or associations (e.g., Asian and Canadian Student Society; Chinese Christian Fellowship; Chinese Student Association; International Student Association; Taiwanese Association), through fliers that were posted on campus and through internet list-servers, and through classes with the permission of the course instructors. Note that recruiting participants from a random selection of classes across disciplines of the University of Victoria were employed, and that efforts were made to recruit participants who are representative of the Chinese Canadian university student population (e.g., equal number of males and females; varied length of residence in Canada). In addition to recruitment at the University of Victoria, some of the similar strategies were applied to recruit participants at the University of British Columbia. A separate ethics application was submitted to UBC in accordance of with its requirements, with the assistance of Dr. Ishu Ishiyama, serving on the principal investigator's dissertation committee as a faculty member at UBC.

In order to encourage participation, three prizes with a value of $30 Canadian dollars each were provided at the end of the data collection. These prizes were drawn among participants who provided their contact information. Winners were contacted individually to receive their prizes. Those participants who were recruited through an undergraduate psychology course were not included in the draw but received bonus points that are added into their final grade for the course. Participants were scheduled for

an individual appointment in a lab assigned to the principal investigator, or for a group session in a classroom that were pre-booked. Participants were also given the option of completing the questionnaires at home. The time to complete all questionnaires is expected to be between 30 and 45 minutes.

Regarding the interview procedure for the current study, about five to ten Chinese Canadian participants (with the same inclusion criteria as for questionnaire participants), plus having prior or current experiences of depression, were to be recruited through the procedures described above. In addition, fliers were posted at Health Services, Counselling Services, and Peer Helping office located in the Student Union Building at University of Victoria, after being approved by the appropriate authorities. Interviewees completed the questionnaire package after the end of the interview. Interviewee participants that were not recruited through an undergraduate psychology course were paid $30 dollars for their participation of the study. The principal investigator is the interviewer who is originally from Taiwan, with Mandarin Chinese and Taiwanese as her native languages, and who has been in Canada for more than nine years. The interview protocol was administered in English, but interviewees were offered an opportunity to express themselves in Mandarin Chinese, Taiwanese, or English.

At the outset of each interview, the interviewer acknowledged her awareness of the opportunities and challenges faced by Chinese ethnic individuals in Canada, and made it clear that she was open to hearing about both positive and negative experiences. This opening statement reflected the spirit of "bracketing" principle as stated earlier, and set up the stage for understanding another individual's worldview without imposing a personal commentary or expectations. The interviewer recoded detailed notes that

included direct quotes of participants' responses during the interview, and audio-taped the actual interview process which were transcribed later.

Sample Descriptions

A total of 457 participants were recruited from University of British Columbia and University of Victoria, including 206 individuals with Chinese origin and 251 with Caucasian background. See Table 1 for a description of the sample. The gender ratio between male and female participants was 3:7, and participants' age ranged from 18 to 40 ($M = 20.69$; $SD = 3.49$). About seventy percent of the sample described their father's occupation to be either professional or self-employed, and more than half of the participants' fathers had a university degree or higher. There was no significant difference between Chinese and Caucasian samples in their sex (chi-square = 2.45; $p = .12$) and age ($t = 1.45$; $p = .15$).

Among the Chinese sample, about forty percent of the Chinese participants were recruited from UBC whereas the rest of sixty percent were recruited from UVic. The mean length of residence in Canada was 7.53 years, ranging from two years to the maximum of 18 years. Almost all came from major Chinese countries, including China, Taiwan, and Hong Kong. Regarding language use, more than eighty percent of them considered ethnic language to be the one they used most of the time at home, and only close to half nominated English or French as the primary language they used outside the home. Compared to the Caucasian sample, the Chinese sample had a significantly lower level of self-reported English proficiency ($t = 21.53$; $p < .001$) and of self-reported English provincial exam marks ($t = 13.57$; $p < .001$). Note that there was no significant difference in their self-reported GPA during the previous year.

Table 1

Description of the Sample

Variable		Range or N	% of M (SD)
	Whole Sample		
Campus	UBC	N = 83	18.2%
	U of Victoria	N = 374	81.8%
Gender	Male	N = 133	29.5%
	Female	N = 318	70.5%
Age (in years)		18 to 40	20.69 (3.49)
Father's Occupation	Service/Clerical	N = 79	17.9%
	Professional	N = 190	42.0%
	Self-Employed	N = 127	28.1%
	Homemaker/not working/retired	N = 52	11.5%
Father's Education	Elementary	N = 14	3.1%
	Junior to High School (grade 12)	N = 106	23.5%
	Vocational School/College	N = 85	18.8%
	University	N = 141	31.2%
	Graduate School / Professional	N = 106	23.5%
	Chinese Sample		
Campus			
	UBC	N = 83	40.3%
	U of Victoria	N = 123	59.7%

(table continues)

Country of Origin			
	China	N = 63	32.8%
	Taiwan	N = 67	34.9%
	Hong Kong	N = 56	29.2%
Length of residence in Canada		2 to 18	7.53 (4.26)
Language spoken at home			
	Ethnic	N = 174	84.5%
	English/French	N = 22	10.7%
	Both	N = 10	4.9%
Language spoken outside the home			
	Ethnic	N = 72	35.8%
	English/French	N = 92	45.8%
	Both	N = 37	18.4%

Seven Chinese participants that were recruited through an undergraduate psychology course were interviewed. Two of them were males and five of them were females. Two had family origins from Hong Kong, three from Taiwan, and two from China. Their length of residence in Canada ranged from two to 18 years. One of the interviews was primarily conducted with Mandarin Chinese, and one with Mandarin Chinese for half of the interview, whereas the remaining five were conducted using English. In order to protect their identities, pseudo-names were created and assigned to each participant as followed: Anna, Barbara, Carol, Donna, Emma, Frank, and George. The assigned pseudo-name shared no resemblance to any participant's real names. The names of Frank and George were assigned to the two male participants.

Measures

Participants completed a demographic questionnaire and a variety of measures that assess affective, cognitive, and somatic aspects of anxiety and depressive syndromes. See Appendix 1 to 15 for the copy of each questionnaire and see Table 2 for a list of measures. A brief review of each measure follows.

Demographic Background Questionnaire

A demographic questionnaire (see Appendix 1) was designed for the purpose of this study. Common demographic questions were included, such as sex, age, and parents' socio-economic status. Specific demographic questions were also included, such as generational status, age of immigration, and perceived ethnic density in their neighbourhood. Two additional questions were included to gather information about individuals' prior history of receiving psychological treatments for personality problem and substance use problems.

Table 2

List of Measures and Constructs Represented

Construct	Components Assessed	Corresponding Measures
Negative Affectivity	Mixed symptoms	15-item general distress-mixed symptoms (MASQ; Watson et al., 1995; see Appendix 2)
	Depressed symptoms	12-item general distress-depressed symptoms (MASQ; Watson et al., 1995; see Appendix 2)
	Anxious symptoms	11-item general distress-anxious symptoms (MASQ; Watson et al., 1995; see Appendix 2)
Low Positive Affect & Anhedonia	Positive Affect	Reverse-coding of 14-item Positive Affect (MASQ; Watson et al., 1995; see Appendix 2)
	Low Positive Affect	14-item Low Positive Affect that are re-phrased from the above 14-item Positive Affect (see Appendix 2)
	Loss of Interest	8-item Loss of Interests (MASQ; Watson et al., 1995; see Appendix 2)
	Psychomotor retardation	20-item Self-Rating Depression Scale (SDS; Zung, 1965; see Appendix 3) & additional 10-items (CIDI-PHC; WHO, 1990; see Appendix 4)
Autonomic Hyperarousal & Somatic	Autonomic Hyperarousal	17-item Anxious Arousal (MASQ; Watson et al., 1995; see Appendix 2)

(table continues)

Tension	Somatic Tension	32-item Muscle Tension and 15-item Gastric Disturbances (Stress Inventory-5, Smith & Seidel, 1982; see Appendix 5)
Cognition	Depressive Cognition	14-item Cognition Checklist-Depression (CCL; Beck et al., 1987; see Appendix 6).
	Anxious Cognition	12-item Cognition Checklist-Anxiety (CCL; Beck et al., 1987; see Appendix 6)
	Panic Cognition	14-item Agoraphobic Cognitions Questionnaire (ACQ; Chambless et al., 1984; see Appendix 7)
	Apprehensive Worry	16-item Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990; see Appendix 8)
	Rumination	22-item Ruminative Responses Scale (RRS; Treynor et al., 2003; see Appendix 9)

Negative Affectivity

Negative affectivity was assessed with 15-item "General Distress-Mixed Symptoms" (e.g., "felt dissatisfied with things"), 12-item "General Distress: Depressive Symptoms" (e.g., felt depressed"), and 11-item "General Distress-Anxious Symptoms" Scales (e.g., "felt afraid") of the Mood and Anxiety Symptom Questionnaire (MASQ; Watson et al., 1995; see Appendix 2). These three scales contain symptoms of negative affectivity that are non-specific, and the placement of these symptoms into their respective scales was based on whether they were included in the DSM-III-R (American Psychiatric Association, 1987) symptom criteria of one or more anxiety disorders (General Distress-Anxious Symptom), one or more mood disorders (General Distress-Depressive Symptoms), or both types of disorder (General Distress-Mixed Symptoms). Participants indicated to what extent they had experienced each symptom when feeling sad or anxious on a 5-point Likert scale, with higher scores indicating a greater propensity. These subscales demonstrated satisfactory reliability among university students, community adults, and psychiatric samples (Watson et al., 1995). Only six studies conducted outside North American (i.e., Australia, Great Britain, India, South Korea) have used this measure. They have found this measure reliable for capturing anxiety and depressive syndromes (Lee & Lee, 1998; Reidy & Keogh, 1997; Ruth & Mehrotra, 2001; Yung, Buckby, & Cosgrave, 2007). This scale has not been used with Chinese individuals.

Low Positive Affect and Anhedonia

Low positive affect was assessed via reverse-coding 14 items of positive affect in the Mood and Anxiety Symptom Questionnaire (MASQ; Watson et al., 1995; see

Appendix 2), and an additional 14 items that were rephrased from the aforementioned 14 items of positive affect, to reflect a direct assessment of low positive affect (see Appendix 2). As previously mentioned, the complete MASQ scale has not been used among the Chinese people. Anhedonia is often viewed as a failure to experience pleasure, which has been assessed through several constructs, including diminution or loss of interests, and retarded activity such as anergia (Snaith, 1993). In the current study, anhedonia was assessed via diminution and loss of interests, and retarded activity which presents the somatic aspects of anhedonia as well as a direct assessment of low positive affect. Diminution and loss of interests were assessed with the 8-item "loss of interest" subscale of the Mood and Anxiety Symptom Questionnaire (MASQ; Watson et al., 1995; see Appendix 2). Physical aspects of anhedonia (also the direct assessment of low positive affect) were assessed with the 20-item Self-Rating Depression Scale (SDS; Zung, 1965; Appendix 3), and a set of additional 10 items selected from the Composite International Diagnostic Interview-Primary Health Care version Anxiety, Depression, and Somatization Sections (CIDI-PHC; WHO, 1990; Appendix 4).

The "loss of interest" on the MASQ was rated on a 5-point scale, with higher scores indicating a greater tendency in loss of interest (e.g., "felt nothing was enjoyable). As described, the MASQ as a whole scale was considered satisfactory in capturing depressive syndromes, although it has not been used in studies of the Chinese individuals. Zung's SDS includes 20 items rated on a 4-point scale (e.g., "morning is when I felt best"), with higher scores indicating greater depressive symptomatology. This scale has been used to detect depression in primary care settings (Zung, Broadhead, & Roth, 1993), and its psychomotor retardation items have been found to best distinguish depressed and

normal participants (Zung, 1972). It has been found to be reliable for measuring depression among Chinese Americans (Marsella, Sanborn, Kameoka, Shizuru, & Brennan, 1975), and its Chinese version has been reliably used among Chinese in China (Liu, Ma, Kurita, & Tang, 1999) and Taiwan (Fugita & Crittenden, 1990). Furthermore, an additional set of items is selected from the CIDI-PHC version (WHO, 1990). Similar items have been selected to measure depressive symptoms among primary care attenders (Piccinelli, Rucci, Üstün, & Simon, 1999). These items were selected because several psychomotor retardation symptoms significant for assessing depression have not been included in Zung's SDS, such as different types of sleep difficulties especially terminal insomnia, slowness in movement and talking, and slowness in thinking. These symptoms have been most frequently reported by clinically depressed individuals (DeSouza, Othmer, Gabrielli, & Othmer, 1988), and best exemplified a slowing down of motor and psychic activity as in psychomotor retardation (Widlöcher, 1983). These items adopted SDS's response format on a 4-point rating scale, and were included into the SDS as one questionnaire.

Autonomic Hyperarousal and Somatic Tension

Autonomic hyperarousal characterizing experiences of panic was assessed with 17 items of the Anxious Arousal in the Mood and Anxiety Symptom Questionnaire (MASQ; Watson et al., 1995; see Appendix 2). These items are rated on a 5-point scale, with higher scores indicating a greater level of anxiety due to sensation experienced (e.g., "felt dizzy, light-headed"). As aforementioned, the complete MASQ scale has not been used among the Chinese people.

In addition to symptoms of autonomic hyperarousal characterizing panic-related

physical symptoms, somatic symptoms most characterizing GAD, such as muscle tension (Marten et al., 1993), were included to capture non-panic somatic symptoms. Muscle tension was assessed comprehensively via a 32-item questionnaire selected from the Stress Inventory-5 (Smith & Seidel, 1982; see Appendix 5), including goal-directed manifestation of tension (i.e., Self-Conscious Tense Activity such as "voice unsteady, strained"; Perceived Lack of Motor Coordination such as "feel uncoordinated"; Trembling and Shaking such as "hands trembles and shakes"), and less self-conscious reporting of tensions (i.e., Restless Activity such as "urge to pace"; Shoulder, Neck, & Back Tension such as "shoulder muscle tenses"; Clenched Muscle Tension such as "brow tense, furrowed"). These items were rated on a 9-point scale, with higher scores indicating how well these symptoms describe participants' experiences of anxiety. The full Stress Inventory-5 has been used reliably among university students for assessing their physical stress reactions (Smith & Siebert, 1984) and Type-A behaviour (Smith & Sheridan, 1983). This scale has not been used among the Chinese people.

Lastly, the specific anxiety factor was found somewhat broader than expected, including several somatic symptoms that do not clearly reflect sympathetic arousal, including nausea, vomiting, and diarrhea (Watson et al., 1995). These symptoms resembling more gradual gastrointestinal responses as a part of slower-acting autonomic nervous system (Beck, 1985) provide adequate protection against more immediate dangers. Gastrointestinal disturbances were assessed with one questionnaire, including 12 items of Gastric Distress (e.g., "nausea, sinking feelings") and 3 items of Eliminative Difficulties (e.g., "urge to urinate often") of the Stress Inventory-5 (Smith & Seidel, 1982; see Appendix 5). See above for their psychometric evidence demonstrated in

previous studies.

Cognition in Anxiety and Depression

Beck's cognitive specificity hypothesis, based on his model of psychopathology, differentiates anxiety from depression in the form and the content of the dysfunctional thoughts, which has received some empirical support (e.g., Beck, Brown, Steer, Eidelson, & Riskind, 1987; Clark, Steer, & Beck, 1994). In depression, one finds a predominance of negative cognitions that take the form of pervasive, absolutistic statements about past personal loss and failure, whereas in anxiety the cognitions reflect possible harm and danger in a more situational, probabilistic fashion (Beck, 1976). In the current study, depression-specific and anxiety-specific cognitions, respectively, were assessed with the Cognition Checklist (CCL; Beck, Brown et al., 1987; see Appendix 6). The CCL is a self-report measure with the 14-item depression subscale (CCL-D; e.g., "I'm worthless") and the 12-item anxiety subscale (CCL-A; e.g., "I'm going to have an accident'), which assesses the frequency of depressive cognitions and danger cognitions in depressed and anxious adults, respectively. Several studies have reported good specificity of these subscales in differentiating depressed individuals from those diagnosed with various anxiety disorders (Clark, Beck, & Brown, 1989; Steer, Beck, Clark, & Beck, 1994). This scale has been found to reliably assess cognitions associated with depression or anxiety in cross-cultural setting, including among Iranian college students (Makaremi, 2000), primary care patients in Spain (San Gregorio & Rodriguez, 2002), and among depressed French-Canadian adolescents (Marcotte, 1995). This scale has not been used among the Chinese people.

As discussed in the Introduction chapter, depression-specific cognitions

performed better than anxiety-specific cognitions in specifically relating to various measures of depression and anxiety, respectively. For example, although individuals with Panic Disorder scored significantly higher on the CCL-A than those with MDD, it did not discriminate between individuals with PD versus those with GAD (Clark et al., 1994). Other studies found that the CCL-A, although not related to measures of depression, related strongly with measures of negative affectivity (Jolly, Dyck, Kramer, & Wherry, 1994). One approach to improve on the performance of overall anxious cognition (see a review by Beck & Perkins, 2001) is to isolate specific anxious cognitions in relation to different anxiety syndromes, including those for Panic Disorder and those for GAD. Panic cognitions were assessed by the 14-item Agoraphobic Cognitions Questionnaire (ACQ; Chambless et al., 1984; see Appendix 7), which includes Social and Behavioural Concerns (e.g., "I will not be able to control myself") and Physical Concerns (e.g., "I will have a heart attack") subscales, being rated on a 5-point scale with higher scores indicating a greater frequency of having these cognitions when being anxious. The ACQ has been used extensively in the area of anxiety, especially among patients with panic disorder and agoraphobia (Arrindell, 1993). This scale has been found reliable in assessing anxious cognition among individuals with panic disorder or agoraphobia cross-culturally such as in Australia (Khawaja, 2003), Portugal (Baptista, 2000), and with French-Canadian (Stephenson, Marchand, & Lavallée, 1999). In addition, this scale has demonstrated similar reliability when used in clinical settings in Japan (Iketani et al., 2002) and in China (Zhou, Wu, Wang, & Jiang, 1997).

The shared cognitive component between anxiety and depression is characterized by apprehensive worry and rumination (see a review by Borkovec, Ray, & Stober, 1998).

Apprehensive worry was measured by the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990; see Appendix 8). The PSWQ has 16 items rated on a 5-point scale, with higher scores indicating a self-reported tendency of pathological worry (e.g., "I am always worrying about something"). This scale has been found reliable especially for distinguishing individuals with GAD from those who received other anxiety disorder diagnoses and normal controls (Brown, Anthony, & Barlow, 1992). The PSWQ has been used reliably across a variety of samples in the general population (Ladouceur, Freeston, & Fournier, 2002), and has been used among Asian Americans (Scott, Eng, & Heimberg, 2002). Its translated versions in a variety of different languages have been used with French Canadians (Gosselin, Tremblay, Dougas, & Ladouceur, 2002), and other countries such as Belgium (Hermans, Crombez, van Rijsoort, & Laeremans, 2002) and Peru (Diaz, 2000). It has not been used with Chinese in their Chinese countries.

Rumination in the current study was assessed with the Ruminative Responses Scale (RRS; Treynor, Gonzales, & Nolen-Hoeksema, 2003; see Appendix 9). The RRS is a subscale of the Response Style Questionnaire (Nolen-Hoeksema & Morrow, 1991) which consists of 72 items being grouped into the Distractive Response Scale, Problem-Solving Scale, Dangerous Activity Scale, and the Ruminative Response Scale. In the current study, only the 22-item RRS scale was used and rated on a 4-point scale, with higher score indicating a greater ruminative tendency (e.g., "think about how alone you feel"). The RRS has been found reliable in relating to anxiety and depression (Watkins, 2004) and considered characteristic of individuals with mixed anxiety and depressive symptoms (Nolen-Hoeksema, 2000). It has been used in English-speaking countries other

than US, such as England (Thomas & Bentall, 2002) and Canada (Flett, Madorsky, & Hewitt, 2002). The reliability in its cross-cultural applications have been demonstrated with college students in Ghana (Eshun, 2000), in Japan with its Japanese translated version (Sakamoto, Kambara, & Tanno, 2001), among depressed psychiatric patients in Germany (Kuehner & Weber, 1999), and among Chinese youth in China (Tally, 2003).

Acculturation: Internal and External Cultural Orientations

An individual's behavioural acculturation to Chinese and Canadian cultures (i.e., Chinese and Canadian external orientations) was assessed as two independent cultural orientation dimensions with parallel items and measures for each dimension. The Chinese External Orientation was assessed with a 13-item scale that was adapted from the Mexican Orientation subscale of the Acculturation Rating Scale for Mexican Americans-II (ARSMA-II; Cuéllar et al., 1995) by replacing "Mexican" with "Chinese" (e.g., "I speak Chinese"; see Appendix 10). In order to ensure that all items assess behavioural practices only, four items from the original 17-item of the scale that assess identity were eliminated (e.g., "I like to identify myself as a Chinese"), resulting in a 13-item scale. Items rated on a 5-point scale, and higher scores indicate a higher level of Chinese orientation. The original scale shows good reliability in assessing individuals' Chinese external orientations among Asian American (Liem et al., 2000) and Chinese Canadian university students (Chia & Costigan, 2006a).

The Canadian External Orientation was assessed with an adaptation of the Anglo Orientation subscale of the Acculturation Rating Scale for Mexican Americans-II (ARSMA-II; Cuéllar et al., 1995) by replacing "Anglo" with "Canada" (e.g., "My family cooks Canadian foods"; see Appendix 10). In order to ensure that all items assess

behavioural practices only, two items from the original scale that assess an individual's identity (e.g., "I like to identify myself as a Canadian") were eliminated. Furthermore, two additional items were added in order to make the items parallel to those of the Chinese External Orientation scale (e.g., "I enjoy speaking English"), resulting in a 13-item scale. The original 13-item scale demonstrates good reliability in assessing individuals' host cultural orientation for Asian American university students (Liem et al., 2000). The revised 13-item scale demonstrated good reliability in assessing Canadian cultural orientation among Chinese Canadian university students (Chia & Costigan, 2006a).

When items on the ARSMA-II were factor analyzed, language and ethnic interaction factors emerged for the American orientation scale whereas an additional "ethnic identity" factor emerged for the American orientation scale (Cuéllar et al., 1995). With the exception of ethnic identity factor of the Mexican orientation scale, the other two factors seem to primarily reflect the behavioural aspects of an individual's cultural orientation. Note that both internal and external domains are considered important in existing ethnic identity and acculturation literature (Tropp, Erkut, Coll, Alarcon, & Garcia, 1999), especially among the overseas Chinese (Kwan & Sodowsky, 1997). Thus, the current study added an additional measure (i.e., Multigroup Ethnic Identity Measure; Phinney, 1992) that assesses an individual's psychological aspects of ethnic and host cultural orientations.

The original version of the Multigroup Ethnic Identity Measure (MEIM; Phinney, 1992) includes 20 items that capture components of ethnic identity, including affirmation and belonging, ethnic identity achievement, ethnic behaviours and practices, and attitudes

toward other groups. The current study used the revised MEIM (Roberts et al., 1999) that includes five items of affirmation and belonging, and seven items of ethnic identity achievement components. The 12-items of Chinese Internal Orientation are rated on a 4-point scale, with higher scores indicating greater psychological orientation toward Chinese or ethnic culture (e.g., "I have a clear sense of my ethnic background and what it means for me"; see Appendix 11). This scale, originally developed for use across ethnic groups, has demonstrated reliability to assess ethnic cultural orientation among Chinese Australian (Eyou et al., 2000) and Chinese Canadian university students (Chia & Costigan, 2006a). In addition to assessing the psychological aspects of Chinese cultural orientation, the revised MEIM was adapted to assess an individual's psychological aspects of Canadian cultural orientation, by replacing "ethnic" with "Canadian" or "Canada" (e.g., I feel a strong attachment towards Canada"; see Appendix 12). This Canadian Internal Orientation scale has been adapted and found reliable in assessing host cultural orientations among Chinese Australian university students (Eyou et al., 2000), and among Chinese Canadian university students (Chia & Costigan, 2006a).

Perceived Racism: Individual and Group Level

Personal negative acculturation experiences, and collective well-being derived from how one's ethnic group being evaluated by the host culture were included as important and specific aspects of cultural experiences, in addition to generic measures of ethnic cultural orientation, among the Chinese Canadians. The perceived racism and discrimination were assessed at an individual level (i.e., a person being an ethnic individual) and also at a group level (i.e., a person being a member to an ethnic group).

The perceived racism at an individual level was assessed with a questionnaire that

includes 10 items selected from Environmental Stress component of the Social, Attitudinal, Familial, and Environmental (SAFE) Acculturation Stress Scale (Fuertes & Westbrook, 1996; see Appendix 13). Items from this scale show good reliability in assessing acculturation stress among Asian American college students (Padilla, Wagatsuma, & Lindholm, 1985) and Chinese Canadian university students (Chia & Costigan, 2006a). Items were rated on a 5-point scale (e.g., "It bothers me when people pressure me to assimilate"), with a higher score indicating a greater level of perceived environmental acculturation stress. Furthermore, three items were added to the aforementioned 10 items (i.e., "I was personally discriminated against/ named-called/ being teased in school because I am ethnically different"), which was found reliable in assessing perceived personal discrimination among ethnic minority individuals (Verkuyten, 1998).

For the perceived racism at a group level, the Collective Self-Esteem Scale (CSE; Luhtanen & Crocker, 1992) was designed to assess individuals' perceived evaluation of their ethnic group and themselves as a group member. Three CSE subscales that tap into the evaluative nature of one's ethnic group were used in the current study: CSE-Public (i.e., judgement of how other people evaluate one's group; e.g., "In general, others think that my social group is unworthy"), CSE-Private (i.e., how individuals privately evaluate their social group; e.g., "I often regret that I belong to the social group I do"), and CSE-Membership (i.e., the extent to which individuals consider themselves to be "good" members of their group; e.g., "I'm a useless membership of my social group"). The CSE was originally developed to assess individuals' evaluations of their social group and group membership, and has been adapted to assess evaluation of ethic group among

Asian American college students (Crocker, Luhtanen, Blaine, & Broadnax, 1994), and Chinese Canadian university students and adolescent immigrants (Chia & Costigan, 2006a; Verkuyten & Lay, 1998). Its adapted version that focuses on evaluation of ethnic group was used in the current study (see Appendix 14). Each subscale contains 4 items, rated on a 7-point scale, with higher score indicating higher perceived values given to one's group and group membership.

Qualitative Interview Schedule

An interview schedule was developed for the current study, as an additional component to the quantitative approach, to explore individuals' depressive and cultural experiences (see Appendix 15). This schedule includes two parts: one dealt with individuals' experiences in negotiating Chinese and Canadian aspects of their cultural orientations, and another dealt with their description of experiencing depression from their perspectives and in their own words. Non-empirically based questions were used in order to elucidate the "lived experience" of the participants. The interview began with "how would you describe your experience so far in Canada", which led to questions exploring how the interviewees see themselves, how they maintain their cultural orientations, and how they relate to others in this Canadian cultural context. Next, they were asked to reflect their expectations before they came to Canada, examine their experiences in dealing with disappointment or fulfillment regarding their expectations, and any change in how they see themselves and relate to others. For individuals who came to Canada before age of 6, a parallel section was prepared. This section started with their first memory about being different from their peers, their experiences about that recollection, and any change in how they see themselves and relate to others. Their

perception of how they differ from other members in the family was queried, to further explore the differentiation between parents and children in their cultural orientations. For all interviewees, the interviewer explored their beliefs about why they change their cultural orientations and queried for any incidents crucial for their changes. This first part of interview ended with questions that examine any negative experiences in Canada, their coping and help-seeking strategies, and any unresolved issues about their cultural experiences.

The second part of the interview began with questions about their current or past experiences of depression. This part of interview started with a general question with a phenomenological perspective, "could you describe your feeling depressed, and what that feels like for you?" The subsequent questions focused on exploring participants' inner experiences, such as their mental health beliefs about people who are depressed, any change in their views of themselves, their perception of how others see them, and the meanings they gave to their experiences of depression. Interviewees then were asked to describe their coping and help-seeking strategies, their experiences of using these strategies, and particularly the impact of their self-view and perceived others' views impacting their ways of coping. These questions aim at exploring any barriers (e.g., material/ actual, psychological, or social) to the utilization of mental health services. The following questions asked interviewees to describe their internal explanations for why they became depressed, especially by exploring the occurrence of any critical events. The final set of questions focused on the cognitive rather than affective level of their depressive experiences, for instance about their views of other depressed individuals and how others could cope.

The interview ended with questions that highlight the resourcefulness of each interviewee, thus placing a different tone to the previous section on exploring depressive experiences, which might be distressing for some interviewees. Thus, these questions anchored the participants back to the interview context itself, by inviting their feedback to the interview process, and any other advice given to other individuals. A list of mental health resources on campus and in the community was provided to each interviewee at the end of the interview for any residual feelings as a result of describing their depressive experiences. This interview lasted no more than two hours.

CHAPTER 5: RESULTS

Before investigating the factorial structures of anxiety and depression symptom measures, each symptom measure was examined individually to evaluate if containing items that were culturally biased. This procedure was performed using one-parameter item response theory (i.e., IRT); that is, Rasch analysis.

Rasch Analyses

Unidimensionality of 14 Symptom Measures

The issue of unidimensionality is important in studies using IRT-based approach to detect items functioning differentially across cultural groups. Sometimes item bias can be found not due to the presence of differential item functioning (i.e., DIF) but due to the presence of multidimensionality (Stout, 1987). Therefore, several preliminary analyses were conducted to ensure each symptom measure assessing a uni-dimensional construct. First, principal component analysis (PCA) on each measure was performed to evaluate if the ratio of the first (also primary) component to the second component was greater than 3. Second, the loadings of items of each measure on the primary component were evaluated to see if they were substantial, preferably greater than .32. Third, the Cronbach's alpha was calculated for each measure to see if their items were internally consistent.

All symptom measures satisfied the criteria outlined in the preceding paragraph, except for the Psychomotor Retardation scale which had the component ratio lower than three. This scale assesses physical aspects of anhedonia and low positive affect. It includes 20 items that were taken directly from Zung Depression Scale (1965), including 10 reverse coded items, as well as 10 newly added items that were selected from the

Composite International Diagnostic Interview-Primary Health Care version, Anxiety, Depression, and Somatization sections (CIDI-PHC; WHO, 1990). These 10 items assess sleep difficulties, and slowness in movement, talking, as well as in thinking. Preliminary PCA found six components, including one component consisting three sleep difficulty items (i.e., "I have trouble sleeping at night"; "I have trouble falling asleep"; "I have trouble staying asleep and restless sleep"), with the first sleep difficulty item originally from the Zung Depression Scale and the latter two items from CIDI-PHC. Furthermore, another component found through preliminary PCA on the Psychomotor Retardation scale consisted 10 reverse coded items that were taken directly from the Zung Depression Scale. Reverse coded items refer to items that are reversely coded so that their responses are in the same direction as the rest of the items of a particular scale. A careful examination of these 10 items found that many reported not only the physical aspect of anhedonia, but also other aspects of depression (e.g., "My mind is as clear as it used to be"; "I felt hopeful about the future"). Therefore, it was decided to delete the aforementioned three sleep difficulty items and the 10 reverse coded items, which altogether formed two significant components found in the preliminary PCA. Note that two other sleep-related items ("I slept too much"; "I woke up earlier than my usual time"), rather than joining these three sleep difficulty items as part of the sleep difficulty component, loaded moderately on the primary component thus were retained for subsequent analyses. Retaining these two sleep difficulty items also addressed the need to assess sleep difficulties as part of psychomotor retardation symptomatology proposed by the current study.

A subsequent PCA was performed among the remaining 17 items of the

Psychomotor Retardation scale, resulting in satisfactory component ratio (i.e., 3.03) and alpha value (i.e., .79). Among these 17 items, three items had loadings on the primary component lower than .32, but it was decided to retain these items at this level of analyses. Special attention would be paid to these three items during the Rasch analyses to see if they were considered fit to the Rasch modeling and non-biased across cultural groups. See Table 3 for the unidimensionaltiy statistics of the component ratio, range of item loading, and Cronbach's alpha for all 14 measures.

Model Fit of Rasch Analyses

A Rasch analysis was performed on each of the 14 symptom measures, using Winsteps scaling software (Linacre, 2006) of an unconditional maximum likelihood approach. All items of a scale and all participants responding to this scale were evaluated to see if any participant or item was considered misfit to the Rasch measurement model. The first step was to look for extreme misfit participants whose INFIT Z absolute value higher than 3.5. These participants, for instance, could be randomly answering items, rather than answering them according to the underlying trait they possessed that was assessed by this particular scale. When such participants were found, they were deleted from the subject pool of the scale under examination. A subsequent Rasch analysis was performed to see if there was any more participant having such an extreme INFIT Z value; if so, they were deleted from the subject pool, followed by another Rasch analysis. This procedure was repeated until no extreme misfit participant was found, after which the analysis could proceed to the next step: to evaluate if items of the scale under examination was fit to the Rasch measurement model.

A misfit item is, first, defined as having INFIT mean square (MNSQ) value

Table 3

Preliminary Unidimensionality Statistics for 14 Symptom Measures

Symptom Measure	1st to 2nd Principal Component Ratio	Range of Item Loading	Cronbach's Alpha
General Distress-Mixed Symptoms	3.03	.38-.74	.85
General Distress-Depression	4.41	.49-.81	.89
General Distress-Anxiety	3.03	.38-.75	.83
Positive Affect (reverse coded)	7.15	.60-.81	.93
Low Positive Affect	7.51	.60-.79	.93
Loss of Interests	3.29	.51-.80	.79
Psychomotor Retardation	3.03	.16-.67	.79
Autonomic Hyperarousal	5.63	.31-.75	.88
Muscle Tension & Gastric Disturbances	4.24	.37-.73	.96
Depressive Cognition	6.74	.62-.80	.92
Anxiety Cognition	5.76	.64-.76	.90
Agoraphobic Cognition	3.04	.45-.70	.86
Worry	4.70	.35-.84	.93
Rumination	3.73	.28-.72	.91

outside the range of .7 and 1.3. An example of a misfit item could be that it was too easy or too difficult for the participants to endorse. For items of a depression measure, it was considered misfit when it only captured the very minimal or very extreme level of depression, to the extent that was beyond the underlying trait of depression expected from the participating subjects. A second criterion was applied to control for family-wise error rate problem, since all items were being tested. In this case, an item was considered misfit when its probability value was below a certain cut-off. For instance, for a ten-item scale, an item is considered misfit with INFIT Z value higher than the Z value that corresponds to the value when the probability is equal to .005. This was used for controlling for family-wise error rate problem at the probability rate of .05.

When misfit items were found, two solutions were considered by the current study. First was to delete these items and re-run another Rasch to see if any more items were found misfit. This procedure was then repeated until all items were found fit to the Rasch measurement model. The second solution was to increase the overall model fit by sub-grouping items according to the spread of their MNSQ values. Instead of treating each item as its own group, which is the default for running Rasch model via Winsteps program, decreasing number of groups could increase the number of participants calibrated for each of the responses on the rating scale of a Likert scale. The current study adopted the second solution first when misfit items were found, in order to retain all the items for the subsequent analysis of differential item functioning (i.e., DIF analysis to identify culturally biased items). When the second solution did not increase the overall model fit, the first solution was then adopted by deleting the misfit items.

All measures contained a few misfit items and went subject to the procedure

described above, including creating subgroups (e.g., General Distress-Anxiety; Low Positive Affect; Loss of Interests; Depressive Cognition), deleting misfit items (e.g., Psychomotor Retardation; Autonomic Hyperarousal; Anxiety Cognition; Agoraphobic Cognition; Rumination), or both procedures being applied to (e.g., General Distress-Mixed Symptoms; General Distress-Depression; Positive Affect; Muscle Tension and Gastric Disturbances; Worry). Examining the deleted items across measures found that they had lower loadings on the primary component derived from the preliminary PCA analysis, that deleting these items increased the internal consistency for that scale, and that some were reverse coded items whose responses may be somewhat incompatible with the rest of items of the same scale.

Note that three items of the Psychomotor Retardation scale earlier were found having lower loadings on the primary component based on the preliminary PCA results and that they had been retained for subsequent analyses. During the data fitting process, these three items were found misfit and deleted from this scale. A subsequent PCA was performed on the final 12 items of the Psychomotor Retardation scale, finding that all items loaded substantially on the primary component, ranging from .42 to .67, with first to second component ratio being 3.16.

After all items of the scale under examination were found fit to the Rasch measurement model, the focus of the analyses returned to the participants; this time, it was to evaluate how many participants having INFIT MNSQ value outside the range of .7 and 1.3 and having Z scores higher than 2. If the number exceeded that expected by chance (i.e., 5% of the total number of participant at this point of the subject pool for the scale under review), the exceeding ones with the most extreme misfit value were deleted.

A subsequent Rasch analysis was performed to see if the number still exceeded the expected; if so, those with extreme misfit values were deleted, and this procedure was repeated until this criterion was met. At this point, the Rasch analyses for the model fit were considered complete and the relevant Rasch statistics, such as item difficulty measures, could be obtained on the final fit model.

Each of the 14 symptom measures were examined individually via the aforementioned procedure in order to ensure that its participants and items were considered fit to the Rasch measurement model. They showed satisfactory reliability characteristics, including having person reliability indices ranging from .70 to .94, and item reliability indices ranging from .96 to .99. The item difficulty measures of all 14 scales revealed by the Rasch analysis fell roughly between -1 and 1 (Mean = 0), suggesting that a good range of variability in the underlying trait was estimated. See Table 4 for the Rasch reliability statistics, range of item difficulty, and the percentages for the deleted participants and items for all 14 measures.

Differential Item Functioning Analyses

The differential item functioning (DIF) test on ethnicity (i.e., Chinese vs. Caucasian Canadian university student samples) was performed using the DIF bias analysis of the Winsteps program (Linacre, 2006). This analysis began with a joint run across the whole sample, producing anchor values for person abilities and rating scale structure. Then a separate run on Chinese and Caucasian groups, respectively, produced item difficulty measures for each group. Then a pair-wise item difficulty difference t-test between the two new sets of item difficulty was performed. In order to avoid the possibility of a Type I error, the Bonferroni correction was applied by the current study

Table 4

Item and Person Reliability Statistics, Range of Item Difficulty, and Number and Percentage of Deleted Participants and Items of 14 Symptom Measures (before DIF test)

Symptom Measure	Item Reliability	Person Reliability	Range of Item Difficulty	Number (%) of Participants Deleted	Number (%) of Items Deleted	Number (%) of Items Retained
General Distress-Mixed Symptoms	.99	.88	-.75 to .96	54 (11.8%)	1 (6.7%)	14 (93.3%)
General Distress-Depression	.99	.84	-.85 to 1.3	23 (5.03%)	2 (16.7%)	10 (83.3%)
General Distress-Anxiety	.99	.75	-.52 to 1.36	13 (2.84%)	0	11 (100%)
Positive Affect (reverse coded)[a]	.99	.93	-.80 to 1.35	73 (15.97%)	1 (7.14%)	13 (92.6%)
Low Positive Affect	.98	.90	-1.09 to 1.22	66 (14.44%)	0	14 (100%)
Loss of Interests	.99	.76	-1.22 to 1.28	17 (3.7%)	1 (12.5%)	7 (87.5%)
Psychomotor Retardation	.98	.73	-.93 to .78	13 (2.8%)	18 (60%)[b]	12 (40%)
Autonomic Hyperarousal	.96	.70	-.67 to .58	8 (1.75%)	4 (23.5%)	13 (76.5%)

(table continues)

Symptom Measure	Item Reliability	Person Reliability	Range of Item Difficulty	Number (%) of Participants Deleted	Number (%) of Items Deleted	Number (%) of Items Retained
Muscle Tension & Gastric Disturbances	.98	.94	-.42 to .39	164 (35.9%)	9 (19.1%)	38 (80.9%)
Depressive Cognition	.99	.86	-1.44 to .1.42	23 (5.03%)	1 (7.14%)	13 (92.8%)
Anxiety Cognition	.96	.74	-.70 to .86	19 (4.16%)	1 (8.33%)	11 (91.7%)
Agoraphobic Cognition	.99	.77	-1.25 to 1.57	15 (3.29%)	0	14 (100%)
Worry	.99	.93	-1.51 to .76	60 (13.2%)	8 (50%)	8 (50%)
Rumination	.97	.91	-1.08 to .79	91 (19.1%)	1 (4.5%)	21 (95.5%)

(Note: [a] Reverse coded items refer to items whose scores are reversely recoded so that their responses are in the same direction as the rest of the items of a particular scale. When the whole scale is reversely coded, e.g., Positive Affect Scale, all items are reverse coded and the measure's summary score intends to reflect low positive affect, rather than positive affect). [b]As discussed earlier, during the examination of the unidimensionality of the Psychomotor Retardation scale, 13 of the 18 items were deleted due to the lower item loading on the primary component and lower component ratio between primary and secondary components. During the Rasch model fitting process, five items were considered misfit and deleted.

for a Type I error level of 0.05. For instance, given that a scale contains ten items, the criterion level for the presence of DIF is 0.005. See Table 5 for a summary of the item difficulty DIF t-test between Chinese and Caucasian groups.

To better understand the information presented on Table 5, an example was illustrated here. The positive and greater value in item difficulty indicates item being more difficult and less likely to be endorsed by the participants from a Likert-scale perspective. For the first DIF item listed on Table 5 (i.e., "Felt like something awful was going to happen" of the General Distress-Mixed Symptom Scale), the DIF item difficulty measure was .47 for the Chinese group and was 1.45 for the Caucasian group, with such difference to be statistically significant, after Bonferroni correction being applied to this 14-item scale ($t = 6.81$; $p < .0001$). While keeping all other items' difficulty constant, Caucasian participants found this item more difficult to endorse than Chinese participants. In other words, regardless of the level of their general distress tendency that was measured by this scale, the Chinese participants were more likely to endorse this item than the Caucasian participants. Therefore, this item was considered culturally biased.

Among 201 items of the 14 symptom measures, 52 items (about 26%) were found culturally biased, with 29 of them being more likely endorsed by the Chinese participants and 23 more likely endorsed by the Caucasian participants. Number of biased items found within a particular scale ranged from one to seven items. Examining nature of these biased items led to several preliminary observations. First, items listing concerns about having physical illnesses were more likely endorsed by the Chinese than the Caucasian participants, such as "I am going to have a stroke", "had diarrhoea", "I must

Table 5

Summary of Item Difficulty DIF t-test between Chinese and Caucasian Groups

Biased Items	Item Difficulty for Chinese	Item Difficulty for Caucasian	t value	More Likely Endorsed by
Found Within "General Distress-Mixed Symptom Scale"				
Felt something awful was going to happen	.47	1.45	6.81	Chinese
Had trouble falling asleep	.46	-.20	5.77	Caucasian
Found Within "General Distress-Depression" Scale				
Felt discouraged	-.42	-1.19	6.20	Caucasian
Felt worthless	1.00	1.65	3.51	Chinese
Felt depressed	-.41	.07	3.65	Chinese
Felt pessimistic about the future	-.46	.26	5.26	Chinese
Found Within "General Distress-Anxiety" Scale				
Felt afraid	-.31	.17	4.09	Chinese
Had diarrhoea	1.02	1.79	3.79	Chinese
Felt uneasy	-.58	-.14	3.88	Chinese
Had an upset stomach	.34	-.08	3.41	Caucasian
Found Within "Positive Affect (reverse coded)" Scale				
(not) Felt cheerful	.58	1.23	4.28	Chinese
(not) Felt like I was having a lot of fun	-.29	.47	5.27	Chinese

(table continues)

Biased Items	Item Difficulty for Chinese	Item Difficulty for Caucasian	t value	More Likely Endorsed by
(not) Felt like I had a lot to look forward to	.86	.09	5.44	Caucasian
(not) Felt like I had a lot of interesting things to do	-.14	-.59	3.16	Caucasian
Found Within "Low Positive Affect" Scale				
Did not feel really "up" or lively	.11	-.49	4.16	Caucasian
Did not feel like I had a lot of energy	-.82	-1.27	3.30	Caucasian
Found Within "Loss of Interests" Scale				
Felt like nothing was enjoyable	.64	1.13	3.11	Chinese
Felt like there wasn't anything interesting or fun to do	-.22	.18	3.11	Chinese
Felt unattractive	-.37	-.91	4.41	Caucasian
Found Within "Psychomotor Retardation" Scale				
I have trouble with constipation	.35	.93	2.96	Chinese
I am restless and can't keep it still	-.16	-.90	4.84	Caucasian
I am more irritable than usual	-.20	-.70	3.41	Caucasian
I talk slower than usual	.46	1.06	2.92	Chinese
I feel time passing more slowly	.01	.54	3.09	Chinese

(table continues)

Biased Items	Item Difficulty for Chinese	Item Difficulty for Caucasian	t value	More Likely Endorsed by
Found Within "Autonomic Hyperarousal" Scale				
Hands were shaky	.59	-.23	5.45	Caucasian
Felt like I was choking	.21	1.21	4.14	Chinese
Had a very dry mouth	-.89	-.43	3.77	Chinese
Found Within "Muscle Tension & Gastric Disturbances" Scale				
Voice unsteady, trembles, and cracks	-.11	.15	4.38	Chinese
Voice strained and tense	-.17	.18	5.86	Chinese
Difficulty speaking	-.09	.19	4.66	Chinese
Feel weak all over	-.13	.16	4.87	Chinese
Fidget, finger things	-.08	-.45	6.28	Caucasian
Brow tense, furrowed	.03	-.17	3.38	Caucasian
Butterflies in stomach	.09	-.27	5.99	Caucasian
Found Within "Depression Cognition" Scale				
People don't respect me anymore	.05	-.51	3.47	Caucasian
There is no one left to help me	.02	.78	4.17	Chinese
Nothing ever works out for me anymore	.16	-.49	3.96	Caucasian
Found Within "Anxiety Cognition" Scale				

(table continues)

Biased Items	Item Difficulty for Chinese	Item Difficulty for Caucasian	t value	More Likely Endorsed by
I am going to be injured	.57	-.03	3.70	Caucasian
What if no one reaches me in time to help	-.16	.86	5.72	Chinese
I might be trapped	-.14	.39	3.29	Chinese
Something might happen that will ruin my appearance	.35	-.20	3.52	Caucasian
Found Within "Agoraphobic Cognition" Scale				
I am going to throw up	.02	-.90	6.83	Caucasian
I am going to pass out	.23	-.24	3.24	Caucasian
I must have a brain tumour	.47	1.27	3.87	Chinese
I am going to act foolish	-.91	-1.48	4.83	Caucasian
I will hurt someone	-.27	.34	3.99	Chinese
I am going to have a stroke	.64	1.77	4.29	Chinese
Found Within "Worry" Scale				
My worries overwhelm me	.64	-.10	4.55	Caucasian
Found Within "Rumination" Scale				
Think about how hard it is to concentrate	-.04	-.78	4.86	Caucasian
Think "Why do I always react this way"	-.41	.09	3.61	Chinese

(table continues)

Biased Items	Item Difficulty for Chinese	Item Difficulty for Caucasian	t value	More Likely Endorsed by
Think "Why do I have problems other people don't have"	-.04	.60	4.54	Chinese
Think "Why can't I handle things better"	-.60	-.14	3.23	Chinese

have a brain tumour", "had a very dry mouth", and "I have trouble with constipation." Concerns about stomach upset, nevertheless, were an exception; two stomach-upset biased items (i.e., "Had an upset stomach"; "Butterflies in stomach") were more likely to be endorsed by the Caucasian participants. Second, symptoms of irritability were more likely to be endorsed by the Caucasian participants than by the Chinese participants, including feeling irritable, restless, fidgety or finger things, shaky hands, and brow tense or furrowed. These symptoms fell within the description of the "restless activity" factor found in the Stress Inventory by Smith and Seidel (1982). This factor referred to mostly restless physical activity that had no particular purpose other than to release tension. Another set of biased items found by the current study fell into the description for the factor of "self-conscious tense activity" in their measure, reflecting muscle tension manifesting in physical activity. Such tension seemed to affect purposeful activity, particularly speech (e.g., "voice unsteady, trembles, and cracks"; "voice strained and tense"; "difficulty speaking"). Interestingly, these items were more likely to be endorsed by the Chinese participants than by the Caucasian participants. Third, several items that assessed the feeling of helplessness were more likely to be endorsed by the Chinese participants (e.g., "feeling trapped"; "there is no one left to help me"; "no one reaches me in time to help").

The following set of analyses was to further explore the relation between the items identified as culturally biased and cultural experience variables, including Chinese and Canadian internal and external cultural orientations, negative acculturative experiences, and collective self-esteem. As no prior hypotheses had been proposed regarding the nature of culturally biased items and their relation with specific cultural

factors, these analyses were exploratory in nature. As clearly found in the above Rasch analyses that 29 of the 52 culturally biased item were more likely endorsed by the Chinese participants and the remaining 23 culturally biased items were more likely endorsed by the Caucasian participants, two new variables were produced accordingly. The "Chinese endorsing" variable was the average of summary score of the 29 culturally biased items that were more likely endorsed by the Chinese sample, and the "Caucasian endorsing" variable was the average of the summary score of the 23 culturally biased items that were more likely endorsed by the Caucasian sample. Due to the two response tendencies (i.e., more likely endorsed by Chinese sample versus more likely endorsed by the Caucasian sample) that were opposite in their directions, a final new variable was produced to reflect the direction of the responses. This final new variable (i.e., Chinese Endorsing variable minus Caucasian Endorsing variable) was called, "Cultural Contrast Response Tendency", with a higher score indicating a greater tendency to respond in a manner that highlighted cultural differences in symptom reporting.

Bivariate correlation analyses were first used to examine the relation among ethnicity, the above three culturally biased related variables and three cultural variables that were common to both samples. Results (see Table 6) showed that all four cultural variables had higher absolute value correlations with the Cultural Contrast Response Tendency composite variable than with its two component variables and that their correlations with the component variables were opposite in sign. This was evidence of the validity of the Cultural Contrast Response Tendency variable, namely that, across the whole sample, the two component variables (i.e., Chinese and Caucasian endorsing variables, representing two sets of culturally biased items) acted similarly and that the

Table 6

Bivariate Correlation between Ethnicity, Three Common Cultural Experience Variables, and Three Cultural Biased Related Variables among the Whole Sample

	Chinese Endorsing	Caucasian Endorsing	Cultural Contrast Response Tendency
Ethnicity[a]	-.38**	.29**	-.75**
Canadian Internal Orientation	-.26**	.12**	-.34**
Canadian External Orientation	-.37**	.24**	-.68**
Negative Acculturative Experience	.50**	.01	.56**

Note. ** $p < .01$. [a]Higher score (i.e., 2) referred to being Caucasian origin, and lower score (i.e., 1) referred to being Chinese origin.

composite variable (representing cultural contrast) was a useful summary variable.

Another bivariate correlation analysis was conducted to examine the relations between the three cultural bias related variables and the six cultural variables within the Chinese sample (see Table 7). Since differential item functioning analysis can only be defined with a sample containing two groups, this bivaraite analysis can not really explain the basis for the presence of the culturally biased items, but was done in the hopes of shedding further light on the relation between the cultural biased variables and the larger set of cultural variables that are only available for the Chinese sample. This analysis (Table 7) showed a more complex relationship than what was seen for the whole sample (Table 6). Unlike with the whole sample, the composite variable (i.e., Cultural Contrast Response Tendency) did not appear to summarize the two component variables within the Chinese sample, and neither did the two component variables (i.e., Chinese and Caucasian Endorsing Variables) always have correlations opposite in sign with the cultural experience variables. Perhaps the clearest results to be seen here were that the Negative Cultural Experience and Collective Self-Esteem variables were most strongly and consistently related to the Chinese Endorsing variable, and that regardless the extent of the statistical significance Chinese External Orientation and Canadian External Orientation related to three cultural bias variables in opposite directions.

For the whole sample, as seen in Table 6, the Cultural Contrast Response Tendency variable was a good summary variable and had a statistically significant relation to all three cultural variables at the first order correlation level. However, if these three cultural variables were intercorrelated themselves, the first order correlations may misrepresent the degree to which each variable independently explained the variance in

Table 7

Bivariate Correlation between Ethnicity, Six Cultural Experience Variables, and Three Cultural Bias Related Variables within the Chinese Sample

	Chinese Endorsing	Caucasian Endorsing	Cultural Contrast Response Tendency
Canadian Internal Orientation	.01	.04	-.04
Canadian External Orientation	-.19**	.01	-.31**
Chinese Internal Orientation	-.08	.-08	-.01
Chinese External Orientation	.04	-.16*	.33**
Negative Acculturative Experience	.47**	.42**	.17*
Collective Self-Esteem	-.36**	-.28**	-.19**

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

Cultural Contrast Response Tendency variable.

The internal domain and external domain of Chinese and Canadian cultural orientations were conceptualized as two separate aspects and were assessed with two different measures that specifically captured these two aspects as distinct constructs. Bivariate correlation between Canadian Internal and External Orientations was found to be relatively substantial across the whole sample ($r = .64, p < .001$) as well as within the Chinese sample ($r = .52, p < .001$). Chinese Internal and External Orientations were similarly significantly correlated within the Chinese sample ($r = .44, p < .001$). Thus, there was evidence for substantial common variance between the internal and external measures. Preliminary exploratory factor analyses were conducted to determine if the internal and external domains of Chinese and Canadian orientation should be treated as two separate variables. Findings supported the distinction between Chinese Internal and Chinese External Orientations, as they formed separate factors. Similarly, Canadian Internal and Canadian External Orientations emerged to become separate factors. Therefore, these variables were retained as separate predictors.

Regression analyses were then conducted to evaluate if these cultural orientation variables, despite forming separate factors regarding their inter-relations, should be simultaneously considered in regression analyses, as their significant inter-correlations may obscure the true nature about each individual variable's unique contribution to the Cultural Contrast Response Tendency variable. A series of regression analyses were run to determine the amount of variance accounted for by each predictor of cultural experience variable alone (i.e., when being entered first in step-wise regression), the unique variances accounted for by each predictor (i.e., when the other predictors were

entered in the previous step of the regression), and the variances accounted for by the linear combination of the predictors (i.e., when all significant predictors had been entered in the regression simultaneously). Note that both personality and substance use problems were assessed as potential control variables. Preliminary regression analyses found that entering the variable of substance use problem along with the personality problem and cultural variables in predicting cultural bias tendency created problems of multicollinearity. Tabachnick and Fidell (2001, p. 85) suggested that a variable with large variance proportion in condition index table is problematic in this regard, especially those with conditioning index higher than .30 for a given dimension, coupled with at least two variance proportions for an individual variable higher than .50. Thus, only the personality problem variable was employed as a control variable by entering it as the first step of the regression (where it was found to be non-significant; $r = .002$, $p = .29$) in the following analyses, whereas all cultural experience variables were entered in subsequent steps of regression.

The three cultural experience variables (i.e., Canadian Internal Orientation; Canadian External Orientation; Negative Acculturative Experiences) were examined through the procedure outlined above among the whole sample as predictors of the Cultural Contrast Response Tendency variable. As shown by their first order correlations, Canadian Internal Orientation, Canadian External Orientation, and Negative Acculturative Experiences were each a significant predictor in isolation, accounting for 19%, 46%, and 31% of the variance of the Cultural Contrast Response Tendency variable, respectively. After both Canadian External Orientation and Negative Acculturative Experiences had been simultaneously entered in the previous step of the

regression (accounting for 49% of the variance), Canadian Internal Orientation was no longer significantly related to Cultural Contrast Response Tendency. This indicated that, the explanatory power of the Canadian Internal Orientation for the Cultural Contrast Response Tendency variable was almost entirely represented as common variance with the other variables and this variable did not add further predictive power. Canadian External Orientation accounted for 18% of the variances after Negative Acculturative Experience variable had been previously entered, which indicated that the Canadian External Orientation variable did add predictive power beyond that provided by Negative Acculturative Experience. After Canadian External Orientation had been entered, Negative Acculturative Experience only accounted for an additional 3% of the variance of the Cultural Contrast Response Tendency variable, which however reached the statistical significance level ($p < .001$). Overall, when considering the unique contribution of each of the three predictors for Cultural Contrast Response Tendency among the whole sample, Canadian External Orientation was a stronger predictor (18% unique) than Negative Acculturative Experience (3% unique), whereas Canadian Internal Orientation was no longer a significant predictor when other predictors have been accounted for. The two significant predictors in combination accounted for 49% of the Cultural Contrast Response Tendency variable's variance. Note that personality problem as a control variable was not significantly related to Cultural Contrast Response Tendency, accounting for less than 1% of the variance ($p = .29$). Furthermore, after personality problem and three cultural experiences variables have been accounted for, ethnicity by itself remained significantly related to Cultural Contrast Response Tendency, accounting for an additional 9% unique variance ($p < .001$).

After identifying culturally biased items among all 14 symptom measures and exploring the relation between cultural factors (e.g., negative acculturative experiences) and culturally biased items, one additional decision had to be made before proceeding into the next stage of statistical analyses (i.e., structural analyses). This was regarding whether Positive Affect Scale (reverse coded) or Low Positive Affect Scale should be used in the subsequent structural analyses that examined the factorial structures of anxiety and depression. One item was considered to be misfitting and thus was deleted from the Positive Affect (reverse coded) scale, whereas all 14 Low Positive Affect Scale were found to fit to the Rasch model. Four items were identified as culturally biased in the Positive Affect Scale (reverse coded), and only two items were identified as culturally biased in the Low Positive Affect Scale. Furthermore, the four biased items identified in Positive Affect scale were affect-related items (e.g., not felt cheerful) whereas the two biased items found in Low Positive Affect scale were related to energy level (i.e., "did not feel really 'up' or lively"; "did not feel like I had a lot of energy"). In other words, the remaining bias-free items in the Low Positive Affect Scale seemed to be a purer scale capturing low positive affect than what the bias-free Positive Affect Scale has captured. Note that the item reliability, person reliability, and range of item difficulty demonstrated by these two scales were comparable. Therefore, a tentative decision was made to use Low Positive Affect Scale in the structural analyses. A final decision would be made based on the results of following exploratory factor analyses.

Structural Analyses

This stage of analyses was to examine whether the constructs assessed by the 14 symptom measures showed structural features that were comparable to the tri-partite

model, put forth by Watson and his colleagues, among Caucasian and Chinese groups. Two sets of structural analyses were performed separately for these two groups, which was followed by assessing their structural convergence. Note that symptom measures here refer to the summary scores of items that are considered fit and not culturally biased for a particular scale. In other words, items that were deleted during the Rasch model fitting process, as well as items that were found culturally biased, were not included when calculating the summary score of symptom measures. For instance, if the original scale has ten items, but one of its items is found misfit and another item is found culturally biased, only the eight remaining items are included in the symptom measure that would be used in the structural analysis. Misfit participants, on the other hand, were not deleted from the full dataset. See Appendix 16 for a complete list of items retained for each of the 14 symptom measures that were used in the structural analysis.

The distributions of the 14 symptom variables and six cultural experience variables were evaluated by examining their skewness and kurtosis. Normal distributions produce a skewness and a kurtosis statistic of about zero; values of two standard errors of skewness or more (regardless of sign) are probably skewed to a significant degree, and values of two standard errors of kurtosis or more (regardless of sign) probably differ from mesokurtic to a significant degree. The value of skewness for all 14 measures in the current study ranged from .061 to 1.055, and the value of kurtosis ranged from -.862 to .873, suggesting no statistical evidence of non-normality. The Cronbach's alpha of all the measures fell within satisfactory range. Note that, as described in the Measures of the Methodology section, negative acculturative experience scale consisted of 13 items, with ten items taken directly from the SAFE Acculturative Stress Scale (Fuertes & Westbrook,

1996), and three items being added, assessing personal direct experiences of discrimination. In order to ensure the consistency of this 13-item scale, an additional principal component analysis was performed. The results of PCA found that all items loaded substantially on the primary component, ranging from .69 to .83. See Table 8 for the psychometric properties of the 14 symptom variables and six cultural experience variables.

Some studies that have examined convergence between empirical symptom structure and the tri-partite theoretical structure (e.g., Watson et al., 1995; Zinbarg & Barlow, 1996) primarily use exploratory factor analyses (EFA), whereas others adopt confirmatory factor analyses (CFA) via the application of structural equation modelling (e.g., Brown et al., 1998; Burns & Eidelson, 1998). Although the tri-partite model has been empirically examined across different samples, cautions were exercised by the current study without imposing a certain structure upon a new sample especially when applying Western-derived theoretical structures to ethnic minority individuals. Thus, the current study began with the exploratory factor analyses (EFA) performed among each of the two groups. The resultant structures derived from the EFA was then evaluated with the confirmatory factor analyses (CFA) that allow the testing of multiple group models and of significance of differences in patterning among factors across groups.

Preliminary Factorial Analyses

In order to determine if the data were suitable for factor analyses and if any variable should be excluded from subsequent analyses, 13 symptom variables (excluding Positive Affect scale) were submitted to a principal component analysis (PCA) without rotations. The results showed that the maximum number of factors (eigenvalues higher

Table 8

Psychometric Properties of the 14 Symptom Measures and Six Cultural Experience Measures

Measure	Number of Item	Mean (SD)	Cronbach's alpha
Symptom Measures			
General Distress-Mixed Symptoms	12	2.20 (.63)	.81
General Distress-Depression	6	2.09 (.86)	.83
General Distress-Anxiety	7	2.01 (.76)	.79
Positive Affect (reverse coded)	9	3.28 (.78)	.89
Low Positive Affect	12	2.17 (.80)	.91
Loss of Interests	4	2.12 (.79)	.62
Psychomotor Retardation	7	1.71 (.52)	.74
Autonomic Hyperarousal	10	1.48 (.41)	.87
Muscle Tension & Gastric Disturbances	31	3.70 (1.57)	.94
Depressive Cognition	10	.78 (.68)	.90
Anxiety Cognition	7	.64 (.58)	.85
Agoraphobic Cognition	8	1.67 (.63)	.79
Worry	7	2.88 (1.06)	.94
Rumination	17	2.28 (.57)	.89
Cultural Experience Measures			
Canadian External Orientation	17	3.97 (.96)	.96

(table continues)

Measure	Number of Item	Mean (SD)	Cronbach's alpha
Chinese External Orientation[a]	17	4.00 (.72)	.91
Canadian Internal Orientation	12	2.84 (.58)	.91
Chinese Internal Orientation[a]	12	2.98 (.52)	.89
Collective Self-Esteem[a]	12	5.14 (.80)	.85
Negative Acculturative Experiences	13	2.01 (.83)	.94

Note. [a]The number of subjects for measures is 457, with exception to Chinese External Orientation, Chinese Internal Orientation, and Collective Self-Esteem scales that only pertained to the Chinese sample with a total of 206 participants.

than 1) was 2, accounting for 63.04% of the total variance. The smallest eigenvalue was .182, not approaching zero, which indicated that multicollinearity is not present. A bivariate correlation matrix among the 13 variables revealed a relatively wide range of correlations among variables, many in excess of .30, suggesting the factorability of the present data set, and the likelihood of finding different patterns in response to variables (Tabachnick & Fidell, 2001, page 589). These 13 variables were then submitted to principal axis factoring (PAF) with varimax rotation in order to obtain the values of squared multiple correlation (SMC) for each variable where it serves as dependent variable with all other variables as independent variables (Tabachnick & Fidell, 2001, page 589). The largest SMC among the variables was .75, not approaching one. If any of the SMC's is very large for instance close to one, multicollinearity is present; if any of the SMC's is one, singularity is present (Tabachnick & Fidell, 2001, page 589). Overall, the above preliminary analyses indicated that multicollinearity and singularity were not a threat in this data set.

Low SMC among variables (lower than .3) was used to screen for outliers among variables (Tabachnick & Fidell, 2001, page 590). The SMC for the variable "autonomic hyperarousal" was as low as of .271, but it loaded .50 on its primary factor which was considered satisfactory above the minimal of .32. Therefore, it was decided to retain this variable in the subsequent factor analyses. Lastly, Kaiser's measure of sampling adequacy with the value of .60 or higher is required for good factor analyses (Tabachnick & Fidell, 2001, page 589). This value provides an index (between 0 and 1) of the proportion of variance among the variables, especially to detect low partial correlation. The current data set had the value of .94. Overall, results obtained from the preliminary

factor analyses found that the 13 symptom measures should be retained for the main factor analyses for which the current data was suitable.

Exploratory Factor Analysis among Chinese Participants

The 13 symptom measure variables were submitted to a PCA without rotation, finding that the maximum number of components (eigenvalues larger than 1) was 2, accounting for 66.53% of the total variance. Note that eigenvalues represent variance. Because the variance that each standardized observed variable contributes is one (or less), strictly from a variance perspective, any factor or component with an eigenvalue less than one is not as important as an observed variable (Tabachnick & Fidell, 2001, p. 620); thus, including such factor or component did not advance our understanding at a greater extent about the issue at hand. The third component accounted for 6.40% of the variances, with eigenvalue of .832, thus not being retained. Furthermore, inspection of a scree plot indicated that the magnitude of eigenvalues markedly tapered off after the first component and moderately tapered off after the second component (see Figure 1). Thus, a two-component model best fit the data for the Chinese sample.

In order to determine the appropriate factor rotation method (orthogonal vs. oblique), the correlation between the two components obtained from an oblique rotation was examined. The correlation was .66, suggesting at least 44% overlap in variances between the two components. Usually, when there is 10% (or more) overlap in variance among factors, oblique rotation is warranted unless there are compelling reasons for orthogonal rotation (Tabachnick & Fidell, 2001, p. 622). Therefore, the oblique rotation was chosen for the Chinese sample.

The 13 variables were submitted to a PCA with oblique rotation. The results of

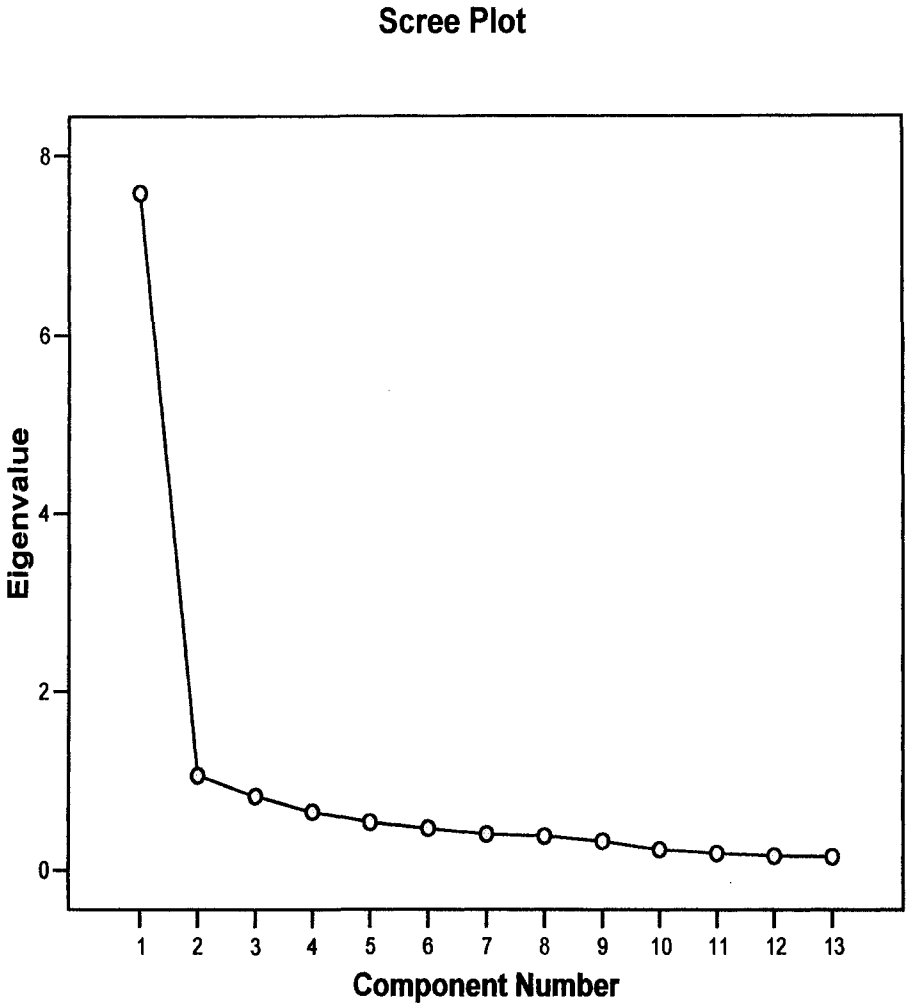

Figure 1

Scree Plot for Estimating the Number of Meaningful Components among Chinese Sample

factor solution were presented in Table 9. Two components were specified, accounting for 66.53% of the total variances. Factor loadings ranged from .53 to .91. The rotation converged in six iterations. The first component was labelled as "affective-somatic", consisting of 7 variables, including the affective aspect (e.g., Loss of Interests) and somatic aspect (e.g., Psychomotor Retardation) of depressive and anxiety symptomatology. The second component, named as "cognitive", consisted of 6 variables, including all depressive and anxiety cognitive variables except for one somatic variable (i.e., Muscle Tension and Gastric Disturbances). Separate factor analyses were conducted within Affective-Somatic and Cognitive components; the results found no further differentiation within each of both components.

As noted earlier regarding whether Low Positive Affect or Positive Affect Scales should be used in the structural analyses, it had been decided tentatively to use Low Positive Affect scale which demonstrated better psychometric characteristics (e.g., containing fewer culturally biased items). Since the above factor analyses used Low Positive Affect scale, the (reverse coded) Positive Affect scale was entered to replace Low Positive Affect scale in the subsequent factor analyses, following the same procedure outlined above, in order to evaluate which scale performed better. Results showed that only two components were found, one smaller component consisting only Positive Affect scale (eigenvalue of 1.16, accounting for 8.89% of variances), whereas the rest of 12 symptom scales formed the other primary component (eigenvalue of 7.04, accounting for 54.17% of variances). The factorial structure using Positive Affect Scale accounted for lesser variance (i.e., 63.06%), compared to the structure using Low Positive Affect Scale. The smaller component, comprised only by one scale of Positive

Table 9

Factor Loading for the 2-Factor Solution among the Chinese Participants

	Component 1: Affective-Somatic	Component 2: Cognitive
General Distress-Mixed Symptoms	**.89**	.04
General Distress-Depression	**.78**	.15
General Distress-Anxiety	**.81**	.10
Low Positive Affect	**.88**	-.002
Loss of Interests	**.85**	.07
Psychomotor Retardation	**.76**	.10
Autonomic Hyperarousal	**.70**	-.11
Muscle Tension & Gastric Disturbances	.22	**.53**
Depressive Cognition	.18	**.70**
Anxiety Cognition	-.14	**.91**
Agoraphobic Cognition	-.06	**.85**
Worry	.19	**.55**
Rumination	.23	**.61**
Eigenvalue	7.59	1.06
Percentage of Variance	58.37	8.15

Affect, was quite unique in a way that it did not relate to the rest of the variables, supported by the non-significant correlation between these two components. Such findings (i.e., Positive Affect formed a stand-alone factor and related little to other variables of depression) revealed a similar problem identified by previous studies that assessed positive affect using reverse coded method (e.g., Iwata & Buka, 2002).

Further examination was pursued to evaluate if there was differentiation within the primary component which was made up by the 12 remaining symptom scales. The 12 symptom measure variables were submitted to a PCA without rotation, finding that the maximum number of components (eigenvalues larger than 1) was 2, accounting for 66.05% of the total variances, Furthermore, inspection of a scree plot indicated that the magnitude of eigenvalues moderately tapered off after the second component. The correlation between the two components obtained from an oblique rotation was .61, suggesting the use of oblique rotation. These 12 variables were submitted to a PCA with oblique rotation, specifying extracting two components, accounting for 66.05% of the total variances. Factor loadings ranged from .47 to .88. The rotation converged in 14 iterations. The variables loaded to the first sub-component included General Distress-Mixed Symptoms, General Distress-Anxiety, General Distress-Depression, Loss of Interests, Psychomotor Retardation, and Autonomic Hyperarousal. The variables loaded to the second sub-component included Muscle Tension/Gastric Disturbances, Anxiety Cognition, Depressive Cognition, Agoraphobic Cognition, Rumination, and Worry. Thus, these two sub-components demonstrated similar features to the two components found among 13 scales when Low Positive Affect scale was included. In other words, when not considering using Low Positive Affect or Positive Affect scales, the rest of the 12

symptom measures demonstrated a two-factor structure as found earlier. When Low Positive Affect Scale was used in the factor analyses, it joined the rest of the symptom scales conforming to the two-factor structure. On the other hand, when the (reverse coded) Positive Affect Scale was used, it formed its own factor and showed little relation to any of the symptom scales, despite that it was intended to assess an aspect of depressive symptomatology, just like some other symptom scales.

Based on the earlier DIF results and the above EFA results, Low Positive Affect scale demonstrated better properties than Positive Affect scale (e.g., finding no misfit items during the Rasch modeling fitting process; having fewer culturally biased items; accounting for a greater amount of variances in factor analyses; relating more to other symptom measures that also assessed symptomatology of anxiety and depression). Therefore, Low Positive Affect scale was chosen by the current study for the further factorial analyses among the Caucasian sample and for the final analyses examining structural equivalence across samples.

As the current study included additional measures to assess elements that are not parts of the original tripartite model put forth by Watson and Clark, the next test aimed at examining if the symptom structure did conform to the tripartite model, if only factor-analyzing the measures assessing three elements of the original tripartite model. A PCA without rotation was performed on five measures, including three general distress scales assessing the shared element of negative affectivity between anxiety and depression (i.e., General Distress-Mixed Symptoms, General Distress-Depression, General Distress-Anxiety), Positive Affect (reverse coded) Scale assessing depression specific element, and Autonomic Hyperarousal Scale assessing anxiety specific element. Only one

component with eigenvalue greater than one emerged, accounting for 61.25% of the total variances. Nevertheless, when specifying extracting three components, the resultant factorial solution conformed exactly to what the tripartite model presented. That is, three negative affectivity scales formed the first component (eigenvalue of 3.06, accounting for 61.25% of variances), whereas the Positive Affect Scale formed the second component (eigenvalue of .90, accounting for 17.90% of variances) and Autonomic Hyperarousal Scale formed the third component (eigenvalue of .62, accounting for 12.40% of variances). Although the initial PCA failed to extract three components, specifying extracting three components did produce the symptom structure conforming to the tripartite model.

Exploratory Factor Analysis among the Caucasian Sample

Among the Caucasian sample, the 13 symptom measure variables were submitted to a PCA without rotation, finding that the maximum number of component (eigenvalues larger than 1) was 3, accounting for 68.69% of the variance. Inspection of a scree plot (see Figure 2) indicated that the magnitude of eigenvalues visibly tapered off after the first component and then moderately after the third component. Thus, it was decided retain all three components for the Caucasian sample. In order to determine the appropriate factor rotation method (orthogonal vs. oblique), the correlations between the three factors obtained from an oblique rotation were examined. The correlation ranged from .10 to .59, suggesting at least a 35% overlap in variance between two of the components. There, oblique rotation was chosen for the Caucasian sample.

The 13 variables were submitted to a PCA with oblique rotation. The results of factor solution were presented in Table 10. Three components emerged, accounting for

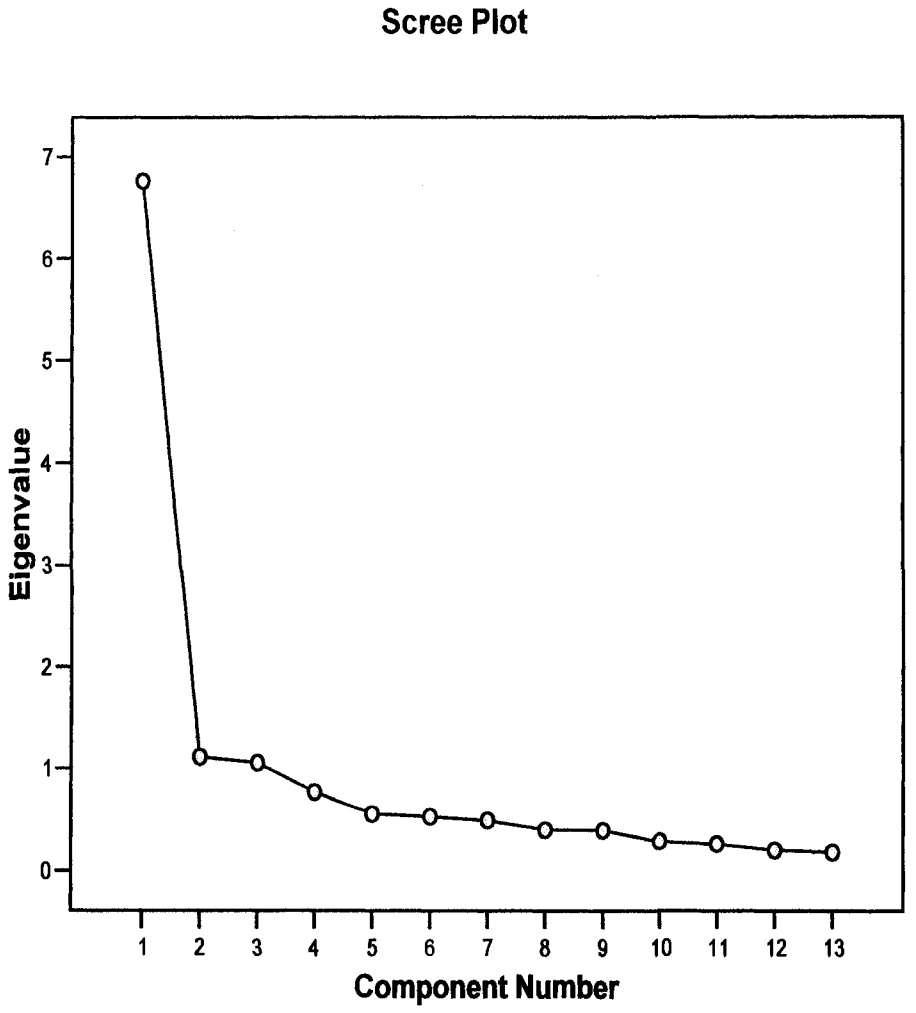

Figure 2

Scree Plot for Estimating the Number of Meaningful Components among Caucasian Sample

Table 10

Factor Loading for the 3-Factor Solution among the Caucasian Participants

	Component 1: Mixed	Component 2: Cognitive	Component 3: Autonomic Hyperarousal
General Distress-Mixed Symptoms	**.90**	.08	.23
General Distress-Depression	**.84**	-.01	-.17
General Distress-Anxiety	**.77**	.03	.34
Low Positive Affect	**.93**	.06	-.14
Loss of Interests	**.70**	-.16	-.04
Psychomotor Retardation	**.62**	-.29	-.04
Worry	**.61**	-.12	.15
Muscle Tension & Gastric Disturbances	.05	**-.66**	.34
Depressive Cognition	.44	**-.50**	-.37
Anxiety Cognition	.04	**-.77**	-.13
Agoraphobic Cognition	-.09	**-.87**	.17
Rumination	.27	**-.59**	-.15
Autonomic Hyperarousal	.17	-.15	**.75**
Eigenvalue	6.77	1.11	1.05
Percentage of Variance	52.04	8.55	8.10

68.69% of the total variances. Factor loadings ranged from .50 to .93. The rotation converged in 16 iterations. The first component was labelled as "mixed", consisting of 7 variables, including the affective aspect (e.g., Loss of Interests), cognitive aspect (i.e., Worry), and somatic aspect (e.g., Psychomotor Retardation) of depressive and anxiety symptomatology. The second component, named as "cognitive", consisted of 5 variables, including all other depressive and anxiety cognitive variables except for one somatic variable (i.e., Muscle Tension and Gastric Disturbances). The third component was consisted of only one variable (i.e., Autonomic Hyperasrousal). Separate factor analyses were conducted within Mixed and Cognitive components; the results found that there was no further differentiation within these two components.

Although the overall symptom structure of anxiety and depression across Chinese and Caucasian samples was different, major differences concerned two specific variables: autonomic hyperarousal and worry. Autonomic hyperarousal loaded substantially on the first component (i.e., Affective-Somatic) for the Chinese sample. It, however, formed its own component, independent of all other variables, among the Caucasian sample. Along with the rest of the cognitive measures, worry was part of the second component (i.e., Cognitive) among the Chinese sample, whereas it was part of the first component (i.e., Mixed) among the Caucasian sample. Note that worry was the only cognitive measure of the first component and that it did not load significantly on the second component (i.e., Cognitive) among the Caucasian sample.

Due to the different number of factors identified in the symptom structures between Chinese and Caucasian samples, it was not suitable to apply techniques of structural equation modelling (SEM) to examine structural equivalence across groups, as

these two structures had already shown to be non-equivalent. On the other hand, as the exploratory factor analysis served as a preliminary procedure for examining the symptom structures, further testing was required to confirm the results derived from exploratory factor analyses. Thus, the confirmatory factor analyses using SEM would be performed on the structures derived from exploratory factor analyses separately among Chinese sample and Caucasian sample.

Confirmatory Factor Analyses among Chinese and Caucasian Samples

Maximum likelihood confirmatory factor analysis (CFA) was conducted to evaluate whether the two-factor model derived from the EFA was a good fit to the data of Chinese sample. The Analysis of Moment Structures (AMOS) computer program (Arbuckle & Wothke, 2004) was used in these analyses. Several indicators were used to assess the overall model fit, including (a) the χ^2/df ratio between 2 and 5 (Quintana & Maxwell, 1999), (b) a comparative fit index (CFI) value above .9 (Bentler, 1990), (c) a root mean square error of approximation (RMSEA) ideally less than .05 (Bentler & Bonett, 1980; Bryne, 2001, page 85), with the upper bound for an acceptable value to be .08 (Quintana & Maxwell, 1999), and (d) factor loadings and patterns of factor inter-correlations consistent with the two-factor model among the Chinese sample.

The results for the two-factor model suggested a satisfactory fit to the data (χ^2 = 150.33, df = 64; $p < .001$; χ^2/df = 2.35). This fit was significantly improved by allowing correlation between error terms (χ^2 = 131.74, df = 63; $p < .001$; χ^2/df = 2.09). Such modification was justified given the common method of measurement (e.g., scales originally were subscales of a larger scale; scales were intended to capture different aspects of a latent variable). The CFI value was .964 and the RMSEA value was .073,

both indicating a good model fit.

An examination of the factor loadings of the two-factor model indicated that all values were of an acceptably high magnitude. The regression weights of all 13 variables were statistically significant at .001 level (two-tailed). The correlation among latent variables was similar to the correlation found among the factor scores thus supported the validity of the two-factor structure. Overall, the two-factor model was considered a good fit to the data. The final two-factor model was presented in Figure 3.

Another CFA was conducted to evaluate whether the three-factor model that resulted from the EFA was a good fit to the data of Caucasian sample. The results for the three-factor model suggested a respectable fit to the data ($\chi^2 = 299.09$, $df = 63$; $p < .001$; $\chi^2/df = 4.75$). This fit was significantly improved by allowing correlation between error terms ($\chi^2 = 128.99$, $df = 52$; $p < .001$; $\chi^2/df = 2.48$). Such modifications were again justified given the common method of measurement (e.g., scales originally were subscales of a larger scale; scales were intended to capture different aspects of a latent variable). The CFI value was .959 and the RMSEA value was .077, both indicating a good model fit.

An examination of the factor loadings of the three-factor model indicated that all values were of an acceptably high magnitude. The regression weights of all 13 variables were statistically significant at .001 level (two-tailed). The correlations among latent variables were similar to the correlations found among the factor scores thus supported the validity of the three- factor structure. Overall, the three-factor model was considered a good fit to the data. The final three-factor model was presented in Figure 4.

Overall, the results of the confirmatory factor analyses indicated that the factorial

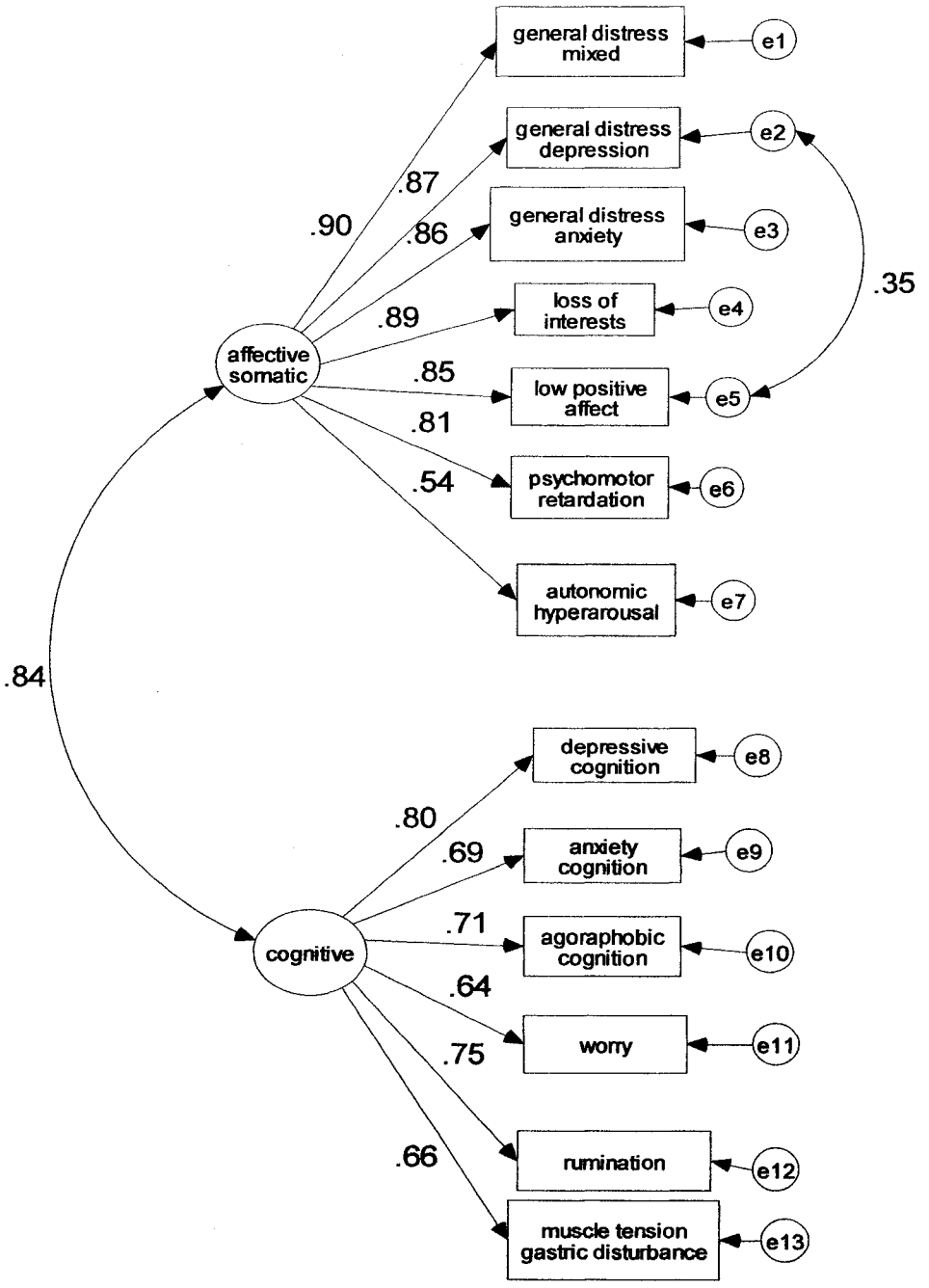

Figure 3

Path diagram and parameters' standardized estimates in 2-factor model among Chinese sample

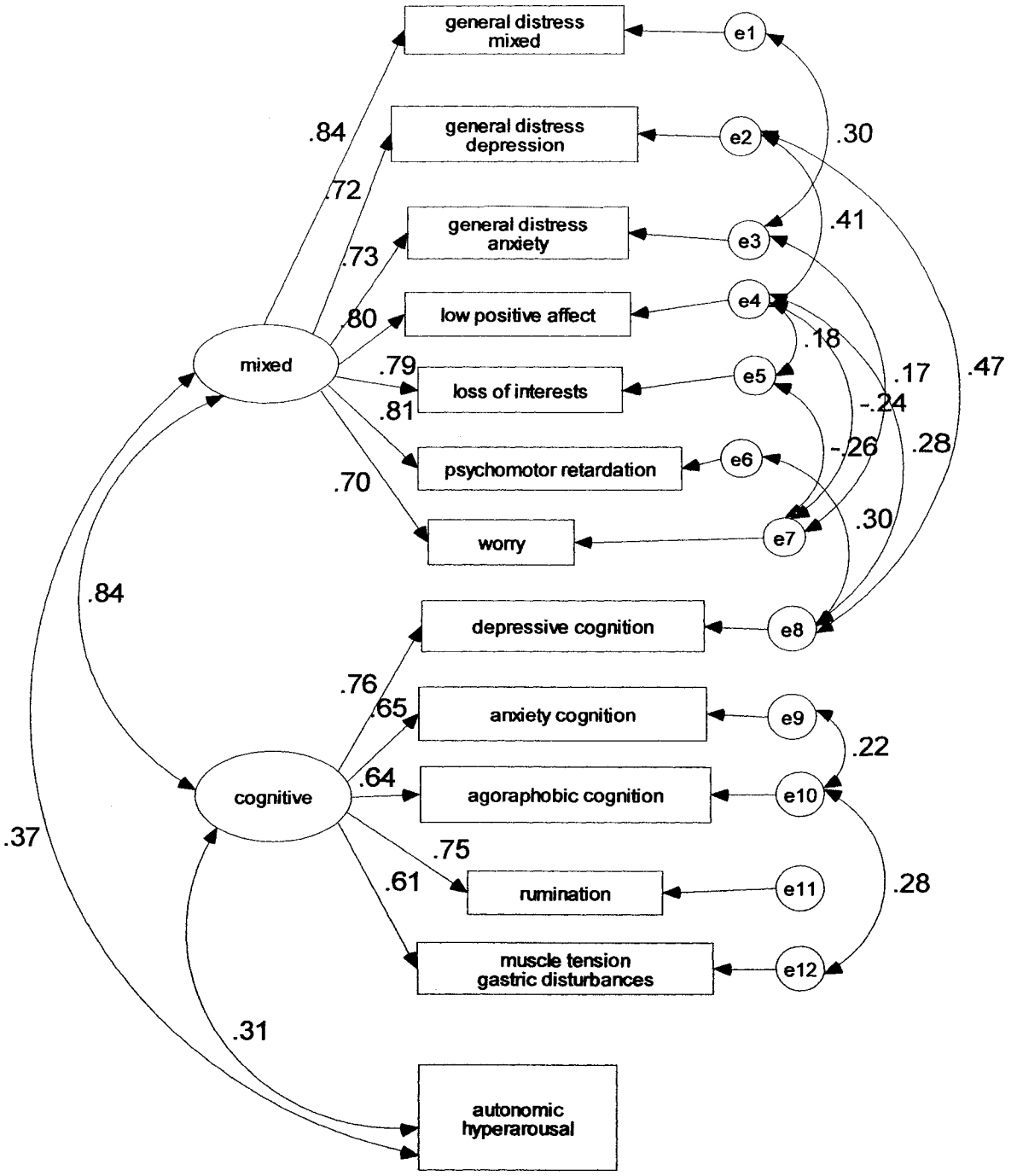

Figure 4

Path diagram and parameters' standardized estimates in the 3-factor model among Caucasian sample

structures derived from exploratory factor analyses were fit to the data of the Chinese sample and of the Caucasian sample. The Chinese sample could be best described by a two-factorial structure, including the Affective-Somatic factor and the Cognitive factor. On the other hand, a three-factorial structure encompassing the Mixed factor, Cognitive factor, and the factor of Autonomic Hyperarousal, best described the Caucasian sample.

Impact of Cultural Experiences on Structures of Depression and Anxiety

The final part of the current study's statistical analyses concerned the relation between factorial structures derived from Chinese and Caucasian samples and the cultural experiences of the participants. As different factorial structures were found across samples, the following analyses aimed at exploring potential underlying sources contributing to such findings. Factor scores were calculated using an item-weighting regression method within each sample, producing scores for Affective-Somatic and Cognitive factors among Chinese participants, and for Mixed, Cognitive, and Autonomic Hyperarousal factors among Caucasian participants.

Bivariate correlation analyses were performed within each sample to examine the pattern of relations between symptom factors and cultural experiences variables (see Table 11 for these results pertaining to the Chinese sample and Table 12 for the Caucasian sample). Among the Chinese sample, higher scores of affective-somatic and cognitive factors were significantly associated with higher scores on Negative Acculturative Experience and lower scores on Collective Self-esteem, whereas other cultural experiences variables were not significantly related to these two factors. Among the Caucasian sample, higher scores of mixed and cognitive factors were significantly associated with lower scores on Canadian Internal Orientation and moderately associated

Table 11

Bivariate Correlation Coefficients between Factor Scores and Cultural Experiences and Control Variables among the Chinese Sample

	Affective-Somatic Factor	Cognitive Factor
Personality Problem	.08	.12
Chinese Internal Orientation	-.02	-.06
Chinese External Orientation	.02	-.03
Canadian Internal Orientation	-.03	.05
Canadian External Orientation	-.13	-.07
Negative Acculturative Experience	.47**	.44**
Collective Self-esteem	-.30**	-.31**

Note. ** $p < .01$

Table 12

Bivariate Correlation Coefficients between Factor Scores and Cultural Experiences and Control Variables among the Caucasian Sample

	Mixed Factor	Cognitive Factor	Autonomic Hyperarousal Factor
Personality Problem	.32**	.17**	-.09
Canadian Internal Orientation	-.14*	-.15*	-.02
Canadian External Orientation	.06	-.05	.15*
Negative Acculturative Experience	.11	.21**	.03

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

with higher score on Personality Problem. Higher scores of cognitive factor were significantly associated with higher scores on Negative Acculturative Experience. The factor of autonomic hyperarousal was moderately related to higher scores on Canadian External Orientation.

Regression analyses were conducted to evaluate which variables best predicted the factors when the control and cultural variables were considered simultaneously. Personality problem variable was entered in the first step as control variable, and the three cultural experience variables that were relevant to the Caucasian sample were entered in the second step simultaneously. This analysis was repeated within the Chinese sample, with the rest three cultural experience variables that were only relevant to this sample being added to the second step of the regression (see Table 13 for the standardized coefficients beta weights in the final step of regression analyses for the Chinese sample and Table 14 for the Caucasian sample). Among the Chinese sample, as found in the bivariate analyses, both factors were best predicted by Negative Acculturative Experience and Collective Self-esteem whereas the rest of the cultural experience variables were not related to both factors. Among the Caucasian sample, the mixed symptom factor was best predicted by the control variable of personality problem and moderately by Canadian Internal Orientation. Cognitive factor was best predicted by Negative Acculturative Experience, and moderately by personality problem and Canadian Internal Orientation. Autonomic Hyperarousal was best predicted by Canadian External Orientation.

As illustrated earlier regarding the inter-correlation among cultural experience variables in the context of examining the Cultural Contrast Respond Tendency, further

Table 13

Predicting the Two Symptom Factors from Cultural Experience Variables (Controlling for Personality Problem) among the Chinese Sample

		Affective-Somatic Factor			Cognitive Factor		
Step	Variable Entered	R^2	ΔR^2	Beta	R^2	ΔR^2	Beta
1	Control	.01			.02		
	Personality Problem			.001			.05
2	Cultural Experiences Variables	.25	.25**		.24	.22**	
	Chinese Internal Orientation			.13			.08
	Chinese External Orientation			-.02			-.04
	Canadian Internal Orientation			.02			.08
	Canadian External Orientation			-.04			-.03
	Negative Acculturative Experience			.39**			.36**
	Collective Self-esteem			-.25**			-.24**

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

Table 14

Predicting the Three Symptom Factors from Cultural Experience Variables (Controlling for Personality Problem) among the Caucasian Sample

		Mixed Factor			Cognitive Factor			Autonomic Hyperarousal Factor		
Step	Variable Entered	R^2	ΔR^2	Beta	R^2	ΔR^2	Beta	R^2	ΔR^2	Beta
	Control	.10			.03			.01		
	Personality Problem			.30**			.14*			-.11
	Cultural Experiences Variables	.13	.03*		.08	.06**		.04	.03*	
	Canadian Internal Orientation			-.15*			-.13*			-.05
	Canadian External Orientation			.10			.02			.19**
	Negative Acculturative Experience			.09			.19**			.10

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

investigation was undertaken to evaluate whether such inter-correlation impacted the findings above between symptom factor scores and cultural experience variables. For both symptom factor scores among the Chinese sample, Negative Acculturative Experience and Collective Self-Esteem were found significant, when these two correlated at -.30 ($p < .001$). A series of regression analyses were performed and found that, when considered by itself, Negative Acculturative Experience and Collective Self-Esteem were both significant predictors, accounting for 21% and 8%, respectively, for predicting Affective-Somatic factor. Both were found to account for additional unique and significant amount of 17% and 3% variance, respectively, after the other has been accounted for. When these two variables were considered simultaneously, they accounted for 24% of variances, similar to when each variable was considered alone.

Similarly, when predicting Cognitive factor among the Chinese sample, both variables were found important predictors by itself, accounting for 9% of variances by Collective Self-Esteem and 19% by Negative Acculturative Experiences. Each contributed additional unique and significant amount of variance, 4% and 14%, respectively, when the other has been accounted for. When being considered simultaneously, they accounted for 23% of the variances, similar to when each was considered alone. Overall, these analyses indicated that the significance of Negative Acculturative Experiences and Collective Self-Esteem to two factor scores among the Chinese sample indeed reflected their unique and important role in understanding their relation, and that Negative Acculturative Experiences was a stronger predictor than Collective Self-Esteem.

Among the Caucasian sample, when predicting the Mixed and Cognitive factor

scores, the presence of personality problems was found significant when being entered in the first step of the regression, whereas Canadian Internal Orientation was found significant for Mixed factor, and Canadian Internal Orientation and Negative Acculturative Experiences were found significant for Cognitive factor. Additional regression analyses were performed and found that personality problems remained as an important predictor for both Mixed and Cognitive factor scores after Canadian Internal Orientation has been accounted for. Furthermore, between Canadian Internal Orientation and Negative Acculturative Experience variables, they were both important predictors by itself, accounting for 2% and 4% of the variances, respectively for Cognitive factor. They remained significant after the other has been accounted for. When considered simultaneously, they accounted for 5% of the variances, similar to when these two variables considered alone. Therefore, Negative Acculturative Experiences and Canadian Internal Orientation, despite of the small amount of variances they accounted for, were significant predictors for understanding Cognitive factor, with Negative Acculturative Experience to be a stronger predictor than Canadian Internal Orientation.

CHAPTER 6: DISCUSSION

The first goal of the current study was to comprehensively assess depressive and anxiety symptomatology and examine the resultant symptom structures among the Caucasian Canadian and Chinese Canadian university student samples in relation to the conceptual tri-partite model put forth by Clark and Watson (1991). The current study used 14 symptom measures assessing various aspects of depressive and anxiety symptomatology, including the affective (e.g., low positive affect), the cognitive (e.g., worry), and the somatic aspects (e.g., autonomic hyperarousal). Items that were found to function differently across the current two samples were considered to be culturally biased and were subsequently removed from these 14 measures so that the true structural relations among measures of depressive and anxiety symptomatology could be illustrated. The current study identified differences in symptom structures between Chinese and Caucasian samples (e.g., worry and autonomic hyperarousal), as well as differences between these two samples' symptom structures and the structures of the original tripartite model (e.g., lack of depression specific element).

After the cross sample differences in symptom structures of anxiety and depressive symtomatology were identified, the second primary goal of the current study was to further investigate cultural influences on between-group similarities and differences in the resultant symptom structures of anxiety and depression. Individuals' cultural experiences, such as their cultural orientations, were examined in relation to symptom structures and cultural contrast response tendencies, in order to better understand the relation between individuals' cultural experiences and the symptoms they reported, and the relation between cultural experiences and the way they reported

symptoms. Cultural contrast response tendency, a composite of cultural biased items, was found to relate to some but not all aspects of cultural orientations (e.g., Canadian External Orientation). It also showed a greater relation than symptom factors with cultural orientation measures. Symptom factor scores were found to relate only to specific and not generic indicators of an individual's cultural experiences (e.g., Negative Acculturating Experiences).

The third goal of the current study was to explore individuals' cultural and depressive experiences through a qualitative approach using a semi-structured interview, in order to discover new culturally relevant themes that may link individuals' cultural background with psychopathology. Three themes were identified among the interviews of Chinese Canadian university students, portraying the role of Chinese culture in understanding an individual's depression, illustrating the mechanism linking culture with psychopathology, and highlighting the significance of a qualitative research approach in understanding a Chinese individual's experiences.

The Discussion section of the current study will be presented in the order of addressing the aforementioned three goals of the current study, by first discussing findings of symptom structures across two samples; then exploring the relation among symptom factors, cultural contrast response tendency, and cultural experiences; and finally presenting themes arising from the interview component of the current study. The section will end with discussions of the clinical and research implications of the current study's findings, and on future directions stemming from the findings as well as the limitations of the current study.

Note that in Result section, findings and procedures concerning Rasch analyses

were presented first, establishing a foundation for conducting structural analyses whose results were subsequently presented. The findings regarding structural analyses needed to be understood within the context of Rasch analyses that strengthened the validity of the structural analyses by deleting misfit and culturally biased items for all symptom measures. Efforts were made to ensure each of the 14 clinical measures fulfilling the assumptions of Rasch model analysis before the inter-relation among these clinical measures was explored through structural analyses. The value of using Rasch analyses prior to the investigation of symptom structures was fully illustrated through the findings about the relation between cultural experiences and cultural response tendency, and the relation between cultural experiences and symptom factors. As the findings concerning cultural experiences were most related to the second goal of the current study, due to the contribution of Rasch analyses made to achieve this second goal, the discussions concerning Rasch analyses were integrated with the discussion of cultural bias analyses and therefore were not presented at the beginning but at a later part of the Discussion section (see relevant discussion starting with page 224).

Symptom Structures In Relation to the Original Tripartite Model

The comorbidity between anxiety and depression, either at the disorder or syndrome levels, has been well-documented in existing literature (see the review by Mineka et al., 1998). Clark and Watson (1991), extending the seminal work on negative and positive affects by Tellegen (1985), proposed a tripartite conceptual model, in order to explain the comorbid relation between anxiety and depressive symptoms. This model groups symptoms common to anxiety and depression into a shared element of negative affectivity, symptoms specific to anxiety into autonomic hyperarousal, and symptoms

specific to depression into low positive affect. Negative affectivity is a general component of subjective distress, and subsumes a broad range of negative mood states, including fear, anxiety, hostility, scorn, and disgust. This non-specific component also includes other symptoms that are prevalent in both anxiety and depression, such as insomnia, restlessness, irritability, and poor concentration (Watson et al., 1995a). Low positive affect is considered as a depression-specific component; high positive affect is composed of terms reflecting one's enthusiasm, energy level, mental alertness, interest, joy, and determination, whereas low positive affect is best defined by descriptors reflecting lethargy and fatigue. The anxiety specific component is characterized with symptoms of autonomic hyperarousal, including shortness of breath, dizziness and light-headedness, dry mouth, and trembling or shaking.

This tripartite conceptual model has received empirical support among a variety of samples across age groups (e.g., Geisser, Cano, & Foran, 2006; Joiner et al., 1996; Teachman, Siedlecki, & Magee, 2007). The current study adopted the tripartite model as its conceptual framework, including measures assessing negative affectivity, low positive affect, and autonomic hyperarousal. In addition, the current study included measures assessing cognitive and other somatic aspects of depressive and anxiety symptomatology that have not been addressed by the original tripartite model. The resultant symptom structures across Chinese and Caucasian samples demonstrated some features resembling aspects of the original tripartite model, as well as other features that differed from what the model described.

Similarities of the Findings to the Original Tripartite Model

One feature of similarity the current findings obviously shared with the original

tripartite model concerned the component of negative affectivity. Three scales that assessed negative affectivity were General Distress-Mixed Symptom, General Distress-Depression, and General Distress-Anxiety scales. General Distress-Depression scale contained items reflecting depressed mood along with other relatively non-specific symptoms of mood disorders (e.g., feelings of disappointment and failure, self-blame, pessimism). General Distress-Anxiety scale included several indicators of anxious mood, as well as other symptoms of anxiety disorders that were expected to be relatively non-differentiating (e.g., inability to relax). General Distress-Mixed Symptom scale contained items that appeared in the DSM symptom criteria of both Anxiety and Mood Disorders (e.g., feelings of irritability and confusion; difficulty concentrating). These scales were traditionally used to assess the construct of negative affectivity, were often found to be highly inter-related, and constituted a factor representing negative affectivity across samples (Watson et al., 1995a; Watson et al., 1995b), evidencing the non-specific nature of negative affectivity, shared by anxiety and depression as proposed by the original tripartite model.

In the current study, consistent with findings of the previous studies, these three scales were found to be highly inter-related, as well as clustering together to become essential elements of the Affective-Somatic factor among the Chinese sample and of the Mixed factor among the Caucasian sample. As mood-based symptoms might be less differentiating and more central to the close relation between anxiety and depression (Norvell et al., 1985), these three scales, as expected, clustered together, rather than separating from one another. The present results showed evidence of convergent validity, emerging through high inter-relations among different measures of the same construct

across samples.

One most significant aspect of the above findings was to assess the construct of negative affectivity among the Chinese sample and to establish its structural similarities between Chinese and Caucasian samples. As previously reviewed, the tripartite conceptual model has been almost exclusively applied to Caucasian samples, with one exception of study by Lambert, McCreary, Joiner, Schmidt, and Ialango (2004), examining its applicability to a community sample of African American adolescents. Their findings supported the utility of the tripartite model among their sample, although different aspects of tripartite model did not differentiate to a greater extent as expected. Note that there were a few studies examining positive and negative affects, rather than the complete three specific components of the tripartite model, among ethnic minority children and adolescents including those with Chinese origin residing in North America (e.g., Austin & Chorpita, 2004; Chorpita, Daleiden, Moffitt, Yim, & Umemoto, 2000). No prior study examined the applicability of the original tripartite model among Chinese adults residing in North America, including Chinese Canadians. The current study was one of the first studies providing empirical evident supporting the validity of negative affectivity among Chinese Canadian university students. As negative affectivity has been found to relate to various psychological correlates, such as indicators of stress and health complaints (Watson & Pennebaker, 1989), whereas the size of Chinese Canadian adult population has been rapidly expanding in recent years, assessing it adequately for this ethnic group will have important clinical and research implications.

Another feature of similarity the current findings shared with the original tripartite model concerned the factor of autonomic hyperarousal among the Caucasian sample. In

line with previous studies examining the role of autonomic hyperarousal as an anxiety specific component of the tripartite model (Nitschke et al., 2001; Reidy & Keogh, 1997; Watson et al., 1995b), the current study found, among the Caucasian sample, that it did not relate substantially to the factor that included elements of negative affectivity and that it formed a stand-alone factor. In addition, despite the overlap between anxiety and depression, the two syndromes that have been identified to be most clearly differentiated are panic disorder and endogenous depression (Mineka et al., 1998). One of the defining features for the former is autonomic symptoms (Brown et al., 1998), and for the latter is loss of interest and psychomotor retardation (Burns & Eidelson, 1998). Among the Caucasian sample, the autonomic hyperarousal factor separated itself from the factor that included depression specific variables, including loss of interest and psychomotor retardation. This finding evidenced the specific role of autonomic hyperarousal as an anxiety specific component proposed by the original tripartite model, and illustrated the unique role of autonomic hyperarousal in relation to other aspects of depressive and anxiety symptomatology among the Caucasian sample.

On the other hand, among the Chinese sample of the current study, the variable of autonomic hyperarousal joined the variables of negative affectivity, loss of interests, psychomotor retardation, and low positive affect to form the Affective-Somatic factor. Note that the differences between Chinese and Caucasian samples in symptom structures due to autonomic hyperarousal will be further discussed in later parts of the Discussion section that illustrated between-group differences of symptom structures in autonomic hyperarousal and worry. The current study used the same measures and same procedures for Chinese and Caucasian samples, both of which had gone through the same statistical

analyses of Rasch model fitting, culturally biased item detection and deletion, and finally the structural analyses which found autonomic hyperarousal conforming to the original tripartite model among the Caucasian sample but not among the Chinese sample. From the measurement and methodological perspectives, cautions had been exercised by the current study to avoid the impact of potential culturally biased methodologies or items on the findings so that true cultural group differences would be revealed.

Identifying the aforementioned true group differences provided strong arguments for the necessity of cross-cultural validation of symptom structure. Rather than assuming structural equivalence across cultural groups, it was essential to hold this assumption only when evidence was available. Some studies that examined structural convergence between empirical symptom structure and the tripartite conceptual model primarily used exploratory factor analyses (e.g., Watson et al., 1995; Zinbarg & Barlow, 1996), while others adopted confirmatory factor analyses via the application of structural equation modeling (e.g., Brown et al., 1998; Burns & Eidelson, 1998). Exploratory factor analyses could help identify latent variables and develop a theoretical model, whereas confirmatory factor analyses could substantiate or invalidate the structures suggested by exploratory factor analyses (Gerbing & Hamilton, 1996); the two approaches did complement each other. As the tripartite model has not been widely applied to culturally diverse samples, including Chinese Canadians, the current study found it important not to impose Western-derived theories to ethnic minority individuals by beginning the analyses with exploratory factor analyses. Analyses that were exploratory in nature would allow the emergence of group differences for the research question under review. According to several fit indices available in the application of structural equation modelling analyses,

the structures derived from exploratory factor analyses for both samples in the current study were further validated by confirmatory factor analyses. To re-iterate, the true group differences were revealed through cultural and statistical consideration of methodologies that overall highlighted the strength of the current findings.

Differences of the Findings from the Original Tripartite Model

In addition to the above discussion that autonomic hyperarousal among the Chinese sample did not conform to the original tripartite model, another major difference between the current findings and the original tripartite model concerned three measures assessing depression specific component, including low positive affect, psychomotor retardation, and loss of interests. The original tripartite model considered low positive affect as a depression specific element, separating it from the common component of negative affectivity shared by anxiety and depression and from autonomic hyperarousal as an anxiety specific component (Clark & Watson, 1991; Watson et al., 1995a). The current study found that these three depression measures clustered together and joined the three scales assessing negative affectivity to form a major factor among both Chinese and Caucasian samples. Although these three measures of depression did not separate from measures of negative affectivity to form a depression-specific factor as expected, evidence of convergent validity was indeed shown, through high inter-relations among different measures of the same construct across samples. While most previous studies used only one measure (i.e., reverse coded Positive Affect scale) to assess this depression specific component, the current findings illustrated the strength of this convergent assessment strategy, including a direct assessment of low positive affect that has been ignored by the previous studies.

When the current study only factor-analyzed the five measures that corresponded to the original tripartite model (i.e., General Distress-Mixed Symptom, General Distress-Anxiety, General Distress-Depression, Autonomic Hyperarousal, Positve Affect-reverse coded), although the initial extraction only produced one primary factor, specifying extracting three factors did produce three factors that completely conformed to the original tripartite model. In addition, when Positive Affect (reverse coded) scale replaced Low Positive Affect scale and was factor-analyzed along with the rest 12 symptom measures, Positive Affect (reverse coded) scale formed its factor and the rest 12 symptoms formed another primary factor. These two additional analyses suggested that, when depression specific component was assessed through reverse coding of Positive Affect scale, a depression-specific component that separated from the rest of symptomatology could have been located, similar to what the previous studies have found. When the depression specific component was assessed only through reverse coding of Positive Affect scale, the original tripartite model might have appeared to be applicable to the current samples (although still unable to fully account for the current sample's symptom structures). On the other hand, when the depression specific component was directly assessed by Low Positive Affect Scale and also was assessed by multiple measures from a perspective of achieving convergent validity, the resultant factorial structures did not conform to the original tripartite model, even though evidence of convergent validity was obtained.

The discrepancy between structural features exhibited by three depression specific measures in the current study and the one by depression specific component in the original tripartite model most likely related to low positive affect, but not loss of interests

or psychomotor retardation. Burns and Eidelson (1998), in order to capture anhedonia as a depression specific component, included items assessing loss of interests and vegetative symptoms which were similar to what the Psychomotor Retardation scale in the current study was intended to assess. None of the positive affect (reverse coded) items were included in their study. They found both anhedonia and non-specific depression component loaded together. Watson and his colleagues (1995b) found that loss of interests loaded quite highly on the measures assessing negative affectivity (e.g., General Distress-Depression), thus concluding no evidence to support that loss of interest was more strongly related to the depression specific factor. Instead, they concluded that Positive Affect (reverse coded) was a major part of the depression specific factor which was most strongly defined by high Positive Affect (reverse coded) items on one end, and weaker loadings of other depression symptoms on the other end, including items of loss of interests and other depression items from General Distress-Depression scale. Nitschke and his colleagues (2001) re-analyzed items of Watson et al.'s depression-specific component and found two separable structures, with one representing depression on one end and with second representing positive affect at another end. Overall, when previous studies included items assessing loss of interest or psychomotor retardation, they often found these items loaded with measures of negative affectivity, similar to what the current study had found. When previous studies included reverse coded positive affect items, they were able to identify a depression specific factor because these items often formed their own factor that was separated from other items assessing depression or negative affectivity.

Previous studies using reverse coded Positive Affect scale to assess low positive

affect have commented on its unsatisfactory performance, although it did produce a unique factor which was considered specific to depression. The current study found that, compared to Low Positive Affect scale, the Positive Affect (reverse coded) scale originally contained one more misfit item and more culturally biased items that were all affect-based. After deleting these misfit and biased items, again compared to Low Positive Affect scale, the remaining items of the Positive Affect (reverse coded) scale has fewer items and was a lesser pure representation of low positive affect because it contained two items not directly related to low positive affect (e.g., "Felt really up or lively"; "Felt like I had a lot of energy"). On the other hand, these two items, after being adapted as parts of the Low Positive Affect scale (e.g., "not felt like I had a lot of energy"), were found culturally biased thus deleted from the Low Positive Affect scale. Deleting these two items made Low Positive Affect scale became a much purer representation of low positive affect. After these misfit and culturally biased items were removed and the final measures of Low Positive Affect and Positive Affect (reverse coded) scales were entered in separate factor analyses, the former accounted for relatively more variance than the latter, and more strongly related to other measures assessing depressive symptomatology, whereas the latter formed an independent factor separating from the rest of the variables. In sum, compared to Low Positive Affect scale, reverse coding of Positive Affect scale did not perform as well as Low Positive Affect scale, although it formed a specific factor as the original tripartite model outlined, by separating itself from measures of negative affectivity and autonomic hyperarousal.

Possibly, Positive Affect (reverse coded) scale and Low Positive Affect scale were assessing very different constructs, with the former capturing the feelings of joy and

enthusiasm, which is distinctively different from typical feelings related to depression or negative affect. As a result, in the current study, Positive Affect (reverse coded) scale did not significantly relate to and did not load with other measures of depression and anxiety. Even if Positive Affect (reverse coded) scale and Low Positive Affect scale were assessing the same construct, Bernstein and Teng (1989) suggested that items with the same content but different response levels often correlated more poorly than did items with similar responses levels. Having methodological heterogeneity has typically been recommended for exploring convergent and divergent validity of constructs (Kenny, 1995; Nunnally & Bernstein, 1994). On the other hand, other researchers recommended avoiding item reversal as these items might result in impaired reliability and validity of measurement (Samuelstuem, 2003; Schriesheim et al., 1991). Assessing low positive affect using reverse coding of Positive Affect items may have introduced methodological heterogeneity as all other measures used in the current study were direct assessment of targeted constructs. Nevertheless, regardless of the relative merits of different psychometric considerations, having reverse coded items as parts of a scale was very different from assessing a construct solely through a scale whose items were all reversely coded.

What the Positive Affect (reverse coded) scale might have accomplished, according to the current findings as well as previous studies, was to form a unique factor, separating from all other measures of depressive and anxiety symptomatology, which was taken by previous studies as evidence for its representing a depression specific component. As aforementioned, Positive Affect (reverse coded) scale assessed the feelings of joy and enthusiasm, which is distinctively different from typical feelings

related to depression or negative affect. Only after items were reversely coded, they appeared to relate to feelings of depression or negative affect. Previous studies did view the outcome of item reversal as important indicators of low positive affect (e.g., Nitschke et al., 2001). On the other hand, Brown (2003) specifically questioned the conceptual and clinical meaningfulness when reverse coded method was used in case of assessing excessive worry. Adopting similar considerations by Brown, the current study would like to question the conceptual and clinical meaningfulness in solely relying on reverse coded positive affect items to assess low positive affect as a defining feature for depression. While the current study attempted to conclude that the construct captured by Positive Affect (reverse coded) scale was inadequate in assessing low positive affect, at the same time its failure to identify a depression specific component was acknowledged and would need to be addressed by future studies.

Psychomotor Retardation and Loss of Interest assessed anhedonia, capturing loss of interests or pleasures in previously enjoyed activities, and physical aspects of anhedonia such as lethargy, fatigue, and sluggishness. Because affect related symptoms might be less differentiating and more central to the close relation between anxiety and depression (Norvell et al., 1985) and a greater distinction has been found between panic disorders and endogenous depression (see review by Mineka et al., 1998), anhedonia was proposed to represent the depression specific component in the current study, separating from autonomic hyperarousal as anxiety specific component. Among the Caucasian sample, as expected, Psychomotor Retardation and Loss of Interests separated from panic symptoms assessed by autonomic hyperarousal. However, contrary to the expectation, they did not form a depression specific component by separating from measures of

negative affectivity which was found across both samples.

One possible explanation for the non-specific feature of anhedonia found in the current study was that it was examined within the context of overall anxiety and depressive symptomatology. This aspect of depressive symptomatology may be more distinctive when examining affect-based symptoms of depression and symptoms of negative affectivity. When anhedonia was examined along with other anxiety and depressive symptomatology, due to a greater difference between endogenous depression characterized by anhedonia and panic disorder characterized by autonomic hypearousal symptoms, the differences of anhedonia with affective aspects of depressive symptomatology and negative affectivity became less obvious, to the extent that measures of anhedonia loaded along with affect-based measures such as Low Positive Affect and measures of negative affectivity. From a data analysis perspective, this explanation was plausible, nevertheless insufficient, as it was only applicable to Caucasian sample. Furthermore, this explanation did not shed light on the nature of a depression specific component.

Not all studies were in a pursuit of finding a depression specific component and many studies found a strong relation between negative affectivity and anhedonia (e.g., Burns & Eidelson, 1998); among those attempting locating a depression specific element, they either emphasized further research needed to better understand this depression specific component or they concluded low positive affect (assessed through reverse coding of Positive Affect) to be the depression specific component (e.g., Nitschke et al., 2001). Some other studies simply used the reverse coding of Positive Affect in their investigation to represent depression specific component without addressing this issue

(e.g., Joiner et al., 1996). As endogenous depression has been widely documented to be quite distinctive from other types or aspects of depression, the current study believed that a depression specific component could be successfully identified through the efforts of future studies. Such efforts may need to focus on refining the assessment strategy for the construct of anhedonia, not using the reverse code method of positive affect items (e.g., Joiner, Brown, & Metalsky, 2003), as anhedonia may present symptoms beyond what Psychomotor Retardation and Loss of Interests in the current study have captured (see further elaboration on this note in the "Study Limitation" section).

Sources for the Differences of Current Findings with the Original Tripartite Model

Two sources could be identified to contribute to the differences between the symptom structures found by the current study and the symptom structure of the original tripartite model. First, as aforementioned, was the use of Low Positive Affect scale, instead of the reverse coding of Positive Affect scale, to directly assess the construct of low positive affect. Second, the current study included additional measures to capture constructs that were not parts of the original tripartite model, in order to include cognitive and other somatic aspects of depressive and anxiety symptomatology.

Several cognitive measures (i.e., Depressive Cognition, Anxiety Cognition, Agoraphobic Cognition, Rumination) clustered together across both samples, and they separated from scales assessing negative affectivity and affective aspect of depression, suggesting that affective symptoms were qualitatively different from cognitive symptoms. On the other hand, Worry as a cognitive measure loaded with measures of negative affectivity, low positive affect, and anhedonia among the Caucasian sample, whereas it loaded with all other cognitive measures among the Chinese sample. These findings

demonstrated the complexity of how symptoms related to each other, which did not cluster along affective versus cognitive aspects. Most importantly, these findings showed that inter-symptom relations may differ depending on which group was under review.

With regards to somatic measures, the current study found they showed a greater varied relation with different aspects of depressive and anxiety symptomatology. Specifically, Psychomotor Retardation and Loss of Interests, representing the somatic aspect of depression, loaded with affective measures of depression and measures of negative affectivity. Somatic Tension, assessed by muscle tension and gastric disturbances, was to capture the somatic aspect of anxiety that was not related to panic. Somatic Tension loaded with cognitive measures across both samples to form a Cognitive factor across both samples as the only non-cognitive measure within this factor. Autonomic Hyperarousal, reflecting the somatic and panic-based aspect of anxiety, formed a stand-alone factor among the Caucasian and it loaded with the affective measures assessing negative affectivity and depression, and somatic measure of depression among the Chinese sample. Overall, somatic symptoms were indeed parts of symptomatology. For some conditions, they were integrated with other aspects of symptomatology (e.g., Psychomotor Retardation in relation to other aspects of depression); for some other conditions (e.g., Autonomic Hyperarousal in relation to other aspects of anxiety among the Caucasian sample), it could be a relatively unique aspect of symptomatology.

Overall, adding the cognitive and somatic aspects of symptomatology to the original tripartite model introduced a greater complexity to resultant symptom structures. Cognitive and somatic measures did not form pure factors that exclusively contained

cognitive or somatic measures, which would have suggested that adding these measures did not help understanding the affective nature of the symptomatology. Instead, these measures showed a varied relation with affective measures, from joining them as a part of a factor to completely separating from them to form a single factor. If, for instance, all somatic measures loaded together, separate from affective measures, such finding could have meant that an individual's distress was expressed exclusively through either somatic or affective means. This could be the evidence for "somatization" in a traditionally psychoanalytical sense, as reporting somatic symptoms were viewed as resulting from an altered presentation of psychiatric disorders as the function of defences in allowing some expression of distress while keeping unacceptable wishes out of awareness. What the current study found was, in line with Kellner's review (1990), as well as with other empirical studies (e.g., Kroenke & Spitzer, 1998; Simon, 1991), somatic symptoms were integral parts of emotional experiences. Thus, these added cognitive and somatic elements demonstrated not only a more comprehensive but also a delicate clinical presentation of depressive and anxiety symptomatology.

Symptom Structures in Chinese and Caucasian Samples

The current study used the same 13 symptom measures assessing affective, cognitive, and somatic aspects of depressive and anxiety symptomatology among the Chinese and Caucasian university student samples. These 13 measures were first factor-analyzed from an exploratory perspective within each sample, producing symptom structures that were later substantiated through confirmatory factor analyses via the techniques of structural equation modelling. The current study found that a two-factor model best described the symptom structure among the Chinese sample, including the

Affective-Somatic factor and the Cognitive factor. The anxiety and depressive symptoms among the Caucasian sample demonstrated a three-factor structure, including the Mixed factor, the Cognitive factor, and the Autonomic Hyperarousal factor. Despite of the obvious difference in the symptom structures between the Chinese and the Caucasian samples, major differences concerned the variables of autonomic hyperarousal and worry. Autonomic Hyperarousal variable loaded along with affective measures of negative affectivity and depression, and somatic measures of depression to form an Affective-Somatic factor among the Chinese sample, but it formed a stand-alone factor among the Caucasian sample. Worry loaded along with other cognitive variables and somatic tension variable to form a Cognitive factor among the Chinese sample, but it loaded along with affective measures of negative affectivity and depression, and somatic measures of depression to form a Mixed factor among the Caucasian sample.

In addition to the quantitative aspect of research methodology, the current study included a qualitative aspect using the format of individual interview to gather information about a Chinese Canadian university student's experiences of depression. The nature of the gathered information ranged from their cultural experiences as a Chinese individual living in Canada to their coping strategies for depression. As described with further details in the Methodology section, these interviews were transcribed in verbatim. Selected parts of the interview transcription would be inserted throughout the remaining Discussion section in order to provide further refined and individual-focused findings that could resonate with or go beyond the findings of the quantitative aspect of the current study.

Similarities in Symptom Structure between Chinese and Caucasian Samples

Several similar features of symptom structures could be identified between the Chinese and Caucasian samples. Three measures assessing negative affectivity (i.e., General Distress-Depression; General Distress-Anxiety; General Distress-Mixed Symptoms), as discussed in the previous section, loaded together across both samples. Negative affectivity, as a general factor of subjective distress, subsumes a broad range of negative mood states, as well as other symptoms that were prevalent in both anxiety and depression, such as insomnia, restlessness, irritability, and poor concentration (Watson et al., 1995a). Finding these three negative affectivity measures clustered together consistently across sample evidenced the validity of this measurement strategy to assess this construct.

When being asked to describe their experiences of depression, several Chinese interviewees reported symptoms that fell into the scope of negative affectivity. Barbara, a female student, whose family was originally from Hong Kong, came to Canada when she was one year old. She described her feeling depressed as:

> *You don't feel like talking, don't feel as cheery or as smiley as possible. You feel you just want to dig a hole and just lie there for a moment, until the day is gone. That's being depressed. Being sad, you just stare off the window, see the rain drops sort of trickle down. Being depressed is like you want to dig a hole and hide in it for a while. It is very different. It is not just sad. Being depressed is a bad day, a very bad day. I will call it my bad day. I just don't want to talk to anybody, just want to be quiet, and stay there, until I feel a little better then I can go back to my usual day.*

Another interviewee, George, a male student, came to Canada around age seven from

Hong Kong. He talked about his depressive symptoms within an interpersonal flavour:

> *Just outside the stuff I do to cover it up, or keep myself not to be thinking about it. Just feel sad most of the time. You feel suspicious and why and you don't see them (friends) as friendly, even though they try to be friendly to you sometimes, you see them having some motives something like that, like how are you feeling, something like that. After that you probably just won't go out a lot. I tend to indulge myself into the videogames a lot after that. Just bury myself into the computer. .....Close to the end I felt quite desperate to have friends, quite desperate to have relation with other people. You were just feeling lonely, feeling sad most of the time, then turn bitter, unhappy.*

As discussed in the previous section regarding low positive affect and anhedonia, three measures assessing these two constructs clustered together, along with three measures of negative affectivity, across both Chinese and Caucasian samples. Indeed, several Chinese interviewees, when describing their experiences of depression, reported low positive affect as one of the defining features of their depression. Frank, a male student originally from China, had been in Canada for four years and half. When being asked how he knew he was depressed, he said:

> *That's a good question. Just don't feel happy, don't feel motivated to do anything, just feel depressed.....Normally I don't have problem to sleep, just feeling bad. Not happy for a couple of days.....First part of the first year I always feel lonely, miss friends, like the friends I had before. Not going to do anything. Not interested in going to do anything.*

Another female student, Anna, was just a new-born to her Taiwanese parents when she

came to Canada. When being asked to nominate the most typical symptom of her depression, she said:

> *You don't feel happy anymore, you can't enjoy things or you don't feel enjoying them. You just don't feel happy anymore, but you pretend to laugh or whatever so people won't know you are depressed. So people won't think you were sad or whatever. I guess it's all like that when you are depressed. Everything you do is because you have to, because you should, because people expect, not what you want to do.*

Detailed discussions had been presented in the previous section describing the relative advantages of using Low Positive Affect scale over Positive Affect (reverse coded) scale to assess low positive affect. An additional point was addressed here regarding assessing low positive affect among the Chinese sample. Recent studies have identified a Chinese-specific response pattern that may impede accurate assessment of depression. Compared to Caucasian groups, Asian ethnic groups, including those with Chinese origins, tended to inhibit the expression of positive affect by not endorsing highly but endorsing low on positive worded items of positive affect scale (Noh et al., 1998; Ying, 1989; Yen et al., 2000). When positively worded items were coded reversely, an artificially elevated score was likely resulted, indicating a higher level of depression that was due to this Chinese specific response tendency.

The current study found, among the original 14 positively worded items of Positive Affect (reverse coded) scale, Chinese sample had higher scores on all of them, compared to Caucasian sample. After excluding one misfit and four culturally biased items, among the remaining nine items, compared to Caucasian sample, Chinese sample

scored higher on all nine items, and scored statistically significantly higher on five of the nine items (p value ranged from .0001 to .045 for these five items). These results indicated that Chinese sample did endorse low on positively worded items of the Positive Affect (reverse coded) scale. When items were reversely coded, Chinese sample scored significantly higher than Caucasian sample. Interestingly, endorsing low on Positive Affect items occurred both on biased and non-biased items, suggesting that Chinese sample may under-endorse because of their cultural background as well as of their true lower level of Positive Affect. Same analyses were performed on Low Positive Affect scale, with only two out of 12 items showing significant between-sample differences, with Chinese sample reporting higher scores. Overall, these additional evidence suggested that Positive Affect (reverse coded) scale was not a proper tool to assess low positive affect as indicators of depression among the Chinese sample, and that problems associated with Positive Affect (reverse coded) scale could be overcome by using Low Positive Affect scale.

Previous studies have proposed that reporting feeling happy and enjoying life might be perceived as signs of immodesty and frivolousness that were not positively valued in Chinese culture (Ying, 1989). Thus, the current study further investigated if a Chinese individual reported a higher score on reverser coding of Positive Affect Scale, when they identified strongly as a Chinese or when they identified less strongly as a Canadian. Bivariate correlations among the Chinese sample found that higher scores of Positive Affect (reverse coded) scale were significantly associated with lower scores of Canadian Internal Orientation (r = -.30; p < .001) and Canadian External Orientation (r = -.27; p < .001), whereas Chinese Internal and External Orientations were not significantly

related to Positive Affect (reverse coded) scale. In other words, a Chinese individual's greater orientation toward Canadian culture (psychologically and behaviourally) was related to a lower score of Positive Affect (reverse coded) scale, suggesting a lesser degree of the aforementioned Chinese specific response tendency.

The above results indicated that, when a Chinese individual's identification or behavioural practices were more Canadian, they tended to have lower scores on the Positive Affect (reverse coded) scale and thus they tended to endorse highly on the positive worded items (or they tended not to endorse low on the positive worded items) before these items were being reverse coded. Thus, they did not exhibit a greater Chinese-specific tendency as aforementioned. On the other hand, a direct relation between Chinese psychological identification or behavioural practices and scores of Positive Affect (reverse coded) scale was not found. Therefore, it is not conclusive as to whether a Chinese individual's endorsement on the Positive Affect (reverse coded) scale was related to the influence of traditional Chinese cultural values that did not encourage the expression of immodesty and frivolousness. Direct assessment of traditional Chinese cultural values by future research may help shed light on such relation. Note that these analyses were exploratory in nature. Although the impact of Chinese cultural values on symptom reporting could not be ascertained, these additional analyses helped identifying the Chinese-specific response tendency in not endorsing highly on positively worded items and further supported the inadequacy of using Positive Affect (reverse coded) scale to assess low positive affect among the Chinese sample.

Another similar feature of symptom structures between Chinese and Caucasian samples concerned the variables of Psychomotor Retardation and Loss of Interests,

assessing the somatic aspect of depression. These two variables loaded along with three measures of negative affectivity, as well as other depression measure (i.e., Low Positive Affect) as parts of the Affective-Somatic factor and Mixed factor, respectively, among Chinese and Caucasian samples. Although they did not, as proposed, become depression-specific component according to the structure of the original tripartite model, they showed relations with these other measures in an expected direction. Psychiatric disorders, especially anxiety and depression, were strongly associated with physical symptom-reporting. For instance, depression was often found to relate to a greater reporting of somatic symptoms (Kroenke & Spitzer, 1998), and, after controlling for depression, anxiety was found independently associated with somatic complaints (Jolly et al., 1994). Somatic symptoms decreased in number and severity, when anxiety or disorder remits (Kellner, 1990). More broadly, negative affectivity was found to be related to greater somatic complaints across samples (Watson & Pennebaker, 1989). These previous studies supported somatic symptoms being integral parts of an individual's emotional distress, particularly in the context of depressive and anxiety symptomatology, which was consistent with the current study's finding concerning the relation of Psychomotor Retardation and Loss of Interests with other measures of depression and negative affectivity.

Several Chinese interviewees, when being asked to describe their experiences of depression, reported symptoms of somatic complaints, including the symptoms assessed by Psychomotor Retardation and Loss of Interests scales, such as feeling slow down, effortful, and fatigue. Barbara used the phrase "lighting up" to describe the opposite feeling of depression:

In the morning I was feeling like two balls in my pocket and I was just dragging myself. In the afternoon I felt like chopping the lead out, and I am all light and happy again. After class, I go to the gym. I work out my frustration, or whatever I was feeling. I want to work off this energy, negative energy that needs to be expended. That's just me. It (negative energy) is like you've been slapped multiple times in the face, and you are just robbing it.

Another female student, Donna, has been in Canada for seven years, originally from Taiwan. She reported several somatic symptoms that were commonly associated with depression:

When I felt depressed, I just felt so so tired, but you did not do anything. Just thinking about a lot of things, thinking the whole day to make you feel so tired. You felt tired so lying on the bed, but then you start thinking there are many things you have not finished, you still worried about them, so you can't sleep. You might go to sleep ok, but you wake up all of sudden after a few hours.....Empty-headedness.

Another interviewee, Emma, has been in Canada for seven years, originally from Taiwan. She described other somatic symptoms which were not as part of Psychomotor Retardation and Loss of Interests scale but related to depression (e.g., changes in eating and weight):

I eat a lot during at that time, when this whole thing begins. Cause I was kind of, I am always fat when I was young. Then I start to lose weight when I came to Canada.....And after I move to X city just being careless, I don't care about eating or anything like that. Yeah, (I gained) a lot of weight.

Note that several Chinese interviewees reported other somatic symptoms that fell in the scope of autonomic hyperarousal symptoms, which would be further discussed in the later section of the Discussion section.

Another somatic variable, Somatic Tension assessed by muscle tension and gastric disturbances, loaded with cognitive measures to form a Cognitive factor across samples. Despite the strong relation between somatic complaints and psychiatric disorders, Somatic Tension did not join Psychomotor Retardation or Loss of Interests as parts of the Affective-Somatic factor among the Chinese sample or the Mixed factor among the Caucasian sample, neither did it cluster with another anxiety-related somatic variable, Autonomic Hyperarousal. Researchers have pointed out that the anxiety specific component in the original tripartite model was not generally characteristic of all anxiety disorders but rather of panic disorder (Brown et al., 1998), and that we have limited understanding about somatic features of non-panic anxiety disorder, such as Generalized Anxiety Disorder, i.e., GAD (Brown et al., 1998; Mineka et al., 1998). A few studies were available regarding the type of somatic symptoms among individuals experiencing non-panic and chronic anxiety, including increased muscle tension (Hoehn-Saric & McLeod, 2000; Marten et al., 1993) and gradual gastro-intestinal responses as part of slower-acting autonomic nervous system such as stomach problems (Beck, 1985).

The current study used Somatic Tension scale, including items of muscle tension and gastric disturbances, to assess the non-panic somatic symptom of anxiety. Across both Chinese and Caucasian samples, Somatic Tension was found part of depressive and anxiety symptomatology, was qualitative different from panic-related somatic symptoms (assessed by Autonomic Hyperarousal), was related more to cognitive than affective

features of anxiety and depressive symptomatology, and was loaded along with cognitive feature of non-panic somatic symptom of anxiety (i.e., Rumination), including the cognitive feature that was conceptualized to be shared by anxiety and depression.

Somatic Tension, representing somatic feature of GAD or chronic anxiety, separated itself from autonomic hyperarousal variable across both samples, suggesting the distinction between the constructs measured by these two measures. Finding such distinction was in line with recent studies that documented the salience of somatic tension symptoms (e.g., muscle tension), not autonomic hyperarousal, among the individuals with GAD (e.g., Hoehn-Saric et al., 1989; Hoehn-Saric & McLeod, 2000; Marten et al., 1993). This finding was also in line with the most recent changes made from DSM-III-R to DSM-IV diagnostic criterion regarding GAD, by eliminating the autonomic symptoms of anxiety. These changes aimed at distinguishing GAD from panic disorders; furthermore, they reflected the lack of relation between autonomic hyperarousal symptoms and symptoms of somatic tension among individuals with GAD. Note that symptoms of somatic tension (e.g., muscle tension) have been a part of GAD diagnostic criterion since DSM-III when it first emerged, to the current version of DSM-IV (American Psychiatric Association, 2000).

A stronger relation between Somatic Tension variable with cognitive measures than with affective measures across samples was worth-noted. Such finding was likely related to that cognitive features were more defining of GAD and that Somatic Tension was part of GAD's symptomatology, although individuals with GAD did commonly report affective symptoms, such as dysphoria (Kessler, Keller, & Wittchen, 2001). While the current study failed to identify a depression specific element that could have

facilitated making a differential diagnosis of depression from anxiety disorders, Somatic Tension could be treated as a GAD specific feature, which separated GAD from measures of depression and negative affectivity, as well as from autonomic hyperarousal symptoms that characterized panic-related anxiety disorders. The distinction between GAD related features and features of depression found in the current study was especially meaningful from a clinical perspective, due to the highly comorbid relation between GAD and depression, as well as between GAD and other anxiety disorders (American Psychiatric Association, 2000).

The unique role Somatic Tension played in overall anxiety and depressive symptomatology found by the current study, once again, highlighted the importance of understanding the somatic aspect as parts of symptomatology for psychiatric disorders. Taking GAD as an example, although its somatic aspect may not be as central as its cognitive features thus may not contribute as much as cognitive features to convergent validity of the GAD diagnosis, its somatic aspect could become useful to differentiate it from other comorbid psychiatric conditions such as depression and panic-related anxiety disorders. Different aspects of symptoms may serve different functions in the process of considering psychiatric diagnoses. While diagnostic criterion were often strongly related to the targeted disorder for achieving a greater convergent validity, identifying indicators that assisted differential diagnoses would be our next step to further refine the current diagnostic system. While acknowledging that high correlations among anxiety and depression scales may reflect the convergent nature of these two clinical phenomena, Dobson and Cheung (1990) proposed measures of anxiety and depression that were specifically developed to highlight a discriminative ability as one of the areas for future

research. The current study concurred with their proposal and furthermore offered empirical evidence for future consideration of using Somatic Tension as a differential diagnosis of GAD from mood and panic-related anxiety disorders. The specific role Somatic Tension played in diagnosing GAD would not have been possible if the current study had not comprehensively assessed affective, cognitive, and somatic aspects of depressive and anxiety symptomatology.

In addition to several affect (e.g., Low Positive Affect) and somatic (e.g., Psychomotor Retardation) measures that highlighted structural similarities of depressive and anxiety symptomatology between Chinese and Caucasian samples, another aspect of similarity was regarding cognitive measures. All cognitive measures (with the exception of Worry) loaded together and formed the Cognitive factor among both samples, including Depressive Cognition, Anxiety Cognition, Agoraphobic Cognition, and Rumination. Such findings suggested that cognitive features were qualitatively different from affective features of anxiety and depressive symptomatology, anxiety-related cognitions were more closely related to specific somatic aspects (i.e., Somatic Tension) than affective aspects of anxiety (e.g., General Distress-Anxiety), and that differentiating among depressive and anxiety cognitions was lacking. Note that Cognitive factor in both samples was not exclusively comprised of cognitive measures and it included one somatic measure (i.e., Somatic Tension), and that not all cognitive measures clustered in a similar fashion across samples (i.e., Worry joined the rest of cognitive measures among the Chinese sample but it joined measures of negative affectivity and depression as part of Mixed factor among the Caucasian sample).

The prominence of cognitions in the context of depressive symptomatology was

revealed by several Chinese interviewees who described thoughts that had been found commonly reported by individuals with depression. For instance, Frank described his negative thoughts and thinking style that frequently occurred during the time of depression, which was characterized with themes of loss and regret:

> *Depression meaning not getting the time worth come here (from China to Canada). It made you think if this is the right choice to come here. I always always think about it when I was depressed. What the decision should be, if I don't come here, would I be happier? Would that be?.....It makes me more depressed. I tend to get away from that..... You tend to see the downsides. Try to see why you are depressed, anything that I can improve. Tend to try to find my mistakes and what I did wrong.*

Anna talked about her thoughts during the time of depression, characterized by themes of self-doubt and low self-esteem to the extent of almost a denial to her worth as an individual:

> *I just hated myself. And I changed a group of friends at that time too. Just everything adds together, the friend thing is just like the last straw. I don't want to face it like another day kind of thing.....I almost like did believe what my dad said, like I wasn't working hard enough. I didn't wanna try, I was going to grow up and be a total failure. I was going to have a horrible life, I wasn't smart enough, just a lot of things.....I guess it is just one of the things with my dad, just make it horror. Everything he says was negative there wasn't never positive. It's like I was living in this constant like little room with these things flying at me not being able to control it or get a hold of myself, always, you know just pretty much*

a slap in your face like that.....I would be like oh my gosh I am stupid. I have nothing to contribute to this world, you know I did horrible, I am gonna be like a failure, drop out of school, it's just like one thought lead to another..... I guess that's the worst thing too is that you stick unto your thoughts, you are just going over the same thing over and over again, you are over-analyzing things, you kind of brought yourself down, it's almost like destroy yourself inside.

Anna also nominated her thoughts of self-doubt to be the first sign she noticed in her depression, which was followed by disturbances that were interpersonal in nature:

Probably just not believe in myself. Kind of doubting everything I do. Putting myself down, that will be the first thing. Afterward I just don't have the energy to go out with my friends, even just say hi, just don't want people to mess with me and I just kind of ignore them. Just stuff like that. Or when people call me I just don't call them back, just don't feel like talking about. Just give myself up or seclude myself.

Some aspects of the current findings regarding the cognitive measures were in line with previous studies finding that anxiety specific cognitions were often not related to autonomic hyperarousal symptoms of anxiety (Clark et al., 1994; Jolly et al., 1994), that anxiety specific cognition often lacked discriminating power in separating anxiety from depression (Beck & Perkins, 2001), that rumination has been considered as a shared cognitive component of anxiety and depression (see review by Borkovec et al., 1998), and that rumination predicted both anxiety and depression symptoms (Nolen-Hoeksema, 2000). On the other hand, some aspects of the current study's finding regarding cognitive measures were in contrast with previous studies which often found depression cognition's

specificity to depression (Beck & Perkins, 2001; Clark et al., 1994; Jolly et al., 1994). Depressive Cognition in the current study joined all other cognitive measures, not affective or somatic measures of depression, as part of the Cognitive factor among both samples.

The lack of specificity of depressive cognition found by the current study may be related to the inter-related nature of Depressive and Anxiety Cognitions measured by the Cognition Checklist (Beck et al., 1987). Depression cognitive content was hypothesized to be focused on themes of negative self-evaluation, hopelessness, and generally pessimistic assessment of the world (Clark et al., 1990). Tellegen (1985) suggested that the temporal focus in each of these cognitive sets differed in that depressive thoughts were past-oriented whereas anxious cognitions were future-oriented. Beck and his colleagues (1987) then constructed the Cognition Checklists that aimed at discriminating anxious and depressive cognitive contents. This scale was concluded to demonstrate cognitive specificity when its Depressive and Anxiety Cognition subscales related strongly to measures of depression and anxiety, respectively (Clark et al., 1989; Steer et al., 1994), and when the correlation between Depressive Cognition and other depression measures was stronger than the correlation between Depressive and anxiety measures (Beck et al., 1987). However, closer examination of these studies found that the inter-correlation between Depression and Anxiety Cognition scales was substantial, and that both cognition scales correlated strongly with measures of anxiety and depression, although not as strong as the correlation between Depressive Cognition subscale and measure of depression, nor as strong as the correlation between Anxiety Cognition subscale and measure of anxiety. Another study (Beck, Perkins, Holder, Robbins, Gray,

& Allison, 2001) used Depressive and Anxiety Cognition subscales, and found they loaded .73 and .56, respectively, on a Depression factor, and the two subscales loaded the same at .48 on an Anxiety factor. In other words, although Depressive and Anxiety Cognition subscales showed differential relations with the same-affect versus different-affect measure (e.g., depressive cognition related strongly with depression measures or related stronger with depression measures than with anxiety measures), depression and anxiety cognitions measured by Cognition Checklists were undeniably strongly interrelated.

Cognitive research concerning depression, in fact, encompassed a wide range of cognitive features; some focused on content or themes (e.g., themes of hopelessness vs. helplessness; Alloy et al., 1990), while others concerned processes, such as information processing or attributional style (Ingram & Malcarne, 1995). Beck and Perkins (2001) even made a distinction between cognitive specificity versus cognitive-content specificity, with the former as a broad description for any cognitive processes that appeared specific to either depression or anxiety and the latter as a specific claim that certain themes of semantic content in self-reported automatic thoughts were unique to either depression or anxiety. Relating this distinction between cognitive specificity and cognitive-content specificity back to the current study, possibly, some cognitive processes or themes of content were more discriminating than what the Cognition Checklist has captured. For instance, Beck and his colleagues (2001), using a variety of cognitive measures including Cognition Checklists, found that Beck Hopelessness Scale (i.e., BHS; Beck, Weissman, Lester, & Trexler, 1974) loaded the highest on the depression factor and did not load significantly on the anxiety factor, and that only BSH, not Cognition Checklist, made a

unique contribution to the depression factor. Similarly, hopelessness was found more related to depressive symptoms than anxious symptoms, as demonstrated by partial correlations (Alford, Lester, Patel, Buchanan, & Giunta, 1995).

Examining the items of Depressive Cognition scale used by the current study found that only a few items reflected thoughts of hopelessness (e.g., "I will never overcome my problems"; "Life isn't worth living") and that most items reflected thoughts of worthlessness (e.g., "I'm worthless"; "I'm not worthy of other people's attention or affection"; "I'll never be as good as other people are"). Two items that seemed reflective of hopelessness were found culturally biased thus not included in the final pool of Depressive Cognition scale (i.e., "There is no one left to help me"; "Nothing ever works out for me anymore"). Such item composition for Depression Cognition scale may additionally explain why Depression Cognition scale failed to distinguish itself from anxiety cognition measures and did not load with other affective and somatic measures of depression to form a depression specific factor.

Depression-related themes of cognition may not be well-captured by the Cognition Checklist used by current study to distinguish depressive cognition from anxiety cognitions; on the other hand, anxiety related themes of cognition may be relatively prevalent among current sample, thus further contributing to the lack of specificity of depression cognition among the current sample. In other words, if individuals having depression among the current sample reported significant anxiety related cognition, in addition to depression related cognition, the differentiation between anxiety and depression cognitions would be unlikely. One example would be feelings or thoughts of helplessness. Alloy and his colleagues (1990) hypothesized the relation

among depression, anxiety, and cognitive themes of helplessness and hopelessness. They proposed that individuals uncertain about their ability to control important outcomes (thus uncertain being helpless or not) would be more likely to experience pure anxiety. Those who certainly felt helpless but uncertain about whether negative outcomes will occur or not (thus uncertain being hopeless or not) would be more likely to experience a mixed anxiety and depressive states. Finally, those who are certainly helpless and also certain about having negative outcomes (thus certainly hopeless) would more likely experience depression. Overall, relating Alloy and his colleague's theory back to the current study, if those with depression among the current sample reported feeling helpless but not necessarily hopeless or if their hopelessness tendency was not well-captured by the measures used in the current study as previously discussed, their clinical presentation would appear to be a mixed anxiety and depressive states without clear distinction between depressive and anxiety cognition; the specificity of depression cognition would not be revealed.

According to the qualitative interviews among Chinese individuals with experiences of depression, many reported feelings or thoughts of helplessness as part of their depression. For instance, Frank considered not knowing what to do with depression and the resultant feeling of helpless to be the most difficult thing about being depressed because he had no solution to end his suffering:

> *You feel sad, feel mentally painful, just feel bad inside, want to get rid of it if you can. But this thing sticks with you and you don't know what to do. You try to do things but there's no help. It's not like you can fake your school work kind of things. You are anxious about get away from it..... When your depression comes,*

you try to deal with it. But you can't, you can't. You feel helpless, then you feel sad and then cry. It's not like it comes and I cry about it. Usually it's helpless, you don't know what to do about it, you try but it doesn't work, you feel frustrated then become crying.

Carol, a female student originally from China, has been in Canada for two years of time. She described her feeling of helpless as the most difficult part about being depressed. Her thoughts of helplessness made her question if other people could really understand her depression:

It's when you know you are depressed, you know it, you know it is not good for you, but you just don't at that point, you do not have the ability to get myself out. When I am depressed, I hate to have a clear mind but my mind is always clear. When my mind is clear, I tell myself I cannot be depressed, but I cannot help it, or I need someone else to help me..... Because it is your depression, your sadness, no matter how good you can describe it, others cannot feel it or understand it. It is beyond language. Also when you are feeling very sad, others cannot feel sad for you. You can just put medicine on that yourself to let it heal.

On the other hand, not all Chinese interviewees reported feeling hopeless as if negative outcomes would be unavoidable. Frank talked about the prospect of things being different if he would suffer from depression again:

Nothing that I am looking forward to doing now actually works. Maybe when you are older, there may be new ways that can deal with that. I don't know. Maybe when you have more money, you can have more ways to cheer up yourself. Like entertainment. There's just limitation right now.

As the current study only interviewed individuals with Chinese origin that was small in number, the above observation regarding the salience of helplessness in depressive symptomatology may not be applicable to other Chinese individuals or the general population. As no diagnosis was obtained about the current sample, it could not be ascertained that the clinical presentation of the current sample was better characterized by mixed anxiety and depression states, thus only reporting feelings of helplessness but not necessarily hopelessness, which resulted in a lack of specificity in depression cognition. Overall, considering the possible salience of helplessness in the context of depression did present a direction for future research in improving the cognitive specificity model for both anxiety and depression, and in capturing the full spectrum of cognitions of depressed individuals.

Findings that Depression Cognition and Anxiety Cognition clustered together were not without merit. Such finding pointed out the possibly unique role of hopelessness in distinguishing depression from anxiety in the cognitive domain. The construct of hopelessness has been reliably measured among the Chinese individuals, using the translated Beck Hopelessness Scale which was modified for use among Chinese individuals residing in Chinese countries (Shek, 1993). Future study may need to incorporate the hopelessness aspect of cognitive content, in addition to the constructed measured by Cognition Checklist, when investigating the issue of cognitive specificity among the Chinese sample or the general population. Furthermore, cross-cultural studies of cognitive specificity were almost not extant. While the lack of specificity of anxiety cognitive measures has been identified among Caucasian samples (e.g., Beck & Perkins, 2001), the current study demonstrated a similar problem when the same measures were

used among the Chinese Canadian sample. Finding Depressive and Anxiety Cognition subscales loaded together consistently across samples provided empirical basis for further investigation of cognitive correlates of depressive and anxiety symptomatology cross-culturally.

Panic related cognition was assessed by Agoraphobic Cognition, which joined the other cognitive measures as part of the Cognitive factor among both samples. The current study used Agoraphobic Cognition measure in order to capture panic-related cognitions, but it failed to distinguish panic cognition from depressive and other anxiety cognitions. Such findings were in line with other studies finding that individuals with higher scores on panic cognitions reported higher scores on general measures of anxiety and depression (Chambless et al., 1984) and that panic cognition was moderately related to anxiety cognition (Woody et al., 1998). Furthermore, many individuals with panic disorders failed to report any cognition surrounding their anxiety states (Rachman et al., 1987), and anxiety states involved with physiological excesses such as autonomic hyperarousal symptoms may be relatively easier to detect (Dobson & Cheung, 1990). Furthermore, the separation of Autonomic Hyperarousal and Agoraphobic Cognition across both samples of the current study was consistent with our understanding about their weak relationship found in existing literature (Chambless et al., 1984; Clark et al., 1994; Jolly et al., 1994).

On the other hand, the cognitive specificity of panic cognition has been demonstrated through studies using methods of the criterion-related validity. For instance, panic cognition successfully discriminated between sample of panic disorder and of major depressive disorder (Woody et al., 1998) and between agoraphobic sample and normal sample (Chambless et al., 1984). Note that the former study also found that panic

cognition was moderately related to anxiety cognition, and the latter study found individuals with higher score on panic cognitions reported higher scores on general measures of anxiety and depression. As we have limited understanding about panic cognition, few findings were available to help fully portraying the nature of panic cognition. Based on previous research, panic cognition seemed to differ the most from depressive symptomatology, nor did it relate significantly with autonomic hyperarousal symptoms, but it distinctiveness from other anxiety cognition remained lacking. Consistent with this summarized notions of panic-related cognitions, the current study found across samples that panic cognition indeed separated from affective and somatic measures of depression, that it separated from autonomic hyperarousal symptoms, and that it was closely related to anxiety cognition. What current findings remained inconsistent with our current, despite scant, understanding about the panic cognition was its lack of distinction with depressive cognition.

One explanation for the lack of distinction between panic cognition and depressive cognition was related to the lack of specificity of depressive cognition, as discussed above. In other words, if the specificity of depressive cognition were found by the current study by separating itself from anxiety cognition and panic cognition, findings of the current study would have been even more consistent with the previous studies. Another possible explanation for the lack of distinction between panic cognition and depression cognition may relate to the measure of Agoraphobic Cognition. Studies examining the validity of this measure often found two factors, reflecting physical concern (e.g., "I will have a heart attack") and social/behavioural concern (e.g., "I am going to babble or talk funny"). Such two-factor structure has been validated across

samples (e.g., Arrindell, 1993; Stephenson et al., 1999). When using the factors instead of the overall measure, Chambless and Gracely (1989) found that panic-disordered and agoraphobic individuals scored higher than all other diagnostic groups on the factor reflecting physical concerns. However, the social/behavioural concern factor revealed no diagnostic group differences. Such findings suggested that physical concern was most discriminating than social/behavioural concern between sample characterized with panic cognition and sample not characterized with panic cognition, such as depression sample.

The current study found that several physical concern items were found culturally biased (e.g., "I must have a brain tumour"; "I am going to have a stroke") thus were not included in the final item pool of the Agoraphobic Cognition scale. As a result, only three out of a total of eight items reflected physical concerns. Having over sixty percent of the Agoraphobic Cognition scale items representing social/behavioural concern may contribute to the lack of specificity between this scale and Depressive Cognition scale. Thus, the lack of specificity of depressive cognition measure and lack of specificity of panic cognition may have collectively contributed to such findings.

If excluding physical concern items from Agoraphobic Cognition scale was indeed the reason for the lack of distinction between panic cognition from depressive cognition measure, future research needed to re-conceptualize the construct of panic cognition to prepare items that best capture this construct validly within the general population as well as among culturally diverse samples. Note that physical concern items may more likely be culturally biased, although not all physical concern items were problematic. Woody and his colleagues (1998), in their measure of panic cognition, included items addressing fears of being out of breath (e.g., "I am going to suffocate"; "I

am going to run out of air to breathe"; "I am going to choke to death"). Rather than assessing somatic symptoms of autonomic hyperarousal commonly associated with panic (e.g., short of breath), these items seemed to capture negative autonomic thoughts associated with autonomic hyperarousal symptoms of panic disorder. Note that "I will choke to death" item was found free of cultural bias thus retained as part of Agoraphobic Cognition scale of the current study. Overall, it is feasible to identify panic cognitions reflecting physical concerns and assess them adequately among culturally diverse samples, as illustrated by some panic cognition items retained in the current study and by the findings from Woody et al.'s study (1998). Future studies may improve the measurement of panic cognition by refining the assessment of physical concern, not necessarily in a form of fear of having a specific physical illness (as these items may more likely be culturally biased) but by focusing on other panic-related fears. Note that issues regarding physical complaints and somatization across cultural groups would be further discussed in later section of the Discussion section.

Rumination was the last cognitive measure whose structural feature was found similar among Chinese and Caucasian samples, by loading along with Somatic Tension and other cognitive measures to form a Cognitive factor for both samples. Rumination was defined as repetitive and recurrent self-focused thinking about failure and depressed mood, focusing on depressive symptoms or subjective distress (Nolen-Hoeksema, 1991). It has been proposed to be a persistent mental attempt at resolving unattained goals, which was initiated by an intrusive concern indicating a discrepancy between current state and ideal outcome (Martin & Tesser, 1996). Several Chinese interviewees reported ruminative thoughts as part of their depressive experiences. For instance, Carol talked

about thoughts of feeling regretful that mostly happened when she was depressed, due to her realization of the discrepancy between current state and the ideal outcome:

> *I hardly regret about anything. I often looked back and self-reflected, but I rarely regret about things. If I really felt regretful, then I knew it was really bad, very depressed, I really lost it if I regret. I found regret is like self-punishment.....To me, it is, because I hardly felt regretful. So if I am, then I am depressed..... I would naturally turn the things back to where it started, then thinking which part I can do better and then why it is like this now. This would get me even more agitated, because the outcomes were just so different, to do things that way, or the way things are, just so different. Then you became more depressed.*

When asking the causes of depression for others, several Chinese interviewees indicated the discrepancy between current state and the ideal outcome as one of the primary reasons. Emma described her ideas for what made other people depressed:

> *Reality kind of not match with their thoughts, cause things won't happen following a person's thought. I think that's why people are depressed because they cannot get what they want.*

Carol similarly considered such discrepancy as major causes for depression for others, in addition to her own depression (as quoted above):

> *It is because what you expect is too different from the reality. There is a difference. The bigger the difference is, the more severe your depression is. Then you would feel sad, down, depressed. I think it's the difference between the reality and the ideal..... Umm, there are other personal reasons that can be grouped into this, the differences between ideal and reality..... Like my friend, her father past away in*

his early 50s, which is something you did not expect. Very depressed, for a long time.

Rumination was originally conceptualized by the current study as a shared cognitive aspect between anxiety and depression, and the results regarding this variable did find that it loaded with measures of both anxiety and depressive cognitions. However, it did not load on the same factor where measures of negative affectivity belonged across both samples. In other words, as a common cognitive aspect shared by anxiety and depression, it should have loaded with other affective measures that similarly assessed the common and shared aspect. It should have functioned similarly to the variable of Worry, which loaded on the Mixed factor among the Caucasian sample, along with the measures of negative affectivity. Instead, it separated from Worry and loaded with other cognitive measures among both samples.

Previous studies often found worry and rumination strongly correlated with each other and with measures of depression and anxiety (Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Segerstrom, Tsao, Alden, & Craske, 2000), although these two constructs showed different structural features, suggesting their distinctiveness as individual constructs. For instance, Fresco and his colleagues (2002) factor-analyzed items from worry and rumination scales, revealing four factors with two worry and two rumination factors. Note that these four factor scores were highly correlated with one another, and worry and rumination factors demonstrated equally strong relationships to both anxiety and depression. Very few recent studies have specifically examined their relative contribution to anxiety and depression. For instance, Muris, Roelofs, Meesters, and Boomsma (2004) found that, while both worry and rumination strongly correlated

with one another and strongly related to both anxiety and depression, rumination was no longer an important predictor for depression when worry was in the regression analyses. Worry remained to be an important predictor for both depression and anxiety after controlling for rumination. When controlling for the comorbid relation between anxiety and depression by holding depression constant, rumination remained significantly correlated with anxiety. In other words, rumination was no longer related to depression when worry has been simultaneously considered. What rumination related the most clearly was anxiety, after controlling for depression. Worry on the other hand was a strong predictor for both anxiety and depression. Worry's contribution to both anxiety and depression, after controlling for rumination, was also found in the study of Hong (2007).

Although most researchers have exclusively related rumination to depression and worry to anxiety, there is no clear empirical evidence to support such exclusive and unique relation between these constructs (Muris, Roelofs, Rassin, Franken, & Mayer, 2005). Studies have often found that worry occurred in depression (Starcevic, 1995) and that rumination involved in the promotion of anxiety (Blagden & Craske, 1996). As examining both worry and rumination in the context of depression and anxiety has been attempted by very few recent empirical studies, the findings by Muris and his colleagues (2004), as described above, were helpful to understand current study's findings in rumination's separation from measures of depression and negative affectivity and its separation from worry among the Caucasian sample. Although rumination and worry were both hypothesized to relate the most to the common component shared by anxiety and depression (i.e., measures of negative affectivity), Worry was found to be more

closely related to the shared element of anxiety and depression than rumination among the Caucasian sample, as its significant relation to both anxiety and depression has been demonstrated by previous studies (Muris et al., 2004; Hong, 2007). In addition, the current study found rumination did not load with measures of depression when worry was simultaneously considered and when Worry loaded with measures of depression among the Caucasian sample. Muris et al.'s study (2004) did find that when worry was in the picture, rumination's relation with depression was weakened. As more anxiety cognitive measures than depressive cognition were included as parts of the Cognitive factor, it was not too surprising that Rumination loaded with the Cognitive factor than with the Mixed factor where Worry belonged.

As very few studies began to examine both worry and rumination which had been traditionally studied within their origin of theories in anxiety and depression, respectively, these interpretations offered by the current study were only preliminary. Nevertheless, such interpretations pointed to several potential areas for future research, including worry as an important role relating to the comorbidity between anxiety and depression, and rumination's unique contribution to anxiety (after its relation with worry and with depression has been taken into consideration). What remained to be further discussed regarding rumination and worry was the differences of symptom structures in worry between Chinese and Caucasian samples in the current study. When rumination's weakened relation with depression and its stronger relation with anxiety cognitive measures could be understood among the Caucasian sample, Worry's separation from measures of depression and negative affectivity among the Chinese sample needed to be further explored, especially when worry's strong relation with measures of negative

affectivity was found among the Caucasian sample. These discussions were in the following section which addressed symptom structural differences between Chinese and Caucasian samples.

Differences in Symptom Structure between Chinese and Caucasian Samples

Main differences found in symptom structures between Chinese and Caucasian samples concerned two variables: Worry and Autonomic Hyperarousal. Worry separated itself from Somatic Tension and other cognitive measures (including rumination), and joined the affective and somatic measures of depression and measures of negative affectivity as part of the Mixed factor among the Caucasian sample. Among the Chinese sample, Worry loaded along with Somatic Tension and other cognitive measures including Rumination to form a Cognitive factor. Note that Worry did not load substantially on the Cognitive factor among the Caucasian sample. Furthermore, Autonomic Hyperarousal loaded along with measures of negative affectivity and depression among the Chinese sample, whereas it formed a stand alone factor among the Caucasian sample. Note that Autonomic Hyperarousal did not load substantially on the Mixed and Cognitive factors among the Caucasian sample.

Worry was thought of a form of recurrent negative thinking, characteristic of Generalized Anxiety Disorder (GAD; American Psychiatric Disorder, 2000). It generally referred to a connected series of negative thoughts and images which represented an attempt to solve a problem whose outcome was uncertain and potentially negative. Worry has often been theoretically linked to anxiety, and can be described as a cognitive response to anxiety and an attempt to problem-solve a perceived threat (Borkovec et al., 1998). However, empirical evidence was inconsistent as to the specificity of worry in

relation to anxiety. Some studies found that it was closely related to affective and cognitive measures of anxiety (Beck et al., 2001); other studies revealed its close relation with affective and cognitive measures of depression (Woody et al., 1998). A few studies found it related to both anxiety and depression (Hong, 2007; Watkins, 2004). Very few recent studies, as reviewed before, found Worry's additionally stronger contribution to both anxiety and depression after controlling for other cognitive correlates of depression and anxiety (Muris et al., 2004).

Recent studies have examined cognitive specificity hypothesis in the context of the original tripartite model, in order to understand the comorbid relation between anxiety and depression (Clark et al., 1994; Jolly et al., 1994). What cognitive specificity hypothesis differed the most from the original tripartite model was that the former had two sets of cognition as depression- and anxiety-cognition, without an additional set of cognitions that were proposed to be shared by depression and anxiety. Other researchers (e.g., Jolly & Dykman, 1994) have suggested the need to identify the nature of the shared cognition, but little consensus emerged regarding the nature of this shared element. Due to amounting evidence documenting the relation between anxiety and depression with worry, as well as the theoretical consideration regarding the possible shared role worry can be in relating to both clinical syndromes, the current study proposed that worry and rumination represented the sets of cognition shared by anxiety and depression.

Among the Caucasian sample, some aspects of the current findings concerning worry were as expected and in line with previous research. Specifically, worry joined the three measures assessing negative affectivity and measures of depression to form a Mixed symptom factor, demonstrating its close relation with measures of depression and

negative affectivity, and highlighting its role as a shared component between anxiety and depression. When other cognitive measures were included, Worry showed a closer relation with measures of depression and negative affectivity than with these cognitive measures. This finding was similar to what Beck and his colleagues found (2001), in which Worry (assessed by Penn State Worry Questionnaire as the current study has done) was more closely related to measures of negative affectivity than to measures of depression or anxiety cognitions (which were also measured by Cognition Checklists as the current study). Worry's close relation to the shared component between anxiety and depression was similarly found in Muris et al.' study (2004) where Worry remained significantly related to both anxiety and depression after controlling for other cognitive correlates (i.e., rumination). Furthermore, worry has been conceptualized to function as an avoidance to suppress autonomic hyperarousal among individuals with GAD in order to decrease the level of arousal and anxiety experienced (Borkovec et al., 1993; Brown et al., 1998). By worrying, individuals successfully avoided aversive images, which interfered with processing negative emotions. Consistent with this line of conceptualizing worry, the current study found that Worry separated itself from variable of Autonomic Hyperarousal across both samples.

On the other hand, what was unexpected in current study's findings was that Worry separated from Rumination among the Caucasian sample when both were originally hypothesized to be the common cognition shared by anxiety and depression, and that both Worry and Rumination loaded with cognitive measures of anxiety and depression among the Chinese sample, rather than with the measures of negative affectivity. Preliminary explanations for the separation between Rumination and Worry,

and for Rumination's separation from measures of depression among the Caucasian sample had been offered in the previous section of the Discussion. Those explanations may similarly shed light on Rumination not loading with measures of depression and negative affectivity among the Chinese sample. However, those explanations were limited in understanding Worry's separation from measures of depression and negative affectivity, and its joining the cognitive measures of anxiety and depression among the Chinese sample.

Worry among the Chinese sample demonstrated quite different structural features than did Worry among the Caucasian sample. Few aspects of the current findings among the Chinese sample were not unexpected. Worry separated itself from the Autonomic Hyperarousal variable, which was in line with the conception of Worry's avoidance function to suppress the level of arousal and anxiety experienced (Borkovec et al., 1993). What was unexpected about the findings concerning Worry among the Chinese sample was that it was more closely related to other cognitive measures of anxiety and depression than to measures of depression and negative affectivity. Based on our understanding from Western psychology research about the cognition shared by anxiety and depression, Worry should have shown a closer relation with measures of negative affectivity than what the current study had found. Worry did show a closer relation with measures of negative affectivity than with cognitive measures among the Caucasian sample, but not among the Chinese sample. Two explanations were likely; one was related to the conception of worry from a Chinese psychiatric perspective, and another was related to the variable of autonomic hyperarousal.

Worry, which was translated into Mandarin Chinese as "Fan Nao." Fan Nao has

been described as a primary complaint of neurasthenia, distinct from affective disturbances that were often thought to characterize depression and anxiety (Liu, 1989). According to Chinese Classification of Mental Disorder, second edition, revised (CMA & NMU, 1995), neurasthenia was subsumed under the "neurotic disorder", along with GAD, phobia, panic disorder, neuroses of hysterical, hypochondriacal, depressive, and other neuroses. Note that the third edition of CCMD no longer put depression or its equivalent under "neurotic disorder" but listed it under "depressive disorder", although its revised second edition remained widely used among Chinese mental health field. One of the five diagnostic symptom groups for neurasthenia was excitement symptoms, as manifested in uncontrollable increase of recollections and thoughts associations, accompanied by unpleasant feelings but not with increased psychomotor activities. Such description of excitement symptoms that were not manic in a literary sense was close to the conception of worry from Western psychology perspective. Note that the applicability of neurasthenia diagnosis among the Chinese sample would be further discussed in later parts of this section.

From a Chinese psychiatric conception of worry in the context of anxiety and depression, it was not unforeseeable that worry separated from affective measures capturing negative affectivity and depression. That is, due to a likely greater distinction between worry and affective symptoms of anxiety and depression among the Chinese sample (based on our understanding about how worry was conceptualized from a Chinese psychiatric perspective), as well as due to a possibly smaller distinction between worry and affective symptoms of anxiety and depression among the Caucasian sample (based on how worry was viewed as a shared element between anxiety and depression, and

based on the empirical evidence documenting the strong relation between worry and negative affectivity), it should not be completely surprising that worry loaded with measures of negative affectivity among the Caucasian sample but separated from those measures among the Chinese sample.

Another factor that contributed to the cross-sample structural differences in worry was the variable of Autonomic Hyperarousal. It was loaded along with affective and somatic measures of depression and measures of negative affectivity among the Chinese sample, whereas it formed a stand-alone factor among the Caucasian sample. As reviewed above, worry was hypothesized to suppress autonomic hyperarousal to decrease the level of anxiety experienced by individuals (e.g., Borkovec et al., 1993). Thus, Autonomic Hyperarousal and Worry may not be compatible with one another as one suppressed the other, which was illustrated in the current study by the separation of these two variables that was found consistently across samples. Among the Chinese sample, when Autonomic Hyperarousal loaded with measure of depression and negative affectivity, Worry would not be part of this factor. When Worry was part of the Cognitive factor among the Chinese sample, Autonomic Hyperarousal would then belong to another factor. Similarly, among the Caucasian sample, when Worry loaded with measures of depression and negative affectivity, Autonomic Hyperarousal would not be part of this Mixed factor.

The above interpretation was methodologically worthwhile to be mentioned here. When symptomatology was not comprehensively assessed in studies examining symptom structure, the resultant findings may not fully reflect the true inter-relation among different aspects of symptoms, because symptoms did influence one another to formulate

a final symptom structure that best described the phenomena for the sample under examination. Although including every aspect of depressive and anxiety symptomatology may not be feasible, it was important to capture the primary domains of the symptomatology, including affective, cognitive, and somatic domains when studies attempted to understand the structural relation among symptoms. As illustrated earlier, when only selected aspects of depressive and anxiety symptomatology were included (i.e., three measures of negative affectivity, and measures of autonomic hyperarousal and positive affect according to the original tripartite model), specifying extracting three factors led to the structure that was identical to the original tripartite model. However, when a greater coverage of symptoms was introduced, a different symptom structure was revealed among the Chinese as well as the Caucasian samples. Such findings would not have been revealed if only selected aspects of symptomatology were included.

One last piece of discussion was noted here regarding the measure for Worry. This scale originally had 16 items, containing five reverse coded items (e.g., "I do not tend to worry about things"). During the Rasch model fitting process, all of these five reverse items were considered misfit therefore deleted from the final item pool of Worry scale. Reverse coded items have been suggested to be incompatible with the rest of the items among the same scale, thus resulting in impaired reliability and validity of the measurement (Samuelstuem, 2003; Schriesheim et al., 1991). Fresco and his colleagues (2002) found that this Worry measure demonstrated slightly better reliability when not including the five reverse coded items, and that these five items formed a stand-alone factor reflecting absence of worry. Furthermore, the scale without these five reverse coded items related stronger with measures of depression and anxiety than the absence of

worry factor. Brown (2003) specifically examined the method effects due to item reversal among Penn State Worry Questionnaires (i.e., PSWQ) through confirmatory factor analyses with the techniques of structural equation modelling. A single substantially meaningful construct was found to underlie the responses of PSWQ, without including the reverse coded items. Haziett-Stevens, Ullman, and Craske (2004) found a two-factor model, including reverse coded items, did not predict a diagnosis of Generalized Anxiety Disorder. As discussed earlier regarding using item reversal in the context of Low Positive Affect scale versus Positive Affect (reverse coded) scale, the fact that five reverse coded items of the Worry measure were considered misfit further documented the problems associated with reverse coding method.

Another major difference in symptom structures found between the Chinese and Caucasian samples concerned the variable of Autonomic Hyperarousal. This variable formed a stand-alone factor among the Caucasian sample. Forming a stand-alone factor, with low cross-loadings on other two factors and non-significant cross-factor correlations, suggested the uniqueness of this factor among the Caucasian sample. On the other hand, among the Chinese sample it was part of the Affective-Somatic factor which included three measure of negative affectivity, and affective and somatic measures of depression.

Some aspects of findings pertaining to the Autonomic Hyperarousal variable among the Caucasian sample were consistent with our understanding about somatic symptoms of panic. For instance, in previous studies examining the symptom structures in relation to the original tripartite model, items assessing autonomic hyperarousal did form a stand-alone factor, separating from items of negative affectivity and low positive affect (Clark et al., 1994), thus representing an anxiety specific factor. In the descriptive

rating data, the two clinical syndromes of depression and anxiety that were most clearly differentiated were between panic disorder and endogenous depression (see review by Mineka et al., 1998), with one of the defining features for the former is panic attacks and autonomic symptoms, and for the latter is loss of interests and psychomotor retardation. The current study found the autonomic hyperarousal variable was a specific factor that represented somatic symptoms of panic among the Caucasian sample. Its separating from factor characterized by measures of negative affectivity was consistent with the original tripartite model by Watson and Clark (1991). Its separation from measures of depression was in line with the distinction between panic disorder and endogenous depression in descriptive rating data. Furthermore, the literature examining the role of worry as a functional mechanism suppressing autonomic hyperarousal symptoms of anxiety (Borkovec et al., 1993) was in line with the current study's finding that Autonomic Hyperarousal separated from Worry.

Few aspects of the symptom structures of the Chinese sample were consistent with our understanding about autonomic hyperarousal. As described above, worry and autonomic hyperarousal may be in compatible with one another, as found in the current study when these two variables loaded in separate factors across samples. Furthermore, some studies (see review by Mineka et al., 1998) found a close relation between measures of negative affectivity and autonomic hyperarousal, which was taken to indicate the less satisfactory performance of autonomic hyperarousal variable as it failed to demonstrate its uniqueness as an anxiety specific factor. Although Autonomic Hyperarousal failed to become an anxiety specific component among the Chinese sample, its closer relation with measure of negative affectivity was consistent with these particular studies. Nevertheless,

the fact that autonomic hyperarousal loaded with affective and somatic measures of depression to form an Affective-Somatic factor among the Chinese sample was unexpected, in contrast to our understanding about the distinction between panic disorder and endogenous depression.

The salience of autonomic hyperaousal symptoms in the context of depressive symptomatology was reported by several Chinese interviewees. Frank described symptoms of autonomic hyperarousal as part of his depression, such as heart pounding, which in his experience lasted for a relatively longer period of time:

> *Feel sad, you feel pressured. Physically you can actually feel it, not just mentally. You can't breathe, stuff like that, for days or so, you can't breathe. Heart pounding.....I felt helpless, I don't know what to do, I felt bad. How can I help it? Like I go to a speech or something..... Crying. It's the first one (symptom). Sometimes you can just be in silence. I can cry sometimes. That only lasts about one or two days. Then it's silence silence. You just sit there and do nothing. That's kind of fades away after a couple of weeks too. But there is still some bad feelings inside, after a long period of time. After a while you don't feel the physical problems anymore, like heart pounding, because they gradually become like gone.*

Anna nominated discomfort in her chest or heart, when being asked about if she had experienced physical symptoms as part of her depression:

> *Sometimes when I'm really sad or something doesn't go very right, not just going right, I just feel horrible, like my chest starts really hurting, like my heart is hurting.*

Carol similarly nominated several symptoms of autonomic hyperarousal in nature, such as sweating and difficulty in breathing, in her depression:

> *It's like something suddenly come, then you heart just like dropped.....I would sweat a lot, feeling very anxious, after being in extreme anxiety for a long time, after a couple of hours, then you relax or stop, you would just feel numb..... Sometimes you just felt so tight and pressured, out of breath, even to the point that you have a hard time even breathing..... You feel very much pressured on chest, when you think about that. You then would want to put down whatever you are doing at that point and go out for a walk, to relax or talk to someone. For me, I had to go out. Otherwise, I would feel trapped and tight. I need to go out for a walk, not liking feeing pressured on my chest.*

One possible explanation for the closer relation between Autonomic Hyperarousal and measures of depression among the Chinese sample was likely related to the presence of somatization. Note that the current study considered reporting somatic symptoms in the context of describing psychological distress as indicators for the presence of somatization. Thus, somatization was not defined from a traditionally psycho-analytical perspective which viewed reporting somatic symptoms as a replacement for reporting emotional symptoms. As hypothesized, when individuals with Chinese origin expressed their depression using somatic in addition to affective terms, their overall presentation would be a mixture of anxiety and depressive symptoms as the distinction between anxiety and depression specific components would become less distinct. The current study's hypothesis regarding the lesser distinction between anxiety and depression due to the presence of somatization was at least partially supported among the Chinese sample.

Autonomic Hyperarousal assessed the somatic aspect of panic as parts of anxiety symptomatology, whereas Loss of Interests and Psychomotor Retardation assessed the somatic aspect of depression. With the exception of the Somatic Tension which loaded on the Cognitive factor across samples, three out of four somatic measures that were included by the current study loaded together among the Chinese sample. As a result, the first factor among the Chinese sample was named as "Affective-Somatic" factor that included three somatic aspects and four affective aspects of depressive and anxiety symptomatology. On the other hand, the somatic measures among the Caucasian showed a varied relation with one another: Somatic Tension was part of the Cognitive factor; Autonomic Hyperarousal formed a stand-alone factor separating from the rest of the symptoms; Loss of Interests and Psychomotor Retardation loaded along with Worry a cognitive measure, affective measure of depression, and measures of negative affectivity to form a "Mixed" factor among the Caucasian sample. Overall, both samples were found to report somatic and affective symptoms as part of their anxiety and depressive symptomatology. The presence of somatization was more evident among the Chinese sample as their somatic symptoms were integrated with affective symptoms at a greater extent (while the somatic symptom reporting among the Caucasian sample was relatively scattered and separated from reporting affective symptoms).

Another evidence of somatization can be gathered from the nature of culturally biased items. Several somatic items that were found culturally biased were more likely endorsed by the Chinese sample than by the Caucasian sample, including items like "I am going to have a stroke,", "had diarrhoea,", "I must have a brain tumour,", "had a very dry mouth,", and "I have trouble with constipation." These items came from different

measures, so their being culturally biased was unlikely due to a specific measure that might be problematic. Furthermore, these items were found culturally biased not due to the nature of the underlying trait that they were intended to measure. When identifying culturally biased items using item response theory-based techniques, the participants' characteristics were analyzed separately from items' performance, therefore the presence of these culturally biased items were not related to the level of underlying trait that was assessed by a particular measure. For example, the fact that the item "I must have a brain tumour" was found culturally biased was independent of the underlying trait of "agoraphobic cognition" that was assessed by the Agoraphobic Cognition scale (where this item originally came from). This item was more likely to be endorsed by the Chinese participants than by the Caucasian sample simply because they were two different cultural groups.

Relating the possibly stronger presence of somatization among the Chinese sample back to the discussion concerning Autonomic Hyperarousal, such presence may facilitate Autonomic Hyperarousal's loading unto the Affective-Somatic factor among the Chinese sample. The original tripartite model treated autonomic hyperarousal as anxiety specific component, separating from the depression specific component and from negative affectivity component shared by anxiety and depression. When autonomic hyperarousal became part of the depressive symptomatology due to the presence of somatization, its distinction with depression became less clear, which was what the current study had found among the Chinese sample.

Note that somatization could only be considered partially, rather than firmly and solely, present among the Chinese sample. Specifically, not all somatic items were found

culturally biased and many somatic items were found to be equally likely reported by the Chinese sample as well as by the Caucasian sample. The presence of somatization was not restricted to the Chinese sample. For instance, not all culturally biased items that were somatic in nature were all more likely endorsed by the Chinese than by the Caucasian sample; the items "Had an upset stomach" and "Butterflies in stomach" were more likely to be endorsed by the Caucasian participants than by the Chinese ones. In addition, the Mixed factor among the Caucasian sample included affective, cognitive, as well as somatic measures, suggesting reporting somatic symptom to be an integral part of emotional experiences among the Caucasian sample

Similar conclusion regarding the possibly presence of somatization among the Chinese sample could be found among the reports of Chinese interviewees. When asked to describe their experiences of depression, not all interviewees reported somatic symptoms. Among those who did report somatic symptoms, not every one of them nominated these symptoms first as parts of their depressive experiences. Some reported having somatic symptoms only when being specifically asked about.

As tentatively concluded earlier, the presence of somatization was stronger among the Chinese sample, but both samples demonstrated features of somatization. Finding that Caucasian sample reported somatic symptoms as part of their symptomatology was meaningful in two ways. First, Western biomedicine subscribes to the Cartesian separation of mind and body (Kleinman & Good, 1985). Therefore, Western psychology discouraged somatic expression of psychiatric disturbances and individuals suffering from such disturbances were expected to distinguish reporting psychological from somatic complaints. The current study provided some empirical evidence documenting

somatic symptoms as part of an individual's emotional experiences, which may help drawing clinicians' attention to both somatic as well as affective symptoms, despite that their practices may be heavily influenced by the Cartesian philosophy.

Second, the presence of somatization among the Caucasian sample was consistent with other studies. For instance, Parker and his colleagues (2001) investigated the somatization hypothesis among both Chinese Australian and Caucasian Australian samples. They found both samples reporting a high rate of somatic symptoms, despite that the somatization was more evident in their Chinese sample (e.g., the Chinese sample was distinctly more likely to nominate somatic symptoms as their presenting complaints; the Chinese sample scored somewhat higher on somatic set of items). If the current study had only found the presence of somatization among the Chinese sample, the discussion might have been more on the Chinese cultural influences to the tendency of somatization. The conclusion might have focused on the somatization tendency among the Chinese sample, as if this tendency were only specific to the Chinese group. Instead, the current study found, similar to Parker and his colleagues' study (2001), both Chinese and Caucasian samples showed features of somatization, despite that such tendency was stronger among the Chinese sample. Rather than assigning the somatization tendency to one cultural group and ignoring its presence in another group in a dichotomous fashion, a better conclusion about current study's findings should recognize the similarities in the presence of somatization between groups, as well as identifying the between-group differences where evidence for somatization was strong among the Chinese sample. While acknowledging the presence of somatization among both samples, it would then be meaningful to contemplate the cultural factors that may prompt the Chinese to be "more"

somatizing than the Caucasian sample.

The significance of somatization in Chinese mental health has often been discussed in the context of using alternative diagnoses, that is, neurasthenia (literarily translated as "nerve weakness and exhaustion", or translated in Mandarin Chinese as "shenjing shuairuo", i.e., SJSR). This diagnosis, as detailed reviewed in the Introduction section, has a long history in itself with a diverse symptomatology, including affective, cognitive, and somatic symptoms. It existed in current diagnostic systems, including ICD-10 (World Health Organization, 1992), and CCMD-2-R (Chinese Medical Association and Nanjing Medical University, 1995). It was included in DSM-II as a subtype of neuroses but dropped out from DSM-III and subsequent editions of DSM. Its diagnostic criteria in ICD overlapped substantially, but not completely with those in the CCMD-2-R, with the two most differing aspects in that ICD-10 picked out fatigue or weaknesses as the dominant feature in neurasthenia from a hierarchical perspective whereas no such consideration was made in the CCMD-2-R. As a result, the ICD-10's neurasthenia resulted in a similar clinical presentation (not to CCMD-2-R's neurasthenia) to chronic fatigue syndrome, which has stimulated discussions about the utility of neurasthenia and chronic fatigue syndrome in recent Western psychiatric research.

Neurasthenia, in the current study, was understood based on CCMD-2-R's conception, which included five diagnostic symptom groups containing affective, cognitive, and somatic symptoms. Group 4 (nervous pain) and group 5 (sleep disturbances) were primarily somatic in nature; Group 2 (weakness or fatigue) included some somatic symptoms, such as feeling slow down or effortful, as well as cognitive symptoms, such as memory or concentration problems. Group 1 (emotional disturbances)

and Group 3 (excitement) were primarily non-somatic. These groups are non-hierarchical, and depressive and anxiety disorders are exclusion criteria for making the diagnosis of neurasthenia according to the CCMD-2-R. Relating neurasthenia's diagnostic criteria back to the current study, after the presence of somatization among the Chinese sample has been identified, the utility of the neurasthenia as an alternative diagnosis would need to be discussed.

One commonly mentioned utility of neurasthenia diagnosis in previous studies was to help establishing rapport between clinician and clients. Neurasthenia was imported to China in the early 1900s from the Westerners. Although this diagnosis ceased to be popular among American and British medical professionals by 1960s, it was retained among the Chinese societies due to its non-stigmatizing nature as it was different from psychiatric labels of insanity such as "affective psychosis" or "schizophrenia" (Lee & Wong, 1992). Especially prior to 1980s, the prevalence rates of neurasthenia in China were reported to range from 6% in community epidemiological studies and up to 80% in psychiatric outpatients (Lee, 1994), although its popularity among the medical professionals has decreased in recent years. Rin and Huang (1989) found that, in a survey of four psychiatric clinics in Taiwan, one-third of the neuro-psychiatrists and 40% of general physicians reported using this term in their practice for rapport building, whereas very few used it as a formal diagnosis.

The current study found that the label of "neurasthenia" may not be as applicable or user-friendly as originally thought for rapport building between clinicians and clients. Across all Chinese interviewees in the current study, when asking any terms they used to describe their depressive experiences, all of them first nominated terms characterized

with affects, including "*Like down, blue, sad, out of it. Stuff like that. Depression is pretty specific as I could be feeling, I would not use any other term. It's a good term*" by Barbara, or "*Mainly just sad, miserable is one term. I probably wouldn't use those words cause I am always be taught with depression, so just depression or depressed*" by George. When being asked if they have heard or used any alternative terms that also referred to depression in English or Chinese, none of them reported using other terms nor using the term of neurasthenia. A few interviewees provided terms using Mandarin Chinese, such as "*wu-zhu*" (translated as "helpless" in English) by Frank, or "*gu-dan*" (translated as "isolated" in English) by Donna, or "*ju-sang*" (translated as "down-spirited" in English) by Carol. Emma actually specifically said, "*you-yu-zheng*", translated into English as "depressive disorder." These interview findings suggested that this diagnosis may not be very beneficial for rapport building, at least for the current sample.

Another potential utility of this diagnosis was to evaluate if any of the five diagnostic groups of neurasthenia shed light on current Western psychiatric nosology. The Group 3 (excitement) diagnostic criteria of neurasthenia referred to individuals' being easily excited by work, study, or activities which was manifested in having thoughts or recollections that were experienced as uncontrollable and often as unpleasant or even painful. The cognitive nature of the manifested symptoms this group described, especially the uncontrollable thoughts, was very similar to how worry or rumination was conceptualized in the Western psychology. Worry, translated into Mandarin Chinese as "Fan Nao", has been described as a primary complaint of neurasthenia, distinct from affective disturbances that were traditionally thought to characterize depression and anxiety (Liu, 1989). Thus, one potential utility of the Group 3 (excitement) diagnostic

criteria was to establish the link between Fan Nao in Chinese psychiatry and Worry in Western psychiatry. A solid link between these two constructs would facilitate cross-cultural investigation of the role of worry in anxiety and depressive symptomatogy.

The other individual diagnostic group worthy of attention was Group 4 (nervous pain). Note that Worry and Somatic Tension loaded together among the Chinese sample, establishing the presence of GAD among this ethnic group according to how Western psychiatry conceptualized the core features of GAD. Interestingly, symptoms of Somatic Tension resembled the symptoms described by Group 4 (nervous pain) for diagnosing neurasthenia according to CCMD-2-R's criteria. Group 4, nervous pain, included symptoms of muscle tension, myalgia (e.g., neck or back muscle pain), or headache (e.g., head feeling swollen or tight). These symptoms were well captured by the current study's Somatic Tension scale, with items such as "shoulder muscle tense", "neck tense", "back muscle tense", and "pain in stomach." Future studies should investigate the nature of nervous pain diagnostic symptom group, and compare it with the construct of Somatic Tension that was associated with depressive and anxiety symptomatology. If these two constructs does resemble each other, and, in addition, if worry resembles the excitement symptom group of the neurasthenia, they together would make a good case for a diagnosis of GAD. Although the above assumptions were hypothetical, such consideration did point out a specific clinical utility of neurasthenia with its diagnostic groups of nervous pain and excitement, which would facilitate the communication between Chinese neurasthenic researchers and Western GAD researchers.

Another individual diagnostic group of CCMD-2-R's neurasthenia outlining a potential utility of neurasthenia concerned its Group 5 diagnostic criteria, sleep difficulty.

Insomnia has been found as the core symptoms of neurasthenia among neurasthenic clients in Hong Kong (Lee, 1996). Sleep disturbances included difficulty falling asleep (considered as the most essential one), sleeping too lightly, being easily awakened, difficulty getting back to sleep after waking up, and unsettling dreams (Liu, 1989). Sleep difficulty (e.g., difficulty falling or staying asleep, or sleeping more than usual) has been included as part of the Major Depressive Disorder diagnostic criteria in DSM-IV (APA, 2000). The current study found that items assessing sleep difficulties either formed a unique factor separating from the rest of the items assessing depression (i.e., three items from Psychomotor Retardation scale, "I have trouble sleeping at night", "I have trouble falling asleep", and "I have trouble staying asleep and restless sleep"), or such sleep-difficulty item was found to be culturally biased (i.e., "Had trouble falling asleep" item from General Distress-Mixed Symptom scale). These items, as a result, were dropped from final analyses. Only two sleep items were retained (i.e., "had trouble staying asleep" and a reverse coded item "slept very well") as part of the General Distress-Mixed symptom. Therefore, it is very likely that sleep difficulties may reflect a relatively independent (yet still related) aspect of depressive and anxiety symptomatology. This observation was in line with how neurasthenia was conceptualized in the CCMD-2-R system when sleep difficulties constituted one of the five diagnostic groups for neurasthenia. Future studies may need to particularly investigate the salience of sleep difficulties and their diagnostic utility for depression among both Chinese as well as general population.

The salience of sleep difficulties in the context of depression was found among several Chinese interviewees with experiences of depression. Several interviewees

reported having sleep related difficulties, such as Donna reported troubles in falling asleep and waking up frequently during the night (see her quotes in earlier section). In particular, Frank noted sleep difficulties as the first sign of his depression, which he specifically said was not related to jet lag as his past depression often occurred after he returned to Canada from visiting his family and friends in China:

> *Can't sleep. Really painful sometimes. Mentally painful. Just can't sleep for whatever reasons. Just homesick sometimes, one night or two nights just can't sleep. Just really bad experience. At first I went back to visit my parents and come back. For the first couple of nights, I always can't sleep.*

Closer examination of the neurasthenia's five symptom groups found that many of these symptoms were not novel. Therefore, the last clinical utility of the neurasthenia may relate to the comprehensiveness in its diagnostic symptoms groups. The Affective-Somatic factor among the Chinese sample included affective measures of negative affectivity, affective and somatic measures of depression, and somatic measure of anxiety. Similarly, the five diagnostic groups of neurasthenia include affective, cognitive, and somatic symptoms, with no hierarchical rule being applied to and with depression and anxiety disorder as the exclusion criteria for diagnosing neurasthenia. Therefore, individuals that did not qualify for a formal diagnosis of Major Depressive Disorder or any anxiety disorder, and that presented affective, cognitive, and somatic features of depression and anxiety could be considered for the diagnosis of neurasthenia. In this context, the clinical utility of neurasthenia was to capture these individuals specifically, rather than as a "residual" category of depression or anxiety. As such, the utility of neurasthenia would resemble the one for the diagnosis of "mixed anxiety depressive

disorder" which has not been included as a formal diagnosis in the DSM system. As Lee (1996) elegantly argued, diagnosing Chinese neurasthenic clients with "mixed anxiety depressive disorder" did not seem appropriate, when anxiety and depression has been the exclusion criteria. Nevertheless, it is undeniable that many individuals with anxiety or depressive symptoms did not meet the current definitional thresholds for DSM's anxiety or depressive disorders, that many of them reported somatic in addition to affective disturbances, and that many showed substantial impairment.

In an attempt to reliably assess such condition, Zinbarg and his colleagues (1994) conducted a field trial for mixed anxiety-depression category for DSM's future consideration of including this category as a formal diagnosis. They have found a substantial number of individuals presenting with sub-definitional threshold symptoms, which was at least as common as individuals with several of the DSM-III-R anxiety and depressive disorders. The criteria they used to identify these individuals included affective (e.g., "easily moved to tears", "feelings of worthlessness"), cognitive (e.g., "hopelessness"; "anticipating the worst"; "worry"), and somatic aspects of symptomatology (e.g., "sleep disturbances", "hyper-vigilance", "fatigue"). Such comprehensive symptom coverage, similar to what the current study has found with regards to the Affective-Somatic factor among the Chinese and the Mixed Symptom factor among the Caucasian, as well as in line with CCMD-2-R's neurasthenia five diagnostic groups, demonstrated a unique clinical utility in capturing the sub-threshold condition. Note that the current study was not to conclude that neurasthenia and mixed anxiety-depression category represented the same clinical condition. What the current study suggested instead was to ask for future studies to examine to what extent these two

were similar or dissimilar, and for future studies using a wider coverage of symptoms to evaluate their equivalence, rather than primarily focusing on the significance of affect-based clinical presentation. This suggestion of the current study was based on the integrative nature of symptom expression across both Chinese and Caucasian samples, illustrated by the features of the factors found among both samples.

Lee (1996) commented one task that was faced by contemporary Chinese psychiatry and psychopathology researchers. That is, to seek to conform with international classification on the one hand, and to sustain a nosology with Chinese cultural characteristics at the other hand. Neurasthenia was one of the very few diagnostic labels that made it particularly hard to accomplish this task. Some Chinese scholars indeed predicted that this diagnosis would be transformed completely and then disappear (e.g., Rin & Huang, 1989), while researchers still found its utility in clinical or research setting (e.g., Liu, 1989). Other researchers empirically demonstrated its unique clinical utility that was beyond what current ICD or DSM nosology could offer in primary care setting especially in rural areas of China (Chang, Myers, Yeung, Zhang, Zhao, & Yu, 2005). The current study did not find sufficient amount of evidence to firmly support or dispute the utility for the neurasthenia diagnosis as a whole, especially because the current study primarily concerned symptomatoloy of depression and anxiety at a syndromal level rather than at a disorder level. On the other hand, the current study's findings did support the utility of several individual diagnostic groups of the neurasthenia (e.g., Group 3 excitement; Group 4 nervous pain; Group 5 sleep difficulties), as well as combination of individual diagnostic groups (e.g., Group 3 excitement and Group 4 nervous pain). The holistic perspective revealed by neurasthenia's diagnostic criteria,

including affective, cognitive, and somatic symptoms, was proven to be an important reminder for psychiatric practitioners and researchers to comprehensively understand psychiatric symptomatology.

Cultural Experiences and Symptomatology of Anxiety and Depression

In addition to examine the symptom structure across Chinese and Caucasian samples, the current study attempted to evaluate the relation between the resultant symptom structures and individuals' cultural experiences. Six cultural experience variables were assessed among the Chinese sample, including Chinese Internal Orientation (i.e., psychological identification with Chinese culture), Chinese External Orientation (i.e., behavioural practices of Chinese culture), Canadian Internal Orientation (i.e., psychological identification of Canadian culture), Canadian External Orientation (i.e., behavioural practices of Canadian culture), Collective Self-Esteem (i.e., perceived social evaluation about the Chinese as a group), and Negative Acculturative Experiences (e.g., personal direct experiences of racism and discrimination). Among the Caucasian sample, three cultural experience variables that were specific to being a Chinese in Canada were not assessed, thus resulting in assessment of Canadian Internal Orientation, Canadian External Orientation, and Negative Acculturative Experiences. Further investigation of significant cultural elements was pursued by examining the relation between cultural experiences variables and the response tendency of the identified culturally biased items (i.e., being more and less likely to be endorsed by Chinese versus by Canadian samples).

Cultural Experiences and Symptom Factors

When examining each cultural experience variable in relation to symptom factors,

among the Chinese sample, higher scores of Affective-Somatic and Cognitive factors were found significantly associated with higher scores on Negative Acculturative Experience and lower scores on Collective Self-esteem, whereas other cultural experiences variables (e.g., Chinese External Orientation), as well as the control variable of personality problem, were not significantly related to symptom factors. Among the Caucasian sample, higher scores of Mixed and Cognitive factors were significantly associated with lower score on Canadian Internal Orientation and moderately associated with higher score on Personality Problem. Higher scores of Cognitive factor were significantly associated with higher scores on Negative Acculturative Experience. Autonomic hyperarousal factor was moderately associated with higher scores on Canadian External Orientation.

When examining these cultural experience variables within the context of each other by considering all these variables simultaneously, among the Chinese sample, both Affective-Somatic and Cognitive factors were best predicted by both Negative Acculturative Experience and Collective Self-Esteem. Among the Caucasian sample, the Mixed symptom factor was best predicted by the control variable of personality problem and moderately by Canadian Internal Orientation. Cognitive factor was best predicted by Negative Acculturative Experience, and moderately by personality problem and Canadian Internal Orientation. Autonomic Hyperarousal was moderately predicted by Canadian External Orientation.

The above analyses led to several conclusions about the relation between symptom factors and cultural experiences. First, variables reflecting a generic model of cultural orientation (e.g., internal and external cultural orientations) were not significantly

related to depressive and anxiety symptom factors among both samples, with only moderate relations found among the Caucasian sample between Canadian Internal Orientation and Mixed and Cognitive Factors, and between Canadian External Orientation and Autonomic Hyperarousal factor. Second, despite the lack of significant relation between generic cultural orientation variables and symptom factors, other cultural variables that was evaluative in nature (i.e., Collective Self-Esteem) and that concerned level of stress (i.e., Negative Acculturative Experiences) showed a greater relation with symptom factors. Third, the control variable of personality problem was a more significant variable among the Caucasian sample than among the Chinese sample in relation to symptom factors.

A trend in existing literature regarding the relation between psychological adjustment of ethnic minority individuals and their cultural orientations could be identified. When simultaneously considering an individual's orientation toward the receiving society and culture of origin, individuals identifying stronger with both cultural orientations (i.e., a culturally integrated individual) were often found showing fewer psychological problems than those who identified with only one cultural orientation (Eyou et al., 2000), whereas individuals identifying with neither culture (i.e., a culturally marginalized individual) were often found with poorest level of psychological outcomes (Sam, 2000; Verkuyten & Kwa, 1996). Despite this relatively consistent trend, many other studies produced contrasting results. For instance, identifying strongly with the ethnic culture was found positively associated with greater self-esteem (Phinney & Chavira, 1992), but it was also being found to show no significant relation with indicators of psychological well-being, including self-esteem (Rosenthal & Cichello, 1986; Zak,

1976). Some other studies even found that more acculturated individuals report higher rates of psychopathology (Burnam, Hough, Karno, Escobar, & Telles, 1987). Such results suggested that, although having a particular cultural orientation or identification may be beneficial in terms of an individual's sense of well-being and level of adjustment, a further refined perspective, beyond the generic model of cultural orientation, was necessary to identify specific cultural aspects that meaningfully and significantly related to an individual's adjustment.

One specific cultural aspect that was often linked with adjustment of ethnic minority individuals concerned the level of acculturative stress, as a result of encountering negative acculturative experiences at a personal level such as personally being discriminated against, or at a group level for instance perceiving one's ethnic group being negatively valued by members of the receiving society. The former was assessed by Negative Acculturative Experience scale whereas the latter was assessed by the Collective Self-esteem scale in the current study. The results found that both specific cultural variables performed better than generic cultural orientation variables in relating to symptom factors among the Chinese sample. Such findings were in line with previous studies finding stresses arising from the process of acculturation being linked to mental health indicators (Szapocznik et al., 1978) including self-esteem (Padilla et al., 1985), with studies documenting the negative impact of racism or discrimination on individuals' mental health (Lalinec-Michaud, 1988) particularly with regards to depression (Fernando, 1984; Noh & Avison, 1996), and with studies demonstrating the impact of perceived negative evaluation about one's ethnic group on an individual's well-being (Lay & Verkuyten, 1999; Zea et al., 1999), including Chinese Canadian university students (Chia

& Costigan, 2006a).

The current study was not claiming to support the assumption of inevitable cultural conflicts among ethnic minority individuals or immigrants when going through the process of acculturation and thus poor adjustment. This assumption had already been challenged by empirical studies, for instance, finding that individuals successfully achieving the integration of ethnic culture and culture of receiving society showed a higher level of psychological flexibility that enabled them to adapt to different life demands and therefore avoided cultural conflicts (Rogler et al., 1991; Rosenthal, 1984). What the current study attempted to establish was the significant impact of countering negative acculturative experiences on an individual's mental health, which was clearly illustrated by the findings of the current study.

Based on the information gathered from interviewing Chinese participants with experiences of depression, many reported experiencing various kinds or degrees of ethnic discrimination. For instance, Donna had experienced it herself throughout her early schooling:

> *We are in a group discussion. People that around me, they trying to, they don't listen to you when you trying to raise a question. They tend to, we don't hear that. They make you feel like you are not belong to the group..... In that pure White group people would treat me like non-exist person. In high school I had a class which has only one Chinese, me. In that class I don't feel I need to say anything, cause people just ignore me....We are all more like living two different worlds.....I think being ignored is a group bullying. Because they are a group, wanting to exclude you.....Sometimes people knew your English is not that good*

but asked you intentionally, what does this word mean. Some people are very sneaky, asking you the meaning of a very dirty word, like "fuck." They would ask you how to say "fuck" in Chinese and want you actually say it. They are intentionally doing so. They knew it from somewhere else, but they forced you to say it, very dirty things. This is a minor case. If you did not say so, they could not do anything about you. They cannot beat you up. I haven't met anyone wanting to hit me. It's a minor case because you can choose not to say so or you can walk away.

Barbara witnessed her peer as a target of a racially derogatory remark in a classroom setting at Grade Seven. Despite her teacher taking immediate action to ameliorate the harm it had caused, such incident left an unforgettable imprint in her mind:

My friend walked up to the front. Somehow she's blocking a boy's way. He's notorious of being late. At principle's office like his own room, he's always in trouble. He's the troublemaker in the class. Suddenly he said, you chink get out of my way. Suddenly the entire class was silent. Obviously this is not an appropriate thing to say at all. It's racial, it's racist. My teacher jumped at that guy, dragged him outside. It was pretty dramatic, you can see it all happening. I just sat there and my friend was shocked. She did not know what she did to deem that slur at her. My teacher made him apologize. I was like 13 or 14. To me that was a big impact, because I was thinking, that could have been me..... It is not directly at me but it is very fresh in my mind as it happened yesterday. Things like that only happen in the States. That's where my mind set is on. It won't happen here. It never happened in my life. But that day it just hit in my face. It could happen

anywhere. For a peaceful country like Canada, it can still happen..... That just makes it even more clear to me that I need to be very careful of who I associate with.....If you know they are not very accepting of other people, perhaps they are not going to be accepting of me. Perhaps they may be nice to me because they like me, but if you are mean to other people, this person might be mean to me one day at one point. So I will set myself up for a filter, a filter for who I associate with.

Anna remembered clearly that her father spoke about being discriminated against as a Chinese individual in a work setting. Details regarding her father's occupation were omitted in order to protect the anonymity of Anna and her family. She said:

He came to Canada, and he's got his license through XX Company and he started working for them. I guess the process of getting to be the XX (note: position title) or whatever, he had a lot of hardship. He was being looked down upon because he is a Chinese. Even now people were like, oh you are a XX (note: position title), that's queer. My dad said that most people think he works as a cook on the XX Company or whatever.

Furthermore, several interviewees described how important it was to have others positively viewing the Chinese as a group, and how others' evaluation about them related to their depression. In line with the current study's finding regarding perceived evaluation of Chinese as a group, interviewee' reflections on this matter highlighted the significance of collective self-esteem to Chinese individuals. For instance, Frank spoke of an incident that demonstrated the impact of perceived negative evaluation of the Chinese as group on his mental health. He believed that segregation within different Chinese ethnic groups would be viewed negatively; although not every Chinese individual shared the same

belief, it was impactful to his sense of well-being:

> *One things I really hate is that we are all Chinese, right? There are hardly any differences between Taiwan and Chinese. All the Hongkongnese, Taiwanese, Chinese, I think we should all get together. We all have Chinese people origin. What's the point of splitting up. We all have isolated groups.....It actually makes me feel somewhat more guilty, feel bad about being a Chinese. Why can't we like Koreans. It's like, something bad feel inside.....I'd like to see all the Chinese stick together, no boundary, just Chinese.*

Similarly, Donna talked about how others' evaluation about her directly related to her depression:

> *I think it is very difficult to do, because most people would just continue worrying about it. It's really hard to not to care that kind of things, because you always care how other people see you. You still want to fit in this society. If you are different from other people, you would feel different, you would feel you are not an ordinary person. If you want to be an ordinary person, you would care how others evaluate an ordinary person and how others expect from an ordinary person, then you would try very hard to meet those expectations. When you fail to meet those expectations, you would have depression.*

While finding the impact of negative acculturative experiences on symptom factor scores among the Chinese sample was in line with previous studies, a somewhat unexpected finding was revealed with regards to the Caucasian sample: negative acculturative experiences were similarly significantly related to symptom factor score (i.e., Cognitive factor) among the Caucasian sample. The constructs that were

traditionally thought more relevant to ethnic minority population, such as ethnic or cultural identities, began to receive attention among few recent studies that included majority members of the society. For example, Verkuyten (2005) investigated the relation between ethnic identification and different acculturation ideologies among the majority members of the society. Majority members of society endorsing assimilation ideologies for the minority members, such as immigrants, were found to identify more strongly with their own ethnic group (i.e., with a Dutch origin residing in Netherlands). These recent research attentions suggested that, rather than assuming the lack of relevance of these constructs to majority members of the society, empirical evidence was needed to first understand the matter at hand and then reach a consensus within the field of cross-cultural psychology regarding their significance among majority members of the society. Reviewing the existing literature found that the construct of acculturative stress has not been examined among the majority members of the society including Caucasian Canadians. As ethnic or cultural identities began to be studied among the majority members of the society, because of the extensive prior research on the relation between ethnic or cultural identities and adjustment among ethnic minority individuals, future studies that examine their relation among the majority members of society are likely to increase in volume and could provide further information on this matter.

As the current study primarily concerned group differences with regards to ethnicity, other factors that may be more relevant to the Caucasian sample but have not been considered by the current study could contribute to the finding between negative acculturative experiences and symptom factor score among the Caucasian sample. For instance, Clément, Noels, and Deneault (2001) examined the relation between linguistic-

based identity and psychological adjustment among a group of Caucasian Canadian university students. Despite the whole sample being homogenous in terms of their racial background, subgroups with different linguistic-based identity based on first and second language competencies were formed within a context of bilingual university which bordered areas that were politically and demographically characterized as French or English. They found that linguistic minority group members might benefit from assimilating into linguistic majority group in terms of adjustment. This study demonstrated the complexity within the Caucasian population in a Canadian context, while some aspects of that complexity may relate to their adjustment at a greater extent than other aspects. Among the current sample of Caucasian Canadian university students, regardless which aspects about themselves they felt being discriminated against, the strong relation between their encountering discrimination and poor adjustment (i.e., higher symptom factor scores) was undeniable.

Another unique finding about the Caucasian sample concerned the control variable of personality problem. It best predicted the Mixed factor and was moderately associated with Cognitive factor among the Caucasian sample, whereas it was not significantly related to any factor score among the Chinese sample. This variable was not to reflect an individual's subjective evaluation about their personality traits or having particular personality problems; instead, this variable assessed whether the reporting participants have been seen or treated for personality problems in the past. Personality related issues were commonly addressed in interventions for psychiatric disorders, although individuals often would not specifically seek psychological treatments for concerns about their personality. Therefore, this variable could best represent whether

individuals has received psychological treatments to deal with their psychological issues that incorporated personality problems as parts of the treatment.

Finding that the variable of personality problems was only significant among the Caucasian sample but not among the Chinese sample should not be interpreted that personality issues were not important in the psychology of Chinese individuals. In fact, several Western-derived personality theories (e.g., Five Factors; Hendriks, Hofstee, & De Raad, 1999) and personality measures (e.g., MMPI; Kwan, 1999) have been widely researched among the Chinese countries or among Chinese ethnic individuals, although not without inconsistent findings (e.g., Cheung, Leung, & Zhang, 2001). The above finding by the current study should be interpreted to indicate that having prior psychological treatments among the Caucasian sample was associated with higher symptom factor scores, and that among the Chinese sample previous psychological treatments were not related to symptom factor scores. Likely, those among the Caucasian sample received prior treatment for anxiety or depressive symptoms that remained stable over-time thus their current symptoms were captured by the current study. Alternatively, those among the Caucasian sample reporting greater anxiety and depressive symptoms were likely to receive prior treatment. In other words, those reporting more symptoms among the Caucasian sample might have better access to mental health services.

The underutilization of mental health services by ethnic groups, including those with Chinese origin, has been well-documented in the literature. When encountering difficulties, Asian Americans would often try to resolve psychological problems on their own before seeking help from others (Root, 1985; Tracey, Leong, & Glidden, 1986). When outside help was sought, Asian Canadians mostly preferred to seek help from

friends or family, whereas mainstream professional helps were given little importance (Christensen, 1987; Ishiyama, 1991). Even when they needed professional assistance to manage depression, Chinese individuals residing in Western countries were less likely to seek psychological treatments than the non-Chinese general population (Parker, Chan, & Tully, 2006b). Several Chinese interviewees have commented on their hesitancy or lack of prior experiences in seeking mental health services that were offered by majority members of the society (see further illustration at the later parts of the Discussion section that described interview-based findings concerning help-seeking).

Cultural Experiences and Culturally Biased Items: Integration of Rasch Model Analyses and Classical Test Theory Analyses

The above section discussed the findings regarding the relation between symptom factors and cultural experiences among Chinese and Caucasian samples. Symptom factors were generated based on symptom scales that did not contain culturally biased items. In other words, the structural analyses of the current study were conducted after symptom scales have been cleared of culturally biased items, in order to ensure that findings in resultant symptom structures across two samples would not be artificially influenced by the presence of culturally biased items. By doing so, the relation among symptom scales, and between symptom scales and cultural experience variables can be fully and truly illustrated.

Each of the 14 symptom scales went through the process of biased item detection, beginning with evaluating each scale using one-parameter item response theory (i.e., Rasch model) data analysis approach, which was followed by differential item functioning techniques of the Rasch model to detect items that were endorsed differently

between Chinese and Caucasian samples. The first part of the Rasch model data analysis approach evaluated item performance in relation to the assumptions of Rasch measurement model, including the assumption of unidimensionality, and also assessed whether a good range of variability in the targeted underlying trait was well estimated by items of the scale under review. When an item did not perform satisfactorily, the techniques from classical test theory would not be able to locate the sources of unsatisfactory performance for that item, as it may result from the ambiguity in the meanings of the item or it may relate to the nature of the participating sample. One of the advantages of Rasch measurement model over the techniques of classical test theory concerned the separation of analyses regarding item related characteristics and from analyses for characteristics related to participating individuals. Such separation would allow an independent evaluation of item performance (e.g., a poorly written item) and evaluation of participating individuals who may not provide reliable answers based on the underlying traits they possessed. In other words, the reasons that items were considered misfit in Rasch data analysis were related to the nature of the items (not due to the nature of the participants, e.g., inconsistency in responding test items). An example of a misfit item would be when item responses are unrelated to the underlying construct or when an item's endorsabilty does not increase along with the increasing level of the targeted underlying construct. In other words, the item provides no information about the latent characteristic, thus showing zero probabilities. As such, when items were found misfit by Rasch analyses, clearer evidence was available to make a conclusion regarding the inadequacy of that item.

After applying Rasch data analyses to each of the 14 symptom scales, ten scales

were found containing misfit items which were deleted from their respective scales. Number of deleted items from one scale ranged from one to nine, and, after excluding misfit items, all 14 scales demonstrated better psychometric properties. Deleted items often contributed to a lower level of internal consistency of the scale, or were often the ones that loaded somewhat lower on the primary component when all items had been entered in the principal component analysis. Some deleted items were reverse coded items, such as those from the Penn State Worry Questionnaire (i.e., PSWQ). The current study has already discussed the issue of using item reversal in the context of assessing low positive affect. Here based on Rasch analyses, several items that were reverse coded were identified as misfit items, suggesting a similarly problematic nature of using item reversal. The Rasch analyses of the current study, in line with some previous studies (e.g., Brown, 2003; Haziett-Stevens et al., 2004), provided specific evidence for not including these reverse coded items as parts of a unidimensional scale of worry.

After deleting these misfit items, the rest of the items across 14 symptom scales was found fit to the Rasch measurement model. These symptom scales showed satisfactory reliability characteristics, and demonstrated a good range of item endorsability, suggesting that a good range of variability in the underlying trait was estimated by 14 symptom scales used by the current study. Analyzing the degree of endorsability each scale had in assessing the targeted construct was indeed a unique and important feature of the Rasch data analysis approach. This feature could describe the extent of underlying trait that was estimated by items of the scale. Hypothetically, when all items from one scale assessed the same level of the underlying trait repeatedly (thus not assessing a good range of underlying trait), other commonly used statistical tests

would often consider these very similar items demonstrating good psychometric properties (e.g., high internal consistency among these items; substantial loading of these items on the primary component when items were entered in principal component analysis). Often these items would then be considered adequate in assessing the targeted construct, without having specific evidence describing how well the targeted construct was assessed. What the Rasch data analysis could offer was the very needed evidence through the index of item endorsability which described the extent of the underlying construct that was estimated by items of a particular scale. In the current study, the Rasch data analysis has found that items from each of the 14 scales, while being a part of a unidimensional scale, estimated a good range of underlying construct, with some items capturing the higher level, other items capturing the medium level, and some other items capturing the lower level of the targeted underlying construct.

The second aspect of Rasch data analysis approach conducted by the current study was to detect items that were endorsed differentially by Chinese and Caucasian samples (thus these items were considered culturally biased). As described above, one of the advantages of Rasch data analysis approach over the classical test theory analysis was the separation of analyses regarding item characteristics from analyses of characteristics pertaining to participating sample. When an item was found biased, it was not because that item was problematic or two samples differed in the level of the underlying trait, but it was because two samples under review responded to this item differently. In the current study, when an item was considered culturally biased by this procedure, it was clearly due to different ethnic background of the two current samples.

Among 201 items of the 14 symptom measures included in the current study, 52

items (about 26%) were found culturally biased, with about half of them being more likely endorsed by the Chinese sample and about the other half more likely endorsed by the Caucasian sample. In other words, on an item level, there was a substantial amount of similarities between Chinese and Caucasian samples in the way they endorsed three-fourth of all items, despite these two samples responded differently on one fourth of the items. These 52 items came from 14 symptom scales, rather than from one or few scales exclusively, indicating that the sources of these items to be culturally biased were not related to the nature of a particular scale. In fact, all 14 scales contained culturally biased items, ranging from one to seven. Biased items from the same scale were hardly only biased toward one direction; that is, some items were found to be more likely endorsed by the Chinese sample and other biased items from the same scale were more likely endorsed by the Caucasian sample. Therefore, the cultural biased items were not sample dependent. To further illustrate, if all biased items came from the same scale, the cultural bias then would be scale dependent (e.g., scales with Psychomotor Retardation features more likely to be culturally biased). If all biased items from the same scale were biased in the same direction (e.g., Chinese individuals more likely to endorse these items than Caucasian sample on Psychomotor Retardation scale), then the phenomena of cultural bias would have been scale and sample dependent. What the current study has found, instead, was that the phenomenon of cultural bias at an item level was not substantial but was quite common, because all scales used in the current study contained culturally biased items, and because bias responding tendency was found within both Chinese and Caucasian samples. The clinical and research implication of the findings regarding misfit items and culturally biased items were further discussed in the "Implication for

Assessment and Intervention" section, a later section of the Discussion.

In order to capture the various nature of these 52 items (e.g., they were originally from 14 symptom scales), as well as to incorporate the two opposite directions of bias responding tendency from both samples (i.e., half of culturally biased items were more likely endorsed by the Chinese sample and the other half items were more likely endorsed by the Caucasian sample), a new variable, Cultural Contrast Response Tendency, was created. This variable was to reflect an individual's tendency in reporting symptoms in a way that most contrasted between Chinese and Canadian samples, and was analyzed in relation to cultural experience variables. Three cultural experience variables that were relevant to both samples (i.e., Canadian Internal Orientation; Canadian External Orientation; Negative Acculturative Experiences) were examined via regression analyses in relation to this cultural contrast response tendency variable across the whole sample. Results found that higher scores on Cultural Contrast Response Tendency were significantly related to lower scores on Canadian External Orientation and higher scores on Negative Acculturative Experiences. Personality problem as control variable and Canadian Internal Orientation were not significantly related to Cultural Contrast Response Tendency variable.

Among the Chinese sample, bivariate correlations were used to examine the relation between Cultural Contrast Response Tendency and six cultural experience variables, including Chinese Internal and External Orientations, Canadian Internal and External Orientations, Collective Self-Esteem, and Negative Acculturative Experiences. Based on the pattern of inter-variable correlations, Cultural Contrast Response Tendency was found most strongly and consistently related to Negative Acculturative Experiences

(similar to the regression results found across the whole sample) and to Collective Self-Esteem, that Chinese External Orientation related to Cultural Contrast Response Tendency variable in an opposite direction with its relation with Canadian External Orientation, and that the Chinese and Canadian Internal Orientations were not significantly related to Cultural Contrast Response Tendency.

Several aspects of the aforementioned findings were worthy of further discussion. First, lower scores on Canadian External Orientation were related to higher scores on Cultural Contrast Response Tendency variable among the whole sample; among the Chinese sample, lower scores on Canadian External Orientation and higher scores on Chinese External Orientation were associated with higher scores on Cultural Contrast Response Tendency, and lower scores on Canadian External Orientation was associated with higher scores on Chinese Endorsing variable. In other words, from a perspective of behavioural acculturation, being more Chinese and less Canadian would report symptoms in a way most similar to how a Chinese individual typically reported symptoms and less similar to how a Caucasian Canadian reported symptoms, showing a greater contrast in symptom reporting. The current study had hypothesized that Chinese Canadians with greater Canadian cultural orientation would express their depressive symptomatology similarly to how Caucasian Canadians expressed their symptoms, and that those with a greater Chinese cultural orientation would express their symptomatology greatly differing from that of Caucasian Canadians. Such hypotheses were supported by the relation found between external orientations and Cultural Contrast Response Tendency variable. That is, when Chinese individuals practicing more Chinese and less Canadian cultural behaviours and customs, their way of reporting psychiatric symptoms differed the most from how

Caucasian Canadian reported their symptoms.

Some previous studies had found the impact of acculturation on a Chinese individual's expression of emotional distress such as depression. For instance, Chinese American university students with higher level of acculturation into the receiving society were found to approximate their expression of depression with that of Caucasian Americans (Ying et al., 2000). Parker, Chan, and Tully (2006a) found the impact of Chinese Australians' higher level of acculturation on recognizing somatic and cognitive aspects of depression. The current study separated aspects of depressive and anxiety symptomatology that were culturally biased from those without cultural biases, and further demonstrated that the level of behavioural acculturation was strongly related to how an individual reported their symptoms. Due to the advantages of identifying cultural biased items through the techniques of item response theory, as explained earlier, these items were found to be culturally biased not due to the nature of the underlying trait that they were intended to measure, but due to the two groups having different ethnic background. In other words, the current study's findings regarding the impact of acculturation on symptom reporting among the Chinese sample were even stronger than those by previous studies, by specifically focusing on items that were found culturally biased. Among the items that were not found culturally biased, after being summed into their respective measures that formed symptom factors, among the Chinese sample, Chinese or Canadian behavioural acculturations were not significantly related to these symptom factor scores. That is, the current study found that the impact of ethnic group differences in symptom reporting was specifically on the culturally biased items, whereas symptom factors that did not contain any biased item did not relate significantly to

generic measures of cultural orientations when more specific cultural aspects (e.g., Negative Acculturative Experiences; Collective Self-Esteem) have been considered.

Practicing cultural behaviours (e.g., speak ethnic languages) and cultural customs (e.g., prefer having ethnic food) were frequently mentioned by several Chinese interviewees as being important indicators for them being a Chinese individual. Barbara nominated having Asian food as sources of re-affirming her sense of being a Chinese Canadian:

> *I'll say in terms of food. I don't mind Western food. I eat rice, and I grew up in an Asian household. I can go a month and half without rice, but after that I started missing rice feeling. I can specifically distinguish Uncle Ben's rice versus Asian authentic rice. At that point, I knew distinctively, that sort of bring my values back. I've been brought up with Asian food all my life. Every month we have outside culture days, like spaghetti or pizza. But most of time will be Asian food. Other things will be irrelevant.*

When being asked if preferring to do anything in particular to make oneself feel like a Chinese individual, Frank said, "*Show off that I can speak Chinese sometimes, show off that I can speak another language, especially when other people around don't understand it.*" Anna recalled having different food to be the first thing she noticed about herself being different from her peers:

> *Ever since I was small, cause other people would have peanut butter and jelly sandwiches and I would have "chow-fan" (translated as "stir fried rice"), like "jian-jiao" (translated as "pan-fried dumplings") from last night. You just have different lunches.....cause we all eat together they all have sandwiches, and I*

would have like little dishes and "fan" (translated as "rice"), "xiang bian-dang" (translated as "like lunch-boxes"). That's pretty much like that.....I remembered it was a little bit awkward and they tried to fit in. Everything else I felt normal. Every time we have lunch, then it will like I am different. I am a lot more distinct, cause this is a whole another factor as much as I am different.

When Chinese immigrants in Canada managed the challenges arising from the process of acculturation, some may adopt new behaviours of the receiving society, such as using Canadian media or gaining English language competence. Others may prefer maintaining the ethnic lifestyle and behavioural practices. Note that greater cultural contrast response tendency was related to practicing more Canadian and less Chinese behavioural practices, as if these two were somewhat incompatible with one another. Similar results were found among Chinese Canadian university students between their Chinese and Canadian external orientations (Chia & Costigan, 2006a). It may be difficult to similarly endorse the external aspects of two cultures, such as language use, or there may be practical constraints on preferring the behavioural practices of two cultures. For example, individuals who enjoy speaking English, perhaps as a way of minimizing cultural distance with the larger society and maximizing feelings of acceptance (Nesdale & Mak, 2003), are not able to simultaneously speak Chinese, and this higher level of English language usage and competence likely created social networks and routines that further reduced opportunities to speak Chinese. Thus, engaging in the behavioural practices of two cultures may be somewhat mutually exclusive.

One of the interviewee, Carol, provided an example of language use to illustrate the relatively exclusive nature of Chinese and Canadian external orientations:

> *Although I speak English, listen to English, attend English classes, but still whenever I heard about something, my first reaction is Chinese and then quickly translate it into English. But if for things I have not heard or in contact before I came here, the first time I heard about it is in English, and then my first reaction would be in English not Chinese.*

George talked about the close connection between language use and peer affiliation, which was formed along line of Chinese-speaking versus English-speaking peer groups, suggesting the nature of incompatibleness of Chinese and Canadian external orientations in the domains of language use and social affiliation:

> *There's type of people I said hi to, other people CBC group, which is Canadian born Chinese, even though they were not Canadian born but they came here very early. Just between Chinese speaking and English speaking Chinese mostly. Eventually you made a conscious choice that you cannot have everything..... Mostly it was the language the culture thing, to fit into the group. It's either Chinese or English. You can't really have both.*

Similarly, Emma talked about not having things in common as important factors, in addition to language, in forming substantial friendships with members of the receiving society, suggesting the impact of cultural customs and practices such as media usage on social affiliation:

> *I think language is a factor too, but not as important as others.....I think nothing in common. They watch the television shows and I found it's kind of boring. I don't watch those shows that's why you can't talk about the show. Western people they started putting make-up kind of everything on earlier than people from Asia,*

they talked about make-up, talked about fashion, you don't focus on that as much as they do. So sometimes I don't know, I just don't understand what they are talking about.....I think, they are kind of nice to you, kind of say hi or anything, but that's just on the surface, it never gets deep to be friends with them. I have a lot of Canadian friends, but they are from all have studies to talk about, like homework and materials in the class, we never came out together, have dinner or go shopping together. With other Asian friends, you can do everything together, you can study or you can have fun.

Furthermore, the internal and external domains of cultural orientations showed varied relation with an individual's symptom reporting tendency. Specifically, while Canadian External Orientation was significantly related to Chinese Endorsing variable among the Chinese sample, Chinese Internal and Canadian Internal Orientations were not significantly related to any of the three cultural bias variables. Among the whole sample, Canadian External, but not Internal, Orientation was significantly related to Cultural Contrast Response Tendency variable. These findings highlighted the importance of evaluating both internal aspect (i.e., representing psychological identification) and external aspect (i.e., representing cultural behavioural practices) as two separate domains of an individual's cultural orientations. Internal and External aspects were not only found to be separate aspects, based on the results of preliminary factor analyses, but they also related to other variables of interests in their distinctive manners. Such findings would not have been available if these two aspects were combined into one or if only one of the aspects was assessed.

In examining the ethnic domain of acculturation in ethnic identity research

tradition or the host cultural domain of acculturation in recent acculturation research, only few studies treated the construct of acculturation as multidimensional constructs without combining items assessing various aspects of acculturation into one summary score (e.g., Elias & Blanton, 1987; Isajiw, 1990). Studies examining ethnic and host cultural orientations among Chinese ethnic group in North America have similarly found a two-dimensional structure representing the psychological and behavioural aspects (e.g., Kwan & Sodowsky, 1997), including among Chinese Canadian university students (e.g., Chia & Costigan, 2006a). Psychological and behavioural domains in these previous studies, similar to what the current study has found, were found to be separate aspects as forming their own factors (e.g., Chia & Costigan, 2006a), and were found to show a differential relation with other variables of interests, such as well-being indicators (e.g., Chia & Costigan, 2006b; Kwan & Sodowsky, 1997).

When these few studies examined psychological and behavioural aspects of acculturation, they similarly identified the relatively stronger role in the behavioural aspect than the psychological aspects in relation to the targeted outcome variables of interests. For example, foreign-born Chinese university students in North America reported greater practices of Chinese behavioural customs than those who were born in the host culture, but these two groups did not differ in the psychological aspects of Chinese cultural orientations (Chia & Costigan, 2006a; Ying et al., 2000). Rosenthal and Feldman (1992) found a decrease in ethnic identification across generations in the external areas of ethnic behaviours and knowledge, but not in the internal importance of ethnic identity. Similarly, compared to the psychological aspect of acculturation, the behavioural aspects showed a stronger relation to the well-being indicators (Kwan &

Sodowsky, 1997).

The finding that behavioural but not psychological acculturation impacted a Chinese individual's way of reporting psychiatric symptoms has important clinical implications. When working with Chinese clients in Canada, their level of behavioural acculturation needed to be evaluated when assessing their psychiatric conditions. Such evaluations could focus on how much they practice Chinese aspects of cultural behaviours or customs, or on how much they began to practice Canadian aspects of cultural behaviours or customs after they immigrated to Canada, as the psychological aspects of acculturation may be not as sensitive as the external aspects in relation to symptom reporting. Note that accurately assessing Chinese individual's psychiatric conditions that were not being influenced by their level of acculturation is not unattainable, as the current study found that cultural orientation variables were not significantly related to factor scores among the Chinese sample, and that majority of the symptom structures were found comparable between Chinese and Caucasian samples with the exception of Worry and Autonomic Hyperarousal.

Lastly, across the whole sample, Negative Acculturative Experiences were positively related to Cultural Contrast Response Tendency. In other words, encountering more negative experiences such as personal discrimination would relate to an individual's tendency to report symptoms that contrasted the most between Chinese and Caucasian samples. Due to the correlational nature of this study's design, such findings reflected the connectedness rather than the causality between two phenomena. Therefore, from another perspective to interpret this finding, when individuals reported symptoms that greatly contrasted with the typical Caucasian Canadian way of reporting symptom, they were

more likely to encounter greater negative experiences in interacting with the Canadian society. This interpretation regarding the relation between Negative Acculturative Experience variable and Cultural Contrast Response Tendency variable was more sounding intuitively. Negative experiences with the receiving society that were assessed by Negative Acculturative Experiences variable included encountering direct discrimination against oneself, or feeling being pressured to assimilate. When individuals reported their symptoms of depression or anxiety in a way that greatly differed from perceived societal expectations, they might not feel being accepted, even to the extent of feeling being discriminated against. Interestingly, the significance of Negative Acculturative Experience in relation to Cultural Contrast Respond Tendency was found across the whole sample. This suggested that regardless of the ethnic background, when an individual did not report their symptoms according to perceived societal expectations, they similarly likely encountered negative experiences interacting with the Canadian society.

Although cultural impact on symptom reporting tendency has not been extensively examined with regards to Chinese or Canadian cultures, some prior research may lend some support to the above observation regarding contextual impact upon an individual's symptom reporting. Based on the distinction between the constructs of illness and disease, the former is assigned to the sickness that is experienced and conceived by the client and their family whereas the latter is defined and conceptualized by the modern medicine. Illness is from the client's perspective and disease is from the physician's perspective; they may overlap or be incongruent with each other (Tseng, 2003, p. 81). Discrepancies between clients and physicians' views can negatively impact

treatment, such as having a worse health status for the client and subsequent increase in health care use (Heijmans et al., 2001). Furthermore, physicians may project their expectations as to how a client should report their symptoms; clients may also report their symptoms to conform to their perceived expectations of others. A study by Chang et al. (2005) found that clients recruited from neurology department and diagnosed with neurasthenia revealed a preoccupation with symptoms localized in the head, brain, and central nervous system. Note that in Mandarin Chinese language, neurasthenia was literarily translated as "shenjing shuariuo", meaning nerve weakness or exhaustion. Therefore, such preoccupation suggested a "semantic" connection between the symptom the clients reported and their help-seeking preference in neurology at a primary care setting, indicating that an individual's symptom reporting did relate to their perception of others' expectations in a particular setting. When prior research documented the impact of others' and perceived societal expectations on an individual's symptom reporting, the current study's findings (in the positive relation between Negative Acculturative Experiences and Cultural Contrast Response Tendency) highlighted the consequences when an individual did not report symptoms according to the perceived expectations. The aspects being assessed by the measure of Negative Acculturative Experiences included feeling being discriminated against, feeling pressured to assimilate thus conform to the expectations, feeling ignored by those who are supposed to provide assistance, or feeling like having more barriers than others to overcome in life. These negative experiences were likely among individuals who did not report their symptoms according to the perceived expectations of others, and who reported their symptoms greatly contrasted to how a typical Caucasian Canadian reported their symptoms.

Summary: Between-Group Differences and Similarities

Examining the symptom structures across Chinese and Caucasian samples identified worry and autonomic hyperarousal as two aspects characterizing between-group differences in depressive and anxiety symptomatology, whereas the rest of the symptom structures seemed similar across samples. As discussed above regarding the relation between cultural experiences and symptom factors, the cultural experience variables that were significantly related to symptom factors were similar across both samples, such as negative acculturation experiences. The cultural experience variables that were not significantly related to symptom factors were similarly so for both samples, such as Canadian Internal Orientation. In fact, the acculturation measures that were commonly used in acculturation or ethnic identity research, such as Phinney's "Multigroup Ethnic Identity Measure" (1992) assessing an individual's psychological identification with ethnic culture, were not significantly related to symptom factors neither did it relate to symptom reporting tendency among the Chinese sample. Overall, these findings portrayed a picture of greater similarities and smaller differences between Chinese and Caucasian samples, in how they reported their symptoms as well as how much cultural experiences impacted their depression and anxiety symptomatology.

Several factors might contribute to current study's findings of greater between-group similarities in depressive and anxiety symptomatology. First, previous studies may use various measures capturing different aspects of symptomatology; some may focus on assessment of affect, and others may pay attention to somatic aspect. As the current study found that, although both Chinese and Caucasian samples reported somatic symptoms as parts of their depressive and anxiety symptomatology, the tendency in reporting somatic

symptoms was found stronger among the Chinese sample. Thus, greater between-group differences might have resulted when studies primarily examined the somatic aspect. Parker and his colleagues (2006a) found that the Chinese sample did not differ from control sample in the core symptom of depression, such as symptoms of low positive affect and negative affectivity, whereas greater between-group differences were found regarding how well they recognized somatic and cognitive symptoms of depression. The current study assessed affective, cognitive, and somatic aspects of symptomatology, and used the same measures across both samples. By doing so, the aspects of greater and smaller between-group differences could then be revealed.

Second, prior to examining the structural relation of anxiety and depressive symptomatology among both samples, culturally biased items were identified thus not included in the final structural analyses. About one-fourth of items were identified as culturally biased. Removing these items from structural analyses has strengthened our understanding about symptom structural features across groups. On the other hand, if the current study had included these biased items, the resultant findings might have shown greater between-group differences as all symptom measures contained culturally biased items. This assumption was further supported by the contrasting findings between how much cultural experience variables related to Cultural Contrast Response Tendency (which was comprised of culturally biased items) and how little they related to symptom factor scores (which did not contain any culturally biased items). For instance, among the whole sample Canadian External Orientation was the most significant predictor for Cultural Contrast Response Tendency, but it became non-significant in relation to factor scores among the Chinese sample and was only moderately related to one of the three

factor scores among the Caucasian sample. Canadian Internal Orientation was not significantly related to Cultural Contrast Response Tendency variable among the whole sample, but it became one of the important predictors for Mixed and Cognitive factors among the Caucasian sample. In other words, the relation between cultural experience variables with culturally biased items and the relation between cultural experience variables with factor scores seemed to be in an opposite direction. When previous studies did not examine cultural bias at an item level prior to investigating between-construct relation across cultural groups, it was difficult to evaluate whether the findings of between-group differences were resulted from true between-group differences in the targeted construct, or from using measures that may contain culturally biased items. The current study, after excluding culturally biased items, found most features of symptom structures to be similar across samples and identified specific aspects of anxiety and depressive symptomatology that were culturally different.

Third, the cultural experience variables, especially generic cultural orientation measures such as those assessing psychological or behavioural aspects, may be limited to meaningfully explain between-group differences in symptomatology, despite that they could portray relatively well the between-group differences in cultural orientations (e.g., generational differences in behavioural acculturation). Chia (2004) explored aspects of acculturation that best characterized within-Chinese-group diversity due to participants' country of origin, and found that generic cultural orientation measures failed to distinguish Chinese individuals from Hong Kong, Taiwan, and China. The limitation of generic measures of cultural orientations has not received extensive attention from acculturation researchers, although some researchers began adopted more specific

conceptual model and measurement approach to understand acculturation. For instance, Clément, Noels, and Deneault (2001) incorporated contextual factors into their investigation of linguistic based cultural identities from a situated identity perspective. Their studies found that, it was the incongruities and variability of an individual's identity, rather than particular domains or aspects of the identities, related to poor adjustment among ethnic minority individuals. New research paradigms in understanding acculturation among ethnic minority individuals, especially in their relation with adjustment and psychopathology, would be necessary. Those paradigms would need to go beyond the generic nature of existing acculturation models.

Last, the greater similarities in symptom structures between Chinese and Caucasian samples, after culturally biased items were removed, may suggest that these two samples were indeed similar in majority aspects of their depressive and anxiety symptomatology. The trend of westernization has been investigated in various domains of research among Chinese individuals residing in Chinese countries, including Taiwan (e.g., Yang, 1981), Hong Kong (e.g., Lam, Lau, Chiu, Hong, & Peng, 1999), and China (e.g., Zhang & Harwood, 2004). Often the results described an emergence of Westernized culture in addition to the presence of traditional Chinese culture. Thus, the current Chinese sample may not be as traditionally Chinese as the current study originally hypothesized. In addition to the amount of exposure to Western culture after they immigrated to Canada, the current Chinese sample may have some contact with aspects of Western culture while they were in their country of origin. Collectively, these factors may contribute to how the current Chinese sample reported their depressive and anxiety symptoms that to a great extent resembled to how Caucasian Canadian reported their

symptoms.

Overall, among the current Chinese and Caucasian samples, greater between-group similarities and smaller between-group differences in reporting depressive and anxiety were identified. Note that the sample-specific symptom structures were obtained after culturally biased items were removed. The presence of these culturally biased items straightforwardly illustrated the cultural differences between these two samples. Rather than concluding these two samples to be different from or similar to each other in a dichotomous fashion, recognizing which aspects of symptomatology to be different and which aspects to be similar would be more meaningful in terms of clinically applied or research implication perspective.

Themes of Culture and Psychopathology among Chinese Interviewees

A qualitative element in a semi-structured personal interview was included as part of this study, complementing the aforementioned quantitative approach of examining depressive and anxiety symptom structures. This inclusion aimed at illustrating a Chinese individual's subjective perspectives about their own cultural and depressive experiences. Furthermore, existing cultural models of psychopathology for ethnic minority individuals tended to be generic in nature, mostly concerning an individual's orientation toward their ethnic culture of origin and toward the culture of the receiving society. A qualitative research methodology may be essential in capturing unique cultural themes that influenced individuals' depressive experiences within their cultural context. Seven Chinese individuals with experiences of depression were interviewed. Some portions of the interview had been included in the previous section of the Discussion, which served as a refining evidence echoing what the quantitative part of the current study has revealed.

Several additional themes that were identified among these interviewees' experiences will be described below.

Theme #1: Role of Chinese Culture in Psychopathology

Due to the consistent finding of lower prevalence rate of depression among the Chinese countries as well as among Chinese ethnic individuals residing in North America, one frequently offered explanation was to consider Chinese culture as a protective factor against psychiatric disorders associated with life stressors. As such, several Chinese cultural elements had been identified, including Chinese's long-standing tradition of withstanding hardship, a higher tolerance for distressing circumstances, and a sense of determination and purposes (Xu, 1987). Additional elements included personality traits such as stoicism or quiescence that allowed Chinese individuals to accept life stresses with a sense of destiny, as well as Chinese social structures emphasizing traditional communal orientation that may help alleviate the impact of loss and provide support during crises (Song, 1985).

Several Chinese interviewees, when describing their experiences of depression, emphasized a personal significance of having experienced depression. Some of them talked about becoming a stronger person after suffering from depression, others viewed their depression as a life lesson or necessary hurdle that was given to them in order for them to prove that they could overcome the difficulties arising from these tasks and to learn an important lesson from such experiences. Some others simply verbalized the importance of not necessarily viewing depression as a negative event. Frank talked about the relative merits of his depressive experiences:

I kept telling myself. All these things, hardship and stuff, has some kind of

challenged my life, which I think is beneficial for me. So gives me some comfortness, determination, to get through all these. So I kept telling myself. This thing is a stage or phrase, a change phrase, that I had to go through. So there is no point whine or cry all these, just deal with it. That's a challenge. I need challenge.

When George talked about what depression meant for him, he said:

I actually take a lesson in life, something I went through. It gives me knowledge, what happened in life, how to deal with it. I wasn't healthy back then. I think it was a short but worthy life experience. Something that you can avoid in the future. Just something a life experience, even that one was a mistake. People learn from their mistakes. Being depressed just teaches me a lesson you know, don't be always so stubborn, don't always pressure your feeling so much.

Donna also talked about some positive things she gained from the experience of depression:

It's strange to say so but I have more thoughts when I am depressed. I think a lot. It's a positive thing. There are many things I used to avoid in the past. Now I would attempt to accept them or try to resolve these feelings. Actually I like to be depressed, personally, because I can talk to myself to help myself when being depressed. Like how this thing starts, how this thing ends, what kinds of attitudes I should have when facing this thing. On ordinary days you just live day by day. It's like you don't care that much.....Probably it is because I don't want myself to be that upset. When you are upset, it's like you have a yarn ball inside of you. They are all in a knot. I want to untie the knots so I would guide myself through self-

talk, or reason with myself, or compare the results for myself, like what the outcome would be if I do this, what the outcome would be if I do that, to compare to see which way is better.

Carol talked about how sharing her experiences with others had strengthened her relationship with friends, as she previously tended to disclose little about this aspect of herself to others:

They just understand me more, understand another side of me, different from what they had previously known of me. What they knew about me wasn't that complete. To better understand me.....Yes, understand me more, maybe seeing me more normal....Then they would say what their experiences were like. Everyone can share and the relationship goes deeper. Because when you find out others have the same experiences, you would feel better, through the story my friends shared with me. Later I would use the same way to comfort my friends.

These Chinese interviewees seemed to benefit from such a cultural notion that overcoming depression were important life tasks for them to complete. On the other hand, the same cultural beliefs would be related to that mental illness was seen as evidence of character weakness or a cause for family shame (Parker et al., 2001), thus the suffering individuals should attempt overcoming it themselves as a way to dispute that they were characterologically weak. In addition, relying on oneself to overcome depression may deter these individuals from seeking professional assistance to alleviate the level of distress. Although none of them identified this cultural belief as a barrier for seeking help, their rationale for not seeking help reflected the impact of having such cultural beliefs on help-seeking behaviours. For instance, after Frank emphasized the importance of not

seeing suffering from depression as a negative experience, he specifically highlighted the significance of helping himself to overcome depression:

> *So that's important not to see suffer necessarily a bad thing, it may be a strength thing in your mind to make you stronger emotionally. So later on you won't be quite sad for this kind of situation..... I think nobody knows more you better than yourself. You know what I mean? You are the one. So there's nothing they (therapists) can help you. I mean what you should do. I am quite confident that I can deal with it by myself. I won't consider suicide that extreme, I can get situations under control myself, so there is no need to see a therapist.*

It was difficult to conclude whether the aforementioned Chinese cultural notions served as a protective role against depression, or as a barrier for seeking help. Similarly, such cultural notions may reflect these individuals' current view of their depressive experiences after they had overcome their depression on their own terms, rather than what had helped them to cope with depression at the time. There was one exception which clearly pointed to one Chinese cultural value that served as a protective factor against negative outcome of depression. One interviewee, Frank, reported recurrent suicidal ideation as parts of his depressive experiences. When being asked what had stopped him from attempting suicides, he specifically identified one cultural value, i.e., being filial, that was considered as the core features of Chinese culture (The Chinese Culture Connection, 1987). Note that Frank felt more pressured and depressed when thinking of himself not being filial if he had attempted suicide, although having this cultural belief of being filial indeed helped him to dissipate his suicidal thoughts. Despite being very fluent in English and participating in the interview using English, Frank

verbalized this notion using Mandarin Chinese, suggesting its origin in Chinese culture from his perspective. When being asked what stopped him from attempting suicide as suicidal thoughts frequently reoccurred, Frank said:

> *"Bu-xiao" (translated as "not filial"). You should suffer this thing as your attitude. You should not do such thing for your parents. If you die now, all the people around you felt sad and all that. You should not just think about yourself, you should think about other people, so just turn down the thought..... (Thinking about other people adds) more pressure. It's actually getting worse. They (other people) tend not to think about the situation, that's where I am depressed about sometimes. Trying to focus on something else, that's usually help sometimes.*

Several Chinese interviewees reported consulting with peers or receiving advice from relatives as one of their primary coping strategy at the time they suffered from depression. As many of these individuals came from a family immigrant background, they did not have a similarly extended network of relatives in Canada. Many reported having majority of their relatives, some including one or both their parents remaining in their country of origin. As Chinese individuals were often thought to rely on traditional communal networks to cope with stresses, not having similarly familial or communal structures here in Canada may place these individuals at particularly vulnerable position. In other words, their existing tendency in relying on these structures for problem-solving may become a contributing factor for greater difficulties in dealing with depression. Frank, after coming to Canada on his own, often wondered how different it might have been if his parents were here when he first arrived:

> *I come here and I am all by myself. By the time four years ago I wasn't ready to*

become totally independent. I need some intellectual and emotional support from others and my parents not here.....After half a year or one year or so, I finally get to speak language better. Before, if you don't know anyone, you don't have the opportunity to go out. Now it seems like I came back (Canada), just feel sad, don't have stronger feeling any more. Just umm ok. Not dependent on my parents any more. I am an individual. I made independent decisions choices and stuff.....I think it's the dependence. Before, you always want someone to take after you. You thought your parents always there always taking care of you. Caring, making choices for you. You don't feel depression. And then you come back, you are on your own, you have to do it all, that's why you feel depression. I am more independent. Without my parents there helping me so that don't make a difference. I don't feel helpless anymore. I know what to do. I don't need you guys to make decisions for me anymore. So that's why I become less depressed.

Other elements that prevented these Chinese interviewees from seeking help from professionals were identified, including lacking adequate information about accessing mental health services, and not having correct information about how psychotherapy was conducted. In addition, some interviewees identified personality traits that prevented them from being open to new experiences. As psychotherapy, at least in its modern forms, might have been a relatively new conception to Chinese individuals, willing to try or being open to new experiences became an important factor for these individuals to seek professional help. George described his apprehension in seeking professional help, from someone he did not know before:

I guess you kind of take a risk when you go to see a professional. With friendship,

no risk yet. You know what they are going to say to you, but you just need to hear them say it. With professionals you don't know what's happening, you don't know what's gonna come along, you are kind of scared what they gonna tell you..... I am not that kind of person, I am not too open to face to what to do in life. I would cry. I would probably die before I do something to myself. I will do what I can to withdraw or whatever before I go to talk to a counsellor or whatever.

A few interviewees presented a much more complex line of reasoning for not seeking professional assistance. One interviewee, Donna, did not have accurate information about the nature and format of psychotherapy (e.g., she believed receiving counselling at the university's counselling centre would be costly), thus she had never sought on-campus services that are available to students. Furthermore, because she encountered many personal negative experiences with the majority members of the receiving society (i.e., the White/Caucasian Canadian, in her definition), she was reluctant to make any contact with them:

Cause now I live in residence, dormitory, and the floormates, people who live on the same floor, I am the only one Chinese in that building, oh so stupid. People who live on the floor start to write something on my white board.....Really negative, try to insult me.....Cause when I register in high school to this year, I still use my Chinese name. When I get my room, that room will have my name on the door, my Chinese name and my English name. There's a girl, she drew a dog on my white board and write my Chinese name under the dog. I think that's an insult.....Probably mean you are a dog or something. I don't know, when I saw that, I think it's pretty negative..... White people can hardly understand your

situation, because you immigrated here. They hardly can feel what you feel..... Before coming to UVic, I lived in Richmond where there are a lot of Chinese shops. I mostly go to these shops and did not even want to go to White people's shops.....I guess it's because I experience so much negative aspects with White people, I don't like to deal with them. Most of time I even want to avoid them.

Another interviewee, Frank, similarly presented several factors that related to his unwillingness to seek professional help. He did not have accurate understanding about the nature of psychotherapy, in addition to his apprehension in encountering a novel situation. However, without having a specific religion, he went to church to seek guidance because of the advice from his aunt and uncle. He was even willing to consider psychotherapy if he was asked to by his parents or elders in the family, due to his showing respect for the elders. This again reflected the impact of traditional Chinese cultural values on a Chinese individual's behaviours:

In my opinion, a stereotype of a therapist is someone drinks coffee, sit there and listen to you, talk about your stuff, and umm umm, I understand that, umm umm, I feel sorry for you..... Actually it (the advice in going to church to seek guidance) comes from a relative, kind of having some authority, something I should do this. It changes your attitude "zun jing zhang bei" (translated as "respect the elders"). So I yeah yeah tried I tried. That's why I go. I didn't really want to go.....The idea of going for a therapist somehow comes from my own mind so it's not necessarily to go. No pressure, don't have to go. When my relative recommended me to go to the church, my parents also said yeah yeah try that. So try to be nice at least I try it..... Going to see a therapist is that the therapist may not know the person before

hand. Don't feel comfortable in sharing everything with the strange people they know for the first day. It might be a problem.....It's actually someone went there and have positive feedback. Oh this person's really helpful, then I probably would go.

In sum, based on the interviews, it was inconclusive as to whether Chinese cultural values as a whole could be considered as protective factors against psychiatric disorders. Different aspects of Chinese cultural values may serve either as a protective factor (e.g., filial) or a contributing factor (e.g., withstanding depression as a hardship thus not seeking professional assistance) for depression. Some cultural factors may have been protective when individuals resided in their country of origin (e.g., relying on communal networks for problem-solving), but may exacerbate the level of distress after they immigrated to a new country. Some other factors might have deterred an individual's seeking professional assistance, including specific personality factor (e.g., not open to new experiences), specific belief about mental health, inaccurate understanding about psychotherapy, and negative experiences with majority members of the society.

Theme #2: Bridging Psychopathology with Culture: Linking Mechanism

One of the main purposes for including a qualitative element of individual interview into the current study was to discover specific themes relating culture to psychopathology, supplementing the generic nature of the current cultural models in understanding their relation. Chinese interviewees were asked to identify specific factors that they considered were etiologically important to their depression. In addition, they were asked to share their ideas about the causes of depression for other people, which

might shed light on their mental health related beliefs.

None of the interviewees described a single and novel factor making them vulnerable to depression that has not been identified by previous research. Instead, many contributing factors that interviewees identified for depression for themselves or for other were not uncommon or have already been captured, at least partially, by depression or cultural research, including unresolved and lingering identity crises, intense interpersonal conflicts with significant others or negative experiences with peers, difficulties in dealing with unexpected or expected losses, social isolation and lack of social support, and external factors that brought in additional stresses to the personal or academic aspects of their lives, such as school change or family relocation. For example, when being asked about what made her depressed, Barbara replied:

> *If it was an argument, a heated argument, that I had with people that I cared about, that will make me feel depressed..... If I am depressed, it's because I cared about the person the problem happened in between me and that person. That will be the only thing that affects me..... It's not about the argument itself, it's more about the person..... cause they've got to bear some sort of importance for you to get depressed about the situation that happen.*

Although these contributing factors identified by the Chinese interviewees have been addressed by past research at a content level, interviewing Chinese participants revealed the importance of "mechanism" that linked these factors with depression that made Chinese immigrants particularly vulnerable. That is, these depression-related themes may be similarly significant among the Chinese immigrant as well as among the general population; however, the Chinese immigrants may be more likely to encounter

more of these themes of experiences than the general population, because they were being an ethnic minority individual or an immigrant. For example, many of these interviewees described indirect or direct encountering of racial or ethnic discrimination, suggesting its salience among the lives of an ethnic minority individual. Some of these discriminatory incidents occurred in the context of school bullying or peer conflicts, which would be as significantly related to depression as among the general population. Nevertheless, being a visible ethnic minority individual may make one more likely encounter more of these experiences. For instance, Donna talked about the built-up of unresolved peer pressures, being discriminated against, as the major source of her depression:

> *Things built up, to the point of explosion that you have to think about them, you have to resolve them. Then you would become depressed, because you start having pressures. When it (her roommate wrote racial-derogatory remarks on her board) happened for the first time, I can take it. I can deal with it when it happened for the first time. You are doing this probably because you want to tease me or make fun of me, you are not mean at heart. You just want to see me how I react. After the third or fourth times, you are not doing this out of curiosity but to bully me. And then I would be depressed, I would think a lot and then depressed.*

In addition, the Chinese immigrant may be more likely to encounter multiple episodes of depression-related themes of experiences within a short period of time, which made them particularly vulnerable for depression during this time frame. For instance, many of these interviewees described having a long struggle right after immigrating to

Canada, which involved school changes, adjusting to school systems that were very different from those in country of origin, language difficulties which brought in additional challenges to school work and social life, losing support from previous network in country of origin but having not yet found new networks of support, and separating from parents or family members or managing home life in Canada which included new members such as other relatives or even home stay family. When all of these experiences occurred within a short and localized period of time, its negative impact on an individual's mental health was foreseeable. For instance, as quoted earlier, Frank talked about losing the guidance from his parents when he was not ready to be independent, which was especially difficult to deal with when he first arrived in Canada on his own. Emma considered losing friends after family's immigration to Canada and again after another family relocation to a different city as a major contributing factor for her depression:

> *I think away from friends is a major thing. I have a lot of friends during that period of time before I moved to XXX. I think about friends is my all, is my everything, but after I move things changed, friends are kind of very different. I felt the group of people is not my friends, and I just want that.....Moving kind of, I don't want to missing every event they have, not want to just be myself at another school to deal with kind of things, cause I can't go (to see her friends) every time cause I am too far away.....Just group of friends that we all grow up together. They are all Asians too, until we get into the school. That's just us. That's how it works.....During that time, they are my only friends, cause I am in Canada.*

From a life-span perspective, if the period of time that these experiences occurred

was developmentally significant, e.g., adolescent managing identity related tasks, their negative impact on mental health may be especially detrimental, thus placing the Chinese immigrants at that age to be vulnerable to negative psychological outcomes, such as depression. For instance, George talked about the time of his depression, when he struggled with the issues of cultural identity that was closely connected to peer affiliation with either Chinese-speaking or English-speaking groups. He said:

> *I guess it is the age that came (to Canada), the language I spoke, and the trust issue from elementary to high school. Like my cousin he goes to a different school. He has Philipino friends, Black friends, all in the same group. They are all very well mixed. But for us we are clearly defined and distributed along (racial lines). I guess the environment just pushes you toward to making that kind of choice.....I guess the friend thing pushed me going into the studies of the Canadian and the Chinese Canadian thing, I guess it pushed me to more Canadian. I think my friends are more thinking English speaking English. Before, we all speak English. For me it's always communication. A change in my language basically. It changed me to see me as a part of that group. I would label myself as a CBC group. It's kind of like declaring your major in the university. I am in biology or that. So I am with this group or that group. I guess friends a few people can be very popular but no one really does a General Studies. So for me I guess it's the time for me to declare these are my friends this is who I am..... Before grade 11, I was all over the place. I don't have many close friends back then, so that's kind of when I had depressed I don't know which way I should go.....Eventually you made a conscious choice that you cannot have everything.....It wasn't a tough*

decision to make, but just coming to accepting that I have to make a decision at that point

Although the themes identified by the Chinese interviewees are not uncommon, some themes may be especially significant in the Chinese culture or to Chinese family with immigrant background to the extent that they became having a greater significant impact on a Chinese individual. As academic success or excellence was often found to be especially valued in Chinese culture (Lin & Fu, 1990), failure to achieve academic goals that were set by parents or elders in the family would be particularly impactful to a Chinese individual's mental health. For instance, one of the interviewees, Anna, talked about experiencing academic pressures to excel or achieve a particularly academic goal that was set by her parents. Such pressures, in her mind, were the utmost factor contributing to her depression. Such pressures were compounded with family relocation and school change from a typical high school to another high school which highly emphasized students' academic achievement:

Just your beliefs, what you think of, is very old fashioned Chinese. Like, school is the most important thing, they (parents) really pressure you about that..... For me, he (father) told me I have to be a doctor and stuff. That's my whole goal during the high school I guess. I am not the most academic person, I know that and I am totally ok with that but he isn't. You know, I tried really hard during grade 8, 9, and 10, just to get my marks up and stuff like that. Like in grade 11, with all the pressure, it's finally just too much, all the criticism, just beat down after that I am just so tired of everything. At grade 11, I tried to commit suicide. I took some sleeping pills, and stayed in the hospital for a couple of days after that. I guess

that's kind of a momentary wake-up call for my dad that he's pressuring too hard, so he's back up for a year. So grade 12 it's just my time to just like. I knew I couldn't be a doctor, may be later on, but for now it's just too much.

Another interviewee, Emma, described the causes of her depression that reflected the struggles of the immigrant family as a whole. When a family immigrated to another country, everyone in the family was making adjustments. A child in the family needed parental support or guidance to deal with the stresses arising from the process of immigrating to another country, while the parents at the same time were facing other kinds of adjustment difficulties. Emma described the time that she had depression and contemplated suicides several times as a means to resolve her conflicts. She presented a family, including both of her parents, facing with multiple stressors, such as job and housing difficulties, conflicts with extended family members (as her family resided with extended family members after immigrating to Canada due to financial constraints), and possibly parental depression. Although she understood the struggles her parents had to manage, to the point that she did not want to over-burden her parents that were already over-stressed, her isolation in managing her own struggles was clearly revealed:

I think it is a lot more scary to go to school.....I worried about I just don't understand everything, even though the teacher talked to me everything, I still don't understand anything. I just worried about making friends, worried about doing homework..... I think that's the most pressure for my parents, cause they've got pressures, my parents, so that kind of transferred on me. So that's my mom, we kind of know the feeling of not being wealthy enough to live under the roof of other people..... I think after moving to my aunt's, it is just becoming more and

more I don't know how to say, more and more depressed.....I just want to be bad, I don't care my parents. I tried marijuana cigarettes. After I started those things, I found my mom never get to know that. I tried the cigarettes or the marijuana. She still doesn't know for now. She didn't even know I am depressed too. I found it's kind of meaningless to do those things just to get to my parents. But that's afterward thoughts. Not even, well, I felt I was even thinking about suicide at that time, but now it kind of felt funny for me. Cause I am walking to school like everyone, there is a bridge, I need to cross the bridge, there is a high way underneath the bridge. I always thought of jumping out from the bridge and I always carried a "fang fu ji" (translated as "food preservatives"). That's the period of time at my depression. Both of my parents depressed at the beginning of my aunt's house too..... I think I never tell my mom what I think about during that time, just told them, not that important, cause my mom's depressed.

Overall, the themes identified by the Chinese interviewees that they considered were contributing factors to their depression have not been ignored by existing depression research. When linking culture to psychopathology to investigate any unique factor for depression, these themes did not reveal any new single factor that has not been explored. Instead, what the interviewees revealed was to pay attention to the "mechanism" that linked culture to psychopathology. Such linking mechanism may be "additive" (e.g., multiple depression-related themes of experiences occurring within a short period of time), or "contextual-personal interactional" (e.g., impact of personal themes of experiences that were amplified by contextual themes of experiences), or "developmentally sensitive" (e.g., multiple themes occurring within developmentally

significant stage or interacting with developmentally significant tasks), or may be "ethnic salient" (e.g., particular themes to be more impactful on an individual's mental health, or more likely to happen among individuals with particular background, such as being ethnic visible minority individuals or from immigrant family background). It was these linking mechanisms that seemed closely related to the Chinese interviewees' experiences of depression. Future research may need to include methodological or statistical methods that would allow the investigation of these mechanisms, among the Chinese or other ethnic visible minority individuals in Canada to further illustrate the relation between culture and psychopathology that goes beyond what the existing generic cultural orientation model could capture.

Theme #3: Interview as a Valuable Methodology

The goal of complementing the quantitative element with the qualitative interview element in the current study was to discover the themes linking culture and psychopathology that have not been examined by previous studies. During the process of conducting the interviews with Chinese participants, two observations were worth noted here, to highlight the merits of using interview from a methodological perspective.

The first observation concerned how participants recalled their experiences. Some interviewees, as the interview proceeded and they had more opportunities to reflect the subject matter at hand, changed their responses to the same question that was answered earlier. For instance, Barbara, when first being asked about her experiences of depression, she said "*it's nothing physical really, just the way I feel.*" However, as she was asked to list all the symptoms that she had during her depression, she did provide several physical symptoms in addition to the psychological ones, such as physically feeling heavy and

slow. Likely, Barbara's view of depression was psychological in its origin, either from a perspective of symptoms or mental health belief, although she did have physical symptoms as part of her depressive symptomatology. Such difference, one reflecting her view of depression the other reflecting her symptomatology, could be best revealed through an interview type of study when she was provided plenty of opportunities to reflect on both aspects of the same experience.

Another interviewee, Anna, provided input to highlight the merits of using interview as a research tool. When being asked about her ethnic identity and cultural orientation, especially in the context of friendship and intimate relationship, she at first stated that she did not specifically select her friends based on their racial or ethnic background, but based on commonality in personality, life style, and interests. She said, "*It's just personality, nothing based on culture or whatever.....We were all the same, we were all equal. To me, we have the same interests, it doesn't really matter you are a Caucasian or Chinese.*" As she grew up in a town with a somewhat small Chinese community and both of her parents were quite involved in and accepted by the community, she reported having friends mostly with Caucasian origins. This ethnic make-up in her friendship network completely changed once her family moved to Vancouver, where majority of her friends was Chinese origin, mostly being Canadian born Chinese. She described her sister' friendship and dating preferences that changed in a similar fashion, after moving to Vancouver:

> *It's just kind of queer to have that total distinct kind of Victoria's friends are Caucasian and Vancouver's friends are Chinese. It's just kind of queer to have that mix. They would be mixed together but there would still be distinct kind of*

line. So it's almost like I am living a double life in Vancouver and here. I am still the same person and everyone else knows I am still the same person but it's like the only thing changes are all my friends here are Caucasian and all my friends there are Chinese….. the same is with my mom. Her best friend is my best friend's mom, and she is Caucasian. But when she's in Vancouver, all her friends are Chinese.

It was undeniable that there was a larger Chinese community in greater Vancouver area, which may influence Anna and her sister's friendship and dating preferences. Nevertheless, for the same reason (i.e., more opportunities to meet other Chinese individuals), the sudden shift was particularly meaningful, simply due to the fact that there were more Chinese individuals and that ethnicity indeed turned out to be a significant factor in their life decisions about friendship and dating. If such opportunities had not been available, these decisions might not have changed. However, when such opportunities became available, even for someone with her background, identifying strongly as a Canadian, living the Canadian lifestyle, and growing up in a typical small Canadian town, her choices in friendship and dating after moving to Vancouver bore little differences from the choices made by those who strongly identified themselves as a Chinese. Note that there was within-ethnic-group diversity which cannot be overlooked, for instance, that her primary friendship circles in Vancouver concerned Canadian born Chinese, rather than recent Chinese immigrants.

During the interview, Anna and the interviewer had a discussion pertaining to this point of discussion as described above:

I never thought about it that way. I guess the only thing I can think of, the only

thing that comes down to it is you stay with your Chinese friends because you are Chinese. When it comes down to it, like here (in Victoria) you don't have a choice. We are all pretty flexible so we just could make friends. But when we actually have the option, we will still be going for the Chinese. I never thought about that before..... Another good example to support that is my sister. My sister went to school here so she never went to Vancouver for school or anything. She pretty much stayed on the island for her whole life so all the guys she dated here were Caucasian. She actually never had a Chinese boyfriend until she moved to Vancouver. She's then had a Chinese boyfriend and that's the one she married. So I guess when you really have that option, you still go for it cause you are from the same culture. They know each other, where they are coming from. It's just easier to relate to. She's had Caucasian boyfriends here and they proposed to her and they were going out and stuff. But I guess she just said no. The first guy she went out is a Chinese in Vancouver and then she said yes. It's kind of queer when you think about that, like when you have that option, someone more familiar.

The above findings deserved future studies' attention to examine contextual and psychological factors that contributed to the impact of ethnicity on an individual's friendship and dating preferences, over and beyond the impact of their cultural identifications and practices on the same issue like dating and friendship. Furthermore, these findings would not have been available if an interview element had not been included as part of the current study. As an interviewee was exposed to different aspects of the issue at hand, they were allowed plenty of opportunities to reflect and contemplate before they communicate their ideas to the researchers. This process of self-reflection and

making sense of their past experiences actually brought up new ideas about oneself that were unexpected to interviewees, like Anna.

The second observation that revealed the significance of using interview as a research tool concerned the language that was chosen for conducting interview and the impact it had on the interview itself. Among seven interviews that were conducted, one was done in Mandarin Chinese, one was done in English first and then Mandarin Chinese for the second half, and the rest five interviews were done in English. Note that these five interviewees using English for their interviews did use Mandarin Chinese sporadically to say certain words or phrases expressing ideas that originated in Chinese culture.

Carol was the one participating in the whole interview using Mandarin Chinese. She came from China to Canada just for two years of time, and did not have prior experiences in living in English speaking countries. While scheduling her interview through email, she was informed that she could choose to use either English or Mandarin Chinese for the interview, and that the interviewer was fluent in both languages. She used English, however, at the start of the interview, despite being reminded that she could use Mandarin Chinese for the interview. At first, due to showing the same respect for all participating interviewees, the interviewer used English primarily and waited for signs that might signal interviewees' intention to switch from English to Mandarin Chinese. For Carol, although her spoken English was relatively fluent, it was apparent that using Mandarin Chinese for the interview would allow her to be informative. Then the interviewer commented that one of the previous interviews was done in Mandarin Chinese, followed by starting speaking Mandarin Chinese to continue the interview process. Carol appeared relieved and continued on participating in the interview using

Mandarin Chinese from this point onward.

This scenario could not be taken lightly and did reflect several dynamic features of the interviewer-interviewee relationship that were worthy of attention. Carol's initial insistency in using English, instead of her native and more fluent language of Mandarin Chinese, should not be viewed as her lack of knowledge about participating in research in a Western country, especially after she's been offered several times to use Mandarin Chinese. As respecting the elders was greatly valued in Chinese culture, the interviewer may be perceived as an authority figure, similar to an elder, by the interviewee. Therefore, it would be inappropriate for her to start switching to speak Mandarin Chinese while the interviewer continued using English. One of the other interviewee described her reasons for not seeking psychotherapy (i.e., "*action speaks louder than words*") as she viewed psychotherapy simply to be sitting down and "venting." In Carol's case, she might think switching from English to Mandarin Chinese to be inappropriate when the interviewer continued to use Mandarin Chinese, despite the interviewer *said* it was fine to use Mandarin Chinese. As the nature of the interviewer-interviewee relationship was potentially power-differential, in addition to that interviewer may be viewed as an authority figure for someone from a culture that emphasized paying respect for elders or authority figures, it did require extra layer of consideration to balance the care of not imposing a specific interview structure unto any interviewee and the respect for different interacting styles due to interviewees' cultural background.

Another interviewee, Donna, presented an even more complicated dynamics with regards to language use for participating in an interview. Donna immigrated from Taiwan with her family, and has been in Canada for seven years. Note that the interviewer

typically started the interview process with general questions asking interviewees describing their background (e.g., where they were from originally; how long they have been in Canada), as these questions were considered relatively neutral thus could facilitate rapport-building between the interviewer and the interviewee before more personal questions or questions with sensitive nature were asked. Despite of the relatively neutral nature of these initial questions (i.e., "*how long you have been in Canada?*"), Donna immediately started talking about her feelings of inadequacy when speaking English: "*Six years. That's why I am so embarrassed.....Because my English is not good, it never improves.*"

After hearing the above, the interviewer clarified the choice of language to be hers for the rest of the interview, but Donna continued using English. Due to the personally sensitive nature of language use issue, the interviewer decided to follow her lead to continue using English. Close to the mid point of the interview, whenever the interviewer asked her to clarify or further elaborate her responses, she apparently took such queries as if the interviewer had difficulties understanding her due to her self-perceived poor English proficiency, despite that the interviewer had repeatedly explained the necessity of further clarification in gathering information during a typical interview process. Finally, after another attempt of query made from the interviewer, Donna took the initiatives to switch to speak Mandarin Chinese from that point on and throughout the rest of the interview.

Rather than as a non-significant misunderstanding about the interview process, the above scenario cannot be taken lightly. Donna seemed constantly aware of other people's expectations (in her view) about the level of English proficiency for someone

with her background (e.g., immigrating to Canada at age 12; living in Canada for seven years; currently studying in a Canadian university). Most importantly, she considered herself to fall short of that perceived expectations in her English proficiency. She reported feeling embarrassed about her imperfect English, although from the interviewer's perspective she could complete this interview using English with little difficulties. On the other hand, she wanted to use English to participate in this interview to demonstrate that she could speak English well. Her struggles with using English were no longer language-oriented in nature but more psychological. Whether she could use English as fluently as she expected herself became a constant and long-term struggle, impacting every aspect of her life, including how she dealt with conflicts with majority members of the society, how she related to other Chinese individuals, how she approached problem-solving including managing her depression, and how she planned her future with regards to career choices.

For instance, when the interviewer asked Donna if she ever thought about what made her a target of being bullied, she replied: "*For all along, I always think it is due to my English and my height. It's the wrong impression that people have about me like they can bully me. People usually when they look at me at first, they will say, you are in university already but you are so short; you've been here for six years but your English is so poor.*" She described how her mother persuaded her to pursue university education as following: "*What my mom said is very cruel, but I think it is also very true. She said you are so short, could not get any taller, your English is not good. If you go to university, at least you get more opportunities in speaking English, you can also have an university degree. When you go finding job, you will not be looked down. It makes a lot of sense.*

But when you first heard it, you felt very hurt. Why everyone else can be above average, why it is me below average."

Likely she might perceive the interviewer as someone with good English skills, by studying at a doctoral program and conducting a research project using English. She particularly commented on the interviewer's fluency in spoken English during the interview. Under this nature of interviewer-interviewee relationship, asking her to switch from English to Mandarin Chinese may reinforce her sense of inadequacy in speaking English, because she might perceive that the interviewer (with the perceived better English proficiency) had asked her to switch because her English was indeed considered by the interviewer to be poor. If the interviewer, after knowing that she often felt inadequate when speaking English, continued to use English, she might feel ignored and neglected, as her stated sense of inadequacy has not been attended to, because the interviewer did not change her use of language for the interview.

From the interviewer's personal experiences in interacting with other Chinese university students or immigrants in the community, the complexities described above with regards to English language use were not uncommon. One of the interviewees, Barbara, described the meanings of using ethnic language in the context parent-child relationship she had experienced herself and witnessed among her friends:

> ***With our parents, we respect them, so we speak Cantonese. If it is like I will be back in five minutes, then it will be English. If we are discussing something, then it will be definitely Cantonese. It is unspoken agreement if they respect us, we respect them. Our family does not believe in parents' talk and kids' talk at the end of the table, there is no such things as split talks. We talk as a family. What are***

you talking about that you cannot share? If it is on the table, it should be a topic that everybody can talk about.....I personally think that's intentional (for having split talks). I have friends do that..... To me that's not dinner time. That's as going to school or going to work. I don't believe in that, that's so separate, I think that's disrespectful. It's the same you're speaking Chinese at school in front of your non-Asian friends they don't understand. My parents never have to tell us that please say Cantonese, because there's something we can't understand. They never have to do that. It's a mutual agreement, yes, we will speak Cantonese if there is something we need to discuss.

Another interviewee, George, considered one of contributing factor for his depression was language related, as previously illustrated. Because he came to Canada around age of six and received his formal education in Canada, he considered his ethnic language proficiency not as good as his English language proficiency. However, his English proficiency, in his view, was not as good as those who were born in Canada. As he was trying to master both languages in order to navigate through different peer groups whose language uses were different, he felt he was not fully accepted by neither English speaking nor Chinese speaking groups. As language use preferences, from his perspective, were closely connected to which peer group he associated with, and which group represented his cultural identities, he felt he was pressured to choose one group to belong to in order to obtain a secure sense of peer affiliation and cultural identity. He said, "*In grade 8, you see all the grade 12 ahead of you, always in groups by themselves too. You see the Chinese group, and Canadian group. You can't really see yourself to become one of them. So when you hit grade 10, when you get into your senior year, then you feel it's*

time you really have to pick one." Later close to the end of the interview, when being asked about his advice to other Chinese in Canada, he said: *"Basically you do whatever you feel comfortable with and go with it. Mostly I am thinking the friend thing, go with the group that speaks the same language as you. That's the most important thing. Otherwise, it will be very awkward in a sense."*

From a perspective of conducting psychological research, the above scenarios presented important issues needing future researchers' attention. As ethnic minority individuals began to be included in psychological research conducted in Western societies, using ethnic native language of the targeted research sample as the language for conducting research became a widely adopted research practice. This research practice may include using alternate sets of written information (e.g., English versus translated ethnic language version of the questionnaires) or using native speakers of ethnic language as research assistants to help recruitment participants and collect research data. These research practices addressed the research need in understanding ethnic minority individuals whose relatively poorer English proficiency may have prevented them from participating in psychological research if these practices had not been in place.

On the other hand, the implications of these research practices and their impact on individuals participating in research had not been fully understood. For example, participants might choose the English version of the questionnaires because they attempted to prove their equal standing in Canada, similar to the majority members of the society, by their abilities to complete English questionnaires, despite that their more proficient ethnic language skills may make them better informants. Participants may choose to underplay the difficulties they have encountered as an immigrant adjusting to

Canadian society, when they perceived the ethnic-language-speaking research assistant representing an ideal of a successful immigrant (i.e., someone who spoke fluent English and was a valued member of the majority society). In addition to implementing research practices that facilitated the success of a research project understanding ethnic minority individuals, future studies may need to begin examining the potential implications of these practices.

Implication for Assessment and Intervention

The measures used in the current study were to capture various aspects of depressive and anxiety symptomatology, thus the clinical implication of the current findings was evident in terms of conducting assessment for these two clinical conditions. Some of the measures have been widely used in both clinical and research settings (e.g., measures of worry and psychomotor retardation) whereas other measures were mostly used as a research tool (e.g., measures of negative affectivity) predominantly among the Caucasian sample. The current study provided empirical support for assessing depressive and anxiety symptomatology using the 13 measures that comprised the factorial structures for the current sample of Caucasian Canadian university students.

Many of these measures have not been used among individuals with Chinese origin (e.g., depression and anxiety cognition scales). Among the very few that had been used among the Chinese individuals, it was the Chinese individuals residing in their country of origin, such as China (e.g., agoraphobic cognition scale; Zhou et al., 1997) or the Chinese immigrants living in the U.S. (e.g., psychomotor retardation scale; Marsella et al., 1975). Note that some measures have been used cross-culturally among individuals with other ethnic origin such as South Korean (e.g., measures of negative affectivity; Lee

& Lee, 1998) and Asian Americans (e.g., worry scale; Scott et al., 2002), or they have been used in Canadian studies (e.g., rumination scale; Flett et al., 2002). The present findings provided the very much needed empirical support for the use of these 13 measures to assess depression and anxiety among the Chinese Canadian university student sample.

Due to the similarities in factorial structures found between Chinese and Caucasian samples, future clinicians or researchers may utilize these areas of similarities as a basis for assessing symptom domains that were culturally similar. Furthermore, cautions need to be exercised when using these measures assessing the areas of similarities, as the original items of all symptom measures contained culturally biased items. Items that were found to be more likely and less likely endorsed by the Chinese sample may not be appropriate in assessing targeted constructs among individuals with Chinese origin. The current study found that the presence of culturally biased items was not scale or sample dependent, and such presence was quite common, even if not substantial, across all scales used in the current study. Clinicians or researchers may need to make necessary adjustments when using the original measures when working with Chinese Canadians, such as not including these items when calculating the overall scores, or establishing a new cut-off point when using these measures for establishing a clinically meaningful threshold.

Discovering over one-fourth of the items to be culturally biased deserved attention from future studies. From a research perspective, such findings were clear reminders of cross-cultural research in establishing item-level measurement equivalence, in addition to structural level equivalence (e.g., similar factorial structures found across

cultural groups). Item response theory and its statistical techniques were at an advantage in accomplishing this goal. Furthermore, future studies examining cross-cultural equivalence at structural level or examining the validity of a particular scale need to establish the absence of bias at an item level as a first step, rather than assuming absence of bias at item level. In the current study, although only a small set of items within a scale were found culturally biased, the accumulative impact of these culturally biased items was substantial. For example, the current study found that the composite variable representing culturally biased items (i.e., Cultural Contrast Response Tendency) showed significant and varied relation with measure of cultural orientation, whereas symptom factor scores that were generated based on symptom scales without culturally biased items did not relate significantly with measures of cultural orientation among the Chinese sample. Future research needs to remove the presence of cultural bias at an item level in order to investigate the true relation between measure of culture (e.g., cultural orientation or acculturation) and measures for their questions of interests, such as psychopathology.

Another clinical implication was related to the use of Rasch model data analysis among these 14 symptom scales. In Rasch model analysis, items from the same unidimensional scale demonstrated different degree of endosability for the same underlying construct; some items may be more sensitive to a lower level of the targeted underlying traits and other items from the same scale may only be endorsed by individuals who possessed a higher level of that trait. The varying degree of endorsability from the same scale can be utilized in clinical assessment to specifically capture individuals with minimum, medium, or high level of the targeted trait. The DSM diagnostic system in general treated every symptom as relatively equal (unless specified

otherwise), although it acknowledged that symptoms listed first in the diagnostic criteria may be more common than symptoms listed later (APA, 2000). Due to the limited space allowed for the presentation of the Result section, findings regarding the endorsability of items for all 14 measures were not included but are available from the author.

With regards to Worry and Autonomic Hyperarousal that contributed to the differences in the factorial structures between Chinese and Caucasian samples, it was their relation with other aspects of depression and anxiety that revealed the most cultural differences, not when these measures were used as stand-alone ones. In other words, it was the clustering of symptoms revealing the most cross-sample differences. Such results likely have the greatest impact on establishing the presence of GAD and panic-related anxiety disorders, or ruling out the presence of these disorders when diagnosing major depressive disorder among Chinese Canadians. As illustrated in the Discussion section, using other aspects of symptomatolog might help clarifying these diagnostic challenges, such as assessing the somatic tension aspect (rather than solely relying on assessment of worry) when considering the GAD diagnoses among the Chinese individuals.

Assessing symptomatology more comprehensively may help establishing the presence of anxiety or depression related conditions as aforementioned. Indeed, broad-based assessment has been specifically highlighted for its importance in prevention research and practice (Dozois, 2004). The current study found that symptoms were quite clustered and not segregated along the lines of various diagnosable disorders. Such findings suggested that we, as a profession, may need to contemplate alternative or additional ways of categorizing symptoms into psychiatric disorders. As more elaborately addressed in the Discussion section, the diagnosis of neurasthenia (according to the

CCMD-2-R criterion) or the "mixed-anxiety-depression category" proposed by Zinbarg and his colleagues (1994) may have specific utility in assessing anxiety or depression conditions that existing DSM system failed to capture. Clark (1989) suggested using other diagnostic label of "generalized affective disorder" to diagnose clients, not meeting criteria for somatization disorder or major depressive disorder, whose clinical presentation included somatic and emotional distress. Similarly, a "general neurotic syndrome" (Andrew et al., 1990) was proposed for clients presenting symptoms of depression, anxiety, and somatoform disorders. These suggestions pointed to the same direction that the present findings showed; that is, to incorporate more comprehensive symptom coverage when diagnosing psychiatric disorder and to consider additional diagnoses encompassing clients with mixed clinical presentation of affective, cognitive, and somatic symptoms.

Cognitive measures were found an important aspect of symptomatology, thus clinicians may need to evaluate a client's cognitive styles or contents as part of the assessment. Although the current study failed to identify disorder-specific cognition, the clustering of cognitive measures with somatic measure (e.g., Rumination and Somatic Tension) or with affective measures (e.g., Worry and measures of negative affectivity among the Caucasian sample) had important clinical implications for intervention or prevention. For instance, specific cognitive schemas as vulnerability markers for depression may remain stable, be easily activated during the non-symptomatic period, and less likely show changes after improving from a depressive episode (Dozois, 2007). Changing these cognitions in treating depression indeed has received empirical support for the effectiveness of cognitive therapies for short-term symptom reduction as well as

long-term relapse prevention (see review by Sacco & Beck, 1995). Such preventive approach may similarly target somatic tension in order to address its chronic nature and close relation with cognitions.

In addition, Worry as a cognitive symptom separated itself from Autonomic Hyperarousal in both samples, supporting its role, proposed by Borkovec et al. (1993) and Brown et al. (1994), in suppressing the intensity of autonomic arousal and the level of anxiety experience. Worry was also found closely related to measures of negative affectivity and depression among the Caucasian sample. Therefore, when providing intervention to treat anxiety and depression, it was necessary to particularly assess worry and its function for the clients undergoing treatment. For clients with a typical clinical presentation of GAD or major depression disorder with features of worry, addressing the function of worry would be an important aspect of delivering interventions.

Limitations of the Current Study and Future Directions

The current study was limited in a number of ways, and several directions for future research stemmed from the findings. First, the use of university students and the location of the current study (i.e., multicultural metropolitan cities) may limit the generalizability of the findings. Samples with different socioeconomic status may demonstrate varied factorial structures of the symptom patterns (see the critique by Dobson & Cheung, 1990). Furthermore, according to the 2001 Census (Statistics Canada, 2003), the majority of Chinese Canadians lived in metropolitan cities, such as Vancouver and Toronto. A huge settlement of Chinese immigrants would facilitate the visibility of Chinese culture (e.g., having Chinese temples or cultural centres), and the availability of specific services for Chinese immigrants (e.g., bi-lingual services in the public or the

private sectors). As such, the current Chinese sample might better access mental health or cultural services to alleviate the level of distress they might have experienced. Thus, the relation among negative acculturative experiences, epressive or anxiety symptoms, and cultural orientations may be qualitatively different from other Chinese population in Canada. A replication of the current study in community or clinical samples and in non-metropolitan areas will be important.

Second, this study, like most studies examining psychological issues among ethnic minority individuals, used participants' self-reports of various constructs which were all collected at one time. Research has found that individuals with depression and anxiety exhibited memory or attention biases; for instance, anxious individuals' attention was more drawn toward threatening cues when both threatening and non-threatening cues were presented whereas depressed individuals demonstrated mood-congruent memory biases which were illustrated with a better recall of negative information (see review by Mineka et al., 1998). The accuracy of recalling specific information in the past was likely influenced by these attention and memory bias tendencies among individuals with depression or anxiety. Future studies may consider using additional methods of collecting data (e.g., real-time hourly log or diary based approach), supplementing the retrospective self-report method, in order to capture a more complete picture of an individual's symptomatology.

Third, this study was correlational in design, and therefore no conclusions about causality to be drawn. Although cross-section correlational studies involved descriptions across groups of subjects examining issues of symptomatology and concurrent comorbidity of diagnoses were considered suitable for the current study that aimed at

understanding the pattern of symptom relations across Chinese and Caucasian samples, they were limited by the nature of such research design, especially since most theories of psychopathology were developmental in nature (Dobson & Cheung, 1990). A prospective longitudinal approach may be particularly effective, proposed by Dobson (1985a), to distinguish depression from anxiety by following samples over time.

Fourth, the third factor of Autonomic Hyperarousal among the Caucasian sample of the current study consisted of only one variable. When exploring the factorial structures among the Chinese and Caucasian samples separately, the same procedure using the same criteria was applied to both samples to determine the number of factors to be retained. Although the third factor identified among the Caucasian sample was relatively small, not retaining it would have made the current study not using same criteria of determining number of factor for the two samples. Furthermore, as Autonomic Hyperarousal demonstrated its uniqueness as a variable by forming a stand-alone factor, combining it with other variables would not have been appropriate from a conceptual perspective. However, in factor analyses, a factor that consisted of fewer variables may be limited in its generalizability across samples (Tabachnick & Fidell, 2001). This variable, Autonomic Hyperarousal, included items assessing the somatic aspect of a panic-related response, such as heart pounding and being out of breath. Future studies might consider including additional elements representing the Autonomic Hyperarousal so that it could be relatively equally assessed as other factors.

In addition to addressing the limitations of the current study, there were other directions for future research that would help us better understand the symptom structures of anxiety and depression among Chinese and Caucasian Canadian samples, and the

relation between symptom structures and individuals' cultural experiences. First, the current study had improved the assessment approach in capturing the construct of low positive affect, by including a direct assessment of low positive affect, and an assessment of physical aspect of anhedonia, such as loss of interests and psychomotor retardation. However, the current study failed to identify a depression specific component among the Caucasian sample, while previous studies were able to when using the reverse coded Positive Affect scale to assess low positive affect. The lack of depression-specific component was similarly found among cognitive aspects of assessment. Although other studies' successes in locating a depression specific component may relate to the use of Positive Affect reverse coded scale, the current study, despite using a broad-based assessment strategy, failed to identify a depression specific component. Future studies would need to address this important issue by contemplating a proper assessment to capture the aspect of depression that separated itself from anxiety and negative affectivity.

For instance, anhedonia was a clinically significant conception which bordered upon a number of related constructs, including diminution of interests, reactivity of mood, affective flattening, and apathy and anergia (Snaith, 1993). Some constructs were better understood and have been assessed with self-report measures, such as loss of interests or pleasures (e.g., "Pleasure Scale" by Fawcett, Clark, Scheftner, & Gibbons, 1983); other constructs were studied more often within a particular research tradition, such as the role of affective flattening among individual with schizophrenia (Loas et al., 1994). Likely there were other aspects of anhedonia that had not been captured by the measures used in the current study, and that might have better distinguish depression from anxiety and negative affectivity.

Second, two methodological improvements have been adopted by the current study, including using item response theory (i.e., IRT) based techniques to detect culturally biased items, and complementing quantitative element with qualitative interview element to explore mechanism linking culture to psychopathology. Both methodological strategies had shown their merits in advancing our knowledge about the issues at hand. The finding regarding differences in factorial structures between Chinese and Caucasian samples would not have been as strong if IRT-based techniques were not used to ensure the measures that were later entered in the structural analyses containing no culturally biased items. The themes revealed by interview findings not only provided further details that corroborated the quantitative findings of the current study, but they also pointed to several new and important directions for future research to understand how an individual's cultural background related to the experiences of psychopathology which the current generic cultural models failed to shed light on. Integrating different research traditions and methodologies was not easy, due to the differences in the familiarity and availability of statistical tools (e.g., statistical analyses available through item response theory and classical test theory), as well as due to the differences in theoretical underpinning of various research traditions (e.g., the research focuses on individual versus group findings in qualitative and quantitative approaches). As each of these research methodologies had plenty to offer, it would be a great miss not to benefit from the relative merits of these various approaches. Future studies may contemplate innovative ways to integrate various research and statistical methodologies by capitalizing on their strengths.

CHAPTER 7: SUMMARY AND CONCLUSION

The current study included both quantitative and qualitative research elements to understand the comorbid relation between anxiety and depression among Chinese and Caucasian Canadian university student samples, as well as to explore the mechanism linking cultural factors to psychopathology among Chinese participants with experiences of depression. In the quantitative element of the present study, 13 measures were included to assess affective, cognitive, and somatic aspects of depressive and anxiety symptomatology. Item response theory based techniques were employed (i.e., Rasch analyses) to ensure that all symptoms measures did not contain items that were culturally biased. Examining the inter-relation among these measures found a two-factorial structure best fit the data of the Chinese sample, including the Affective-Somatic and the Cognitive factors. Affective-Somatic factor included measures of negative affectivity, affective and somatic measures of depression, and autonomic hyperarousal which was one of the somatic measures for anxiety. The Cognitive factor included measures of Somatic Tension (another somatic measure of anxiety) and cognitive measures of anxiety and depression. Among the Caucasian sample, a three-factorial structure was identified, including the Mixed factor, the Cognitive factor, and the factor only comprising of autonomic hyperarousal measure. The Mixed factor included measures of negative affectivity, affective and somatic measures of depression, and worry which was one of the cognitive measures. The Cognitive factor included measures of Somatic Tension and other cognitive measures of anxiety and depression.

Individuals' cultural experiences were examined in relation to the symptom factors. Among the Chinese sample, specific cultural experiences (i.e., Negative

Acculturative Experiences; Collective Self-Esteem) showed a stronger relation with symptom factors than generic measures of cultural orientations (i.e., Chinese and Canadian Internal and External Orientations). Among the Caucasian sample, prior treatment for personality problems was a relatively stronger predictor for Mixed and Cognitive factors, whereas the factor of Autonomic Hyperarousal was moderately related to Canadian External Orientation. In addition, across all symptom measures over one-fourth of the items were found to be culturally biased, among half to be more likely endorsed by the Chinese sample and the other half to be more likely endorsed by the Caucasian sample. A new variable, Cultural Contrast Response Tendency, was created, reflecting an individual's symptom reporting style greatly contrasting the styles between Chinese and Caucasian samples. Examining this new variable's relation with cultural experience variables found that external cultural orientations were strongly related to greater contrast in symptom reporting whereas internal cultural orientations were not significant predictors, that Chinese and Canadian External Orientation related to symptom reporting tendency in opposite directions, and that Negative Acculturative Experiences were related to greater contrast in symptom reporting among the whole sample.

The qualitative element of the current study included an approximately two-hour long individual interview with seven Chinese Canadian university students with experiences of depression. Complementing the quantitative element with a qualitative interview element aimed at discovering important themes explaining the relation between culture and psychopathology that had not been examined by existing generic cultural model for understanding ethnic minority individuals' adjustment. Several themes had

been identified that contributed to the interviewees' experiences of depression; however, these themes at a content level mostly have already been addressed by depression or ethnic minority psychology literature. The new direction for future research that the themes revealed was about the mechanism that linked culture with psychopathology, such as "addictive" or "developmentally sensitive" mechanism. Interviewing was found to be a very useful research tool to obtain a more detailed and fuller understanding about the subject matter at hand. The research implications of using interview were discussed, such as the use of English or ethnic language in an interview process.

Two methodological improvements adopted by the current study proved to be instrumental, including utilizing item response theory-based biased item detection techniques and incorporating a qualitative interview component into a quantitative study. The former strengthened the current study's findings, by excluding cultural biased items from the process of investigating symptom structures. As a result, cross sample differences in symptom structures were likely to reflect true differences between these two cultural groups, rather than as the function of un-identified cultural bias items. The findings in cross-sample similarities in depressive symptomatology were further corroborated by the interview component of the current study. Except for specific features that were highlighted by Chinese interviewees, the majority of depressive symptomatology portrayed in the interviews resembled the depressive symptoms that could be expected from the general population. In addition, the interview component of the current study provided further information regarding how an individual's cultural background linked with their experiences of psychopathology, and documented the unique advantage of using interviews in understanding an individual's experiences.

References

Abbey, S. E., & Garfinkel, P. E. (1992). Neurasthenia and chronic fatigue syndrome: The role of culture in the making of the diagnosis. *American Journal of Psychiatry, 148*, 1638-1646.

Abe-Kim, J., Okazaki, S., & Goto, S. G. (2001). Unidimensional versus multidimensional approaches to the assessment of acculturation for Asian American populations. *Cultural Diversity and Ethnic Minority Psychology, 7*, 232-246.

Akiskal, H. S. (1985). Anxiety: Definition, relationship to depression, and proposal for an integrated model. In A. H. Tuma, & J. D. Maser (Eds.), *Anxiety and the Anxiety Disorders* (pp. 787-797). Hillsdale, NJ: Erlbaum.

Akiskal, H. S. (2000). Mood disorders: Clinical features. In B. J. Sadock, & V. A. Sadock (7^{th} eds.), *Comprehensive Textbook of Psychiatry*, Volume 1 (pp. 1338-1377). Lippincott Williams & Wilkins: Philadelphia.

Alford, B. A., Lester, J. M., Patel, R. J., Buchanan, J. P., & Giunta, L. C. (1995). Hopelessness predicts future depressive symptoms: A prospective analysis of cognitive vulnerability and cognitive content specificity. *Journal of Clinical Psychology, 51*, 331-339.

Alloy, L., Kelly, K., Mineka, S., & Clements, C. (1990). Comorbidity in anxiety and depressive disorders: A helplessness/ hopelessness perspective. In J. D. Maser, & C. R. Cloninger (Eds.), *Comorbidity of Mood and Anxiety Disorders* (pp. 499-543). American Psychiatric Press: Washington, DC.

Altshuler, L. L., Wang, X., Qi, H., Hua, Q., Wang, W., & Xia, M. (1988). Who seeks mental health care in China? Diagnoses of Chinese outpatients according to

DSM-III criteria and the Chinese Classification System. *American Journal of Psychiatry, 145*, 872-875.

Alvarez, A. N., & Helms, J. (2001). Racial identity and reflected appraisals as influences on Asian Americans' racial adjustment. *Cultural Diversity and Ethnic Minority Psychology, 7*, 217-231.

American Psychiatric Association (1980). *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed.). Washington, DC: Author.

American Psychiatric Association (1987). *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., revised). Washington, DC: Author.

American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text revision). Washington, DC: Author.

Andrews, G., Stewart, G., Morris-Yates, A., Holt, P., & Henderson, S. (1990). Evidence for a general neurotic syndrome. *British Journal of Psychiatry, 157*, 6-12.

Andrich, D. (1978). Scaling attitude items constructed and scored in the Likert tradition. *Educational and Psychological Measurement, 38*, 581-594.

Arbuckle, J., & Wothke, W. (2004). *Analysis of Moment Structures* (Version 5.0) [Computer software]. Chicago: Small Waters.

Arrindell, W. A. (1993). The fear of fear concept: Evidence in favour of multidimensionality. *Behaviour Research and Therapy, 31*, 507-518.

Arthur, N. (2001). Using critical incidents to investigate cross-cultural transitions. *International Journal of Intercultural Relations, 25*, 41-53.

Austin, A. A., & Chorpita, B. F. (2004). Temperament, anxiety, and depression: Comparisons across five ethnic groups of children. *Journal of Clinical Child and*

Adolescent Psychology, 33, 216-226.

Bagozzi, R. P., Wong, N., & Yi, Y. (1999). The role of culture and gender in the relationship between positive and negative affect. *Cognition and Emotion, 13*, 641-672.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychological Review, 84*, 191-215.

Bankier, B., Aigner, M., & Bach, M. (2001). Clinical validity of ICD-10 Neurasthenia. Psychopathology, 34, 134-139.

Barlow, D. H. (1985). The dimensions of anxiety disorders. In A. H. Tuma, & J. D. Maser (Eds.), *Anxiety and the Anxiety Disorders* (pp. 479-500). LEA: Hillsdale, NJ.

Baptista, A. (2000). Gender differences and sex-roles in panic disorder. *Ansiedad y Estres, 6* (2-3), 243-253 [in Spanish; English abstract].

Beck, A. T. (1976). *Cognitive Therapy and the Emotional Disorders*. New York: New American Library.

Beck, A. T. (1985). Theoretical perspectives on clinical anxiety. In A. H. Tuma, & J. D. Maser (Eds.), *Anxiety and the Anxiety Disorders* (pp. 183-196). LEA: Hillsdale, New Jersey.

Beck, A. T., Brown, G., Steer, R. A., Eidelson, J. I., & Riskind, J. H. (1987). Differentiating anxiety and depression: A test of the cognitive content-specificity hypothesis. *Journal of Abnormal Psychology, 96*, 179-183.

Beck, A. T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: The Hopelessness Scale. *Journal of Consulting and Clinical*

Psychology, 42, 861-865.

Beck, R., & Perkins, T. S. (2001). Cognitive content-specificity for anxiety and depression: A meta-analysis. *Cognitive Therapy & Research, 25*, 651-663.

Beck, R., Perkins, T. S., Holder, R., Robbins, M., Gray, M., & Allison, S. H. (2001). The cognitive and emotional phenomenology of depression and anxiety: Are worry and hopelessness the cognitive correlates of NA and PA? *Cognitive Therapy and Research, 25*, 829-838.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238-246.

Bentler, P. M., & Bonett, D. G. (1980). Significant tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588-606.

Bernstein, I. H., & Teng, G. (1989). Factoring items and factoring scales are different: Spurious evidence for multidimensionality due to item categorization. *Psychological Bulletin, 105*, 467-477.

Berry, J. W. (1980). Acculturation as varieties of adaptation. In A. M. Padilla (Ed.), *Acculturation: Theory, Models and Some New Findings* (pp. 9-25). Boulder, Colorado: Westview Press.

Berry, J. W., & Annis, R. C. (1974). Acculturative stress: The role of ecology, culture and differentiation. *Journal of Cross-Cultural Psychology, 5*, 382-406.

Berry, J. W., Kim, U., Power, S., Young, M., & Bujaki, M. (1989). Acculturation attitudes in plural societies. *Applied Psychology: An International Review, 38*, 185-206.

Betacourt, H., & López, S. R. (1993). The study of culture, ethnicity, and race in

American psychology. *American Psychologist, 48*, 629-637.

Blagden, J. C., & Craske, M. G. (1996). Effects of active and passive rumination and distraction: A pilot replication with anxious mood. *Journal of Anxiety Disorders, 10*, 243-252.

Blanshfield, R. K. (1990). Comorbidity and classification. In J. D. Maser, & C. R. Cloninger (eds.), *Comorbidity of Mood and Anxiety Disorders* (pp. 61-82). American Psychiatric Press: Washington, D. C.

Blumberg, S. H., & Izard, C. E. (1986). Discriminating patterns of emotions in 10- and 11-year-old children's anxiety and depression. *Journal of Personality and Social Psychology, 51*, 852-857.

Borkovec, T. D., Lyonfields, J. D., Wiser, S., & Deihl, L. (1993). The role of worrisome thinking in the suppression of cardiovascular response to phobic imagery. *Behavioral Research and Therapy, 31*, 321-324.

Borkovec, T. D., Ray, W. J., & Stöber, J. (1998). Worry: A cognitive phenomenon intimately linked to affective, physiological, and interpersonal behavioral processes. *Cognitive Therapy and Research, 22*, 561-576.

Bradley, M. M., & Lang, P. J. (1994). Measuring emotion: The Self-Assessment Manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry, 25*, 49-59.

Brown, T. A. (2003). Confirmatory factor analysis of the Penn State Worry Questionnaire: Multiple factors of method effects? *Behaviour Research and Therapy, 41*, 1411-1426.

Brown, T. A., Antony, M. M., & Barlow, D. H. (1992). Psychometric properties of the

Penn State *Worry Questionnaire in a clinical anxiety disorders sample. Behaviour* Research & Therapy, 30, 33-37.

Brown, T. A., Chorpita, B. F., & Barlow, D. H. (1998). Structural relationships among dimensions of the DSM-IV anxiety and mood disorders and dimensions of negative affect, positive affect, and autonomic arousal. *Journal of Abnormal Psychology, 107*, 179-192.

Burn, D. D., & Eidelson, R. J. (1998). Why are depression and anxiety correlated? A test of the tri-partite model. *Journal of Consulting and Clinical Psychology, 66*, 461-473.

Burnam, M. A., Hough, R. L., Karno, M., Escobar, J. I., & Telles, C. A. (1987). Acculturation and lifetime prevalence of psychiatric disorders among Mexican Americans in Los Angeles. *Journal of Health and Social Behaviour, 28*, 89-102.

Byrne, B. M. (2001). *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming*. Lawrence Erlbaum Associates, Publishers: Mahwah, New Jersey.

Chambless, D. L., Caputo, C., Bright, P., & Gallagher, R. (1984). Assessment of fear of fear in agoraphobics: The Body Sensation Questionnaire and the Agoraphobic Cognitions Questionnaire. *Journal of Consulting and Clinical Psychology, 52*, 1090-1097.

Chang, D. E., Myers, H. F., Yeung, A., Zhang, Y., Zhao, J., & Yu, S. (2005). Shenjing Shuairou and the DSM-IV: Diagnosis, distress, and disability in a Chinese primary care setting. *Transcultural Psychiatry, 42*, 204-218.

Chang, W. C. (1985). A cross-cultural study of depressive symptomatology. *Culture,*

Medicine, & Psychiatry, 9, 295-317.

Chen, C.-N., Wong, J., & Lee, J. (1993). The Shatin Community Mental Health Survey in Hong Kong: II. Major findings. *Archives of General Psychiatry, 50*, 125-133.

Cheng, T.A. (1989). Symptomatology of minor psychiatric morbidity: a cross-cultural comparison. *Psychological Medicine, 19*, 697-708.

Cheng, T. A., Wu, J. T., Chong, M. Y., & Williams, P. (1990). Internal consistency and factor structure of the Chinese Health Questionnaire. *Acta Psychiatrica Scandinavica, 82*, 304-308.

Cheung, C.-K., & Bagley, C. (1998). Validation an American scale in Hong Kong: The Center for Epidemiological Studies-Depression Scale (CES-D). *The Journal of Psychology, 132*, 169-186.

Cheung, F. M., Lee, S-Y., & Chan, Y. Y. (1983). Variations in problem conceptualization and intended solutions among Hong Kong students. *Culture, Medicine, and Psychiatry, 7*, 263-278.

Cheung, F. M., Leung, K., & Zhang, J.-X. (2001). Indigenous Chinese personality constructs: Is the Five-Factor Model complete? *Journal of Cross-Cultural Psychology, 32*, 407-433.

Chia, A.-L. (2004, May). *Diversities in country of origin on immigration: A Canadian example.* Poster presented at the 3rd International Academy for Intercultural Research biennial conference, Taipei, Taiwan.

Chia, A.-L., & Costigan, C. L. (2006a). A person-centred approach to identifying acculturation groups among Chinese Canadians. *International Journal of Psychology, 41*, 397-412.

Chia, A.-L., & Costigan, C. L. (2006b). Understanding multidimensionality of acculturation among Chinese Canadians. *Canadian Journal of Behavioural Science, 38*, 311-324.

Chia, A.-L., & Costigan, L. C. (2002, July). *Cultural identity and well-being of Chinese immigrants in Canada.* Paper presented at the XIV International Association of Cross-Cultural Psychology Congress, Yogyakarta, Indonesia.

Chinese Medical Association, and Nanjing Medical University (1995). *Chinese Classification of Mental Disorders, Second Edition, Revised* (CCMD-2-R). Nanjing: Dong Nan University Press [In Chinese].

Cho, M. J., & Kim, K. H. (1998). Use of the Center for Epidemiological Studies-Depression (CES-D) Scale in Korea. *Journal of Nervous and Mental Disease, 186*, 304-310.

Chorpita, B. F., Daleiden, E. I., Moffitt, C., Yim, L., & Umemoto, I. A. (2000). Assessment of tripartite factors of emotion in children and adolescents: I. Structural validity and normative data of an affect and arousal scale. *Journal of Psychopathology and Behavioral Assessment, 22*, 141-160.

Christensen, C. P. (1987). The perceived problems and help-seeking preferences of Chinese immigrants in Montreal. *Canadian Journal of Counselling, 21*, 189-199.

Clark, D. A., Beck, A. T., & Brown, G. (1989). Cognitive mediation in general psychiatric outpatients: A test of the cognitive content-specificity hypothesis. *Journal of Personality and Social Psychology, 56*, 958-964.

Clark, D. A., Beck, A. T., & Stewart, B. (1990). Cognitive specificity and positive-negative affectivity: Complementary of contradictory views on anxiety and

depression? *Journal of Abnormal Psychology, 99*, 148-155.

Clark, D. A., Steer, R. A., & Beck, A. T. (1994). Common and specific dimensions of self-reported anxiety and depression: Implications for the cognitive and tripartite models. *Journal of Abnormal Psychology, 103*, 645-654.

Clark, L. A. (1989). The anxiety and depressive disorders: Descriptive psychopathology and differential diagnosis. In P. D. Kendall, & D. Watson (Eds.), *Anxiety and Depression: Distinctive and Overlapping Features* (pp. 88-129). Academic Press: San Diego, CA.

Clark, L. A., & Watson, D. (1991). Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. Journal of Abnormal Psychology, 100, 316-336.

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*, 309-319.

Cleary, T. A., & Hilton, T. L. (1968). An investigation of item bias. *Educational and Psychological Measurement, 28*, 61-75.

Clément, R., Noels, K. A., & Deneault, B. (2001). Interethnic contact, identity, and psychological adjustment: The mediating and moderating roles of communication. *Journal of Social Issues, 57*, 559-577.

Cole, D. A., Truglio, R., & Peeke, L. (1997). Relation between symptoms of anxiety and depression in children: A multitrait-multimethod-multigroup assessment. *Journal of Consulting and Clinical Psychology, 65*, 110-119.

Compton, W. M., Helzer, J. E., Hwu, H.-G., Yeh, E.-K., McEvoy, L., Tipp, J. E., &

Spitznagel, E. L. (1991). New methods in cross-cultural psychiatry: Psychiatric illness in Taiwan and the United States. *American Journal of Psychiatry, 148*, 1697-1704.

Creswell, J. W. (1998). *Qualitative Inquiry and Research Design: Choosing among Five Traditions*. SAGE Publications: Thousand Oaks, CA.

Crocker, J., Luhtanen, R., Blaine, B., & Broadnax, S. (1994). Collective self-esteem and psychological well-being among White, Black, and Asian college students. *Personality and Social Psychology Bulletin, 20*, 503-513.

Cuéllar, I., Arnold, B., & Maldonado, R. (1995). Acculturation Rating Scale for Mexican Americans-II: A revision of the original ARSMA Scale. *Hispanic Journal of Behavioural Sciences, 17*, 275-304.

Cushner, K., & Brislin, R. W. (1996). *Intercultural Interactions: A Practical Guide* (2nd ed.). Thousand Oaks, CA, US: Sage Publications.

Derogatis, L. R., & Cleary, P. A. (1976). Confirmation of the dimensional structure of the SCL-90: A study in construct validation. *Journal of Clinical Psychology, 33* (4), 981-989.

Derogatis, L. R., Lipman, R. S., & Covi, L. (1971). Neurotic symptom dimensions: As perceived by psychiatrists and patients of various social classes. Archives of General Psychiatry, 24, 454-464.

DeSouza, C., Othmer, E., Gabrielli, W., & Othmer, S. (1988). Major depression and somatization disorder: The overlooked differential diagnosis. *Psychiatric Annals, 18*, 340-348.

Diaz, M. L. (2000). Exploring generalized anxiety disorder and worry in Peru.

Dissertation Abstracts International: Section B: The Sciences and Engineering, 60 (8-B), 4215.

Dobson, K. S. (1985a). The relationship between anxiety and depression. *Clinical Psychology Review, 5*, 307-324.

Dobson, K. S. (1985b). Defining an interactional approach to anxiety and depression. *Psychological Record, 35*, 471-489.

Dobson, K. S., & Cheung, E. (1990). Relationship between anxiety and depression: Conceptual and methodological issues. In J. D. Maser, & C. R. Cloninger (Eds.), *Comorbidity of Mood and Anxiety Disorders* (pp. 611-634). American Psychiatric Press: Washington, DC.

Dozois, D. J. A. (2004). Prevention of anxiety psychopathology: Conceptual, methodological, and practical issues. *Clinical Psychology: Science and Practice, 11*, 425-429.

Dozois, D. J. A. (2007). Stability of negative self-structures: A longitudinal comparison of depressed, remitted, and nonpsychiatric controls. *Journal of Clinical Psychology, 63*, 319-338.

Elias, N., & Blanton, J. (1987). Dimensions of ethnic identity in Israeli Jewish families living in the United States. *Psychological Reports, 60*, 367-375.

Ellis, A. (1962). *Reason and Emotion in Psychotherapy*. New York: Lyle Stuart.

Embretson, S. D., & Reise, S. P. (2000). *Item Response Theory for Psychologists*. Lawrence Erlbaum Associates: Mahwah, New Jersey.

Eshun, S. (2000). Role of gender and rumination in suicide ideation: A comparison of college samples from Ghana and the United States. *Cross-Cultural Research: The*

Journal of Comparative Social Science, 34, 250-263.

Eyou, M. L., Adair, V., & Dixon, R. (2000). Cultural identity and psychological adjustment of adolescent Chinese immigrants in New Zealand. *Journal of Adolescence, 23*, 531-543.

Fawcett, J., Clark, D. C., Scheftner, W. A., & Gibbons, R. D. (1983). Assessing anhedonia in psychiatric patients. *Archives of General Psychiatry, 26*, 57-63.

Feldman, L. A. (1995). Valence focus and arousal focus: Individual differences in the structure of affective experience. *Journal of Personality and Social Psychology, 69*, 153-166.

Fernando, S. (1984). Racism as a cause of depression. *The International Journal of Social Psychiatry, 30*, 41-49.

Ferraro, A. (1954). Nosologic position of neurasthenia in psychiatry. *Journal of Nervous and Mental Disease, 119*, 299-314.

Flett, G. L., Madorsky, D., & Hewitt, P. L. (2002). Perfectionism cognitions, rumination, and psychological distress. *Journal of Rational-Emotive & Cognitive Behavior Therapy, 20*, 33-47.

Fresco, D. M., Frankel, A. N., Mennin, D. S., Turk, C. I., & Heimberg, R. G. (2002). Distinct and overlapping features of rumination and worry: The relationship of cognitive production to negative affective states. *Cognitive Therapy and Research, 26*, 179-188.

Fuertes, J. N., & Westbrook, F. D. (1996). Using the Social, Attitudinal, Familial, and Environmental (S.A.F.E.) Acculturation Stress Scale to assess the adjustment needs of Hispanic college students. *Measurement and Evaluations in Counseling*

and Development, 29, 67-76.

Fugita, S. S., Crittenden, K. S. (1990). Toward culture- and population-specific norms for self-reported depressive symptomatology. *The International Journal of Social Psychiatry, 36*, 83-92.

Futterman, A., Thompson, L., Gallagher-Thompson, D., & Ferris, R. (1995). Depression in later life: Epidemiology, assessment, etiology, and treatment. In E. E. Beckham, & W. R. Leber (2nd eds.), *Handbook of Depression* (pp. 494-525). The Guilford Press: New York.

Gerbing, D. W., & Hamilton, J. G. (1996). Validity of exploratory factor analysis as a precursor to confirmatory factor analysis. *Structural Equation Modelling, 3*, 62-72.

Geisser, M. E., Cano, A., & Foran, H. (2006). Psychometric properties of the Mood and Anxiety Symptom Questionnaire in patients with chronic pain. *Clinical Journal of Pain, 22*, 1-9.

Gosselin, P., Tremblay, M., Dugas, M. J., & Ladouceur, R. (2002). Adolescent worries: Psychometric properties in the French version of the Penn State Worry Questionnaire for children. *Canadian Psychology, 43*, 270-277.

Greenberger, P. E., Stiglin, L. E., Finkelstein, S. N., & Berndt, E. R. (1993). Depression: A neglected major illness. *Journal of Clinical Psychiatry, 54*, 419-424.

Gupta, R., & Yick, A. (2001). Validation of CES-D Scale for older Chinese immigrants. *Journal of Mental Health and Aging, 7*, 257-272.

Hartung, C. M., & Widiger, T. A. (1998). Gender differences in the diagnosis of mental disorders: Conclusions and controversies of the DSM-IV. Psychological Bulletin,

123, 260-278.

Hazlett-Stevens, H., Ullman, J. B., & Craske, M. G. (2004). Factor structure of the Penn State Worry Questionnaire: Examination of a method factor. *Assessment, 11*, 361-370.

Heijmans, M., Foets, M., Rijken, M., Schreurs, K., de Ridder, D., & Bensing, J. (2001). Stress in chronic disease: Do the perceptions of patients and their general practitioners match? *British Journal of Health Psychology, 6*, 229-243.

Helms, J. E. (1997). The triple quandary of race, culture, and social class in standardized cognitive ability testing. In D. P. Flanagan, J. L. Genshaft, & P. L. Harrison (eds.). *Contemporary Intellectual Assessment: Theories, Tests, and Issues* (pp. 517-532). New York: Guilford Press.

Hendriks, A. A. J., Hofstee, W. K. B., & De Raad, B. (1999). The Five-Factor Personality Inventory (FFPI). *Personality and Individual Differences, 27*, 307-325

Hermans, D., Crombez, G., van Rijsoort, S., & Laeremans, I. (2002). The Metacognitions Questionnaire. *Gedragstherapie, 35*, 341-352 [English abstract].

Hickie, I., Davenport, T., Issakidis, C., & Andrews, G. (2002). Neurasthenia: prevalence, disability, and health care characteristics in the Australian community. *British Journal of Psychiatry, 181*, 56-61.

Hoehn-Sarci, R., & McLeod, D. R. (2000). Anxiety and arousal: Physiological changes and their perception. *Journal of Affective Disorders, 61*, 217-224.

Holland, P. W., & Thayer, D. T. (1988). Differential item performance and the Mantel-Haenszel procedure. In H. Wainer, & H. I. Braun (Eds.), *Test Validity* (pp. 129-145). Hillsdale, NJ: Erlbaum.

Hong, R. Y. (2007). Worry and rumination: Differential associations with anxious and depressive symptoms and coping behavior. *Behaviour Research and Therapy, 45*, 277-290.

Hulin, C. L., Drasgow, F., & Parsons, C. K. (1983). *Item Response Theory: Application to Psychological Measurement*. Dow Jones-Irwin: Homewood, IL.

Hutchison, K. E., Trombley, R. P., Collins, F. L. Jr., McNeil, D. W., Turk, C. L., Carter, L. E., Ries, B. J., & Leftwich, M. J. T. (1996). A comparison of two models of emotion: Can measurement of emotion based on one model be used to make inferences about the other? *Personality and Individual Differences, 21*, 785-789.

Hwu, H.-G., Chang, I.-H., Yeh, E.-K., Chang, C.-J., & Yeh, L.-L. (1996). Major depressive disorder in Taiwan defined by the Chinese Diagnostic Interview Schedule. *The Journal of Nervous and Mental Disease, 184*, 497-502.

Iketani, T., Nagao, K., Minamikawa, N., Shidao, A., Fukuhara, H., Nagata, T., Kiriike, N., & Sugiura, Y. (2002). Anxiety sensitivity and catastrophic cognition in Panic Disorder: Association with Agoraphobia. *Seishin Igaku (Clinical Psychiatry), 44*, 977-983 [in Japanese, English abstract].

Ingram, R. E., & Malcarne, V. L. (1995). Cognitions in depression and anxiety: Same, different, or a little of both? In K. D. Craig, & K. S. Dobson (Eds.), *Anxiety and Depression in Adults and Children* (pp. 37-56). SAGE: Thousand Oaks, CA.

Isajiw, W. W. (1990). Ethnic-identity retention. In R. Breton, W. W. Isajiw, W. E. Kalbach, & J. G. Reitz (Eds.), *Ethnic Identity and Equality: Varieties of Experience in a Canadian City* (pp. 34-91). Toronto: University of Toronto Press.

Ishiyama, F. I. (1991). An international comparative survey on problems and help-seeking: Japanese and Canadian high school students. *Report of Research Support, 4*, 21-24.

Iwamasa, G. Y. (1997). Asian Americans. In S. Friedman (ed.), *Cultural Issues in the Treatment of Anxiety* (pp. 99-129). The Guilford Press.

Iwata, N., & Buka, S. (2002). Race/ethnicity and depression symptoms: A cross-cultural/ethnic comparison among university students in East Asia, North and South America. *Social Science and Medicine, 55*, 2243-2252.

Iwata, N., Roberts, C. R., & Norito, K. (1995). Japan-U.S. comparison of responses to depression scale items among adult workers. *Psychiatry Research, 58*, 237-245.

Joiner, T. E., Brown, J. S., & Metalsky, G. I. (2003). A test of the tripartite model's prediction of anhedonia's specificity to depression: patients with major depression versus patients with schizophrenia. *Psychiatry Research, 119*, 243-250.

Joiner, T. E. Jr., Catanzaro, S. J., & Laurent, J. (1996). Tripartite model of positive and negative affect, depression, and anxiety in child and adolescent psychiatric inpatients. *Journal of Abnormal Psychology, 105*, 401-409.

Jolly, J. B., Dyck, M. J., Kramer, T. A., & Wherry, J. N. (1994). Integration of positive and negative affectivity and cognitive content-specificity: Improved discrimination of anxious and depressed symptoms. *Journal of Abnormal Psychology, 103*, 544-552.

Jolly, J. B., & Dykman, R. A. (1994). Using self-report data to differentiate anxious and depressive symptoms in adolescents: Cognitive content specificity and global distress? *Cognitive Therapy and Research, 18*, 25-37.

Kaelber, C. T., Moul, D. E., & Farmer, M. E. (1995). Epidemiology of depression. In E. E. Beckham, & W. R. Leber (2nd eds.), *Handbook of Depression* (pp. 3-35). The Guilford Press: New York.

Katz, M. M. (1984). A multi-vantaged approach to measurement of behavioural and affect states for clinical and psychobiological research. *Psychological Reports, 55*, 619-671.

Kawanishi, U. (1992). Somatization of Asians: An artifact of western medicalization? *Transcultural Psychiatric Research Review, 29*, 5-36.

Kellner, R. (1990). Somatization: Theories and Research. *Journal of Nervous and Mental Disease, 178*, 150-160.

Kenny, D. A. (1995). The multitrait-multimethod matrix: Design, analysis, and conceptual issues. In P. E. Shout, & S. T. Fiske (Eds.), *Personality, Research, Methods, and Theory: A Festchrift Honoring Donald W. Fiske* (pp. 111-124). Hillsdale, NJ: LEA.

Kessler, R. C., Keller M. B., & Wittchen, H. U. (2001). The epidemiology of generalized anxiety disorder. *Psychiatric Clinics of North America, 24*, 19-39.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., Wittchen, H.-U., & Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. *Archives of General Psychiatry, 51*, 8-19.

Khawaja, N. G. (2003). Revisiting the factor structure of the Agoraphobic Cognitions Questionnaire and Body Sensation Questionnaire: A confirmatory factor analysis study. *Journal of Psychopathology and Behavioral Assessment, 25*, 57-63.

Kim, Y., Pilkonis, P. A., Frank, E., Thase, M. E., & Reynolds, C. F. (2002). Differential item functioning of the Beck Depression Inventory in late-life patients: Use of item response theory. *Psychology and Aging, 17*, 379-391.

Kirmayer, L. J., Gaulbaud du Fort, G., Young, A., Weinfeld, M., & Larsy, J.-C. (1996). *Pathways and Barriers to Mental Health Care in an Urban Multicultural Milieu: An Epidemiological and Ethnographical Study* (Report No. 6, Part 1). Culture, and Mental Health Research Unit, Institute of Community Psychiatry, Sir Mortimer B. Davis-Jewish General Hospital.

Klein, D. N., & Riso, L. P. (1993). Psychiatric disorders: Problems of boundaries and comorbidity. In C. C. Costello (Ed.), *Basic Issues in Psychopathology* (pp. 19-66). New York: The Guilford Press.

Kleinman, A. (1982). Neurasthenia and depression: A study of somatization and culture in China. *Culture, Medicine, and Psychiatry, 6*, 117-190.

Kleinman, A. (1988). *Rethinking Psychiatry: From Cultural Category to Personal Experience.* New York: The Free Press.

Kleinman, A., & Good, B. (1985). *Culture and Depression.* Univ. of California Press: Berkeley.

Kroenke, K., & Spitzer, R. L. (1998). Gender differences in the reporting of physical and somatoform symptoms. *Psychosomatic Medicine, 60*, 150-155.

Kroger, J., & Green, K. E. (1996). Events associated with identity status change. *Journal of Adolescence, 19*, 477-490.

Kuehner, C., & Weber, I. (1999). Responses to depression in unipolar depressed patients: An investigation of Nolen-Hoeksema's response styles theory. *Psychological*

Medicine, 29 (6), 1323-1333.

Kuo, W. H. (1984). Prevalence of depression among Asian Americans. *Journal of Nervous and Mental Disease, 172*, 449-457.

Kwan, K.-L. K. (1999). MMPI and MMPI-2 performance of the Chinese: Cross-cultural applicability. *Professional Psychology: Research and Practice, 30*, 260-268.

Kwan, K.-L. K., & Sodowsky, G. R. (1997). Internal and external ethnic identity and their correlates: A study of Chinese American immigrants. *Journal of Multicultural Counseling and Development, 25*, 51-67.

Ladouceur, R. Freeston, M. H., & Fournier, S. (2002). The social basis of worry in three samples: High-school students, university students, and older adults. *Behavioural & Cognitive Psychotherapy, 30*, 427-438.

Lalinec-Michaud, M. (1988). Three cases of suicide in Chinese-Canadian women. *Canadian Journal of Psychiatry, 33*, 153-156.

Lam, S.-F., Lau, I. Y., Chiu, C.-Y., Hong, Y.-Y., & Peng, S.-Q. (1999). Differential emphases on modernity and Confucian values in social categorization: The case of Hong Kong adolescents in political transition. *International Journal of Intercultural Relations, 23, 237-256.*

Lambert, S. F., McCreary, B. T., Joiner, T. E., Schmidt, N. B., & Ialongo, N. S. (2004). Structure of anxiety and depression in urban youth: An examination of the tripartite model. *Journal of Consulting and Clinical Psychology, 72*, 904-908.

Lang, P. J. (1978). Anxiety: Toward a psychophysiological definition. In H. S. Akiskal, & W. L. Weber (Eds.), *Psychiatric Diagnosis: Exploration of Biological Predictors*. New York: Spectrum.

Lange, R., Thalbourne, M. A., Houran, J., & Lester, D. (2002). Depressive response sets due to gender and culture-based differential item functioning. *Personality and Individual Differences, 33*, 937-954.

Lay, C., & Verkuyten, M. (1999). Ethnic identity and its relation to personal self-esteem: A comparison of Canadian-born and foreign-born Chinese adolescents. *Journal of Social Psychology, 139*, 288-300.

Lazarus, R. S. (1974). Psychological stress and coping in adaptation and illness. *International Journal of Psychiatry in Medicine, 5*, 321-333.

Lee, K. R., & Lee, Y. H. (1998). The effects of affectivity and types of stress on common and specific symptoms of depression and anxiety. *Korean Journal of Clinical Psychology, 17* (2), 69-86 [English Abstract].

Lee, S. (1994). The vicissitudes of neurasthenia in Chinese societies: Where will it go from the ICD-10? *Transcultural Psychiatric Research Review, 31*, 153-172.

Lee, S. (1996). Cultures in psychiatric nosology: The CCMD-2-R and International Classification of Mental Disorders. *Culture, Medicine, and Psychiatry, 20*, 421-472.

Lee, S. (1998). Estranged bodies, simulated harmony, and misplaced cultures: Neurasthenia in contemporary Chinese society. *Psychosomatic Medicine, 60*, 448-457.

Lee, S., & Wong, K. C. (1995). Rethinking neurasthenia: The illness concepts of Shenjing Shuairuo among Chinese undergraduates in Hong Kong. *Culture, Medicine, & Psychiatry, 19*, 91-111.

Levinson, D. J. (1986). A conception of adult development. *American Psychologist, 41*,

3-13.

Liem, R., Lim, B. A., & Liem, J. H. (2000). Acculturation and emotion among Asian Americans. *Cultural Diversity and Ethnic Minority Psychology, 6*, 13-31.

Lin, C.-Y. C., & Fu, V. R. (1990). A Comparison of Child-Rearing Practices among Chinese, Immigrant Chinese, and Caucasian-American Parents. *Child Development, 61*, 429-433.

Lin, N. (1989). Measuring depressive symptomatology in China. *Journal of Nervous and Mental Disease, 177*, 121-131.

Lin, T.-Y. (1985). Mental disorder and psychiatry in Chinese cultures: Characteristics features and major issues. In W.-S. Tseng and D. Y. H. Wu (Eds.), *Chinese Culture and Mental Health* (pp. 369-393). Orlando, FL: Academic.

Lin, T.-Y. (1992). Neurasthenia revisited: Its place in modern psychiatry. *Psychiatric Annals, 22*, 4, 173-187.

Linacre, J. M. (2003). *A user's guide to Winsteps, Ministep Rasch-Model computer programs.* Chicago, IL: MESA Press.

Liu, S. (1989). Neurasthenia in China: Modern and traditional criteria for its diagnosis. *Culture, Medicine, & Psychiatry, 13*, 163-186.

Liu, X. C., Ma, D. D., Kurita, H., & Tang, M. Q. (1999). Self-reported depressive symptoms among Chinese adolescents. *Social Psychiatry and Psychiatric Epidemiology, 34*, 44-47.

Loas, G., Salinas, E., Pierson, A., Guelfi, J., & Samuel-Lajeunesse, B. (1994). Anhedonia and blunted affect in major depressive disorder. *Comprehensive Psychiatry, 35*, 365-372.

López, S. R., & Guarnaccia, P. J. (2000). Cultural psychopathology: uncovering the social world of mental illness. *Annual Review of Psychology, 51*, 571-598.

Löwe, B., Spitzer, R. L., Gräfe, K., Kroenke, K., Quenter, A., Zipfel, S., Buchholz, C., Witte, S., & Herzog, W. (2004). Comparative validity of three screening questionnaires for DSM-IV depressive disorders and physicians' diagnoses. *Journal of Affective Disorders, 78*, 131-140.

Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self evaluation of one's social identity. *Personality and Social Psychology Bulletin, 18*, 302-318.

Lung, F.-W., Huang, Y.-L., Shu, B.-C., & Lee, F.-Y. (2004). Parental rearing style, premorbid personality, mental health, and quality of life in chronic regional pain: A causal analysis. *Comprehensive Psychiatry, 45*, 206-212.

Makaremi, A. (2000). Relation of depression and anxiety to personal and academic problems among Iranian college students. *Psychological Reports, 87*, 693-698.

Mantel, N., & Haenszel, W. (1959). Statistical aspects of the analysis of data from retrospective studies of disease. *Journal of the National Cancer Institute, 22*, 719-748.

Marcotte, D. (1995). The influence of cognitive distortions, self-esteem, and attitudes toward puberty on symptoms of depression in adolescents. Revue Quebecoise de Psuychologie, 16 (3), 109-132 [in French; English abstract].

Marin, G. (1992). Issues in the measurement of acculturation among Hispanics. In K. F. Geisinger (Ed.), *Psychological Testing of Hispanics* (pp. 235-251). Washington, D. C.: American Psychological Association.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition,

emotion, and motivation. *Psychological Review, 98,* 224-253.

Marsella, A. J., Sanborn, K. O., Kameoka, V., Shizuru, L., & Brennan, J. (1975). Cross-validation of self-report measures of depression among normal populations of Japanese, Chinese, and Caucasian ancestry. *Journal of Clinical Psychology, 31,* 281-287.

Martin, L. L., & Tesser, A. (1996). Some ruminative thoughts. In R. S. Wyer (ed.), *Ruminative Thoughts* (pp. 1-47). Hillsdale, NJ: Erlbaum.

Marten, P. A., Brown, T. A., Barlow, D. H., Borkovec, T. D., Shear, M. K., & Lydiard, R. B. (1993). Evaluation of the ratings comprising the associated symptom criterion of DSM-III-R Generalized Anxiety Disorder. *The Journal of Nervous and Mental Disease, 181,* 676-682.

Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy, 28,* 487-495.

McQuaid, J. R., Stein, M. B., Laffaye, C., & McCahill, M. E. (1999). Depression in a primacy care clinic: The prevalence and impact of an unrecognized disorder. *Journal of Affective Disorder, 55,* 1-10.

Miller, J. G. (1999). Cultural psychology: Implications for basic psychological theory. *Psychological Science, 10,* 85-91.

Millsap, R. E., & Everson, H. T. (1990). Methodology review: Statistical approaches for assessing measurement bias. *Applied Psychological Measurement, 17,* 297-334.

Mineka, S., Watson, D., & Clark, L. A. (1998). Comorbidity of anxiety and unipolar disorders. *Annual Review of Psychology, 49,* 377-412.

Mountjoy, C. Q., & Roth, M. (1982). Studies in the relationship between depressive disorders and anxiety states. *Journal of Affective Disorder, 4*, 127-147.

Muris, P., Roelofs, J., Rassin, E., Franken, I., & Mayer, B. (2005). Mediating effects of rumination and worry on the links between neuroticism, anxiety and depression. *Personality and Individual Differences, 39*, 1105-1111.

Muris, P., Roelofs, J., Meesters, C., & Boomsma, P. (2004). Rumination and worry in nonclincial adolescents. *Cognitive Therapy and Research, 28*, 539-554.

Murray, C. J., & Lopez, A. D. (1996). *The Global Burden of Disease*. Cambridge, MA: Harvard University Press.

Nemanick, R. C. Jr., & Munz, D. C. (1994). Measuring the poles of negative and positive mood using the Positive Affect Negative Affect Schedule and Activation Deactivation Adjective Checklist. *Psychological Reports, 74*, 195-199.

Nesdale, D., & Mak, A. S. (2003). Ethnic identification, self-esteem, and immigrant psychological health. *International Journal of Intercultural Relations, 27*, 23-40.

Nitschke, J. B., Heller, W., Imig, J. C., McDonald, R. P., & Miller, G. A. (2001). Distinguishing dimensions of anxiety and depression. *Cognitive Therapy and Research, 25*, 1-22.

Noh, S., & Avison, W. R. (1996). Asian immigrants and the stress process: A study of Koreans in Canada. *Journal of Health and Social Behaviour, 37*, 192-206.

Noh, S., Avison, W.R., & Kasper, V. (1998). Depressive symptoms among Korean immigrants: An assessment of a translation of the Center for Epidemiological Studies-Depression Scale. *Psychological Assessment, 4*, 84-91.

Noh, S., Speechle, M., Kaspar, V., & Wu, Z. (1992). Depression in Korean immigrants in

Canada I: Method of the study and prevalence of depression. *Journal of Nervous & Mental Disorder, 180*, 573-577.

Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*, 569-582.

Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/ depressive symptoms. *Journal of Abnormal Psychology, 109*, 504-511.

Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta earthquake. *Journal of Personality and Social Psychology, 61*, 115-121.

Norvell, N., Brophy, C., & Finch, A. J. (1985). The relationship of anxiety to childhood depression. *Journal of Personality Assessment, 49*, 150-153.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory* (3rd. ed.). New York: McGraw-Hill.

Okazaki, S. (1998). Psychological assessment of Asian Americans: Research agenda for cultural competency. *Journal of Personality Assessment, 70*, 54-70.

Okazaki, S., & Sue, S. (1995). Methodological issues in assessment research with ethnic minorities. *Psychological Assessment, 7*, 367-375.

Oetting, E. R., & Beauvais, F. (1991). Orthogonal cultural identification theory: The cultural identification of minority adolescents. *The International Journal of Addictions, 25*, 655-685.

Ots, T. (1990). The anger liver, the anxious heart, and the melancholy spleen. *Culture, Medicine, and Psychiatry, 14*, 21-58.

Padilla, A. M., Wagatsuma, Y., & Lindholm, K. J. (1985). Acculturation and personality

as predictors of stress in Japanese and Japanese-Americans. *The Journal of Social Psychology, 125*, 295-305.

Parham, T. A., & Helms, J. E. (1985). Attitudes of racial identity and self-esteem of black students: An exploratory investigation. *Journal of College Student Personnel, 26*, 143-147.

Parker, G., Chan, B., & Tully, L. (2006a). Recognition of depressive symptoms by Chinese subjects: The influence of acculturation and depressive symptoms. *Journal of Affective Disorders, 93*, 141-147.

Parker, G., Chan, B., & Tully, L. (2006b). Depression and help-seeking in a western sample of 'highly acculturated' Chinese and controls. Journal of Affective Disorders, 94, 239-242.

Parker, G., Cheah, Y.-C., & Roy, K. (2001). Do the Chinese somatize depression? A cross-cultural study. *Social Psychiatry and Psychiatric Epidemiology, 36*, 287-293.

Pawliuk, N., Grizenko, N., Chan-Yip, A., Gantous, P., Mathew, J., & Nguyen, D. (1996). Acculturation style and psychological functioning in children of immigrants. *American Journal of Orthopsychiatry, 66*, 111-121.

Phinney, J. S. (1992). The Multigroup Ethnic Identity Measure: A new scale for use with diverse groups. *Journal of Adolescent Research, 7*, 156-176.

Phinney, J. S., & Chavira, V. (1992). Ethnic identity and self-esteem: An exploratory longitudinal study. *Journal of Adolescence, 15*, 271-281.

Phinney, J. S., Horenczyk, G., Liebkind, K., & Vedder, P. (2001). Ethnic identity, immigration, and well-being: An interactional perspective. *Journal of Social*

Issues, 57 (3), 493-510.

Piccinelli, M., Rucci, P., Üstün, B., & Simon, G. (1999). Typologies of anxiety, depression and somatization symptoms among primary care attenders with no formal mental disorder. *Psychological Medicine, 29*, 677-688.

Prieto, P., Barbero, M., & San Luis, C. (1997). Identification of nonuniform differential item functioning: A comparison of Mantel-Haenszel and item response theory analysis procedures. *Educational and Psychological Measurement, 57*, 559-568.

Prusoff, B., & Klerman, G. L. (1974). Differentiating depressed from anxious neurotic outpatients: Use of discriminant function analysis for separation of neurotic affective states. *Archives of General Psychiatry, 30*, 302.

Quintana, S. M., & Mawell, S. E. (1999). Implications of recent development in structural equation modeling for counselling psychology. *Counseling Psychologist, 27*, 485-527.

Rachman, S., Levitt, K., & Lopatka, C. (1987). Panic: The links between cognitions and bodily symptoms-I. *Behavioral Research and Theory, 25*, 149-154.

Radloff, L.S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385-401.

Rankin, S. H., Galbraith, M. E., & Johnson, S. (1993). Reliability and validity data for a Chinese translation of the Center for Epidemiological Studies-Depression. *Psychological Bulletin, 73*, 1291-1298.

Rasch, G. (1980). *Probabilistic Models for Some Intelligence and Attainment Tests.* Chicago: University of Chicago Press. (Original work published 1960).

Rehm, L. P. (1990). Extracting comorbidity from self-report instruments: A cognitive

perspective. In J. D. Maser, & C. R. Cloninger (Eds.), *Comorbidity of Mood and Anxiety Disorders* (pp. 633-648). American Psychiatric Press: Washington, DC.

Reidy, J., & Keogh, E. (1997). Testing the discriminant and convergent validity of the Mood and Anxiety Symptoms Questionnaire using a British sample. *Personality & Individual Differences, 23*, 337.

Richman, J. A., Gaviria, M., Flaherty, J. A., Birz, S., & Wintrob, R. M. (1987). The process of acculturation: Theoretical perspectives and an empirical investigation in Peru. *Social Science and Medicine, 25*, 839-847.

Rin, H., & Huang, M.-G. (1989). Neurasthenia as nosological dilemma. *Culture, Medicine, & Psychiatry, 13*, 215-226.

Roberts, R. E., Phinney, J. S., Masse, L. C., Chen, Y. R., Roberts, C. R., & Romero, A. (1999). The structure of ethnic identity of young adolescents from diverse ethnocultural groups. *Journal of Early Adolescence, 19*, 301-322.

Rogler, L. H., Cortes, D. E., & Malgady, R. G. (1991). Acculturation and mental health status among Hispanics: Convergence and new directions for research. *American Psychologist, 46*, 585-597.

Root, M. P. P. (1985). Guidelines for facilitating therapy with Asian American clients. *Psychotherapy, 22*, 349-356.

Rosenthal, B. S., & Schreiner, A. C. (2000). Prevalence of psychological symptoms among undergraduate students in an ethnically diverse urban public college. *Journal of American College Health, 49*, 12-18.

Rosenthal, D. A. (1984). Intergenerational conflict and culture: A study of immigrant and non-immigrant adolescents and their parents. *Genetic Psychology Monographs,*

109, 53-75.

Rosenthal, D. A., & Cichello, A. M. (1986). The meeting of two cultures: Ethnic identity and psychosocial adjustment of Italian-Australian adolescents. *International Journal of Psychology, 21*, 487-501.

Roysircar-Sodowsky, G., & Maestas, M. V. (2000). Acculturation, ethnic identity, and acculturative stress: Evidence and measurement. In R. H. Dana (Ed.), *Handbook of Cross-Cultural and Multicultural Personality Assessment* (pp. 131- 172). Mahwah, N. J.: Lawrence Erlbaum Associates Inc.

Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology, 39*, 1161-1178.

Russell, J. A., & Yik, M. S. M. (1996). Emotion among the Chinese. In M. H. Bond (Ed.), *The Handbook of Chinese Psychology* (pp. 166-188). Hong Kong: Oxford University Press.

Ruth, S., & Mehrotra, S. (2001). Differentiating depression and anxiety: Psychometric implications of the tripartite model of affect. Journal of Personality & Clinical Studies, 17, 9-18.

Ryder, A. G., Alden, L. E., & Paulhus, D. L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. *Journal of Personality and Social Psychology, 79*, 49-65.

Sacco, W. P., & Beck, A. T. (1995). Cognitive theory and therapy. In E. E. Beckham, & W. R. Leber (2nd eds.), *Handbook of Depression* (pp. 329-351). The Guilford Press: New York.

Sakamoto, S., Kambara, M., & Tanno, Y. (2001). Response styles and cognitive and affective symptoms of depression. *Personality and Individual Differences, 31,* 1053-1065.

Sam, D. L. (2000). Psychological adaptation of adolescents with immigrant backgrounds. *Journal of Social Psychology, 140,* 5-26.

Samuelstuen, M. S. (2003). Psychometric properties and item-keying direction effects for the learning and study strategies inventory-high school version with Norwegian students. *Educational and Psychological Measurement, 63,* 430-445.

San Gregorio, P., & Rodriguez, M. (2002). Psychological variables related to the perception of body image in transplanted patients. *Revista de Psicologia General y Aplicada, 55,* 439-453 [in Spanish, English abstract].

Sanchez, J. I., & Fernandez, D. M. (1993). Acculturative stress among Hispanics: A bidimensional model of ethnic identification. *Journal of Applied Social Psychology, 23,* 654-668.

Santor, D. A., & Coyne, J. C. (2001). Examining symptom expression as a function of symptom severity: Item performance on the Hamilton Rating Scale for Depression. *Psychological Assessment, 13* (1), 127-139.

Santor, D. A., Ramsay, J. O., & Zuroff, D. C. (1994). Nonparametric item analyses of the Beck Depression Inventory: Evaluating gender item bias and response option weights. *Psychological Assessment, 6,* 255-270.

Sartorius, N., Jablensky, A., Gulbinat, W., & Ernberg, G. (1980). WHO Collaborative Study: Assessment of depressive disorders. *Psychological Medicine, 10,* 743-749.

Sartorius, N., Üstün, T. B., Lecrubier, Y., & Wittchen, H.-U. (1996). Depression

comorbid with anxiety: Results from the WHO study on psychological disorders in primary health care. *British Journal of Psychiatry, 168*, 38-43.

Schonpflug, U. (1996). Acculturation: Adaptation or development? *Applied Psychology: An International Review, 46*, 52-55.

Schriesheim, C. A., Eisenbach, R. J., & Hill, K. D. (1991). The effect of negation and polar opposite item reversals on questionnaire reliability and validity: An experimental investigation. *Educational and Psychological Measurement, 51*, 67-78.

Scott, E. L., Eng, W., & Heimberg, R. G. (2002). Ethnic differences in worry in a nonclinical population. *Depression & Anxiety, 15*, 79-82.

Segerstrom, S. C., Tsao, J. C. I., Alden, L. E., & Craske, M. G. (2000). Worry and rumination: Repetitive thoughts as a concomitant and predictor of negative mood. *Cognitive Therapy and Research, 24*, 671-688.

Shek, D. T. L. (1993). Measurement of pessimism in Chinese adolescents: The Chinese Hopelessness Scale. *Social Behavior and Personality, 21*, 107-120.

Silverstein, B. (1999). Gender difference in the prevalence of clinical depression: The role played by depression associated with somatic symptoms. *American Journal of Psychiatry, 156*, 480-482.

Silverstein, B. (2002). Gender differences in he prevalence of somatic versus pure depression: A replication. *American Journal of Psychiatry, 159*, 1051-1052.

Simon, G. E. (1991). Somatization and psychiatric disorders. In L. J. Kirmayer, & J. M. Robbins (Eds.), *Current Concepts of Somatization: Research and Clinical Perspectives* (pp. 37-62). American Psychiatric Press: Washington, DC.

Simon, G. E., VonKorff, M., Piccinelli, M., Fullerton, C., & Ormel, J. (1999). An international study of the relation between somatic symptoms and depression. *New England Journal of Medicine, 341*, 1329-1335.

Simon, G. E., & VonKorff, M. (2006). Medical co-morbidity and validity of DSM-IV depression criteria. *Psychological Medicine, 36*, 27-36.

Smith, C. E., & Hopkins, R. (2004). Mitigating the impact of stereotypes on academic performance: The effects of cultural identity and attributions for success among African American college students. *Western Journal of Black Studies, 28*, 312-321.

Smith, J. C., & Seidel, J. M. (1982). The factor structure of self-reported physical stress reactions. *Biofeedback and Self-regulation, 7*, 35-47.

Smith, J. C., & Sheridan, M. (1983). Type A (coronary-prone) behavior and self-reported physical and cognitive reactions to actual life stressors. *Perceptual and Motor Skills, 56*, 545-546.

Smith, J. C., & Siebert, J. R. (1984). Self-reported physical stress reactions: First- and second-order factors. *Biofeedback and Self-regulation, 9*, 215-227.

Smith, L. L. (2002). On the usefulness of item bias analysis to personality psychology. *Personality and Social Psychology Bulletin, 28*, 754-763.

Snaith, P. (1993). Anhedonia: A neglected symptom of psychopathology. *Psychological Medicine, 23*, 957-966.

Song, W. (1985). A preliminary study of the character traits of the Chinese. In W.-S. Tseng and D. Y. H. Wu (Eds.), *Chinese Culture and Mental Health* (pp. 57-56). Orlando, FL: Academic.

Starcevic, V. (1995). Pathological worry in major depression: A preliminary report. *Behavior Research and Therapy, 33*, 55-56.

Statistics Canada (2002). *Canadian Community Health Survey: Mental Health and Well-being* (82-617-XIE). Ottawa, ON: Statistics Canada.

Statistics Canada (2003). *Ethnocultural Portrait of Canada: Highlight Tables* (data products: 2001 census of population). Ottawa, ON: Statistics Canada.

Steer, T. A., Beck, A. T., Clark, D. A., & Beck, J. S. (1994). Psychometric properties of the Cognition Checklist with psychiatric outpatients and university students. *Psychological Assessment, 6*, 67-70.

Stephenson, R., Marchand, A., & Lavallée, M.-C. (1999). A Canadian French adaptation of the Agoraphobic Cognitions Questionnaire: Cross-cultural validation and gender differences. *Scandinavian Journal of Behaviour Therapy, 28*, 58-69.

Stout, W. F. (1987). A nonparametric approach for assessing latent trait dimensionality. *Psychometrika, 55*, 293-326.

Sue, S., Fujino, D. C., Hu, L., Takeuchi, D., & Zane, N. (1991). Community mental health services for ethnic minority groups: A test of the cultural responsiveness hypothesis. *Journal of Consulting and Clinical Psychology, 59*, 533-540.

Swagler, M. A., & Ellis, M. V. (2003). Crossing the distance: Adjustment of Taiwanese graduate students in the United States. *Journal of Counseling Psychology, 50*, 420-437.

Swaminathan, H., & Rogers, J. J. (1990). Detecting differential item functioning using logistic repression procedures. *Journal of Educational Measurement, 27*, 361-370.

Szapocznik, J., Kurtines, W., & Fernandez, T. (1980). Bicultural involvement and

adjustment in Hispanic American youths. *International Journal of Intercultural Relations, 4*, 353-365.

Szapocznik, J., Scopetta, M. A., Kurtines, W., & Arandale, M. A. (1978). Theory and measurement of acculturation. *Interamerican Journal of Psychology, 12*, 113-120.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using Multivariate Statistics* (4th ed.). Harper Collins College Publishers: New York.

Tabora, B. L., & Flaskerud, J. H. (1997). Mental health beliefs, practices, and knowledge of Chinese American immigrant women. *Issues in Mental Health Nursing, 18*, 173-189.

Takeuchi, D. T., Chung, R. C.-Y., Lin, K.-M., Shen, H., Kurasaki, K., Chun, C.-A., & Sue, S. (1998). Lifetime and twelve-month prevalence rates of major depressive episodes and dysthymia among Chinese Americans in Los Angeles. *American Journal of Psychiatry, 155*, 1407-1414.

Tally, S. R. (2003). A comparative study of adolescent depressive symptomatology in United States and Chinese youth. *Dissertation Abstracts International: Section B: The Sciences and Engineering, 63* (10-B), 4945.

Teachman, B. A., Siedlecki, K. L., & Magee, J. C. (2007). Aging and Symptoms of Anxiety and Depression: Structural Invariance of the Tripartite Model. *Psychology and Aging, 22*, 160-170.

Tellegen, A. (1985). Structures of mood and personality and their relevance to assessing anxiety, with an emphasis on self-report. In A. H. Tuma, & J. D. Maser (Eds.), *Anxiety and the Anxiety Disorders* (pp. 681-706). Hillsdale, NJ: LEA.

The Chinese Culture Connection (1987). Chinese values and the search for culture-free

dimensions of culture. *Journal of Cross-Cultural Psychology, 18*, 143-164.

Thomas, J., & Bentall, R. P. (2002). Hypomanic traits and response styles to depression. *British Journal of Clinical Psychology, 41*, 309-313.

Tracey, T. J., Leong, F. T. L., & Glidden (1986). Help seeking and problem perception among Asian Americans. *Journal of Counselling Psychology, 33*, 331-336.

Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research, 27*, 247-259.

Tropp, L. R., Erkut, S., Coll, C. G., Alarcon, O., & Garcia, H. A. V. (1999). Psychological acculturation: Development of a new measure for Puerto Ricans on the U. S. Mainland. *Educational and Psychological Measurement, 59*, 351-367.

Tseng, W. (1973). The development of psychiatric concepts in traditional Chinese medicine. *Archives of General Psychiatry, 29*, 596-575.

Tseng, W.-S. (2003). *Clinician's Guide to Cultural Psychiatry*. Academic Press: San Diego, CA.

Tseng, W.-S., & Wu, D.Y.H. (1985). *Chinese Culture and Mental Health*. Academic Press Inc.

Uba, L. (1994a). Underuse of mental health services. In *Asian Americans: Personality Patterns, Identity, and Mental Health* (pp. 196-213). The Guilford Press: New York.

Uba, L. (1994b). Stress. In *Asian Americans: Personality Patterns, Identity, and Mental Health* (pp. 119-134). The Guilford Press: New York.

Vale, D. C. (1986). Linking item parameters onto a common scale. *Applied Psychological Measurement, 10*, 133-344.

Van de Vijver, F. J. R., & Leung, K. (1997). Methods and data analysis of comparative research. In J. W. Berry, M. H. Segall, & C. Kagitçibasi (2nd. Eds.), *Handbook of Cross-Cultural Psychology: Volume 1 Theory and Method* (pp. 250-300). Allyn & Bacon: Boston.

Vega, W.A., & Rumbaut, R.G. (1991). Ethnic minorities and mental health. Annual Review of Sociology, 17, 351-383.

Verkuyten, M. (1998). Perceived discrimination and self-esteem among ethnic minority adolescents. *The Journal of Social Psychology, 138*, 479-493.

Verkuyten, M. (2005). Ethnic Group Identification and Group Evaluation Among Minority and Majority Groups: Testing the Multiculturalism Hypothesis. *Journal of Personality and Social Psychology, 88*, 121-138.

Verkuyten, M., & Kwa, G. A. (1996). Ethnic self-identification, ethnic involvement, and group differentiation among Chinese youth in the Netherlands. *The Journal of Social Psychology, 136*, 35-48.

Verkuyten, M., & Lay, C. (1998). Ethnic minority identity and psychological well-being: The mediating role of collective self-esteem. *Journal of Applied Social Psychology, 28*, 1969-1986.

Wang, C.-H., Liu, W. T., Zhang, M.-Y., Yu, E. S. H., Xia, Z.-Y., Fernandez, M., Lung, C.-T., Xu, C.-L., & Qu, G.-Y. (1992). Alcohol use, abuse, and dependency in Shanghai. In J. E. Helzer, & G. J. Canino (Eds.), *Alcoholism in North America, Europe, and Asia* (pp. 264-286). London: Oxford University Press.

Watkins, E. (2004). Appraisals and strategies associated with rumination and worry. *Personality and Individual Differences, 37*, 679-694.

Watson, D., Clark, L. A., & Carey, G. (1988). Positive and negative affectivity and their relation to anxiety and depressive disorders. *Journal of Abnormal Psychology, 97*, 346-353.

Watson, D., Clark, L. A., Weber, K., Assenheimer, J.S., Strauss, M.E., & McCormick, R.A. (1995). Testing a tripartite model: II. Exploring the symptom structure of anxiety and depression in student, adult, and patient samples. *Journal of Abnormal Psychology, 104*, 15-25.

Watson, D., & Kendall, P. C. (1989). Understanding anxiety and depression: Their relation to negative and positive affect states. In P. C. Kendall, & D. Watson (Eds.), *Anxiety and Depression: Distinctive and Overlapping Features* (pp. 3-26). San Diego, CA: Academic Press.

Watson, D., & Pennebaker, J. W. (1989). Health complaints, stress, and distress: Exploring the central role of negative affectivity. *Psychological Review, 96*, 234-254.

Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin, 98*, 219-235.

Weissman, M. M., Bland, R. C., Canino, G. J., Faravelli, C., Greenwald, S., Hwu, G.-G., Joyce, P. R., Karam, E. G., Lee, C.-K., Lellouch, J., Lépine, J.-P., Newman, S. C., Rubio-Stipec, M., Wells, J. E., Wickramaratne, P. J., Wittchen, H.-U., & Yeh, E.-K. (1996). Cross-national epidemiology of major depression and bipolar disorder. *Journal of American Medical Association, 276*, 293-299.

Wessely, S. (1994). Neurasthenia and chronic fatigue: Theory and practice in Britain and America. *Transcultural Psychiatric Research Review, 31*, 173-209.

Widlöcher, D. J. (1983). Psychomotor retardation: Clinical, theoretical, and psychometric aspects. *Psychiatric Clinics of North America, 6*, 27-40.

World Health Organization (1990). *CIDI-Core. Composite International Diagnostic Interview. Core Version.* World Health Organization: Geneva.

World Health Organization (1992). *ICD-10: The ICD-10 Classification of Mental and Behavioural Disorder, Clinical Descriptions and Diagnostic Guidelines.* Geneva, Switzerland: WHO.

Wright, B., & Stone, M. (1979). *Best Test Design: Rasch Measurement*. Chicago: MESA.

Wu, Z., Noh, S., Kaspar, V., & Schimmele, C. M. (2003). Race, ethnicity, and depression in Canadian society. *Journal of Health and Social Behavior, 44*, 426-441.

Xu, J. M. (1987). Some issues in the diagnosis of depression of China. *Canadian Journal of Psychiatry, 32*, 368-370.

Yang, K.-S. (1981). Social orientation and individual modernity among Chinese students in Taiwan. *Journal of Social Psychology, 113*, 159-170.

Yen, S., Robins, C.J., & Lin, N. (2000). A cross-cultural comparison of depressive symptom manifestation: China and the United States. *Journal of Consulting and Clinical Psychology, 68*, 993-999.

Yeung, A., Neault, N., Sonawalla, S., Howarth, S., Fava, M., & Nierenberg, A. A. (2002). Screening for major depression in Asian-Americans: A comparison of the Beck and the Chinese Depression Inventory. *Acta Psychiatrica Scandinavica, 105*, 252-257.

Ying, Y.-W. (1988). Depressive symptomatology among Chinese Americans as

measured by the CES-D. *Journal of Clinical Psychology, 44*, 739-749.

Ying, Y. (1989). Nonresponse on the Center for Epidemiological Studies-Depression Scale in Chinese Americans. *International Journal of Social Psychiatry, 35*, 156-163.

Ying, Y.-W., Lee, P. A., & Tsai, J. L. (2000). Cultural orientation and racial discrimination: Predictors of coherence in Chinese American young adults. *Journal of Community Psychology, 28*, 427-442.

Yung, A. R., Buckby, J. A., & Cosgrave, E. M. (2007). Association between psychotic experiences and depression in a clinical sample over 6 months. *Schizophrenia Research, 91*, 246-253.

Zea, M. C., Reisen, C. A., & Poppen, P. J. (1999). Psychological well-being among Latino lesbians and gay men. *Cultural Diversity and Ethnic Minority Psychology, 5*, 371-379.

Zhang, Y. B., & Harwood, J. (2004). Modernization and Tradition in an Age of Globalization: Cultural Values in Chinese Television Commercials. *Journal of Communication, 54*, 156-172.

Zheng, Y, Wei, L., Gao, L., Zhang, G., & Wong, C. (1988). Applicability of the Chinese Beck Depression Inventory. *Comprehensive Psychiatry, 29*, 484-489.

Zheng, Y.-P., Lin, K.-M., Takeuchi, D., Kurasaki, K. S., Wang, Y., & Cheung, F. (1997). An epidemiological study of neurasthenia in Chinese-Americans in Los Angeles. *Comprehensive Psychiatry, 38*, 249-259.

Zhou, Y., Xu, J., Wang, X., & Jiang, K. (1997). A study of cognitions and body sensations in anxiety disorders. *Acta Psychologica Sinica, 29*, 60-66 [in Chinese;

English abstract].

Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica, 67*, 361-370.

Zinbarg, R. E., & Barlow, D. H. (1996). Structure of anxiety and anxiety disorders: A hierarchical model. *Journal of Abnormal Psychology, 105*, 181-193.

Zinbarg, R. E., Barlow, D. H., Liebowitz, M., Street, L., Broadhead, E., Katon, W., Roy-Bryne, P., Lepine, J.-P., Teherani, M., Richards, J., Brantley, P. J., & Kraemer, H. (1994). The DSM-IV field trial for mixed anxiety-depression. *American Journal of Psychiatry, 151*, 1153-1162.

Zung, W. W. (1965). A self-rating depression scale. *Archives of General Psychiatry, 12*, 63-75.

Zung, W. W. (1972). Depression in the normal adult population. *Psychosomatics: Journal of Consultation Liaison Psychiatry, 12*, 164-167.

Zung, W. W., Broadhead, W. E., & Roth, M. E. (1993). Prevalence of depressive symptoms in primary care. *Journal of Family Practice, 37*, 337-344.

Appendix 1:

Demographic Background Questionnaire

Background Questionnaire Today's Date:_____

1. Age: _____ Date of Birth: _____/_____/_____
2. Gender: Male _____ Female _____

3. Your Major: _____
4. Degree/Program: _____ a) Bachelors: BA_____ , BSc _____, BEd_____
_____ b) Masters: MA _____, MSc _____, Med _____
_____ c) Doctorate: PhD _____, EdD _____
_____ d) Others (please specify: _____)

5. What is your ethnic background? Chinese _____ Caucasian/White _____
Others (please specify:_____)

6. What is your father's ethnic background? _____
7. What is your mother's ethnic background? _____

8. What is your status in Canada (Check one):
Citizen _____ Permanent Resident_____ Refugee _____ Student _____
Working_____ Others (please specify: _____)

9. In your family, which generation was the first to be born in Canada? (Check one)
_____ a) No one was born in Canada. I am an immigrant.
_____ b) I was the first generation born in Canada.
_____ c) Our family has been in Canada for more than two generations.
_____ d) My great-grandparent(s) was/were the first generation born in Canada.
_____ e) Other (please specify: _____)

If your answer is "a" for Question 9, please continue; otherwise, skip to Question 20.

10. What is your country of origin?_____
(e.g. China, Taiwan, Hong Kong, Singapore, etc.)
11. When did you/your family immigrate to Canada? Year _____
12. How old were you when you/your family immigrated to Canada? _____
13. How long you have lived in other Western countries, not including Canada? ____
14. Why did you/your family immigrant to Canada?

_____

_____

15. How much participation did you have in the decision to immigrate?
0% (*not my decision at all*) 25% 50% 75% 100% (*total decision is mine*)

16. At the time of immigration, how much did you/your family know about Canada?
0 (*none*) 1 2 3 4 (a lot)

17. My parents (check one)…
____ both live here most of the time.
____ do not live here most of the time.
____ one of them flies back and forth (Please check: it is my mom___, it is my dad ___)

18. In the future, do you think *you* will ….
____ stay in Canada____ go back to my country of origin____ live somewhere else

Why?_____

19. In the future, do you think *your family* will ….
____ stay in Canada____ go back to our country of origin ____ live somewhere else

Why?_____

20. What language do you speak most of the time *at home*? _____
21. What language do you speak most of the time *outside the home*? _____

22. How would you rate your language proficiency (Check one for each language)?

English:	Poor _____	Fair _____	Good _____	Excellent _____
Ethnic language:	Poor _____	Fair _____	Good _____	Excellent _____

23. What was your total score on the TOEFL test? (If not take this test, check here ____)
Score _____ (Please check: Computerized Version___ ; Paper-Pencil Version: ____)

24. What was your total score on the English Provincial Exam at the time you applied to study at university? Score: _____. (If you did not take this test, check here: _____)

25. What was your average grade last year: (9-point scale) _____/(4-point scale)_____

26. What is your religious background? (Check all that apply)
Christian _____ Catholic _____ Buddhism _____ Taoism _____
Folk Religion Others (please specify: _____)
_____

27. How involved are you in your religion?
None _____ Very little _____ Some _____ Moderate _____Very much _____

28. What is your mother and father's occupation (please indicate both of your parents)?
_____ Service (please specify: _____)
_____ Professional (please specify: _____)
_____ Clerical (please specify:_____)
_____ Self-Employed (please specify: _____)
_____ Not working/ Retired/ Homemaker (please specify: _____)
_____ Others (please specify: _____)

29. What is the highest level of education completed by both of your parents?
_____ (mother ___; father ___) Elementary (Grade 1 to Grade 6)
_____ (mother ___; father ___) Middle/Junior High to High School (Grade 7 to Grade 12)
_____ (mother ___; father ___) College/Vocational School
_____ (mother ___; father ___) University
_____ (mother ___; father ___) Graduate School/Professional Degree

30. In your own opinion, which "ethnic/cultural" group is most valued in Canada?

Most valued group: _____

Which is *the second most valued group*: _____

31. Where do you live? (Check one)
____ Campus ____ Off Campus/Not with family _____ Off Campus/Live with family

32. What is the ethnic mix in the neighbourhood *you live in now*?

	None	Few	About 1/3	About Half	About 2/3	Mostly	All or Almost All
Chinese	1	2	3	4	5	6	7
White	1	2	3	4	5	6	7
Other Ethnicities	1	2	3	4	5	6	7

33. What was the ethnic mix in the neighbourhood where *you grew up*?

	None	Few	About 1/3	About Half	About 2/3	Mostly	All or Almost All
Chinese	1	2	3	4	5	6	7
White	1	2	3	4	5	6	7
Other Ethnicities	1	2	3	4	5	6	7

34. Have you been seen for substance use problems? Yes _____ No _____

35. Have you been seen for personality problems? Yes _____ No _____

36. What do you find stressful about living in Canada?

_____

37. Do you find anything particularly stressful as a consequence of being a Chinese in Canada?

_____

38. Do you think you feel more stressed than other people in general, or more stressed than other Chinese people?

_____

39. What advice you would give to other Chinese people in Canada so that they can learn from your experiences.

_____

Appendix 2:

Mood and Anxiety Symptom Questionnaire

See the source below:

Watson, D., Clark, L. A., Weber, K., Assenheimer, J.S., Strauss, M.E., & McCormick, R.A. (1995). Testing a tripartite model: II. Exploring the symptom structure of anxiety and depression in student, adult, and patient samples. Journal *of Abnormal Psychology, 104*, 15-25.

Mood & Anxiety Symptom Questionnaire

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
General Distress-Mixed Symptoms					
4. Felt confused	1	2	3	4	5
5. Slept very well	1	2	3	4	5
17. Felt irritable	1	2	3	4	5
29. Felt dissatisfied with everything	1	2	3	4	5
31. Had trouble remembering things	1	2	3	4	5
34. Felt like something awful was going to happen	1	2	3	4	5
37. Did not have much of an appetite	1	2	3	4	5
50. Felt very restless	1	2	3	4	5
51. Had trouble falling asleep	1	2	3	4	5
70. Had trouble making decisions	1	2	3	4	5
76. Had trouble concentrating	1	2	3	4	5
80. Had trouble paying attention	1	2	3	4	5
83. Had trouble staying asleep	1	2	3	4	5
84. Worried a lot about things	1	2	3	4	5
90. Got tired or fatigued easily	1	2	3	4	5
General Distress-Depressive Symptoms					
6. Felt sad	1	2	3	4	5
8. Felt discouraged	1	2	3	4	5

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
10. Felt like crying	1	2	3	4	5
13. Felt worthless	1	2	3	4	5
16. Felt depressed	1	2	3	4	5
22. Felt hopeless	1	2	3	4	5
24. Blamed myself for a lot of things	1	2	3	4	5
42. Felt pessimistic about the future	1	2	3	4	5
47. Felt like a failure	1	2	3	4	5
56. Felt sluggish or tired	1	2	3	4	5
64. Felt inferior to others	1	2	3	4	5
74. Was disappointed in myself	1	2	3	4	5
General Distress-Anxious Symptoms					
2. Felt afraid	1	2	3	4	5
9. Felt nauseated	1	2	3	4	5
12. Had diarrhea	1	2	3	4	5
15. Felt nervous	1	2	3	4	5
20. Felt uneasy	1	2	3	4	5
59. Was unable to relax	1	2	3	4	5
63. Had an upset stomach	1	2	3	4	5
65. Had a lump in my throat	1	2	3	4	5
77. Felt tense or "high-strung"	1	2	3	4	5

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
81. Muscles were tense or sore	1	2	3	4	5
82. Felt keyed up, "on edge"	1	2	3	4	5
Positive Affect					
1. Felt cheerful	1	2	3	4	5
14. Felt really happy	1	2	3	4	5
18. Felt optimistic	1	2	3	4	5
23. Felt like I was having a lot of fun	1	2	3	4	5
27. Seemed to move quickly and easily	1	2	3	4	5
30. Looked forward to things with enjoyment	1	2	3	4	5
35. Felt like I had accomplished a lot	1	2	3	4	5
36. Felt like I had a lot of interesting things to do	1	2	3	4	5
40. Felt like I had a lot to look forward to	1	2	3	4	5
49. Was proud of myself	1	2	3	4	5
58. Felt really "up" or lively	1	2	3	4	5
72. Felt like I had a lot of energy	1	2	3	4	5
78. Felt hopeful about the future	1	2	3	4	5
86. Felt really good about myself	1	2	3	4	5
Low Positive Affect (rephrased from the above 14 items; not in the original MASQ)					
Did not feel cheerful	1	2	3	4	5
Did not feel really happy	1	2	3	4	5

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
Did not feel optimistic	1	2	3	4	5
Did not feel like I was having a lot of fun	1	2	3	4	5
Did not seem to move quickly and easily	1	2	3	4	5
Did not look forward to things with enjoyment	1	2	3	4	5
Did not feel like I had accomplished a lot	1	2	3	4	5
Did not feel like I had a lot of interesting things to do	1	2	3	4	5
Did not feel like I had a lot to look forward to	1	2	3	4	5
Was not proud of myself	1	2	3	4	5
Did not feel really "up" or lively	1	2	3	4	5
Did not feel like I had a lot of energy	1	2	3	4	5
Did not feel hopeful about the future	1	2	3	4	5
Did not feel really good about myself	1	2	3	4	5
Loss of Interest					
21. Felt really bored	1	2	3	4	5
26. Felt withdrawn from other people	1	2	3	4	5
33. Felt like nothing was enjoyable	1	2	3	4	5
39. Felt like it took extra effort to get started	1	2	3	4	5
44. Felt like there wasn't anything interesting or fun to do	1	2	3	4	5
53. Felt unattractive	1	2	3	4	5
66. Felt really slowed down	1	2	3	4	5

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
89. Thought about death or suicide	1	2	3	4	5
Autonomic Hyper-arousal					
3. Startled easily	1	2	3	4	5
19. Felt faint	1	2	3	4	5
25. Felt numbness or tingling in my body	1	2	3	4	5
45. Had pain in my chest and body	1	2	3	4	5
48. Had hot or cold spells	1	2	3	4	5
52. Felt dizzy or lightheaded	1	2	3	4	5
55. Was short of breath	1	2	3	4	5
57. Hands were shaky	1	2	3	4	5
61. Felt like I was choking	1	2	3	4	5
67. Had a very dry mouth	1	2	3	4	5
69. Muscles twitched or trembled	1	2	3	4	5
73. Was afraid I was going to die	1	2	3	4	5
75. Heart was racing or pounding	1	2	3	4	5
79. Was trembling or shaking	1	2	3	4	5
85. Had to urinate frequently	1	2	3	4	5
87. Had trouble swallowing	1	2	3	4	5
88. Hands were cold or sweaty	1	2	3	4	5

Note. Seventy-seven of 90 items in the MASQ was used in the current study; the remaining 13 items were not part of any scale thus not included (Watson et al., 1995).

Appendix 3:

Self-Rating Depression Scale

See the source below:

Zung, W. W. (1965). A self-rating depression scale. *Archives of General Psychiatry, 12*, 63-75.

Self-Rating Depression Scale

Please circle the number for each statement which best describes how often you felt or behaved this way.	None/ A little	Some of the time	Good part of the time	Most of the time
1. I feel down-hearted and blue.	1	2	3	4
2. Morning is when I feel the best.	1	2	3	4
3. I have crying spells or feel like it.	1	2	3	4
4. I have trouble sleeping at night.	1	2	3	4
5. I eat as much as I used to.	1	2	3	4
6. I still enjoy sex.	1	2	3	4
7. I notice that I am losing weight.	1	2	3	4
8. I have trouble with constipation.	1	2	3	4
9. My heart beats faster than usual.	1	2	3	4
10. I get tired for no reason.	1	2	3	4
11. My mind is as clear as it used to be.	1	2	3	4
12. I find it easy to do the things I used to.	1	2	3	4
13. I am restless and can't keep still.	1	2	3	4
14. I feel hopeful about the future.	0	1	2	3
15. I am more irritable than usual.	1	2	3	4
16. I find it easy to make decisions.	1	2	3	4
17. I feel that I am useful and needed.	1	2	3	4
18. My life is pretty full.	1	2	3	4
19. I feel that others would be better off if I were dead.	1	2	3	4
20. I still enjoy the things I used to do.	1	2	3	4

Appendix 4:

Additional Set of Somatic and Physical Anhedonia Items

See the source below:

World Health Organization (1990). *CIDI-Core. Composite International Diagnostic Interview. Core Version.* World Health Organization: Geneva.

Additional Set of Somatic and Physical Anhedonia Items

Please circle the number for each statement which best describes how often you felt or behaved this way.	/None/ A Little of the time	Some of he time	Good part of the time	Most of the time
1. I have trouble falling asleep.	1	2	3	4
2. I have trouble staying asleep and restless sleep.	1	2	3	4
3. I wake up earlier than my usual time.	1	2	3	4
4. I sleep too much.	1	2	3	4
5. I feel bad when waking up.	1	2	3	4
6. I move slower than usual.	1	2	3	4
7. I am moving all the time.	1	2	3	4
8. I feel slowed down in my thinking.	1	2	3	4
9. I talk slower than usual.	1	2	3	4
10. I feel time passing more slowly.	1	2	3	4

Appendix 5:

Stress Inventory-5

See the source below:

Smith, J. C., & Seidel, J. M. (1982). The factor structure of self-reported physical stress reactions. *Biofeedback and Self-regulation, 7*, 35-47.

Stress Inventory-5

Please indicate how true each statement fits your typical experience of stress.	Not at all				Neutral/ Not Sure				Very True
Self-conscious Tense Activity									
Tension interferes with speech.	1	2	3	4	5	6	7	8	9
Voice unsteady, trembles, and cracks.	1	2	3	4	5	6	7	8	9
Voice strained and tense.	1	2	3	4	5	6	7	8	9
Difficulty speaking.	1	2	3	4	5	6	7	8	9
Voice loud or quiet.	1	2	3	4	5	6	7	8	9
Self-conscious about movement.	1	2	3	4	5	6	7	8	9
Walking rigid and forced.	1	2	3	4	5	6	7	8	9
Speech fast.	1	2	3	4	5	6	7	8	9
Perceived Lack of Motor Coordination									
Feel uncoordinated.	1	2	3	4	5	6	7	8	9
Feel weak all over.	1	2	3	4	5	6	7	8	9
Trembling and Shaking									
Hand shakes and trembles.	1	2	3	4	5	6	7	8	9
Parts of body tremble and shake.	1	2	3	4	5	6	7	8	9
Restless Activity									
Can't sit long.	1	2	3	4	5	6	7	8	9
Need to squirm, shift.	1	2	3	4	5	6	7	8	9
Restless.	1	2	3	4	5	6	7	8	9
Urge to pace.	1	2	3	4	5	6	7	8	9

Please indicate how true each statement fits your typical experience of stress.	Not at all				Neutral/ Not Sure				Very True
Tap, move feet.	1	2	3	4	5	6	7	8	9
Fidget, finger things.	1	2	3	4	5	6	7	8	9
Unnecessary finger movements.	1	2	3	4	5	6	7	8	9
Staring.	1	2	3	4	5	6	7	8	9
Feeling jumpy, easily startled.	1	2	3	4	5	6	7	8	9
Want to chew, nibble.	1	2	3	4	5	6	7	8	9
Sign when breathe.	1	2	3	4	5	6	7	8	9
Shoulder/ Neck/ Back Tension									
Shoulder muscle tense.	1	2	3	4	5	6	7	8	9
Physically tense, uncomfortable.	1	2	3	4	5	6	7	8	9
Difficult to let go, relax.	1	2	3	4	5	6	7	8	9
Neck tense.	1	2	3	4	5	6	7	8	9
Feel jumpy, easily startled.	1	2	3	4	5	6	7	8	9
Back muscles tense.	1	2	3	4	5	6	7	8	9
Clenched Muscle Tension									
Clench, grind teeth.	1	2	3	4	5	6	7	8	9
Brow tense, furrowed.	1	2	3	4	5	6	7	8	9
Make a fist, hold something tight.	1	2	3	4	5	6	7	8	9
Gastric Distress									
Pressure in stomach.	1	2	3	4	5	6	7	8	9
Stomach trouble.	1	2	3	4	5	6	7	8	9

Please indicate how true each statement fits your typical experience of stress.	Not at all				Neutral/ Not Sure				Very True
Pain in stomach.	1	2	3	4	5	6	7	8	9
Discomfort in stomach.	1	2	3	4	5	6	7	8	9
Nervous stomach.	1	2	3	4	5	6	7	8	9
Stomach acid, heartburn.	1	2	3	4	5	6	7	8	9
Indigestion.	1	2	3	4	5	6	7	8	9
Nausea, sinking feeling.	1	2	3	4	5	6	7	8	9
Churning, noisy stomach.	1	2	3	4	5	6	7	8	9
Butterflies in stomach.	1	2	3	4	5	6	7	8	9
Feel unwell.	1	2	3	4	5	6	7	8	9
Feel generally sick, in bad health.	1	2	3	4	5	6	7	8	9
Eliminative Difficulties									
Urge to move bowels often.	1	2	3	4	5	6	7	8	9
Diarrhea.	1	2	3	4	5	6	7	8	9
Urge to urinate often.	1	2	3	4	5	6	7	8	9

Appendix 6:

Cognition Checklist

See the source below:

Beck, A. T., Brown, G., Steer, R. A., Eidelson, J. I., & Riskind, J. H. (1987). Differentiating anxiety and depression: A test of the cognitive content-specificity hypothesis. *Journal of Abnormal Psychology, 96*, 179-183.

Cognition Checklist

Please indicate how often each thought listed below typically occurred to you.	Never	Not Very Often	Moderately	Very Often	Always
Depression subscale					
I'm worthless	0	1	2	3	4
I'm not worthy of other people's attention or affection	0	1	2	3	4
I'll never be as good as other people are.	0	1	2	3	4
I'm a social failure	0	1	2	3	4
I don't deserve to be loved.	0	1	2	3	4
People don't respect me anymore.	0	1	2	3	4
I will never overcome my problems.	0	1	2	3	4
I've lost the only friends I've ever had.	0	1	2	3	4
Life isn't worth living.	0	1	2	3	4
I'm worse off than they are.	0	1	2	3	4
There's no one left to help me.	0	1	2	3	4
No one cares whether I live or die.	0	1	2	3	4
Nothing ever works out for me anymore.	0	1	2	3	4
I have become physically unattractive.	0	1	2	3	4
Anxiety subscale					
What if I get sick and become an invalid?	0	1	2	3	4
I am going to be injured.	0	1	2	3	4
What if no one reaches me in time to help?	0	1	2	3	4

Please indicate how often each thought listed below typically occurred to you.	Never	Not Very Often	Moderately	Very Often	Always
I might be trapped.	0	1	2	3	4
I am not a healthy person.	0	1	2	3	4
I'm going to have an accident.	0	1	2	3	4
There's something very wrong with me.	0	1	2	3	4
Something might happen that will ruin my appearance.	0	1	2	3	4
I am going to have a heart attack.	0	1	2	3	4
Something awful is going to happen.	0	1	2	3	4
Something will happen to someone I care about.	0	1	2	3	4
I'm losing my mind.	0	1	2	3	4

Appendix 7:

Agoraphobic Cognitions Questionnaire

See the source below:

Chambless, D. L., Caputo, C., Bright, P., & Gallagher, R. (1984). Assessment of fear of fear in agoraphobics: The Body Sensation Questionnaire and the Agoraphobic Cognitions Questionnaire. *Journal of Consulting and Clinical Psychology, 52*, 1090-1097.

Agoraphobic Cognition Questionnaire

Please indicate how frequent each thought listed below occurred to you when you are anxious.	Never	Not Very Often	Moderately	Very Often	Always
I am going to throw up.	1	2	3	4	5
I am going to pass out.	1	2	3	4	5
I must have a brain tumour.	1	2	3	4	5
I will have a heart attack.	1	2	3	4	5
I will choke to death.	1	2	3	4	5
I am going to act foolish.	1	2	3	4	5
I am going blind.	1	2	3	4	5
I will not be able to control myself.	1	2	3	4	5
I will hurt someone.	1	2	3	4	5
I am going to have a stroke.	1	2	3	4	5
I am going to go crazy.	1	2	3	4	5
I am going to scream.	1	2	3	4	5
I am going to babble or talk funny.	1	2	3	4	5
I will be paralysed by fear.	1	2	3	4	5

Appendix 8:

Penn State Worry Questionnaire

See the source below:

Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy, 28*, 487-495.

Penn State Worry Questionnaire

Please indicate how typical each statement below describes how you think.	Not at all	A Little	Moderately	Quite A Bit	Extremely
1. If I do not have enough time to do everything, I do not worry about it.	1	2	3	4	5
2. My worries overwhelm me.	1	2	3	4	5
3. I do not tend to worry about things.	1	2	3	4	5
4. Many situations make my worry.	1	2	3	4	5
5. I know I should not worry about things, but I just cannot help it.	1	2	3	4	5
6. When I am under pressure I worry a lot.	1	2	3	4	5
7. I am always worrying about something.	1	2	3	4	5
8. I find it easy to dismiss worrisome thoughts.	1	2	3	4	5
9. As soon as I finish one task, I start to worry about everything else I have to do.	1	2	3	4	5
10. I never worry about anything.	1	2	3	4	5
11. When there is nothing more than I can do about a concern, I do not worry about it anymore.	1	2	3	4	5
12. I have been a worrier all my life.	1	2	3	4	5
13. I notice that I have been worrying about things.	1	2	3	4	5
14. Once I start worrying, I cannot stop.	1	2	3	4	5
15. I worry all the time.	1	2	3	4	5
16. I worry about projects until they are all done.	1	2	3	4	5

Appendix 9:

Response Styles Questionnaires

See the source below:

Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research, 27*, 247-259.

Response Styles Questionnaire

Please indicate how often you generally think or do when you feel down, sad, or depressed.	Almost Never	Not Often	Very Often	Almost Always
1. Think about how alone you feel.	1	2	3	4
2. Think "I won't be able to do my job if I don't snap out of this."	1	2	3	4
3. Think about your feelings of fatigue and achiness.	1	2	3	4
4. Think about how hard it is to concentrate.	1	2	3	4
5. Think "What am I doing to deserve this?"	1	2	3	4
6. Think about how passive and unmotivated you feel.	1	2	3	4
7. Analyze recent events to try to understand why you are depressed.	1	2	3	4
8. Think about how you don't seem to feel anything anymore.	1	2	3	4
9. Think "Why can't I get going?"	1	2	3	4
10. Think "Why do I always react this way?"	1	2	3	4
11. Go away by yourself and think about why you feel this way.	1	2	3	4
12. Write down what you are thinking and analyze it.	1	2	3	4
13. Think about a recent situation, wishing it had gone better.	1	2	3	4
14. Think "I won't be able to concentrate if I keep feeling this way"	1	2	3	4
15. Think "Why do I have problems other people don't have"	1	2	3	4
16. Think "Why can't I handle things better?"	1	2	3	4
17. Think about how sad you feel.	1	2	3	4
18. Think about all your shortcomings, failings, faults, mistakes.	1	2	3	4
19. Think about how you don't feel up to doing anything.	1	2	3	4

Please indicate how often you generally think or do when you feel down, sad, or depressed.	Almost Never	Not Often	Very Often	Almost Always
20. Analyze your personality to try to understand why you are depressed.	1	2	3	4
21. Go some place alone to think about your feelings.	1	2	3	4
22. Think about how angry you are with yourself.	1	2	3	4

Appendix 10:

Chinese and Canadian Cultural Orientations

(adapted from Acculturation Rating Scale for Mexican Americans-II).

See the source below:

Cuéllar, I., Arnold, B., & Maldonado, R. (1995). Acculturation Rating Scale for Mexican Americans-II: A revision of the original ARSMA Scale. *Hispanic Journal of Behavioural Sciences, 17*, 275-304.

Chinese and Canadian Cultural Orientations

Please circle the number for each statement that best applies to you.	Not at all	Not very often	Moderately	Very often	Almost always
1. I speak Chinese.	1	2	3	4	5
2. I speak English.	1	2	3	4	5
3. I enjoy speaking Chinese.	1	2	3	4	5
4. I enjoy speaking English.	1	2	3	4	5
5. I associate with Caucasians.	1	2	3	4	5
6. I associate with Chinese and/or Chinese Canadians.	1	2	3	4	5
7. I enjoy listening to Chinese language music.	1	2	3	4	5
8. I enjoy listening to English language music.	1	2	3	4	5
9. I enjoy Chinese language TV.	1	2	3	4	5
10. I enjoy English language TV.	1	2	3	4	5
11. I enjoy English language movies.	1	2	3	4	5
12. I enjoy Chinese language movies.	1	2	3	4	5
13. I enjoy reading in Chinese.	1	2	3	4	5
14. I enjoy reading in English.	1	2	3	4	5
15. I write in Chinese.	1	2	3	4	5
16. I write in English.	1	2	3	4	5
17. My thinking is done in English.	1	2	3	4	5
18. My thinking is done in Chinese.	1	2	3	4	5

Please circle the number for each statement that best applies to you.	Not at all	Not very often	Moderately	Very often	Almost always
19. My contact with a Chinese country has been...	1	2	3	4	5
20. My contact with Canada has been...	1	2	3	4	5
21. My friends, while I was growing up, were of Chinese origin.	1	2	3	4	5
22. While I was growing up, my friends were of Caucasian origin.	1	2	3	4	5
23. My family cooks Chinese foods.	1	2	3	4	5
24. My family cooks Canadian foods.	1	2	3	4	5
25. My friends now are of Caucasian origin.	1	2	3	4	5
26. My friends now are of Chinese origin.	1	2	3	4	5

Appendix 11:

Multigroup Ethnic Identity Measure-Ethnic Version

See the source below:

Phinney, J. S. (1992). The Multigroup Ethnic Identity Measure: A new scale for use with diverse groups. *Journal of Adolescent Research, 7*, 156-176.

Multigroup Ethnic Identity Measure: Ethnic Version

There are many different words to describe the different *ethnic* groups that people come from (e.g., Indo-Canadian, Taiwanese, Chinese-Canadians, Black, First Nations, and British heritage). These questions are about your ethnicity or your ethnic group, and how much you agree with each statement.	Strongly Disagree	Disagree	Agree	Strongly Agree
1. I have spent time trying to find out more about my own ethnic group, such as its history, traditions, and customs.	1	2	3	4
2. I am active in organizations or social groups that include mostly members of my own ethnic group.	1	2	3	4
3. I have a clear sense of my ethnic background and what it means for me.	1	2	3	4
4. I think a lot about how my life will be affected by my ethnic group membership.	1	2	3	4
5. I am happy that I am a member of the group I belong to.	1	2	3	4
6. I have a strong sense of belonging to my own ethnic group.	1	2	3	4
7. I understand pretty well what my ethnic group membership means to me.	1	2	3	4
8. To learn more about my ethnic background, I have often talked to other people about my ethnic group.	1	2	3	4
9. I have a lot of pride in my ethnic group and its accomplishments.	1	2	3	4
10. I participate in cultural practices of my own group, such as special food, music, or customs.	1	2	3	4
11. I feel a strong attachment towards my own ethnic group.	1	2	3	4
12. I feel good about my cultural or ethnic background.	1	2	3	4

Appendix 12:

Multigroup Ethnic Identity Measure-Canadian Version

(adapted from Multigrup Ethnic Identity Measure).

See the source below:

Phinney, J. S. (1992). The Multigroup Ethnic Identity Measure: A new scale for use with diverse groups. *Journal of Adolescent Research, 7*, 156-176.

Multigroup Ethnic Identity Measure-Canadian Version

Please indicate how much you agree with each statement below about your Canadian background.	Strongly Disagree	Disagree	Agree	Strongly Agree
1. I have spent time trying to find out more about my Canadian background, such as its history, traditions, and customs.	1	2	3	4
2. I am active in organizations or social groups that include mostly Canadians.	1	2	3	4
3. I have a clear sense of my Canadian background and what it means for me.	1	2	3	4
4. I think a lot about how my life will be affected by my Canadian group membership.	1	2	3	4
5. I am happy that I am a Canadian.	1	2	3	4
6. I have a strong sense of belonging to Canada.	1	2	3	4
7. I understand pretty well what my Canadian group membership means to me.	1	2	3	4
8. In order to learn more about my Canadian background, I have often talked to other people about being a Canadian.	1	2	3	4
9. I have a lot of pride in my Canadian background and Canada's accomplishments.	1	2	3	4
10. I participate in Canadian cultural practices, such as special food, music, or customs.	1	2	3	4
11. I feel a strong attachment towards Canada.	1	2	3	4
12. I feel good about my Canadian background.	1	2	3	4

Appendix 13:

Perceived Racism-Personal Level

See the source below:

Fuertes, J. N., & Westbrook, F. D. (1996). Using the Social, Attitudinal, Familial, and Environmental (S.A.F.E.) Acculturation Stress Scale to assess the adjustment needs of Hispanic college students. *Measurement and Evaluations in Counseling and Development, 29*, 67-76.

Perceived Racism-Personal Level

Please circle the number for each statement that best applies to you because of your ethnic or cultural background.	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Disagree
1. Because I am different, I do not get enough credit for the work I do.	1	2	3	4	5
2. I often feel ignored by people who are supposed to assist me.	1	2	3	4	5
3. I often feel that people actively try to stop me from advancing.	1	2	3	4	5
4. Many people have stereotypes about my culture or ethnic group and treat me as if they are true.	1	2	3	4	5
5. In looking for a job, I sometimes feel that my ethnicity is a limitation.	1	2	3	4	5
6. I feel uncomfortable when others make jokes about or put down people of my ethnic background.	1	2	3	4	5
7. I have more barriers to overcome than most people.	1	2	3	4	5
8. Because of my ethnic background, I feel that others often exclude me from participating in their activities.	1	2	3	4	5
9. It bothers me when people pressure me to assimilate.	1	2	3	4	5
10. People look down upon me if I practice customs of my culture.	1	2	3	4	5
11. I was personally discriminated against because I am ethnically different.	1	2	3	4	5
12. I was being name-called because I am ethnically different.	1	2	3	4	5
13. I was being teased in school because I am ethnically different.	1	2	3	4	5

Appendix 14:

Collective Self-Esteem Scale

See the source below:

Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self evaluation of one's social identity. *Personality and Social Psychology Bulletin, 18*, 302-318.

Collective Self-Esteem

Please respond to the following statements on the basis of how you feel about your ethnic groups and your memberships in them. Please circle the answer that best matches your response to each statement.	Strongly Disagree	Disagree	Mildly Disagree	Neither agree Nor Disagree	Mildly Agree	Agree	Strongly Agree
1. I am a worthy member of my ethnic group.	1	2	3	4	5	6	7
2. I often regret that I belong to my ethnic group.	1	2	3	4	5	6	7
3. Overall, my ethnic group is considered good by others.	1	2	3	4	5	6	7
4. I feel I don't have much to offer to my ethnic group.	1	2	3	4	5	6	7
5. In general, I'm glad to be a member of my ethnic group.	1	2	3	4	5	6	7
6. Most people consider my ethnic group, on the average, to be more ineffective than other ethnic groups.	1	2	3	4	5	6	7
7. I am a cooperative participant in my ethnic group.	1	2	3	4	5	6	7
8. Overall, I often feel that the ethnic group of which I am a member is not worthwhile	1	2	3	4	5	6	7
9. In general, others respect my ethnic group.	1	2	3	4	5	6	7
10. I often feel I'm a useless member of my ethnic group.	1	2	3	4	5	6	7
11. I feel good about the ethnic group I belong to.	1	2	3	4	5	6	7
12. In general, others think that my ethnic group is unworthy.	1	2	3	4	5	6	7

Appendix 15:

Interview Protocol

Interview Protocol

Part I: Cultural Experiences

A. Reflections about Current Condition

- What has your experience been like in Canada so far?
- How would you describe yourself now, more Chinese or Canadians or both or any other ways? How do you know (*hint*: in what ways did your feelings translate into behaviours)? What does this mean to you (*hint: having this cultural identity*)?
- Have you tried to do anything to make yourself feel more like a Chinese or a Canadian? What was that like for you (e.g., successful; effortful; difficult)?
- Have you experienced any sense of cultural conflict between the ways of being Chinese or Canadian? If so, how these conflicts impacted you and how they were resolved?
- What is your relationship with other Chinese people here in Canada? What make it difficult and make it enjoyable for you? In your mind, how these people see you?
- What is your relationship with other non-Chinese ethnic people (*giving examples if needed*)? What make it difficult and make it enjoyable for you? In your mind, how these people see you?
- What is your relationship with other typical Canadians? What make it difficult and make it enjoyable for you? In your mind, how these people see you?

B-1. Cultural Experiences for Those Coming to Canada After Age 6:

- Do you remember the time before you came to Canada? How was that for you?
- What expectations did you have before you come to Canada? (*listing any*

expectations), how have your experiences being different or similar to what you expected? How did you deal with these experiences?

- Have you noticed anything different about yourself since you came (*hint: any change about how you see or feel about yourself, and how you relate to other people*)? Have you thought about why you changed and what made you changed (*hint: how they feel about their changes*)? What else would you like to change about yourself?
- When looking back, have you noticed any event or things happened during those time you felt yourself changed (*hint: explore the nature and meanings of these events, and query if the participants considered these incidents crucial for initiating these changes*)?
- When looking back, what was the most difficult thing being a Chinese in Canada? Do you have any difficulties or negative experiences since you came? How did you cope with those difficulties? How would you like to cope differently? Have you noticed any unresolved issues still impacting you?

B-2: Cultural Experiences for Those Born in or Coming to Canada Before Age 6:

- When did you first realize you were different from your peers, because of your ethnicity? What was that like for you, and what sense did you make out of that (*hint: explore the nature of such realization; what incidents lead to this realization; any aftermath or specific meanings derived from these experiences*)?
- From that point on to who you are right now, have you noticed any change in how you see yourself, as an individual or as a Chinese? What has changed, and what has not? In your mind, what made you change (*hint: explore occurrence of*

critical events; meanings given to a specific event)? What else would you like to change about yourself?

- Compared to your parents, how's your experience of being a Chinese in Canada different from theirs? How do your parents see themselves now and how do they see you? Has there been a time when you and your parents disagree or even argue because of these differences (*query how they resolve these conflicts*)?
- When growing up, what was the most difficult thing being ethnically different or being a Chinese? Do you have any negative experiences being who you are? How these experiences impact you? How did you cope with that? Now looking back, how else could you have coped?

Part II: Depressive Experiences

- Could you describe your feeling depressed? For you, what did that feel like? What was the most difficult thing about being depressed?
- Other than the term "depression", what other terms or names would you call it (*hint: explore why these terms are chosen*)?
- How did you know you might be depressed (*hint: explore if they engage any behaviour leading to further understanding*)?
- How did you feel about being depressed? What it meant, being depressed, for you? How did you see yourself when you were depressed (*hint: explore any change in self-concept or esteem when depressed vs. not depressed*)? How has your depression changed your life?
- What do you think led up to your depression (*hint: explore their reasoning and mental health beliefs*)?

- In your mind, what other people might think of you if they knew (*hint: explore their perception of societal judgment*)?
- How did you cope with your depression? What was that like for you (*hint: explore negative or positive experiences of coping or help-seeking*)? How else would you have coped differently? What stopped you from coping the way you would like to (*hint: explore how mental health beliefs and perceived societal judgment impact their choices of coping, and other barriers in preventing them from adopting desired coping strategies*)?
- Have you noticed any critical events happening around that time you felt depressed? In your mind, how did those events impact you (*hint: explore if they believe these events crucial to their depression*)?
- What do you think about people who are depressed? What make them depressed, if you have to guess? What they could do to cope with their depression? (*Hint: double standards for coping strategies for oneself and others*) Could you see yourself coping with in the same way they could have coped (*hint: explore reasons for double-standards*)?
- Was there anything positive about being depressed, if there was any?

Part III: Ending Questions

- How do you feel about answering these questions?
- What other questions that would be important to ask to better understand about being a Chinese in Canada? What other questions that would be important to ask to better understand depression?
- In your opinion, what would be important for other Chinese students or families

to know before they come to Canada?

- What advice would you give to other Chinese people in Canada so that they can adjust better to living here?
- What would you say to people who want to know about the Chinese people in Canada?

Appendix 16:

Complete List of Items of 14 Symptom Measures Used in the Structural Analyses

(Excluding Misfit Items and DIF Items)

Complete List of Items of 14 Symptom Measures Used in the Structural Analyses

(Excluding Misfit Items and DIF Items)

1. General Distress-Mixed Symptoms

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
Felt confused	1	2	3	4	5
Slept very well	1	2	3	4	5
Felt irritable	1	2	3	4	5
Felt dissatisfied with everything	1	2	3	4	5
Had trouble remembering things	1	2	3	4	5
Did not have much of an appetite	1	2	3	4	5
Felt very restless	1	2	3	4	5
Had trouble making decisions	1	2	3	4	5
Had trouble paying attention	1	2	3	4	5
Had trouble staying asleep	1	2	3	4	5
Worried a lot about things	1	2	3	4	5
Got tired or fatigued easily	1	2	3	4	5

2. General Distress-Depressive Symptoms

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
Felt sad	1	2	3	4	5
Felt hopeless	1	2	3	4	5

Blamed myself for a lot of things	1	2	3	4	5
Felt like a failure	1	2	3	4	5
Felt inferior to others	1	2	3	4	5
Was disappointed in myself	1	2	3	4	5

3. General Distress-Anxiety Symptoms

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
Felt nauseated	1	2	3	4	5
Felt nervous	1	2	3	4	5
Was unable to relax	1	2	3	4	5
Had a lump in my throat	1	2	3	4	5
Felt tense or "high-strung"	1	2	3	4	5
Muscles were tense or sore	1	2	3	4	5
Felt keyed up, "on edge"	1	2	3	4	5

4. Positive Affect (reverse coded)

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
Felt really happy	1	2	3	4	5
Felt optimistic	1	2	3	4	5
Seemed to move quickly and easily	1	2	3	4	5
Looked forward to things with enjoyment	1	2	3	4	5

Felt like I had accomplished a lot	1	2	3	4	5
Was proud of myself	1	2	3	4	5
Felt really "up" or lively	1	2	3	4	5
Felt like I had a lot of energy	1	2	3	4	5
Felt hopeful about the future	1	2	3	4	5

5. Low Positive Affect

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
Did not feel cheerful	1	2	3	4	5
Did not feel really happy	1	2	3	4	5
Did not feel optimistic	1	2	3	4	5
Did not feel like I was having a lot of fun	1	2	3	4	5
Did not seem to move quickly and easily	1	2	3	4	5
Did not look forward to things with enjoyment	1	2	3	4	5
Did not feel like I had accomplished a lot	1	2	3	4	5
Did not feel like I had a lot of interesting things to do	1	2	3	4	5
Did not feel like I had a lot to look forward to	1	2	3	4	5
Was not proud of myself	1	2	3	4	5
Did not feel hopeful about the future	1	2	3	4	5
Did not feel really good about myself	1	2	3	4	5

6. Loss of Interest

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
Felt withdrawn from other people	1	2	3	4	5
Felt like it took extra effort to get started	1	2	3	4	5
Felt really slowed down	1	2	3	4	5
Thought about death or suicide	1	2	3	4	5

7. Autonomic Hyperarousal

Please indicate to what extent you have experienced each symptom during the past week, including today.	Not at all	A Little Bit	Moderately	Quite A Bit	Extremely
Felt faint	1	2	3	4	5
Felt numbness or tingling in my body	1	2	3	4	5
Had pain in my chest and body	1	2	3	4	5
Had hot or cold spells	1	2	3	4	5
Felt dizzy or lightheaded	1	2	3	4	5
Was short of breath	1	2	3	4	5
Muscles twitched or trembled	1	2	3	4	5
Heart was racing or pounding	1	2	3	4	5
Was trembling or shaking	1	2	3	4	5
Had trouble swallowing	1	2	3	4	5

8. Psychomotor Retardation

Please circle the number for each statement which best describes how often you felt or behaved this way.	None/ A little	Some of the time	Good part of the time	Most of the time

I feel down-hearted and blue.	1	2	3	4
I have crying spells or feel like it.	1	2	3	4
My heart beats faster than usual.	1	2	3	4
I get tired for no reason.	1	2	3	4
I feel that others would be better off if I were dead.	1	2	3	4
I feel bad when waking up.	1	2	3	4
I feel slowed down in my thinking.	1	2	3	4

9. Muscle Tension and Gastric Disturbances

Please indicate how true each statement fits your typical experience of stress.	Not at all				Neutral/ Not Sure				Very True
Feel uncoordinated.	1	2	3	4	5	6	7	8	9
Hand shakes and trembles.	1	2	3	4	5	6	7	8	9
Parts of body tremble and shake.	1	2	3	4	5	6	7	8	9
Can't sit long.	1	2	3	4	5	6	7	8	9
Need to squirm, shift.	1	2	3	4	5	6	7	8	9
Restless.	1	2	3	4	5	6	7	8	9
Urge to pace.	1	2	3	4	5	6	7	8	9
Unnecessary finger movements.	1	2	3	4	5	6	7	8	9
Feeling jumpy, easily startled.	1	2	3	4	5	6	7	8	9
Want to chew, nibble.	1	2	3	4	5	6	7	8	9
Sigh when breathe.	1	2	3	4	5	6	7	8	9
Shoulder muscle tense.	1	2	3	4	5	6	7	8	9
Difficult to let go, relax.	1	2	3	4	5	6	7	8	9

Neck tense.	1	2	3	4	5	6	7	8	9
Feel jumpy, easily startled.	1	2	3	4	5	6	7	8	9
Back muscles tense.	1	2	3	4	5	6	7	8	9
Clench, grind teeth.	1	2	3	4	5	6	7	8	9
Make a fist, hold something tight.	1	2	3	4	5	6	7	8	9
Pressure in stomach.	1	2	3	4	5	6	7	8	9
Stomach trouble.	1	2	3	4	5	6	7	8	9
Pain in stomach.	1	2	3	4	5	6	7	8	9
Discomfort in stomach.	1	2	3	4	5	6	7	8	9
Nervous stomach.	1	2	3	4	5	6	7	8	9
Stomach acid, heartburn.	1	2	3	4	5	6	7	8	9
Indigestion.	1	2	3	4	5	6	7	8	9
Nausea, sinking feeling.	1	2	3	4	5	6	7	8	9
Churning, noisy stomach.	1	2	3	4	5	6	7	8	9
Feel generally sick, in bad health.	1	2	3	4	5	6	7	8	9
Urge to move bowels often.	1	2	3	4	5	6	7	8	9
Diarrhoea.	1	2	3	4	5	6	7	8	9
Urge to urinate often.	1	2	3	4	5	6	7	8	9

10. Depressive Cognition

Please indicate how often each thought listed below typically occurred to you.	Never	Not Very Often	Moderately	Very Often	Always
I'm worthless	0	1	2	3	4

I'm not worthy of other people's attention or affection	0	1	2	3	4
I'll never be as good as other people are.	0	1	2	3	4
I'm a social failure	0	1	2	3	4
I don't deserve to be loved.	0	1	2	3	4
I will never overcome my problems.	0	1	2	3	4
I've lost the only friends I've ever had.	0	1	2	3	4
Life isn't worth living.	0	1	2	3	4
I'm worse off than they are.	0	1	2	3	4
No one cares whether I live or die.	0	1	2	3	4

11. Anxiety Cognition

Please indicate how often each thought listed below typically occurred to you.	Never	Not Very Often	Moderately	Very Often	Always
What if I get sick and become an invalid?	0	1	2	3	4
I am not a healthy person.	0	1	2	3	4
I'm going to have an accident.	0	1	2	3	4
There's something very wrong with me.	0	1	2	3	4
I am going to have a heart attack.	0	1	2	3	4
Something awful is going to happen.	0	1	2	3	4
I'm losing my mind.	0	1	2	3	4

12. Agoraphobic Cognitions

Please indicate how frequent each thought listed below occurred to you when you are anxious.	Never	Not Very Often	Moderately	Very Often	Always

I will have a heart attack.	1	2	3	4	5
I will choke to death.	1	2	3	4	5
I am going blind.	1	2	3	4	5
I will not be able to control myself.	1	2	3	4	5
I am going to go crazy.	1	2	3	4	5
I am going to scream.	1	2	3	4	5
I am going to babble or talk funny.	1	2	3	4	5
I will be paralysed by fear.	1	2	3	4	5

13. Worry

Please indicate how typical each statement below describes how you think.	Not at all	A Little	Moderately	Quite A Bit	Extremely
Many situations make my worry.	1	2	3	4	5
I know I should not worry about things, but I just cannot help it.	1	2	3	4	5
When I am under pressure I worry a lot.	1	2	3	4	5
I am always worrying about something.	1	2	3	4	5
I notice that I have been worrying about things.	1	2	3	4	5
Once I start worrying, I cannot stop.	1	2	3	4	5
I worry all the time.	1	2	3	4	5

14. Rumination

Please indicate how often you generally think or do when you feel down, sad, or depressed.	Almost Never	Not Often	Very Often	Almost Always
Think about how alone you feel.	1	2	3	4

Think "I won't be able to do my job if I don't snap out of this."	1	2	3	4
Think about your feelings of fatigue and achiness.	1	2	3	4
Think "What am I doing to deserve this?"	1	2	3	4
Think about how passive and unmotivated you feel.	1	2	3	4
Analyze recent events to try to understand why you are depressed.	1	2	3	4
Think about how you don't seem to feel anything anymore.	1	2	3	4
Think "Why can't I get going?"	1	2	3	4
Go away by yourself and think about why you feel this way.	1	2	3	4
Think about a recent situation, wishing it had gone better.	1	2	3	4
Think "I won't be able to concentrate if I keep feeling this way"	1	2	3	4
Think about how sad you feel.	1	2	3	4
Think about all your shortcomings, failings, faults, mistakes.	1	2	3	4
Think about how you don't feel up to doing anything.	1	2	3	4
Analyze your personality to try to understand why you are depressed.	1	2	3	4
Go some place alone to think about your feelings.	1	2	3	4
Think about how angry you are with yourself.	1	2	3	4