INFLUENCE OF CULTURE ON CARDIOVASCULAR RESPONSE TO ANGER PROVOCATION

by

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A THESIS SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE STUDIES

(Psychology)

THE UNIVERSITY OF BRITISH COLUMBIA

April 2006

Abstract

The objective of this research was to determine whether, and to what extent, culture may influence response to anger provocation. For Study One, 67 psychology undergraduates comprised of 34 English-speaking Canadians (29 females, 5 males) and 33 Cantonese-speaking Chinese/Chinese-Canadians (26 females, 7 males) completed a questionnaire package including measures of acculturation, self-construal, and preferred response to anger. As predicted, the English group was more likely to endorse a strategy of overt anger expression than was the Cantonese group, who were more likely than English speakers to endorse a strategy of either distraction or making a less hostile reappraisal. For Study Two, the main study, 122 psychology undergraduates comprised of 60 English-speaking Canadians (33 females, 27 males) and 62 Cantonese-speaking Chinese/Chinese-Canadians (38 females, 24 males) underwent an anger-provocation task (serial 7'with harassment) while their blood pressure (BP) and heart rate (HR) were monitored. Following anger provocation, participants either were given the opportunity to overtly express their anger (Expression group) or were left alone (Non-expression group) while their BP and HR continued to be monitored. It was hypothesized that for those in the Expression group, rate of BP and HR recovery would not differ between cultural groups but for those in the Non-expression group, the Cantonese group would show faster recovery than the English group, the result of differential opportunity to utilize their preferred anger response strategy. Contrary to these hypotheses, it was found that the Cantonese group generally showed faster systolic BP recovery than the English

group across anger expression conditions. Results suggest that: (1) culture plays a significant role in responding to anger, and that, at least for the Cantonese group, its role may be mediated via self-construal, consistent with the model proposed by Markus and Kitayama (1991), and (2) continued attentional focus to an anger-provoking event can result in attenuated cardiovascular recovery.

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Acknowledgements

First and foremost, I thank Wolfgang Linden for his many years of mentorship that began years before I even started my graduate study. I also thank all of the people who provided assistance throughout the course of this dissertation, particularly members of my supervisory committee for their thoughtful suggestions and all members of my lab. I would like to extend special thanks to Jocelyne Leclerc, who supervised and coordinated data collection while I was away from the lab.

I thank Mum, Dad, Jeff, and Carrie, for without your support I would never have come this far. I also thank all of my friends who have supported me throughout my years of study and have made Vancouver my home. I would like to specifically thank Darcy Hallett not only for providing free statistics consulting services, but for being the best roommate I ever had.

Finally, thank you to Julie Bélanger for all of your love and support (not to mention cracking the whip) in good times and bad. I hope that in the years ahead I may make you as happy as you have made me.

Chapter One – Introduction

Within the psychological research literature, there exists a long tradition of examining the relationship between the expression of emotions and their concurrent physiological response. It has long been argued by those as early as William James (1890) and Freud (1917) that inhibition of emotional expression is an inherently stressful condition for an organism and that such stress can lead to pathological mental and physical states. Since then, although many in psychology and medicine rejected the proposed psychodynamic basis of this relationship for a lack of empiricism, over the years there arose a literature linking emotion inhibition to increased physiological arousal and poorer health (Traue & Pennebaker, 1993).

More recently, researchers in cultural psychology have been examining the extent to which cultural differences influence or limit social and cognitive psychological phenomena once thought to be universal. For example, it has been found that people from certain cultures are less susceptible to some cognitive biases that were once thought to be fundamental (Heine, Lehman, Markus, & Kitayama, 1999). Within this literature, it has been argued that one's culture greatly influences self-construal, which in turn has implications for social and interpersonal, cognitive and emotional functioning (Markus & Kitayama, 1991; Matsumoto, 1999). Cultures use similar facial expressions to express emotion (Ekman, 1972), however more recent evidence has emphasized culture-specific determination of intensity and self-report of emotion. For example, people from East Asian cultures show markedly less facial expression of emotion, particularly

for negative emotions, than those living in Western cultures (Matsumoto et al., 1988). In fact, the notion that emotional expression is healthy and that chronic inhibition of emotions is unhealthy is believed to be absent in these cultures (Markus & Kitayama, 1991).

If one holds to the notion that emotion inhibition results in conflict and stress for an organism, and that such stress contributes to disease processes, then one might predict that, all other factors being equal, cultures that foster inhibited display of emotion would exhibit higher incidence of stress-related illness, unless there is also cultural variation in beliefs, cognitions, etc. about the appropriateness of inhibiting emotion displays. However, factors related to disease development are *not* equal across cultures, and the author is not aware of any epidemiological research suggesting higher rates of stress-related illness in East Asian cultures compared to Westerners. Curiously, those living in Asia have historically been noted to exhibit *lower* rates of cardiovascular disease (CVD, an illness that is in part attributed to chronic stress) compared to North Americans, although in recent years CVD incidence and CVD-related mortality has been rising in Asian countries (Khor, 2001). This increase has been attributed to non-psychological factors such as lessened physical activity, changing ('Westernized') diet, and proneness to obesity and diabetes (Wahlqvist, 2001; 2002; Gill, 2001; Sullivan, 2001). No study has thus far suggested that culturally mandated inhibition of emotion is in any way related to disease development.

Nonetheless, it is of great interest to the author to compare the physiological response of a sample of Westerners and Easterners to emotion inhibition in order to better understand the relationship between psychological stress and disease. Although there are previous studies that have examined cross-cultural differences in anger expression, the proposed study will be a unique contribution to the literature, as the author is not aware of any published research examining cultural differences in emotion expression/inhibition *and* physiological response to emotional stress. Such a comparison will address whether emotion inhibition is universally maladaptive, or perhaps only maladaptive when packaged within a 'Western' cultural frame. So for example, if groups show identical physiological profiles for emotion inhibition across cultures, the comparison could serve as a cross-cultural validation of the Western idea of the inverse relationship between emotion expression and physiological arousal, but suggest perhaps that pathological effects of such arousal may be buffered by other factors within Eastern cultures, so as to result in, for example, observed lower rates of CVD. Alternatively, if the pattern of increased arousal in response to emotion inhibition noted in Westerners is not observed in Easterners, this would suggest that emotion inhibition *per se* is not solely responsible for additional arousal. In this case, one might ask what else Westerners are doing (or not doing) that accounts for the difference, and the answer may lie with the manner in which culture influences the development of personality factors and cognitions known to be related to physiological arousal and recovery (e.g., hostile rumination).

Emotion Inhibition and Physiological Response

The apparent relationship between inhibition of emotion and physiological response has been the subject of much scientific inquiry (see the review by Traue & Pennebaker, 1993). They cite Prideaux (1920) who noted that individuals who expressed their emotion showed a smaller magnitude of electrodermal activity (micro-fluctuations in perspiration that can increase and decrease electrical conductance of the skin). Similarly, it was long ago suggested that blocking specific emotions results in development of identifiable, physical disease, specifically that blocked anger and hostility are associated with CVD, and blocked dependency-relevant emotions are related to digestive and other illness (Alexander, 1939; 1950).

Similar observations were made in children (Jones, 1950) who hypothesized that in infancy, emotion is experienced primarily as an external signal of difficulty or need (e.g., a baby cries when he/she wants a bottle). Later, such emotional outbursts are met with disapproval and punishment rather than succour, and so external expression of emotion becomes inhibited and emotional experience becomes an increasingly internal experience. Jones argued that suppression of external expression of emotion is an effortful process resulting in additional arousal. Buck (1979) argued rather, that a biological disposition for introversion results in both increased electrodermal lability and emotional inhibition. Regardless of the particular etiological theory one might hold, there have been dozens of studies conducted in the years following that support the

widespread notion of an inverse relationship between emotion inhibition and physiological arousal.

More specifically related to the topic of this dissertation is research on the inverse relationship between anger expression and blood pressure. Working within the framework of the frustration-aggression hypothesis (Dollard et al., 1939), a series of studies (Hokanson, 1961; Hokanson & Shelter, 1961; Hokanson & Burgess, 1962, 1963) involved measuring the blood pressure of participants while they (the participants) administered what they believed were electric shocks as part of a learning task to a study confederate who had insulted the participant prior to the task. It was found, under a number of different conditions, that participants given the opportunity to aggress against the source of their frustration showed decreases in blood pressure compared to those not able to aggress. More recently, it has been demonstrated that the opportunity to express anger can speed blood pressure recovery from a laboratory stress task (Engebretson, Matthews, & Scheier, 1989; Lai & Linden, 1992).

In studying emotion inhibition, it is important to clarify exactly what it is that is being inhibited. A strong emotion has been conceptualized as having three components: (1) a subjective emotional experience, (2) the behavioural expression of that experience and (3) a physiological response. Gross (1998) refers to two main strategies for emotion inhibition. The first, termed, "antecedent-focused," emotion regulation, refers to cognitive efforts to change or reduce the subjective experience of emotion through cognitive reappraisal. An example of this would be viewing an emotionally charged film, with an effort to

attend to the objective, technical aspects of what is being presented in a detached and unemotional way, as participants did in a study by Gross (1998). In effect, the individuals are dampening their own internal experience of emotion.

Another way one might inhibit emotion is to suppress the behavioural expression of the emotion being subjectively felt. An example of this strategy would be purposefully relaxing the facial muscles when angry in order to conceal a grimace or scowl. In this case, one allows the inner experience of emotion but tries to behave in such a way as to avoid the notice of others. Individuals who are using this "emotion suppression" method of emotion regulation show increased sympathetic activation when compared to those not suppressing and those using the antecedent-focussed method (Gross, 1998; Richards & Gross, 1999). Further, individuals using the emotion suppression strategy score lower on memory tests (cued recognition, cued recall) for visually presented verbal material paired with the emotion-inducing stimuli than do those using the antecedent-focussed method or those not attempting to regulate their emotion (Richards & Gross, 1999). Those authors concluded that emotion suppression is a cognitively demanding task, which places an additional burden on the individual resulting in both greater sympathetic activation and impaired encoding of incidental material, which might suggest that it is a universal phenomenon.

The model described here is one of regulating emotional display. Such regulation can be achieved either through (1) reappraising the emotion stimulus in order to dampen one's own internal experience of emotion (i.e., changing the input), or (2) suppressing the external display of one's internal emotional

experience (i.e., changing the output). In the studies by Gross and colleagues, participants viewed visual materials designed to elicit negative affect, particularly disgust (e.g., still photos of wounded people, medical films depicting burn victims, arm amputation). Participants in the antecedent-focus / reappraisal condition were instructed to, ". . . think about what you are seeing objectively . . . in such a way that you don't feel anything at all." Participants in the suppression condition were instructed to, ". . . try your best not to let those feelings show." They found that use of the latter method in particular was associated with impaired cognitive functioning and exaggerated arousal, which, in turn may contribute to the development of stress-related illness. Although Gross and colleagues did not specifically study anger, anger is negative affect and therefore one might predict a similar pattern of results for anger, especially so given the history of research examining the effect of anger expression versus inhibition. It may be intuitive to the reader that suppressing one's emotions, and anger in particular, might be a *stressful* experience, yet it is still not clear as to how such stress may causally relate to illness. The following is a review of the literature to acquaint the reader with how emotional stress is relevant to disease processes and CVD in particular.

Stress

Although the term "stress" is widely known and used by many people, popular usage makes little distinction between the very separate phenomena involved. Stress may be defined as a transaction between the individual and the environment, in which the person assesses both the threatening stimuli (stressor) and also available coping resources (i.e., the ability of that individual to deal with

the threat), and the psychological and physiological reactions to the perceived threat (Lazarus & Folkman, 1984). This definition makes a distinction between the stressor (e.g., job, crying baby, mugger, death of a loved one) and the behavioural/physiological response to that stressor (e.g., aggression, increased heart rate, sweating), as well as the subjective evaluation of the situation (e.g., fear, anger, distress). Conceptualizing stress in this manner allows one to hypothesize why different individuals might experience an identical stressor differently. Individuals differ both in available coping strategies as well as their perceived abilities to deal with a given stressor.

The theoretical framework for studying the physiological response to stress is the "fight or flight" model proposed by Cannon (1929) and later expanded by Selye (1976). According to Selye, the physiological response to stress involves three phases: (1) activation, a label for the physiological changes which occur within the organism (e.g., increased heart rate, respiration) in order to help the organism respond to a threat, (2) resistance, referring to the organism's coping response to the threat (i.e., fighting or fleeing), and (3) exhaustion, which occurs when activation and resistance are maintained beyond the organism's available resources.

The physiological response to stress is apparent in two major neuroendocrine pathways. The first, called the sympathoadreno-medullary (SAM) axis, involves direct stimulation by the sympathetic nervous system (SNS). SNS activity increases heart rate, increases respiration and perspiration, constricts blood vessels in the skin, dilates the pupils, inhibits digestion and stimulates the

liver to increase blood glucose. The SNS also stimulates the adrenal medulla, resulting in release of epinephrine and norepinephrine. Norepinephrine is also a neurotransmitter and increased levels of this hormone in the blood results in similar increases in heart rate, respiration, perspiration and muscle strength.

The second pathway is called the hypothalamic-pituitary-adrenocortical (HPA) axis. For this pathway, central nervous system (CNS) activity stimulates the hypothalamus, which secretes corticotrophin-releasing factor (CRF), which acts on the pituitary gland to release adrenocorticotrophic hormone (ACTH) into the blood stream. ACTH then stimulates the adrenal cortex, producing corticosteroids, which regulate blood glucose and blood electrolytes, and suppress inflammation and other immune system activity.

Both of these pathways, when activated, represent a departure from homeostasis, the natural equilibrium in which an organism's physiological systems function optimally. However, SAM axis activity is generally characterized by sharp deviations from homeostasis that return quickly to baseline equilibrium, due to a large degree of direct neural stimulation, and is thought to represent an adaptive short-term response to an immediate stressor. HPA axis activity is more hormonally mediated than is SAM axis activity, and is therefore slower acting and longer-lasting. HPA axis activity has been associated with chronic strain and negative affect, and is thought to be more relevant to stress-related illness, because it represents a relatively prolonged departure from homeostasis, compared to SAM axis activity (Dienstbier, 1989; Taylor, 1991).

Measuring Stress

A prototypical laboratory study examining the stress response is conducted in a 3-stage measurement process to assess physiological changes accompanying exposure to a stressor. First, the physiological parameter of interest (e.g., blood pressure, heart rate, skin conductance, etc.) is measured while the participant is at rest. This provides a *baseline* measurement of the participant's functioning while in a presumably non-stressed state. Next, the participant is exposed to an operationally well-defined stressor (e.g., physical exertion, ice-cold water, *emotion* induction, chemical substance, etc.) while measuring the same physiological parameter. The extent to which the participant's physiological functioning departs from baseline values in response to the stressor represents that individual's *reactivity* to the stressor. Finally, the stressor is removed and the participant's physiological functioning may be measured, as changes occur to regain homeostatic functioning. This is termed the *recovery* or return-to-baseline stage. Several authors have argued that delayed post-stress recovery plays a crucial role in stress-related illness development because it represents a prolonged departure from homeostasis (Haynes, 1991; Linden, Earle, Gerin, & Christenfeld, 1997).

An understanding of the stress response is important because the magnitude of the stress response is thought to bear some relationship to development of CVD. CVD researchers began by examining the stress response of individuals with primary hypertension, commonly known as high blood pressure. High blood pressure (BP) is a known risk factor for CVD and has been

shown to be genetically heritable (e.g., Snieder, Harshfield, & Treiber, 2003). In studies examining the stress response of hypertensive individuals, hypertensives have been shown to display exaggerated increases in blood pressure and heart rate compared to normotensives (Drummond, 1983; Fredrikson, 1992; Tuomisto, 1997). Also, normotensive offspring of hypertensive parents display the same *hyper*reactive pattern (Stoney, & Matthews, 1988; Marrero, al'Absi, Pincomb, & Lovallo, 1997; Voegele, Jarvis, & Cheeseman, 1997). This has led to two conceptual models relating stress-reactivity to CVD. The first suggests that a hyperreactive stress response, over time, damages the body and eventually results in disease (i.e., the 'strong' model) (Fredrikson & Matthews, 1990).

However, some studies have not found such a strong relationship between hyperreactivity and hypertension. Hypertensives have not always been shown to differ reliably from normotensives in their blood pressure response to a stressor (Lazaro, Valdes, Marcos, & Guarch, 1993; Koehler, Scherbaum, & Ritz, 1995; Koehler, 1996). It has also been noted that the magnitude of cardiovascular changes that are observed in the laboratory occur regularly throughout a person's waking state. In addition, it has been argued that anxiety disorders, characterized by cardiovascular hyperreactivity, correlate poorly with CVD and although patients with such anxiety disorders typically report symptoms similar to myocardial infarction (commonly known as a heart attack), only those with established cases of CVD are at increased risk of a coronary event due to their anxiety symptoms (Rosenman, 1991; Rosenman & Hjemdahl, 1991). Such contradictory findings have called into question the causal role of hyperreactivity

in CVD and have suggested that cardiovascular hyperreactivity may be a non-causal biological marker for later disease development (i.e., the 'weak' model) (Schwarz et al., 2003).

Personality, Stress and Cardiovascular Illness

Given the sometimes disparate and confusing results among those examining the relationship between the stress response and CVD, greater attention is now being paid to personality factors in CVD. Stress is a phenomenon experienced by all human beings, and yet not everyone develops stress-related illnesses. Many researchers have turned their attention to the psychology of individual differences, arguing that personality interacts with stressors such that individuals with a particular personality trait or cluster of traits experience stress differently, resulting in illness.

One of the first psychological constructs proposed to bear a relationship to CVD was Type A behaviour pattern (TABP; Rosenman, 1968). TABP is a cluster of behaviour that includes competitiveness, achievement striving, sense of time urgency, impatience and hostility. Numerous studies showed that TABP is associated with greater risk of heart attack and greater severity of cardiovascular disease after controlling for other risk factors (Frank, et al., 1978; Drummond, 1982; Schmidt, 1983), in comparison to Type B behaviour pattern (TBBP), essentially the opposite of TABP.

However, the strength of the relationship between TABP and cardiovascular disease was questioned. Some later studies failed to support the relationship between TABP and increased risk of cardiovascular disease

(MacDougall, Dembroski, Dimsdale, & Hackett, 1985). In addition it was found that after having experienced one heart attack, those classified as Type B's were *more* likely than Type A's to experience a second heart attack (de Leo, Caracciolo, Berto, Mauro, et al., 1986; Ragland & Brand, 1988). It has been suggested that following a heart attack, people with TABP are more likely than people with TBBP to make lifestyle changes (e.g., quit smoking, change unhealthy diet, exercise) in order to reduce their likelihood of dying of a second heart attack. It would appear then that certain components of TABP are not necessarily toxic. Therefore it must be only certain components within the TABP cluster that account for increased risk of CVD. In a re-analysis of the Western Collaborative Group Study data, Williams (1987) found that only traits of hostility, anger, and anger expression were positively associated with coronary disease endpoints.

Hostility has long been thought to relate to cardiovascular disease. It was earlier reported that hypertensives tend to show more hostility than normotensives (Mann, 1977) and coronary prone individuals were noted to be aggressive (Diamond, 1982). With the above-mentioned findings suggesting that hostility in particular is related to CVD development, researchers began to examine hostility more closely.

Researchers began to look at hostility as a multi-component concept in the same way that TABP is composed of multiple factors. Hostility is comprised of factors such as cynicism, hostile attitudes, aggressiveness, hostile affect, and propensity for anger. Much research has focused on whether or not anger is

overtly expressed or inhibited, and has been referred to in the literature using various terms like overt/covert hostility, neurotic/non-neurotic hostility, and anger-in/anger-out. In particular, it appears that individuals who report extreme expression of anger (high anger-out) or extreme inhibition of outward display of anger (high anger-in) also score high on measures of hostility and trait anger and are at increased risk of CVD (Brosschot & Thayer, 1998).

Brosschot and Thayer (1998) have proposed a model linking hostility, anger inhibition, cardiovascular recovery and CVD. They assert that in studying the relationship between cardiovascular response and the development of CVD, researchers have focussed on sympathetic activation and largely ignored the role of the vagus nerve. Normally, blood pressure is controlled primarily by regulating cardiac output (lower output = lower blood pressure), a function of heart rate. Regulation of HR is normally achieved through predominantly *parasympathetic* activity via the vagus nerve (slower HR = lower cardiac output). Anger inhibition is known to be associated with a decrease in vagal tone. They proposed a model whereby persons high in trait hostility, although they experience anger frequently and intensely, are socially constrained more often than not and thus chronically inhibit their anger, regardless of their own preferred anger expression style (anger-in or anger-out). The corresponding chronic reduction in vagal tone results in less cardiac regulation of HR and therefore slower HR recovery. As a result of decreased HR regulation, BP becomes less regulated by cardiac output and BP regulation shifts to predominantly sympathetic regulation via a decrease in peripheral vascular resistance (i.e., constriction/dilation of the blood vessels).

This sympathetic regulation is less efficient than vagal regulation, resulting in greater BP variability. This shift from predominantly parasympathetic (cardiac) regulation to sympathetic (vascular) regulation of blood pressure results in a condition of high HR and low HR variability referred to as "hyperkinesis" and is characteristic of early hypertension.

A Popular Notion: Do we need to express our emotions to be healthy?

There exists within North American popular culture the notion that it is unhealthy to, "bottle-up," negative emotions such as anger. In addition to the idea of a cathartic release proposed by Freud, there is empirical evidence suggesting that suppressing emotions creates an added cognitive demand as well as increased physiological arousal, while expressing emotions is related to faster stress recovery. Further, such inhibition-related arousal may be related to a shift in physiological functioning characteristic of early CVD.

However, it is not clear that the unrestrained expression of emotion is *always* healthy and this notion is not one shared by all cultures. People of East Asian cultures in particular have been noted to foster inhibited display of negative emotions (Matsumoto, et al., 1988). This is not to say that in contrast, people of Western cultures always express their emotion. Indeed, Brosschot & Thayer (1998) argue that inhibition of anger is by far the most frequent response by North Americans experiencing anger, regardless of their own self-declared preferred expression style. In their discussion of hostility, they argue that hostile individuals are at greater risk for CVD because they so frequently experience intense anger, the expression of which must more often than not be inhibited.

Rather, what is at issue is that if one accepts the notion that inhibition of one's negative feelings is generally unhealthy, one might hypothesize that a culture which puts even greater restrictions on such emotional expression would produce a population with a correspondingly higher incidence of stress-related illness.

The question then is how cultural differences play a role in emotional regulation and illness development. The answer may lie in the two forms of emotion regulation proposed by Gross and colleagues (1998, 1999), i.e., antecedent focus/reappraisal vs. suppression. I propose that cultures foster different methods of emotion regulation in individuals, and specifically, that Western cultural norms result in the predominant use of a suppression strategy to inhibit emotion whereas East Asian cultural norms result in the predominant use of an antecedent-focussed/reappraisal strategy for emotion regulation. The reasons for this are outlined in the following review.

Culture and the Self

Understanding the self has been one of the most fundamental issues of study and concern for social and personality psychologists (Baumeister, 1987). The extensive literature on the self covers topics ranging from self-esteem and self-schemas to self-handicapping, self-monitoring and self-construal. It has been theorized that there are certain universal aspects of the self. For example, people develop an understanding of themselves as physically distinct and separable from others (Hallowell, 1955). In addition, everyone has some awareness of their own inner thoughts and feelings and people understand those to be private in the sense that others do not have direct access to them. This is not to say that

everybody is equally good at recognizing and labelling emotions (Lane & Schwartz, 1987).

However, it has been argued in recent years that beyond this, people can vary greatly in their construal of the self. In their seminal paper in the area, Markus and Kitayama (1991) put forth a model of culturally mediated self-construals and summarized the available literature to suggest implications of such differing construals on cognition, emotion, motivation and behaviour. For the purposes of the present research, an understanding of self-construal and the corresponding implications for emotion is the foundation for the hypotheses to follow.

Prior to discussing the relationship between culture and the self in detail, it is necessary to discuss how cultures are thought to systematically differ. Cultures can be categorized in terms of the degree to which they place primary importance on the individual in contrast to the larger social group (Triandis & Brislin, 1980). Individualistic cultures are dominant throughout North America and Western Europe. These cultures are thought to value individual rights and freedoms, independence, honest expression and uniqueness (Kim & Markus, 1999). Conversely, cultures in which members primarily value connectedness, social harmony, conformity and individual responsibility to groups are termed collectivistic (Triandis & Brislin, 1980). The most frequent examples cited of collectivistic cultures include Japan, China and other East Asian societies, although cultures around the world including those of Latin America, Eastern Europe, Africa and the Indian sub-continent have been described as collectivistic.

It is important to note here that individualism and collectivism may better be conceptualized as a dimensional construct whereby cultures vary in their degree of individualism-collectivism, rather than categorical labels. Further, it is understood that individuals within any culture can vary in the degree to which they are prototypical of their culture of origin. In addition, sub-cultures may exist within the dominant culture whose values differ in their degree of individualism-collectivism. An example of such a sub-culture would be the various religious societies such as Quakers, Amish and Mennonites, who might all be described as being collectivistic, operating within but separate from the individualistic mainstream of United States culture. A culture's preference for individualism-collectivism has profound implications for the development and construal of the self.

Markus and Kitayama (1991) assert that the self may be construed as either an *independent* or *interdependent* self. They propose that within individualistic, Western cultures, the self is defined by its distinctness from others. Individualistic cultures emphasize independence from others and expression of one's own unique internal attributes. One's behaviour is understood to arise primarily from internal thought and feeling states, rather than from the actions of others or situational variables. This is in contrast to the interdependent self, fostered in collectivistic cultures. Within these cultures, it is argued, the self is defined in terms of one's connectedness to others. There is recognition that one's behaviour is determined to a large extent by the perceived thoughts, feelings and actions of others in the relationship. The self becomes most meaningful and

complete when cast within an appropriate social relationship. People are motivated to fit in with relevant others and to create and maintain social relationships of reciprocal dependence. Internal attributes (such as beliefs, abilities and personality characteristics), rather than being the primary determinants of behaviour as with the independent self, are viewed as situation-specific, often dependent on the interpersonal context and are therefore regulated so as to foster interdependence. The understanding that one's autonomy is secondary to interdependence is the characteristic that most distinguishes between interdependent and independent selves (Markus & Kitayama, 1991).

In describing the Japanese interdependent construal of self, Markus and Kitayama (1991) emphasize that the interdependent self is not the result of a merging of self and other, and it is not the case that the Japanese have no sense of agency or control over their own actions. Rather, they suggest that interdependent selves control and regulate their internal attributes to fit the social situation so as to avoid a disruption in interpersonal harmony, in contrast to independent selves who might rather assert those internal attributes so as to change or influence the social situation.

In summary, an independent self can be conceptualized as one that is stable, internal, and separate from others and the social context. The goals of the independent self include uniqueness, direct communication and expressing one's internal attributes. In contrast, the interdependent self is defined by relationships

with others within a social context. One's goals include adjustment and restraint in order to fit in and maintain harmony within the social context.

There are a number of cultural differences in cognition, motivation, emotion and behaviour that are hypothesized to result from such culturally mandated self-construals. Many of these differences have been investigated empirically. For example, Kim & Markus (1999) performed a series of studies comparing American and East Asian preferences for similarity and uniqueness. They presented participants with a set of geometric shapes in which many were identical and one, two or three shapes were different from the rest. Participants were asked to rate their preference for each shape. They found that American participants preferred unique shapes to the other shapes, whereas East Asian participants preferred similar shapes to unique ones. In another study reported in the same article, the researchers allowed participants to choose one pen from a group of pens varying in two colours. They found, under a variety of conditions, that East Asians were more likely to choose the most common colour pen whereas Americans were more likely to choose the uncommon colour pen. Finally, in a survey of American and Korean magazine advertisements, the researchers found that Korean advertisements predominantly emphasized conformity while American advertisements predominantly emphasized uniqueness. The authors interpreted these differences to result from cultural values in America encouraging uniqueness and independent self-expression, and those of Korea encouraging conformity and consideration of others' preferences.

The propensity to behave either as a result of one's own internal attributes or in adjustment to the social context has been investigated in relation to the kinds of attributions made regarding the motivations of others. Specifically, investigators have shown that Hong Kong Chinese participants, presumably having interdependent self-construals, are less susceptible to the fundamental attribution error than are American participants, presumed to hold independent self-construals (Morris & Peng, 1994). In studies with bicultural Chinese (Hong et al., 2000) it was further shown that the number of external attributions for an observed behaviour could be influenced through cultural priming using icons.

Recent research has demonstrated that cultural practices differentially emphasize influence or adjustment across cultures and that such practices reciprocally affect the development of psychological characteristics attuned to those practices (Morling, Kitayama, & Miyamoto, 2002). In a comparison of Americans and Japanese, these authors found that Americans recalled more, and more recent, examples of situations in which they influenced another person. Japanese participants more readily recalled situations in which they adjusted to situational demands. American examples of influence situations were shown to evoke especially strong feelings of efficacy, especially among Americans, and Japanese examples of adjustment situations were shown to evoke especially strong feelings of relatedness, especially among Japanese. The authors noted that American influence situations also evoked feelings of interpersonal closeness among Americans, likely because examples involved pro-social acts of helping another person.

Another difference noted between North American and Japanese culture is the need for self-esteem. It has been found that Westerners have a need for positive self-regard and engage in self-enhancing behaviours (Heine, Lehman, Markus, & Kitayama, 1999). In contrast, the Japanese tend to show little need for positive self-regard and engage in little self-enhancement. Rather, they appear to be predominantly self-critical. Self-enhancing behaviours arise in individualistic cultures because the independent self-construal views the self as governed by relatively stable, internal characteristics and abilities not easily changed. In this cultural context, self-enhancing behaviour is functional because it is the most efficient method of facilitating a positive view of self. Those with an interdependent self-construal on the other hand may be more concerned with how they are viewed by others (as opposed to how they view themselves) and are more likely to view their abilities to be the result of effort. Therefore, self-critical and self-improving behaviours become more important strategies in ensuring that one is regarded positively by others because one is better able to meet expectations and maintain relationships (Heine, 2001; Heine, Kitayama, & Lehman, 2001).

With regard to emotion, there are several ways in which differences in self-construal might result in observed cultural differences. Markus and Kitayama (1991) hypothesize that emotions vary in the extent to which they foster an independent or interdependent self-construal. For example, anger is an emotion that usually results from the blockage of one's own internal needs, desires or goals, and can be a motivating force to assert these internal attributes publicly. It

is argued therefore, that people with independent selves need to become experts in the expression and experience of such, "ego-focused," emotions as anger, frustration or pride, in order to maintain the culturally mandated construal of the self as an autonomous entity. It follows that ego-focused emotions should be experienced and expressed more frequently among independent selves than interdependent selves, and that such emotions form the basis for behaviour to a greater extent for independent selves than for interdependent selves.

Similarly, recent research has proposed that three negative "moral" emotions may map on to three moral codes: (1) contempt linked to violations of community, (2) anger linked to violations of autonomy, and (3) disgust linked to violations of divinity (CAD Triad Hypothesis, Rozin, Lowery, Imada, & Haidt, 1999). These authors found support for their model in both American and Japanese samples. They note, however that cultures are believed to differ in terms of the presence or importance of the different moral codes. To the extent that interdependent selves may be thought to emphasize community and de-emphasize autonomy, one might predict anger to be a less salient or frequently experienced emotion compared to independent selves.

Consistent with this view, Americans report feeling emotions longer and more intensely than Japanese, and in response to these emotions, the Japanese were more likely than Americans to report that no action was necessary (Matsumoto et al., 1988). It has also been found that in rating the perceived intensity of emotion displayed in a photograph, interdependent selves gave lower intensity ratings than independent selves (Matsumoto & Ekman, 1989).

Cross-cultural studies of anger typically involve administering anger and hostility inventories to respondents from different countries and cultures for comparison (e.g., Chon, Kim, & Ryoo, 2000; Ramirez, Andreu, & Takehiro, 2001). Overall, these studies indicate that Westerners and Easterners report comparable levels of trait anger, in contrast to the above-mentioned findings of Matsumoto et al. (1988), although Easterners appear less likely to overtly express that anger, consistent with what has been hypothesized about interdependent selves. However, all of these studies utilize self-report questionnaire data, and while their findings appear to fit well with the hypothesized cultural differences in emotion resulting from independent versus interdependent selves, it is not clear whether these differences represent actual emotional experience and expression, an artefact of methodological problems associated with self-report questionnaires, or merely a cultural response set that may *or may not* be mediated by an independent or interdependent self-construal.

This problem was raised by Matsumoto (1999). He argues that the theory put forth by Markus and Kitayama (1991), i.e., that individualism-collectivism influences independent vs. interdependent self-construal, which then results in cultural differences on some dependent variable, has rarely been tested. Instead, most studies examine two groups from different countries on some variable and, upon finding a cross-*national* difference, attribute that difference to presumed differences in individualism-collectivism and self-construal not actually tested. Matsumoto reviews a number of studies that appear to show that, at least for

American-Japanese comparisons, the evidence contradicts the model put forth by Markus and Kitayama (1991).

The studies which follow will attempt to address the problems put forth by Matsumoto (1999) by utilizing a methodology that incorporates both explicit measures of culture and self-construal, as well as (in Study Two) physiological measures less susceptible to the difficulties inherent in relying on participant self-report.

Chapter Two – Study One

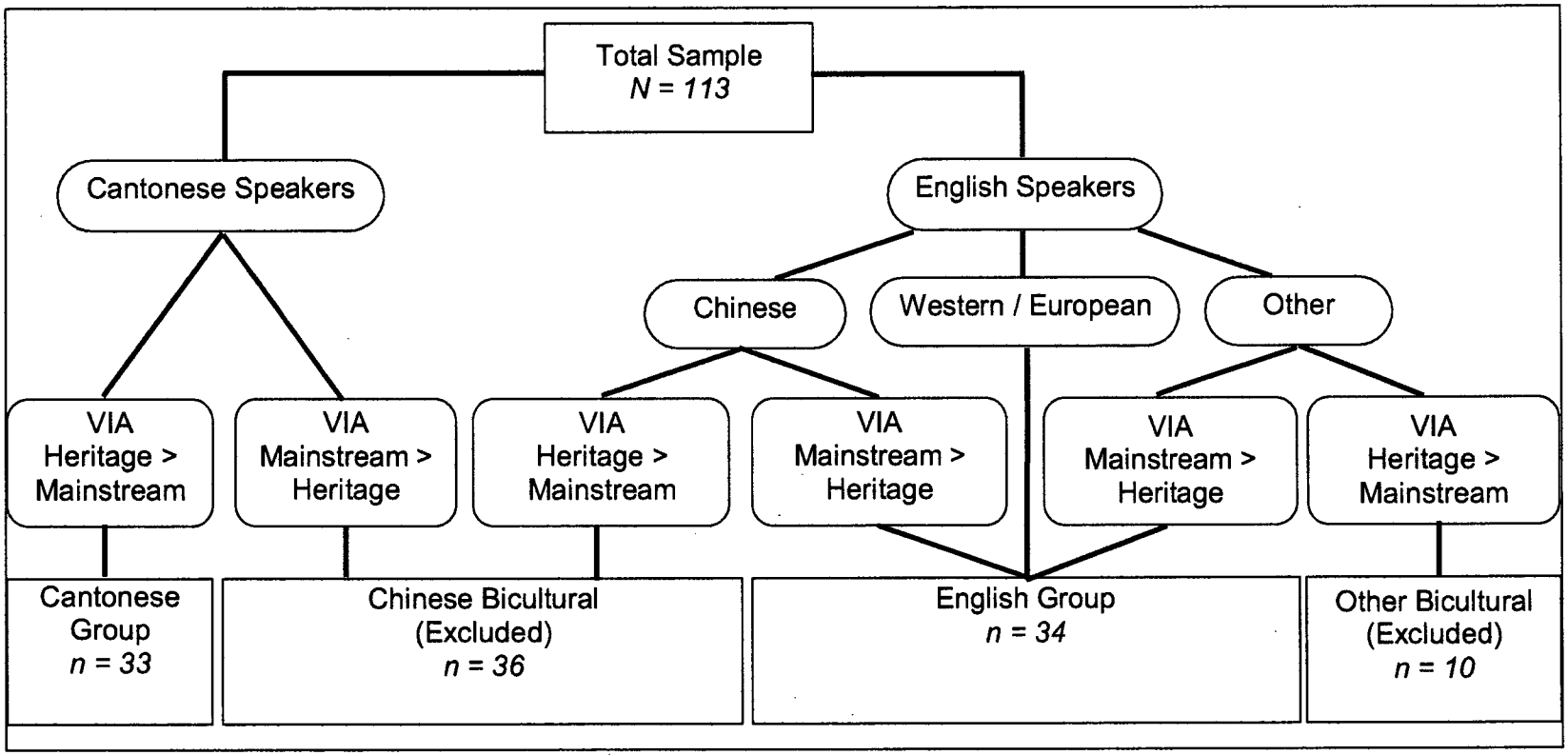
The objective of Study One was to determine whether, and to what extent, culture influences one's choice of response to anger. The author examined differences in self-reported response to anger in a comparison of English-speaking Canadians of mostly European/Caucasian heritage (the English group) and Cantonese-speaking Chinese/Chinese-Canadians (the Cantonese group). In Study One, participants were provided a list of anger vignettes (either in English or Cantonese) and asked to choose from a list of possible responses. Given the supposed cultural differences between these groups with respect to beliefs regarding the relative appropriateness of open anger expression, one would expect the groups to differ in their self-reported likely anger response strategy. Specifically, Hypothesis One states that the English group, reflecting mainstream North American culture, will show a preference for open anger expression whenever possible, consistent with the mandate for self-expression fostered in individualistic cultures. Hypothesis Two is that the Cantonese group, to the extent that collectivistic cultural values, such as social harmony and interdependence, are robustly maintained within a dominant individualistic mainstream culture, will show a relative disinclination for overt expression of anger. Rather than merely suppressing the expression of anger, this group would be expected to favour strategies that target the inner experience of anger, specifically making a less hostile cognitive reappraisal of the anger-provoking incident or distracting oneself from the anger source.

Method

Participants

A total of 113 (87 female, 26 male) psychology undergraduate students at the University of British Columbia participated in Study One in exchange for bonus course credit. 60 participants (47 female, 13 male) completed the study in English while 53 participants (40 female, 13 male) did so in Cantonese. All participants were asked to indicate their ethnic heritage, whether they were born in Canada, how long they had lived in Canada, and completed the Vancouver Index of Acculturation (VIA), a measure of acculturation described below. In an effort to produce two distinct, relatively homogeneous samples for a comparison of responses to the anger vignettes, several participants from this overall sample were excluded from analysis, according to these demographic variables. The decision tree used to categorize participants into included or excluded groups is displayed in Figure 2.1. As can be seen from the figure, Cantonese-speaking individuals who identified strongly with their heritage culture and less so with mainstream North American culture according to their obtained scores on the VIA were categorized as the Cantonese group. The rest were categorized as Bicultural Chinese and were excluded from analysis in order to increase within-group homogeny. Of those who completed the questionnaire in English, those who identified their ethnic heritage as Western (e.g., North American, Canadian, Caucasian, etc.) were categorized as the English group. Those who identified their ethnic heritage as being outside North America (e.g., Chinese, Japanese, Muslim, Indian, etc.) but identified strongly with mainstream North American

Figure 2.1: Decision tree for categorizing participants into included and excluded groups.



culture to a greater extent than their heritage culture according to the VIA were categorized as the English group also. Those who identified strongly with their heritage culture according to the VIA were categorized as bicultural and excluded from analysis. This process resulted in a final sample of 34 English-speaking Canadians (29 female, 5 male) and 33 Cantonese-speaking Chinese/Chinese-Canadians (26 female, 7 male)[1]. Ethnicity of the English group was as follows: 76% Caucasian, 15% Chinese, 6% other Asian, 3% East Indian. Ethnicity of the Cantonese group was 100% Chinese.

Materials

Anger Scenarios Questionnaire (ASQ). The ASQ is a 41-item list of anger vignettes taken from two previously developed inventories of anger-provoking events. 32 items come from a questionnaire developed by Ben-Zur and Breznitz (1991) who were studying the dimensions of anger-evoking events. An additional 9 items were taken from the Standardized Expression of Anger Measure (STEAM; Linden et al., 1997). An example of one of the anger vignettes is: "You go with your family to a restaurant where the food is superb and prices are low, but the service is terrible. There are many people in the restaurant; you wait a quarter of an hour and the waiter has not yet come to your table to take your order." For each item, participants were asked to first rate the intensity of

[1] The reader may be interested to know whether or not the results from Study One would have differed had those classified as "bicultural" not been excluded from the analyses. I'm pleased to mention that such analyses were indeed conducted and that the results were virtually identical to those presented here. This suggests that the findings from Study One are applicable to a less restricted sample and that heritage language fluency may be considered an effective method for categorizing participants *a priori* into groups expected to be either highly acculturated or less acculturated. Although these findings are important because they support the decision made for Study Two to categorize participants into cultural groups based on heritage language fluency, they are not presented for the sake of parsimony.

their anger, were the hypothesised event to have happened to them, on a 7-point Likert scale on which 1 = 'Not at all angry,' and 7 = 'Extremely angry.' Next, participants were presented with four possible responses to each scenario and asked to choose their most likely response.

Each set of four responses included one response for each of the four response strategies under investigation: (1) open anger expression (e.g., complain to the manager), (2) suppression of outward signs of anger (e.g., wait quietly, getting more and more angry), (3) distraction from the source of anger (e.g., focus on how good the food smells), and (4) a less hostile cognitive reappraisal of the event (e.g., consider that the staff are very busy). Each response was originally created by the author and then presented to two other judges who independently rated each response in terms of whether they thought it represented expression, suppression, distraction or reappraisal. Judges included individuals of both Western and Eastern ethnic heritage. In cases where there was a disagreement among the judges, the wording of the item was adjusted such that all judges could agree that a given response indeed clearly represented one of the four response strategies. The ASQ is found in Appendix A.

Vancouver Index of Acculturation (VIA). The VIA is a 20-item questionnaire measure of acculturation (Ryder, Alden, & Paulhus, 2000). A measure of acculturation was chosen because the current study is not a comparison of two samples from different countries, in which case a measure of culture (e.g., first language spoken, practised traditions) would be appropriate. Rather, the current

study is a comparison of a sample of Canadians, representing mainstream North American culture of mostly European ethnic heritage and a sample of Chinese/Chinese-Canadians, representing those of Chinese heritage who, though they may differ widely in their length of exposure to Canadian culture, are all thought to be experiencing an acculturation process by virtue of their currently living in Canada. Prior measures of acculturation have typically been *unidimensional*, in that identification with the old vs. new culture is viewed as being on a single continuum. Therefore, identification with the new culture is necessarily viewed as assimilation and loss of one's culture of origin. The VIA consists of 10 pairs of items answered on a 9-point Likert scale that may be summed together to form two separate scales (Heritage and Mainstream). Ryder et al. (2000) argue that such a bidimensional measure of acculturation represents a better model of acculturation than the unidimensional model. VIA subscales show high internal consistency (Cronbach's alphas between .85 and .92) and high mean inter-item correlations (*r*s between .38 and .53). The Heritage and Mainstream subscales are only modestly negatively correlated (*r*s between -.19 and .06), indicating that the subscales are orthogonal. The VIA was originally designed for use with those of Chinese origin acculturating to Canada, making it ideal for use in the current study. Concurrent validity was established by showing significant correlations between the two subscales and other demographic variables thought to relate to acculturation (Ryder et al., 2000). An additional advantage of using the VIA in the current study is that it was shown to relate to

the measure of self-construal used in the current study, described below (Ryder et al., 2000). The VIA is found in Appendix A.

Self-Construal Scale (SCS). The SCS (Singelis, 1994) is a 24-item, 7-point Likert scale measure of individualism-collectivism as it relates to independent and interdependent self-construal. Like the VIA, the SCS is also a bidimensional measure of self-construal. Singelis (1994) established that the independent and interdependent subscales are orthogonal and noted that people who have been exposed to both Chinese and Western culture, as is the case in the current study, are likely to exhibit *both* strong independent as well as interdependent selves (Ryder et al., 2000). The SCS is found in Appendix A.

Procedures

All participants came to the laboratory to obtain either a Cantonese or English language questionnaire package. Questionnaires were translated from English and verified for accuracy using back translation. Either an English-speaking or Cantonese-speaking lab assistant met each participant and provided general instructions and obtained informed consent. Each participant completed the questionnaires individually while seated in the lab. The lab assistant was available to respond to any questions or concerns of the participant and fully debriefed the participant upon task completion.

Results

Analytical Strategy

The results are presented to answer the following questions, in order:

1. Did the two cultural groups interpret the anger vignettes similarly?

2. Did the two cultural groups endorse anger response strategies at different rates?
3. Did groups endorse any strategies at a level less than or greater than chance?
4. What is the relationship between participants' acculturation and self-construal?
5. What is the relationship between group membership and self-construal?
6. What is the relationship between self-construal and endorsement of anger response strategies?

For all analyses, alpha level was set to .05. In addition to reporting *p*-values, measures of effect size have been provided wherever possible[2]. Examination of both the *p*-value and the effect size of a given analysis, in some cases, aided in the interpretation of trend findings.

Preliminary Analyses

Prior to addressing the analyses related to the hypotheses regarding preferred anger strategy, the question arises as to whether the English and Cantonese groups rated the anger vignettes of the ASQ as similarly anger-provoking. An analysis of mean ASQ anger ratings between groups indicated that, overall, the English group gave higher anger ratings to the anger vignettes

[2] Two different kinds of effect size measures are reported. The first, Cohen's *d*, reflects the difference between two means and is commonly used following a *t* – test. Cohen (1992) argues that *d* may be interpreted in the following manner: small = .20, medium = .50, and large = .80. The second, partial eta squared (η_p^2), is the measure provided by SPSS for GLM analyses and reflects the strength of association between an effect and the dependent variable. It may be interpreted as the proportion of variance in the dependent variable which may be attributed to the effect. Following from Hopkins (2002), strength of association measures of effect size may be interpreted in the following manner: small = .01, medium = .09, large = .25.

than did the Cantonese group, $t(65) = 3.07$, $p = .003$, $d = 0.75$. Such a finding raises the possibility that either (1) the Cantonese group perceived or interpreted the anger vignettes as significantly less anger provoking than did the English group, or (2) groups interpreted the vignettes similarly but the Cantonese group provided lower ratings due to a culturally-mediated response tendency, as has been noted previously (Matsumoto, Fazilet, & Kooken, 1999).

To partially address this question, individual anger ratings for each of the 41 items of the ASQ were standardized according to each group's mean and pooled standard deviation (not group's per-item standard deviation). Following from Matsumoto, Fazilet, & Kooken (1999), this procedure eliminates an overall cultural response tendency but allows for between-group comparisons for each item. The standardized scores for the 41 items were then entered as dependent variables into a one-way multivariate analysis of variance (MANOVA), with Culture group (English, Cantonese) as the between-subjects factor. The overall test was significant, Wilks' Lambda = .10, $F(41,21) = 4.6$, $p < .001$, mult. $\eta_p^2 = .90$. An examination of between-subjects effects revealed significant differences for only 9 of the possible 41 comparisons (average η_p^2 effect size for the significant between-group differences = .14, SD = .06). Of those 9 comparisons, in only three cases did the Cantonese group display relatively lower scores than the English group. These results suggest that although there was an overall tendency of the English group to rate the anger vignettes as more intensely anger provoking, for the most part, the *pattern* of responding was not different between the English and Cantonese groups. Although one cannot rule out the

possibility that the Cantonese group reliably and very consistently perceived the vignettes as slightly less anger-provoking (a finding of potential interest in its own right), that the relative magnitude of individual item ratings about their group mean was very similar between groups suggests that groups may have interpreted items similarly.

Main Analyses

To investigate group differences in preferred ASQ anger response strategy, participants' responses were summed to produce total scores for each of the four possible response strategies (i.e., expression, suppression, distraction, reappraisal). These were entered as dependent variables into a one-way MANOVA with Culture group (English, Cantonese) as the between-subjects factor. The overall test was significant, Wilks' Lambda = .73, F (4,62) = 5.8, p = .001, mult. η_p^2 = .27. The English group endorsed overt anger expression more frequently than did the Cantonese group, $F(1, 65) = 19.85$, $p < .001$, $\eta_p^2 = .23$. The Cantonese group endorsed strategies of distraction and reappraisal more frequently than did the English group, $F(1, 65) = 10.48$, $p = .002$, $\eta_p^2 = .14$, and , $F(1, 65) = 5.53$, $p = .02$, $\eta_p^2 = .08$, respectively. Groups did not differ in their endorsement of the anger suppression strategy, $F(1, 65) = .13$, *ns*. Mean differences between groups are displayed in Table 2.1.

Because the ASQ required respondents to choose only one of the four available strategies, the question arises as to what extent endorsement rates of each of the strategies differ from chance, or random, responding (i.e., for 41 items, chance would predict, on average, equal endorsement of each strategy

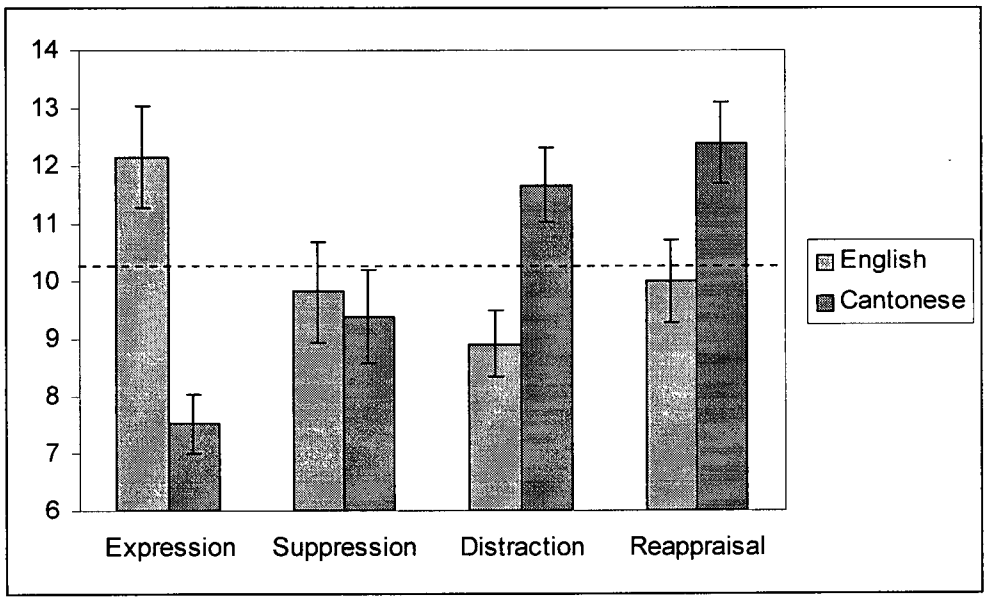
Table 2.1: Mean anger response strategy scores by cultural group.

Anger Response Strategy	Cultural Group		Mean Difference (Eng. – Cant.)
	English	Cantonese	
Expression	12.1 (5.2)	7.5 (3.0)	4.6
Suppression	9.8 (5.1)	9.4 (4.6)	0.4
Distraction	8.9 (3.2)	11.7 (3.7)	-2.8
Reappraisal	10 (4.3)	12.4 (4.0)	-2.4

Note. Values in parentheses represent standard deviations.

10.25 times). Data for each group's endorsement rates were analyzed separately in a series of two-tailed one-sample *t*-tests. Results indicated that the English group endorsed the anger expression strategy at a level greater than chance, $t(33) = 2.13$, $p = .04$. Conversely, the Cantonese group endorsed the Expression strategy at a level less than chance, $t(32) = -5.25$, $p < .001$. The English group endorsed the distraction strategy at a level less than chance, $t(33) = -2.41$, $p = .02$. Conversely, the Cantonese group endorsed the strategies of distraction and reappraisal at greater than chance levels, $t(32) = 2.19$, $p = .036$, and, $t(32) = 3.06$, $p = .005$, respectively. Results are displayed pictorially in Figure 2.2. Overall, results suggest that in response to an anger-provoking stimulus, Westerners show a preference for overt anger expression, relative to Easterners, who show a preference for strategies of distraction and reappraisal, consistent with study hypotheses.

Figure 2.2: Mean ASQ anger strategy total score by cultural group.



Note. Dashed line represents level of chance responding.

Analyses of Acculturation, Self-Construal, and Anger Response

To determine the strength of relationship between participants' culture, self-construal and anger response choice, VIA and SCS subscales were correlated. Results are displayed in Table 2.2. As can be seen from the table, for the English group, SCS independent and interdependent self-construal were positively correlated and acculturation was not related to self-construal. This is not surprising perhaps, since for the majority of the English group, their heritage culture *is* mainstream North American culture. For the Cantonese group, the VIA Heritage subscale score was negatively correlated with the SCS independent self-construal subscale score, indicating that those in the Cantonese group who identify more strongly with Chinese culture tended to also have a less independent self-construal, consistent with the model put forth by Markus and

Table 2.2: *Correlation coefficients between VIA and SCS.*

		Heritage	Mainstream	Inter-dependent
English	Mainstream	.23	-	
	Inter-dependent	-.11	.25	-
	Independent	-.29	-.10	.41*
Cantonese	Mainstream	.22	-	
	Inter-dependent	.23	.05	-
	Independent	-.35*	-.30	-.54**
Overall	Mainstream	-.01	-	
	Inter-dependent	.22*	-.02	-
	Independent	-.21*	-.35**	-.08

*. Correlation is significant at the .05 level (2-tailed).

**. Correlation is significant at the .01 level (2-tailed).

Kitayama (1991). VIA subscales were not intercorrelated, consistent with the findings of Ryder, et al. (2000). SCS subscales were in fact negatively correlated, inconsistent with the findings of Singelis (1994), perhaps due to the use of a relatively restricted sample in this case. Overall, identification with heritage culture was associated with a more interdependent, less independent self-construal, consistent with the Markus and Kitayama model. Unexpectedly, identification with mainstream North American culture was negatively correlated with independent self construal. To determine the strength of relationship

between self-construal and response to anger provocation, the two SCS subscales, participant's mean ASQ anger rating, and each of the four anger response choices were correlated. The results are displayed in Table 2.3. The table displays correlation coefficients both for English and Cantonese groups separately (because self-construal may hold a different relationship to anger response between groups) and together (to address power and restriction of range concerns). As can be seen from the table, for the English group, independent self-construal was positively associated with use of the anger suppression strategy and negatively associated with the cognitive reappraisal strategy. For the Cantonese group, independent self-construal was negatively associated with use of the distraction strategy.

Looking at the correlations computed across groups, interdependent self-construal was negatively associated with the anger expression strategy. Independent self-construal was positively associated with the suppression strategy. The Pearson *r* coefficient reflecting a negative association of independent self construal and use of the distraction strategy approached statistical significance ($p = .056$). The observed associations between these variables are consistent with the model proposed by Markus and Kitayama (1991).

It is also evident from the table that the anger response strategies were each highly correlated with participant's mean anger intensity rating on the ASQ. Anger intensity was positively associated with anger expression and suppression

Table 2.3: Correlation coefficients between self-construal, anger rating and anger strategy.

		SCS Int	SCS Ind	ASQ Ang	Express	Suppress	Distract
English	SCS Ind	.41* (.44*)	-				
	ASQ Ang	-.04	.27	-			
	Express	-.17 (-.17)	.15 (.02)	.48**	-		
	Suppress	.25 (.28)	.43* (.37*)	.38	-.26 (-.51**)	-	
	Distract	.03 (.01)	-.28 (-.17)	-.55**	-.41* (-.20)	-.55** (-.46**)	-
	Reapp	-.11 (-.15)	-.50** (-.44**)	-.58**	-.62** (-.48**)	-.45** (-.34)	.40* (.12)
Chinese	SCS Ind	-.54** (-.57**)	-				
	ASQ Ang	.25	.07	-			
	Express	-.19 (-.25)	-.07 (-.09)	.22	-		
	Suppress	.25 (.15)	.18 (.17)	.51**	-.15 (-.31)	-	
	Distract	.07 (.16)	-.42* (-.42*)	-.31	-.12 (-.06)	-.62** (-.56**)	-
	Reapp	-.21 (-.11)	.23 (.29)	-.45**	-.46** (-.41*)	-.47** (-.31)	-.12 (-.31)
Total	SCS Ind	-.04 (-.04)	-				
	ASQ Ang	.02	.07	-			
	Express	-.26* (-.30*)	-.06 (-.11)	.47**	-		
	Suppress	.23 (.24)	.29* (.29*)	.41**	-.17 (-.44**)	-	
	Distract	.14 (.17)	-.23 (-.23)	-.50**	-.41** (-.23)	-.55** (-.44**)	-

Reapp	.08 (.08)	.07 (-.04)	-.56**	-.60** (-.45**)	-.46** (-.30*)	.22 (-.08)

Note. Values in parentheses represent partial correlations controlling for anger intensity rating. SCS Int = Interdependent self-construal score, SCS Ind = Independent self-construal score, ASQ Ang = mean ASQ anger intensity rating, Express = anger expression, Suppress = anger suppression, Distract = distraction from anger, Reapp = cognitive reappraisal.

*. Correlation is significant at the .05 level (2-tailed).

**. Correlation is significant at the .01 level (2-tailed).

and negatively associated with strategies of distraction and reappraisal. Thus, if English and Cantonese groups differed in their ratings of anger intensity (as noted in previous analyses), then apparent group differences in anger response thought to be related to self-construal could be due instead to groups perceiving the vignettes as differentially anger provoking. To control for this, correlations between the variables were computed while controlling for mean ASQ anger rating. As can be seen in Table 2.3, the above-noted associations between self-construal and anger response strategies were maintained or often strengthened after controlling for anger intensity.

Discussion

The purpose of Study One was to determine if there are cultural differences in preferred response to anger. Study One showed that the English group reported a preference for open and direct expression of anger relative to the Cantonese group, who were particularly unlikely to endorse open and direct

expressions of anger. Rather, they strongly endorsed strategies that involved simultaneous inhibition of outward anger expression as well as dampening one's own internal experience of anger. Although neither group preferred the strategy of suppressing anger (inhibiting outward display, but maintaining internal anger), this choice was ranked second-best for the English group.

Study One was not a cross-national comparison, as is typical in cross-cultural studies. Rather than collecting the two comparison samples in two different countries (e.g., a Western sample from Canada and an Eastern sample from China), Study One was a comparison between a Canadian sample (i.e., English-speaking, mostly Caucasians who identified their ethnicity as "Canadian") and a relatively un-acculturated sample of Chinese/Chinese-Canadians (i.e., Cantonese-speaking persons of Chinese ethnicity who identify strongly with Chinese culture). A disadvantage of this study design is that, because the Chinese sample was to some extent exposed to Canadian culture, between-group differences may have been somewhat harder to find than with a cross-national comparison. This makes the results from the current study inherently conservative. The advantage of such a design is that any observed between-group differences may be assumed to be relatively robust.

Also notable were the associations between acculturation, self-construal and anger response. An important finding of this study is that identification with traditional Chinese culture is associated with a more interdependent, less independent self-construal. Further, the results demonstrate that those with an interdependent self-construal are less likely to show preference for overt anger

expression. Those with an independent self construal appear more likely to choose an anger suppression strategy when faced with an anger provoking incident and appear unlikely to try to distract themselves from the source of anger. This finding is intriguing not only because of the apparent relationship between self-construal and anger response choice, but because of the lack of observed relationship between independent self-construal and overt anger expression. One possible reason for this is that, consistent with the suggestion of Brosschot and Thayer (1998), for people in North America, who presumably hold independent self-construals, the most frequent response to anger is *not* overt anger expression, but anger non-expression. For these people, suppression of the outward signs of anger is paramount, though dampening the inner experience of anger is not, perhaps explaining the reported disinclination of this group to distract themselves from the source of their anger.

A significant limitation to Study One is that the results are confined to participants' self-report of their responses to imagined events, not real ones, and as such, may reflect participant expectancies, task demand characteristics or evaluation apprehension. These data do not necessarily reflect participants' *actual* responses to anger provocation, as questionnaire measures of traits and attitudes can be incongruent with observed behaviour, particularly when the behaviour in question, in this case anger, is subject to social constraints.

With respect to the preliminary analyses performed, there was an apparent overall group difference in anger intensity ratings for the vignettes. Although the most simple and straightforward interpretation of this finding would

have been that the English group perceived the vignettes to be more intensely anger-provoking than did the Cantonese group, that interpretation is confounded by the possibility of a culturally mediated response tendency. In fact, that participants' *pattern* of responding was largely the same (i.e., the magnitude of individual anger ratings relative to each group's mean and standard deviation was nearly identical) between groups suggests that groups may have perceived the items in much the same way. This example illustrates the problem of questionnaire response bias and serves as a reminder of the need for caution when drawing inferences from questionnaire data. It would appear then, that a limitation of Study One is its total reliance on self-report questionnaire data to measure participants' responses to anger provocation. This limitation was addressed in Study Two through the use of a methodology that measured participants' physiological response to actual anger provocation and relied to a lesser extent on self-report questionnaires.

Chapter Three – Study Two

To determine the influence of culture on the cardiovascular response to, and recovery from, provoked anger, the author conducted a comparison between a new sample of English-speaking Canadians and Cantonese-speaking Chinese/Chinese-Canadians. The study involved provoking anger in participants and measuring their response via subjective anger ratings as well as cardiovascular indices of blood pressure (BP) and heart rate (HR). Based on the findings of Study One, one would expect that the two comparison groups would vary in their preferred anger response strategy:

(1) the English group would prefer anger expression, would suppress anger when needed but would be unlikely to distract from the anger source or try to think about the situation in a less hostile manner, and

(2) the Cantonese group would favour strategies of distraction and reappraisal and would be relatively unlikely to overtly express or otherwise suppress anger.

Participants were assigned to one of two conditions: one that allowed open expression of anger or one that did not. The main hypothesis of the current study is an anger expression × culture interaction. Specifically, the author expects that the English participants in the anger non-expression condition to show prolonged anger, evidenced by maintained subjective anger ratings and attenuated cardiovascular recovery, compared to those participants in the expression condition, consistent with the Western literature relating emotion inhibition with greater and prolonged physiological arousal (e.g., Gross et al.,

1998-1999). Conversely, I expect to find no difference between expression conditions among Cantonese group. Because these participants are expected to favour responses to anger that do not involve open anger expression, it follows that being placed in a condition that restricts such expression should not result in any additional or prolonged stress.

Method

Participants

A total of 134 (78 female, 56 male) psychology undergraduate students at the University of British Columbia participated in Study Two in exchange for bonus course credit. 65 participants (36 female, 29 male) completed the study in English while 69 participants (42 female, 27 male) did so in Cantonese. Of those, 12 participants indicated at debriefing that they saw through the anger manipulation and were thus excluded from the analyses. This resulted in a final sample of 60 English-speaking Canadians (33 female, 27 male) and 62 Cantonese-speaking Chinese/Chinese-Canadians (38 female, 24 male). Ethnicity of the English group was as follows: 57% Caucasian, 37% Chinese, 3% other Asian, 3% East Indian. Ethnicity of the Cantonese group was 100% Chinese.

Materials

Questionnaire package. Prior to participating in the laboratory portion of the study, participants came to the lab to sign a consent form and complete a questionnaire package. We collected demographic information of participants, including their reported ethnicity, whether they were born in Canada and for how long they have lived in Canada. Each participant completed the VIA and the

SCS, the same questionnaire measures of acculturation and self-construal, described in Study One.

Emotion rating scale (ERS) and evaluation forms. Following each phase of testing (i.e., baseline, task, and recovery) participants were asked to complete an ERS form, containing six 10 cm visual analogue scales. Each scale was labeled with one of the following emotion categories: Happiness, Anger, Anxiety, Sadness, Frustration, or Surprise. Each line was anchored on the left with, "None at all," and on the right with, "Most I've ever felt." Participants completed the form by placing a tick mark on each line according to the intensity with which they currently were experiencing each of the given emotions. Responses were quantified by measuring the distance in centimetres from the left end of each scale. Doing so provided a quantitative description of participants' subjective emotional state.

Following the task period, participants assigned to the expression condition completed an additional series of items along with the ERS form in which they were asked to rate the lab assistant's competence, courtesy and professionalism using visual analogue scales. Also, space was provided for these participants to write any other comments they wished regarding the lab assistant. These items were provided under the guise of a "Quality Assurance Feedback" section, similar to such forms provided in the service industry. Completing these items gave participants in this condition the opportunity to express their emotion and indirectly aggress towards the lab assistant without fear of reprisal.

Testing Day

Participants were met at the lab by a research assistant who spoke to them in either English or Cantonese. For the English group, the testing session was conducted in English while for the Cantonese group, the testing session was conducted in Cantonese. Participants were told that we were studying the influence of culture on physiological response to a stressful task. They were told that their HR and BP would be monitored and that the study would be composed of three phases: (1) baseline, during which they would be seated in the testing room for several minutes, (2) task, in which they would be performing a stressful task, though they were not told the nature of the task until that phase of the testing, and (3) recovery, during which they should sit quietly for several minutes the same as during the baseline phase. Participants were randomly assigned to either the expression or non-expression condition.

Baseline Period

Participants were first informed that the testing session would require two research assistants, one of which had not yet arrived. This was done to increase the face validity of the anger manipulation, which involved this research assistant behaving towards to the participant in a rude and disrespectful manner. Presenting this research assistant as one who lacks the professionalism of punctuality was expected to increase the believability of their being unprofessional towards the participant, thereby reducing the likelihood that participants would see through the anger manipulation.

Despite the other assistant's supposed tardiness, participants were instructed to be seated in the testing room so that testing could begin. All participants were seated in a comfortable armchair with armrests such that the blood pressure cuff was situated approximately equidistant from the floor as the participant's heart (to enhance accuracy of the readings). The lab assistant attached an electronic oscillatory blood pressure monitor (Bp TRU™ BPM-100, VSM MedTech Ltd., Coquitlam, BC, Canada) to the participant's non-dominant arm, by having the participant extend their bare arm with their palm facing upwards and centring the inflatable bladder over the brachial artery. After this, participants were asked to relax their arm, particularly during one of the automated readings, and to remain with their arm on the chair's armrest. Validation studies have shown the BPM-100 to be accurate and reliable in comparison to standard auscultatory mercury sphygmomanometer readings in both adult and paediatric samples (Mattu, Heron, & Wright, 2004a; Mattu, Heron, & Wright, 2004b). Although no study it seems has yet specifically compared the BPM-100 to intra-arterial measurements of BP, among non-invasive measures of BP, oscillatory monitors have shown adequate accuracy (Pace & East, 1991). Lab assistants were careful to ensure that the cuff used matched participants' upper arm circumference to help ensure accuracy (Bur et al., 2003). Participants were instructed to sit quietly, alone in the testing room, for several minutes while their BP was monitored. Over the 12-minute baseline period, BP readings were taken at minutes 0, 2, 10 and 12. A length of 12 minutes was chosen because such a length has been demonstrated previously to be sufficient time for resting

BP levels to be established and is the length of time used in previous studies conducted in this lab (Anderson, Linden, & Habra, 2005). Following this, participants completed an ERS form.

Task Period

After the 12-minute baseline period, the lab assistant entered the testing room and informed the participant that the other lab assistant had arrived and the testing session would begin. The task would be mental arithmetic. When told to begin, the participant was to count backwards beginning at 9000 in decrements of seven (e.g., "9000, 8993, 8986 . . ."), out loud and as fast as possible for several minutes until told to stop. The first lab assistant would monitor BP and HR, while the second would give instructions (i.e., when to start and stop) and monitor counting speed and accuracy. Instructions would be given via an intercom. The lab assistant left the testing room.

The 6-minute task period began by having the second lab assistant tell the participant to begin counting. Four BP and HR readings were taken at minutes 0, 2, 4, and 6. In between the readings at minutes 1, 3 and 5, the second lab assistant provided scripted harassing comments to the participant in an attempt to provoke anger. Harassment scripts are provided in Appendix B. Participants were instructed to cease counting following the final task period reading, and complete an ERS/Quality Assurance Feedback form.

Task Rationale

The mental arithmetic task with harassment was chosen here because it has repeatedly been used in anger provocation research and has been shown to

reliably elicit anger arousal, as measured by both subjective anger ratings and cardiovascular indices. The question arises as to whether the two cultural groups in the current study would have found such a task similarly anger-provoking. The serial 7's task has been used repeatedly for anger provocation studies conducted in this lab and, despite having tested for it, an East-West cultural difference in reactivity has not emerged (Anderson, Linden, & Habra, 2005).

Recovery Period

The recovery period began immediately following participants' cessation of counting while they completed their rating forms and continued for 20 minutes. Participants' BP and HR were monitored during this time for a total of ten readings taken every two minutes. Following those 20 minutes, participants were instructed to complete a final ERS form.

Debriefing

Following the recovery period, all participants were informed via written and aural debriefing of the full hypotheses underlying the study. Lab assistants responded to any questions or concerns of the participants. Additionally, lab assistants conducted a manipulation check to determine if, and at what point, participants became aware of the intent to provoke anger. Participants who indicated that they had determined that the lab assistant's harassing comments were scripted were excluded from the analysis. The list of questions used in debriefing is provided in Appendix C. The lab assistant further requested that participants not discuss the study with classmates who might later enrol in the study to ensure that for future participants the manipulation was equally effective.

Results

Analytical Strategy

The results are presented to answer the following questions, in order:

1. Did the harassment task actually provoke subjective anger or frustration? Did the amount of emotional arousal reported differ between cultural groups?
2. Was there a difference in subjective emotional recovery between cultural groups and between expression / non-expression conditions?
3. Did the harassment task result in cardiovascular reactivity? Did reactivity differ between cultural groups?
4. Was there a difference in cardiovascular recovery between cultural groups and between expression / non-expression conditions?
5. What is the relationship between participants' acculturation and self-construal?
6. What is the relationship between group membership and self-construal?
7. What is the relationship between self-construal and cardiovascular recovery?

For all analyses, alpha level was set to .05. In addition to reporting p-values, measures of effect size have been provided wherever possible. Examination of both the p-value and effect size of a given analysis, in some cases, aided in the interpretation of trend findings. Analyses of reactivity (changes from baseline to task) were conducted separately from those of recovery (changes from task to recovery) because observed changes are thought

to reflect distinct physiological processes and, in the case of the cardiovascular data, separate recovery analyses allowed for the use of more powerful trend analyses. Separate between-within ANOVAs were chosen over MANOVAs for the analyses of SBP, DBP and HR. Although BP is partly a function of HR, these indices can reflect different hemodynamic processes and analyzing them separately will often provide unique information. The recovery analyses of within-subjects effects of SBP, DBP and HR utilized trend analysis. Trend analysis (within-subjects contrasts) was chosen over the more straightforward within-subjects effects analyses because they represent a more specific test of the main hypotheses of Study Two (i.e., different recovery *slopes* between cultural groups, depending on expression condition). An advantage of this type of analysis is that the focus is on the recovery slope as a whole, not between-group differences at any particular time point. This avoids the need for post-hoc tests, the interpretation of which would be difficult with this data set, due to difficulty in controlling for possible differential response to the task between groups. Of note, the author initially analyzed the physiological recovery data by co-varying task values, to control for any between-group differences in response to the task. That approach is the recommended strategy and would be easily understood by fellow researchers in the area. Although the results obtained with that analysis were nearly identical to the results presented here, the lack of *any* within-subjects effects (indicating that participants showed no recovery over time from anger provocation) suggests that perhaps those initial analyses may have violated the assumptions of ANCOVA and therefore cannot be trusted.

Subjective Emotion Ratings

Baseline to task changes. Data from the ERS forms were used to compute raw change scores for each of the six emotion categories by subtracting each participant's baseline scores from their task scores. These results are displayed pictorially in Figure 3.1. Figure 3.2 displays these results broken down by cultural group. As can be seen from Figure 3.1, participants generally reported the greatest increase in frustration, followed by anger, anxiety, surprise and sadness. Happiness ratings decreased. A series of paired-samples *t*-tests were conducted. They showed that the magnitude of participants' frustration change score was significantly higher than any other change score ($p < .001$, $d = .36$) and their happiness change score, was significantly different from any other change score ($p < .001$, $d = .79$), not surprising given that the happiness change score was in the opposite direction of all other emotion categories. Comparisons between the other emotion categories were all non-significant. So that the reader may easily compare mean raw change scores across emotion categories, a table of means, broken down by culture is provided in Table 3.1.

To determine whether the two cultural groups differed in their subjective emotional experience from baseline to task, raw change scores for each emotion category were entered as dependent variables into a one-way MANOVA with Culture group (English, Cantonese) as the between-subjects factor. Overall, the results suggest that the task changed acute mood in the desired directions. This conclusion was derived from the following findings. The overall test was

Figure 3.1: Emotion rating scales baseline to task raw change scores.

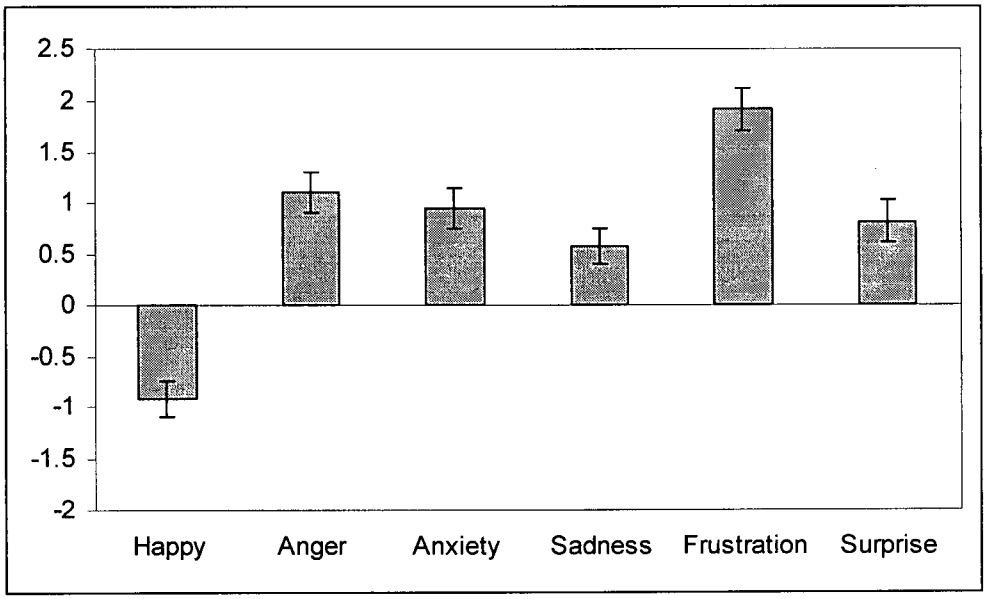


Figure 3.2: Emotion rating scales baseline to task raw change scores broken down by cultural group.

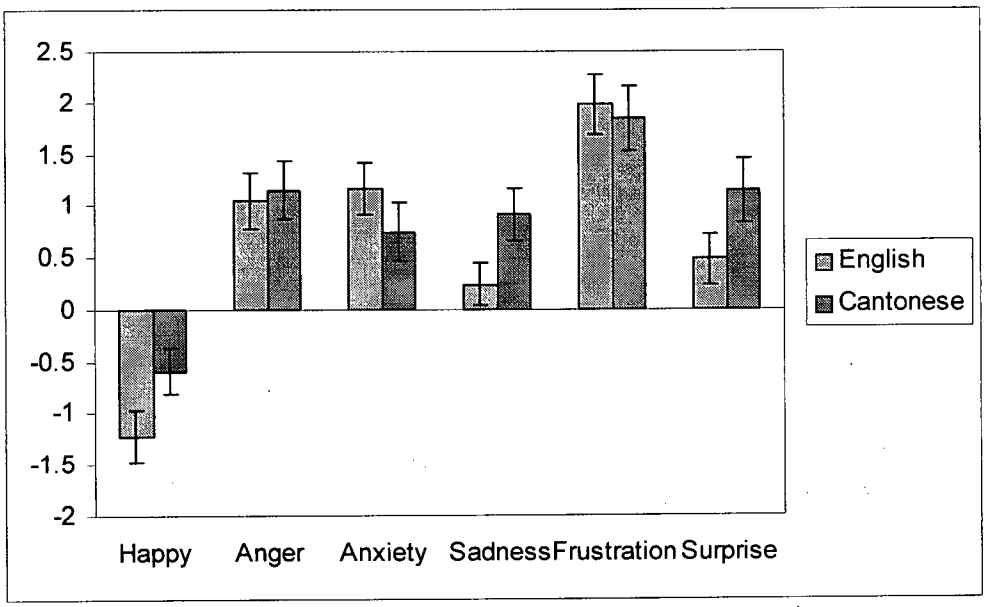


Table 3.1: Emotion rating scales baseline to task means and raw change scores.

	Happy			Anger			Anxiety			Sadness			Frustration			Surprise		
	Bl	Task	Δ	Bl	Task	Δ	Bl	Task	Δ	Bl	Task	Δ	Bl	Task	Δ	Bl	Task	Δ
Eng.	3.2 (1.8)	1.9 (2.0)	-1.2 (2.0)	1.2 (1.7)	2.2 (2.1)	1.0 (2.1)	2.0 (1.9)	3.2 (2.0)	1.2 (1.9)	1.0 (1.5)	1.3 (1.7)	0.2 (1.6)	1.8 (1.9)	3.7 (2.3)	2.0 (2.3)	1.5 (1.5)	2.0 (2.0)	0.5 (1.8)
Cant	2.8 (2.0)	2.2 (2.2)	-0.6 (1.8)	1.0 (1.7)	2.2 (2.3)	1.2 (2.2)	2.0 (2.1)	2.7 (2.5)	0.7 (2.2)	0.7 (1.4)	1.7 (2.1)	0.9 (2.1)	1.0 (1.6)	2.8 (2.7)	1.8 (2.4)	1.3 (1.9)	2.5 (2.7)	1.2 (2.4)
Tot.	3.0 (1.9)	2.1 (2.1)	-.9 (1.9)	1.1 (1.7)	2.2 (2.2)	1.1 (2.1)	2.0 (2.0)	3.0 (2.3)	0.9 (2.1)	0.9 (1.5)	1.5 (1.9)	0.6 (1.9)	1.4 (1.8)	3.3 (2.5)	1.9 (2.3)	1.4 (1.7)	2.2 (2.4)	0.8 (2.2)

Note. Values in parentheses represent standard deviations.

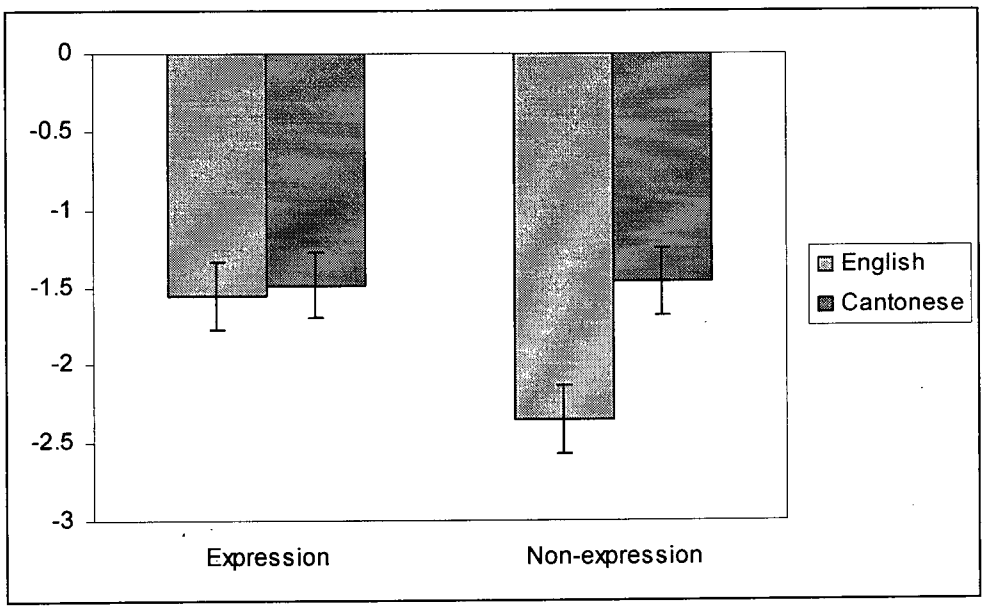
significant, Wilks' Lambda = .88, F (6, 114) = 2.3, p = .02, mult. η_p^2 = .12. The Cantonese group reported a greater increase in sadness than the English group, F (1, 119) = 4.0, p = .048, η_p^2 = .03. There was a trend for the English group to report a greater decrease in happiness, F (1, 119) = 3.3, p = .074, η_p^2 = .03. Of note, there was no difference found between groups in their reported increase of frustration and anger, the two highest change scores and those of specific interest in the current study. Both, English and Cantonese participants experienced similar increases in frustration and anger.

To determine whether groups differed from each other in their level of subjective emotion ratings, a series of two-tailed independent-samples t – tests were conducted on participants' baseline and task ERS ratings. These analyses showed that the English group reported higher levels of frustration than the Cantonese group at baseline, t (115.6) = 2.5, p = .01, d = .45, and at task, t (120) = 2.0, p = .04, d = .37. Group means and standard deviations are displayed in Table 3.1.

Task to recovery changes. Data from the ERS forms were used to compute raw change scores for each of the six emotion categories by subtracting each participant's task scores from their recovery scores. Data were analyzed by entering mean raw change scores for each of the six emotion categories as dependent variables in a two-way multivariate analysis of covariance (MANCOVA) with Culture group (English, Cantonese) and Condition (Expression, Non-expression) as between-subjects factors, and ERS baseline-to-task mean raw change scores entered as covariates. The multivariate test of the Culture

× Condition interaction was a trend, Wilks' Lambda = .89, F (6, 101) = 2.0, p = .07, mult. η_p^2 = .11. Examination of the univariate analyses revealed only an almost-significant Culture × Condition effect of Frustration, F (1, 106) = 3.5, p = .065, η_p^2 = .03. Analysis of simple main effects revealed that English participants reported greater decreases in frustration than Cantonese participants when in the non-expression condition, F (1, 106) = 4.7, p = .03, η_p^2 = .08, but not in the expression condition, F (1, 106) = .03, p = .58. These results are portrayed in Figure 3.3. As can be seen from the figure, English participants in the non-expression condition reported larger magnitude decreases in frustration than English participants in the expression condition or Cantonese participants generally.

Figure 3.3: Task to recovery mean change scores (adjusted by MANCOVA) for frustration, broken down by cultural group and expression condition.



Physiological Measures

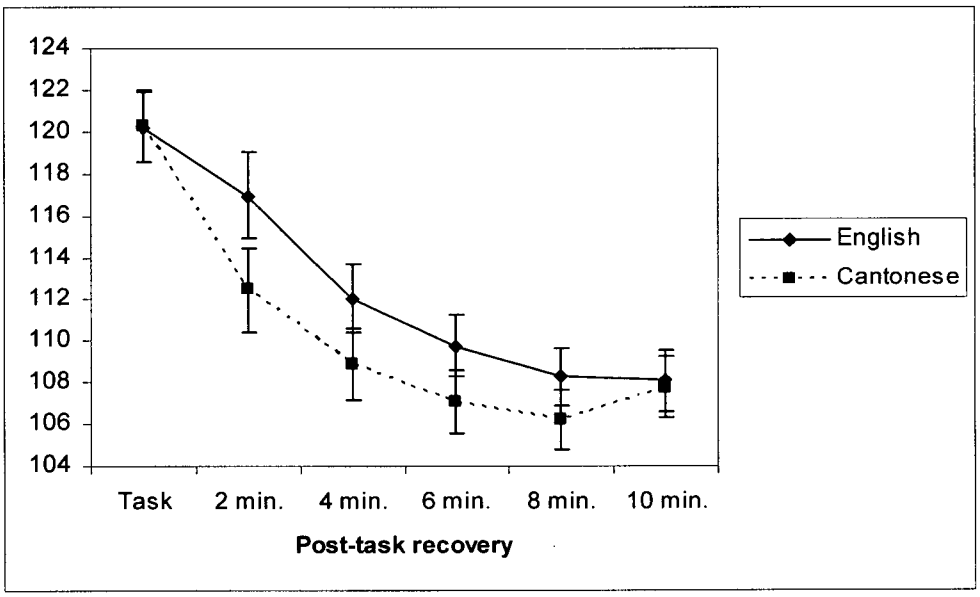
Data reduction. In order to facilitate the analysis and assist in providing a parsimonious description of the results, the author first computed average baseline scores for SBP, DBP and HR, using those baseline readings taken at minutes 10 and 12 at the end of the baseline period. This practice is recommended (Kamarck & Lovallo, 2003) and is consistent with previous studies conducted in this lab. Next, each of the four readings of SBP, DBP and HR taken during the task period were averaged to provide a single, reliable estimate of task-related arousal. This was done because there were no hypotheses regarding change in task values between the beginning and end of the task period and doing so allowed for the inclusion of the occasional participant who, due to an error with the monitor, would otherwise be excluded because of a single case of missing data. Finally, SBP, DBP and HR recovery readings taken beyond 10 minutes post-task were excluded from the analyses. This was done after examining the slope of the recovery profiles for each measure to determine the point at which they flatten out. The flat portion of the curve indicates that the processes affecting recovery that are of interest in the current study have ceased. Including these data in the analyses would serve only to reduce power to detect hypothesized differences. Again, this is consistent with previous studies conducted in this lab.

Baseline to task analyses. To determine whether or not participants in each cultural group experienced significant changes in cardiovascular functioning in response to the anger provocation, average baseline and task values for each

of SBP, DBP and HR were entered separately into three 2 (Time: baseline, task) × 2 (Culture: English, Cantonese) mixed model ANOVAs. Results indicate that from baseline to task, SBP increased, F (1,120) = 428.1, $p < .001$, $\eta_p^2 = .78$, Δ = 17.9 mmHg, DBP increased, F (1,120) = 677.1, $p < .001$, $\eta_p^2 = .85$, Δ = 17.9 mmHg, and HR increased, F (1,120) = 390.2, $p < .001$, $\eta_p^2 = .77$, Δ = 19.6 beats per minute. These results clearly show that participants demonstrated BP and HR reactivity to the anger provocation task. There were no significant between-subjects effects or interactions, indicating that English and Cantonese participants reacted equally to the anger provocation task.

Recovery analyses of SBP. Recovery data were entered into a 6 (Time: task, recovery 1, recovery 2, recovery 3, recovery 4, recovery 5) × 2 (Culture: English, Cantonese) × 2 (Condition: Expression, Non-expression) repeated-measures ANOVA. Of note, there were no interactions found between Culture condition and Expression condition, contrary to the main hypothesis of the study. Although there were linear and quadratic main effect trends for Time, more importantly there was a significant Time × Culture interaction quadratic trend, F (1, 106) = 7.2, $p = .009$, $\eta_p^2 = .06$. Follow-up simple main effects analyses revealed significant quadratic trends for Time for both the English group, F (1, 54) = 12.9, $p = .001$, $\eta_p^2 = .19$, and the Cantonese group, F (1, 52) = 65.9, $p < .001$, $\eta_p^2 = .56$, indicating that both groups recovered from task levels. This result is displayed in Figure 3.4. As can be seen from the figure, although groups start recovery from similar task values, the Cantonese group showed a relatively steep recovery curve compared to that of the English group.

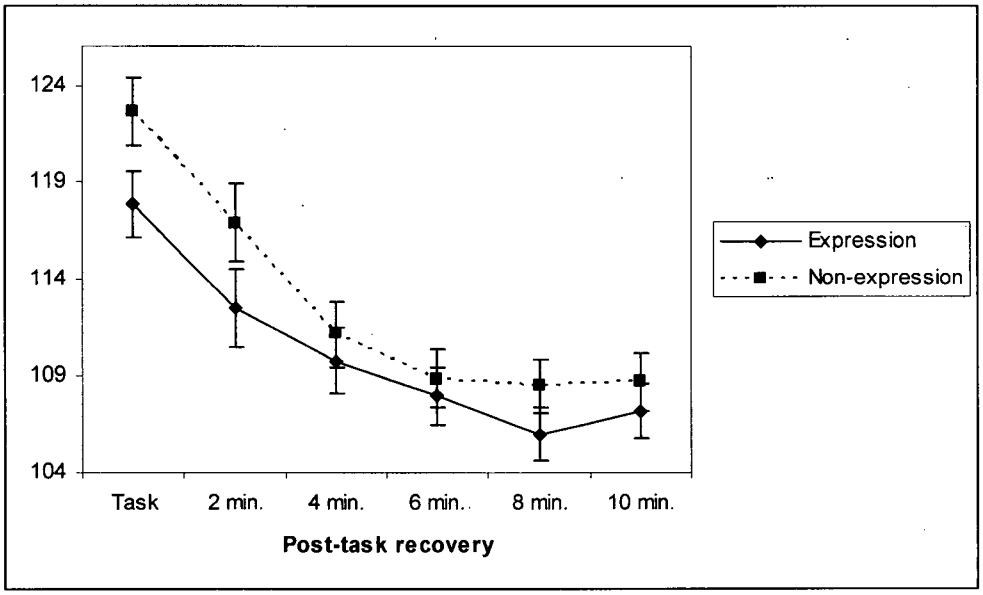
Figure 3.4: SBP recovery slopes broken down by cultural group.



There was also a significant Time × Condition linear trend, F (1, 106) = 4.3, p = .04, η_p^2 = .04. Follow-up simple main effects analyses revealed significant quadratic trends for Time for both the Expression group, F (1, 53) = 21.1, p < .001, η_p^2 = .29, and the Non-expression group, F (1, 53) = 46.6, p < .001, η_p^2 = .47, indicating that both groups recovered from task levels. This result is displayed in Figure 3.5. As can be seen from the figure, SBP recovery slopes are curvilinear and the values observed for the Non-expression group are generally higher than those in the Expression group throughout, beginning with task values.

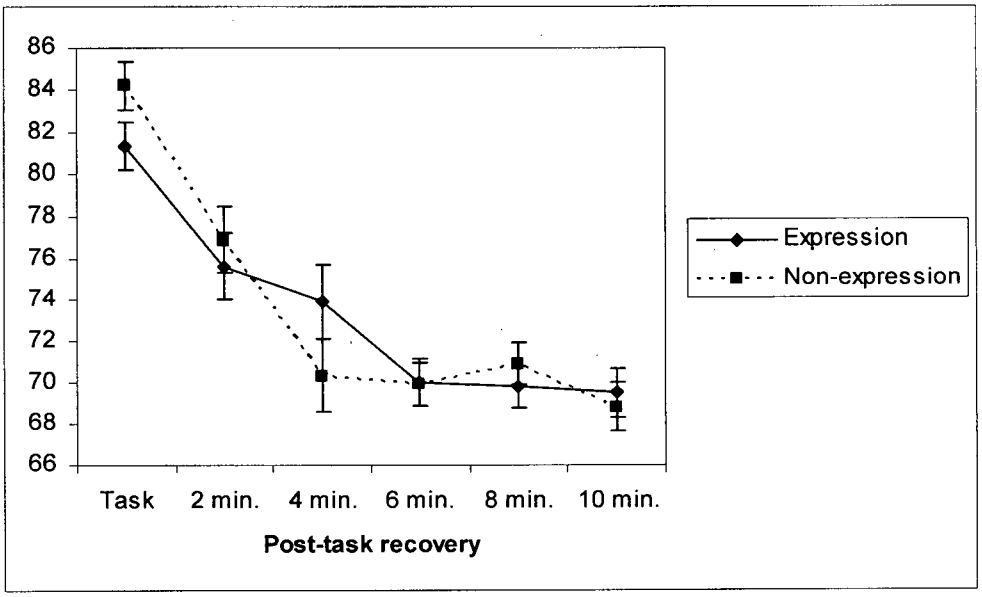
Recovery analyses of DBP. Recovery data were entered into a 6 (Time: task, recovery 1, recovery 2, recovery 3, recovery 4, recovery 5) × 2 (Culture: English, Cantonese) × 2 (Condition: Expression, Non-expression) repeated-measures ANOVA. Of note, there were no interactions found between Culture

Figure 3.5: SBP recovery slopes broken down by expression condition.



condition and Expression condition, contrary to the main hypothesis of the study. Although there were significant linear and quadratic main effect trends for Time, indicating that participants did recover from task values, the Time × Condition interaction quadratic trend was almost significant, F (1, 106) = 3.4, p = .067, η_p^2 = .03. Follow-up simple main effects analyses revealed significant linear and quadratic trends for Time for the Expression group, linear F (1, 52) = 98.5, p < .001, η_p^2 = .65, quadratic F (1, 52) = 9.3, p = .004, η_p^2 = .15, and significant linear, quadratic and cubic trends for the Non-expression group, linear F (1, 54) = 154.5, p < .001, η_p^2 = .74, quadratic F (1, 54) = 66.2, p < .001, η_p^2 = .55, cubic F (1, 54) = 6.5, p = .013, η_p^2 = .11. This result is displayed in Figure 3.6. As can be seen from the figure, for both groups, DBP recovery was curvilinear. The Time × Condition interaction noted above may be accounted for by the relatively steeper

Figure 3.6: DBP recovery slopes broken down by expression condition.



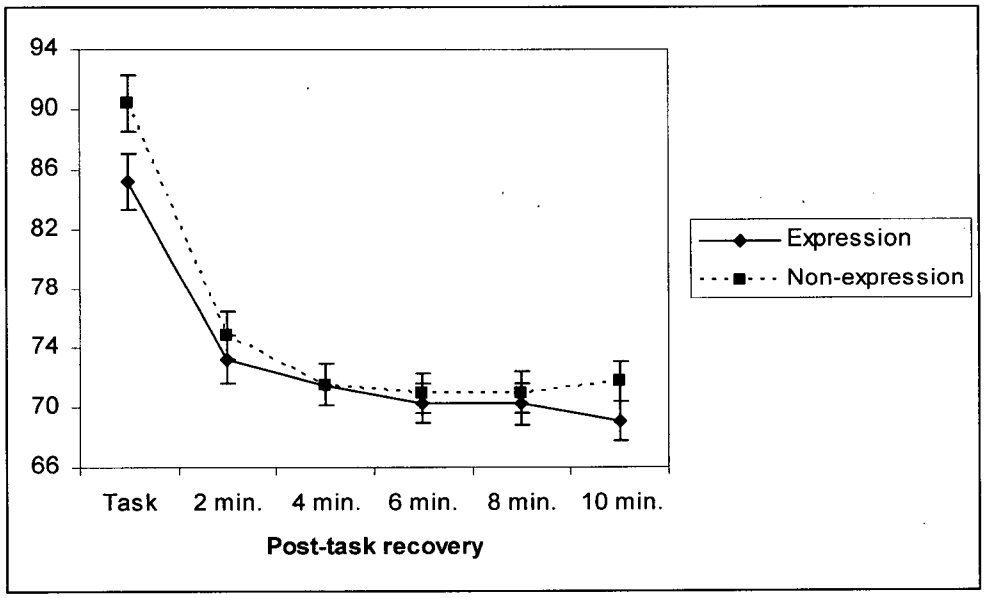
recovery slope for the Non-expression group relative to the Expression group in the first half of the recovery period, having almost completely recovered by four minutes post-task. Although the cubic trend in the Non-expression group is worth noting (and is accounted for by the slight increase in DBP for this group observed 8 minutes post-task), examination of the figure and the associated effect sizes suggests that the main effect is a quadratic one.

Recovery analyses of HR. Recovery data were entered into a 6 (Time: task, recovery 1, recovery 2, recovery 3, recovery 4, recovery 5) × 2 (Culture: English, Cantonese) × 2 (Condition: Expression, Non-expression) repeated-measures ANOVA. Of note, there were no interactions found between Culture condition and Expression condition, contrary to the main hypothesis of the study. Although there were significant linear, quadratic, cubic and order 4 main effect trends noted for Time, more importantly, the Time × Condition interaction

quadratic trend was significant, F (1, 113) = 13.1, p < .001, η_p^2 = .10. Follow-up simple main effects analyses revealed significant linear, quadratic, cubic and order 4 trends for Time for the Expression group: linear F (1, 57) = 112.1, p < .001, η_p^2 = .66, quadratic F (1, 57) = 112.2, p < .001, η_p^2 = .66, cubic F (1, 57) = 45.6, p < .001, η_p^2 = .44, order 4 F (1, 57) = 6.1, p = .017, η_p^2 = .10. For the Non-expression group, there were significant linear, quadratic, cubic and order 4 trends: linear F (1, 56) = 103.7, p < .001, η_p^2 = .65, quadratic F (1, 56) = 167.6, p < .001, η_p^2 = .75, cubic F (1, 56) = 56.7, p < .001, η_p^2 = .50, order 4 F (1, 56) = 6.9, p = .011, η_p^2 = .11. This result is displayed in Figure 3.7. As can be seen from the figure, for both groups, HR recovery was curvilinear. The Time × Condition interaction noted above may be accounted for by the relatively steeper recovery slope for the Non-expression group relative to the Expression group during the first half of the recovery period. However, this difference appears to have resulted from between-group differences at task, not recovery. Of note, although analyses presented included significant cubic and order 4 effects, examination of the figure as well as the associated effect sizes suggests that the main effect is a quadratic one.

So that the reader may more easily compare the differences between groups described in these analyses, Table 3.2 displays the means and standard deviations for SBP, DBP and HR, broken down by culture condition and expression condition.

Figure 3.7: HR recovery slopes broken down by expression condition.



Analyses of Acculturation, Self-Construal, Cultural Group and Recovery

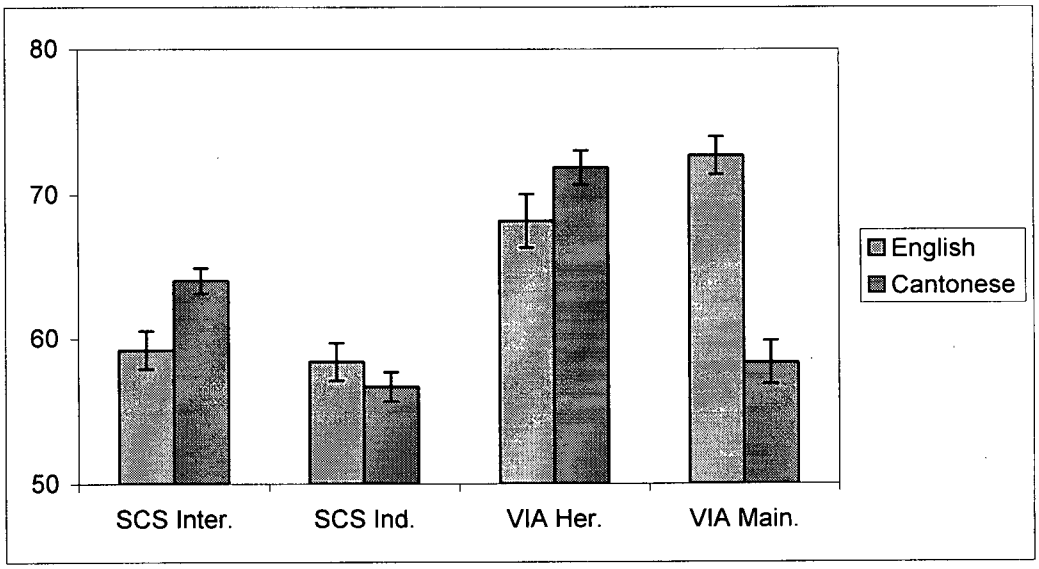
To determine the pattern of relationships between acculturation, self-construal and cultural group, a series of two-tailed, independent-samples t-tests compared the scores between the English and Cantonese groups. Participant's mean VIA and SCS subscale scores can be seen in Figure 3.8, broken down by cultural group.As can be seen from the figure, those in the English group identified more strongly with mainstream North American culture than those in the Cantonese group, $t\ (120) = 7.3$, $p < .001$, $d = 1.31$. There was a trend for those in the Cantonese group to identify more strongly with their heritage culture than those in the English group, $t\ (120) = 1.7$, $p = .09$, $d = .30$. Those in the Cantonese group scored higher on interdependent self-construal than the English group, $t\ (120) = 3.1$, $p = .003$, $d = .55$. Groups did not differ in their independent self-construal score.

Table 3.2: Task to recovery means for SBP, DBP, and HR broken down by culture and by condition.

		Task	Post-task Recovery				
			2 min.	4 min.	6 min.	8 min.	10 min.
SBP	English	120.2 (12.3)	117.0 (17.7)	112.0 (15.8)	109.7 (10.0)	108.3 (10.4)	108.0 (10.3)
	Cantonese	120.3 (13.1)	112.4 (11.9)	108.9 (11.8)	107.1 (11.9)	106.2 (10.0)	107.8 (11.1)
	Expression	117.9 (11.1)	112.5 (11.2)	109.8 (15.0)	108.0 (9.5)	106.0 (10.6)	107.1 (12.1)
	Non-expression	122.6 (13.7)	117.0 (18.2)	111.1 (9.7)	108.9 (12.4)	108.5 (9.8)	108.7 (9.1)
DBP	English	82.4 (8.0)	76.3 (11.8)	71.4 (12.8)	69.8 (8.9)	69.9 (8.3)	68.6 (6.7)
	Cantonese	83.5 (9.2)	75.2 (12.3)	72.4 (13.1)	69.1 (7.8)	69.6 (7.1)	69.3 (10.3)
	Expression	81.3 (7.6)	75.6 (9.6)	73.9 (17.2)	70.0 (7.9)	69.8 (7.5)	69.5 (10.0)
	Non-expression	84.3 (9.0)	76.7 (13.9)	70.3 (7.1)	69.8 (8.4)	70.8 (7.1)	68.7 (7.4)
HR	English	87.0 (16.2)	72.5 (13.8)	70.5 (12.6)	69 (11.8)	68.7 (11.2)	68.5 (11.2)
	Cantonese	88.2 (14.4)	75.4 (10.5)	72.0 (8.7)	71.6 (8.8)	71.5 (10.0)	71.9 (9.4)
	Expression	85.2 (13.3)	73.2 (11.8)	71.5 (10.2)	70.3 (9.2)	70.2 (11.0)	69.1 (10.2)
	Non-expression	90.4 (15.4)	74.9 (12.9)	71.6 (11.6)	71.0 (11.3)	71.1 (10.1)	71.8 (10.7)

Note. For SBP and DBP, values represent mmHg. For HR, values represent beats per minute (bpm). Values in parentheses represent standard deviations.

Figure 3.8: Mean SCS and VIA subscale scores broken down by cultural group.



To determine the strength of associations between acculturation and self-construal, these subscale scores were correlated. The results are displayed in Table 3.3, in which the correlations are displayed separately by cultural group.

As can be seen from the table, overall there is a positive association between identification with one's heritage culture and interdependent self-construal. Identification with mainstream North American culture was positively associated with independent self-construal. These correlations remain when examining the Cantonese group in isolation. These findings are consistent with the model put forth by Markus and Kitayama (1991).

For the English group, VIA heritage and mainstream subscale scores were positively correlated and interdependent self construal was positively associated with both VIA heritage and mainstream subscale scores. This pattern of results is inconsistent with the model put forth by Markus and Kitayama (1991), and may

Table 3.3: Correlation coefficients between VIA and SCS subscale scores broken down by cultural group.

		Heritage	Mainstream	Inter-dependent
English	Mainstream	.28*	-	
	Inter-dependent	.31*	.27*	-
	Independent	-.02	.10	.05
Cantonese	Mainstream	.23	-	
	Inter-dependent	.29*	.15	-
	Independent	.10	.26*	.05
Total	Mainstream	.12	-	
	Inter-dependent	.33*	.02	-
	Independent	.01	.20*	.02

*. Correlation is significant at the .05 level (2-tailed).

result from the fact that, consistent with findings from Study One, the English group did *not* display a predominantly independent self-construal, as measured by the SCS.

Finally, to determine the relationship between self-construal and physiological recovery, the SCS subscales and SBP recovery values were correlated. The strength of relationship between SCS subscales and DBP and HR were not analyzed because there were no significant interactions or main effects related to cultural group for these indices. Independent self-construal was positively correlated with SBP values at two minutes post-task, $r = .29$, $p = .002$,

and 4 minutes post-task, $r = .24$, $p = .01$, meaning that those scoring relatively high in independent self construal also tended to show relatively higher SBP values (i.e., slow recovery). Interdependent self-construal was not correlated with any of the SBP recovery scores.

Discussion

The purpose of Study Two was to determine the influence of culture on one's acute response to anger provocation, both in terms of subjective experience as well as concurrent cardiovascular indices of emotional arousal. Becoming aware of physiological processes might help to elucidate culture and anger effects in disease development. Based on the findings of Study One, it was expected that a English group, because they prefer open anger expression, would show fastest subjective and physiological anger recovery if placed in a condition that facilitated emotion expression. When placed in a condition that did not allow for open anger expression, this group was predicted to suppress their anger, which would in turn lead to attenuated recovery. Those in the Cantonese group on the other hand, because of their apparent preference for distraction and reappraisal in response to anger (thought to lessen inner experience of anger without the necessity of outward expression), were predicted to show quick recovery regardless of whether they were given the opportunity to express their emotions.

The crucial finding of Study Two was that the Cantonese group showed faster SBP recovery than did the English group. This finding underscores the importance of including measures less susceptible to self-report bias in studies

investigating the relationship between culture and emotion. Had cardiovascular measures not been included in the study design, the results from self report would indicate that culture plays relatively little role in the *actual* experience of anger and frustration (in contrast to participants' supposed response to hypothetical anger scenarios examined in Study One). Indeed, the English and Cantonese groups differed little in their reported subjective experience of frustration or anger, with the exception that those in the English group, tended to generally report higher frustration, beginning at baseline. They did not respond differently to the task than the Cantonese group or to the opportunity to express anger in terms of their subjective report.

The tendency of the Cantonese group to report generally slightly lower levels of frustration beginning at baseline was not reflected in the cardiovascular data. If we assume that people's report of their subjective emotional experience is accurate, and that there is concordance between outright level of frustration and HR or BP values then, given their subjective report, one might have predicted the Cantonese group to show similarly lower baseline and task HR and BP values. This was not the case. HR and BP values at baseline and task were identical across cultural groups. That groups also showed identical subjective increases in frustration and identical increases in HR and BP in response to the task suggests, again, that perhaps rather than perceiving their frustration to be less than the English group, instead their rating reflects a cultural response tendency to *report* less intense emotion. This interpretation is consistent with the data and interpretation from Study One.

There are two possibilities that might account for the differential SBP recovery observed between English and Cantonese groups. First, perhaps the two cultural groups are also racially different and race may affect physiological response (racial differences in hemodynamics have been noted between Blacks and Whites). This question is untested for recovery per se but our research group has asked similar questions previously using samples drawn from the same subject pool and found no differences in either baselines or reactivity. Further, it should be noted that particularly for Study Two, there was not a purely racial comparison. The ethnic heritage of the cultural groups was such that the comparison was one of Canadians (English-speaking persons living in Canada of various ethnicities including some highly acculturated Chinese) to Chinese/Chinese-Canadians (relatively unacculturated, Cantonese-speaking persons of Chinese ethnicity also living in Canada). Thus the most consistent difference between groups was culture, not race.

The hypothesis of a culture × anger expression interaction effect in Study Two was not supported. It was predicted that the opportunity to express anger by aggressing against the anger source would facilitate recovery in the English group, consistent with previous studies (Hokanson et al., 1962, Lai & Linden, 1992). This did not happen. Instead, the English group displayed slower SBP recovery relative to the Cantonese group, regardless of opportunity to express anger.

It is not immediately obvious why no support for the hypothesized interaction of culture and anger expression could be found. There are number of

possible reasons. First, it is theoretically possible that the anger provocation did not lead to sufficient arousal to allow for differential rates of recovery across expression conditions. This, however, makes little sense here because the provocation task led to large changes on all cardiovascular indices (almost twenty points). A second possibility is that the anger expression manipulation used in the current study was weak. Indeed, not only did the opportunity to express anger fail to facilitate recovery in the English group as had been predicted, but the manipulation may have at least slightly *slowed* DBP recovery and, for the English group, resulted in maintained frustration.

An explanation for these unexpected results may lie with the manner in which anger expression was operationalized in the current study. Unlike previous studies, such as those by Hokanson and colleagues (in which anger expression involved the supposed opportunity to directly deliver a punishing electric shock to the anger source quickly and easily), the opportunity to express anger/frustration in the current study was far less direct and participants received no feedback regarding the effect of their actions. Also, anger expression in the current study presumably required considerably greater focussed attention and effort over a greater time period (completing rating scales and writing comments) than in other studies (in which participants believed they were delivering an electric shock, effortlessly and instantaneously). Therefore, rather than allowing participants to utilize their preferred anger response strategy, as was intended, the anger expression manipulation may instead have served to maintain attentional focus

on the anger-provoking incident. Attentional focus on one's negative affect, may stimulate rumination and thus contribute to slow recovery.

As a result, it may be concluded from Study Two that, following anger provocation and without satisfactory opportunity to express anger, English-speaking Canadians generally show delayed SBP recovery relative to Cantonese-speaking Chinese/Chinese-Canadians. It remains to be seen whether or not such a difference would persist were participants given adequate opportunity to openly express anger. Such a test may prove extraordinarily difficult, if we consider that Hokanson and colleagues may have been able to be more provocative than were we, the result of changes in acceptability of types of provocation by ethics committees over time. Further, if the Hokanson-type findings can only come about if one can release anger quickly and drastically (via electric shock) we may never be able to repeat this work.

To summarize thus far, it has been shown that English-speaking Canadians report a preference, while Cantonese-speaking Chinese/Chinese-Canadians report a disinclination, to openly express anger. They choose instead to dampen the internal experience of anger and engage in active processing. Further, following anger provocation without adequate opportunity to express anger, the English group displayed slow SBP recovery compared to the Cantonese group. This is likely because for the English group anger inhibition involves suppressing outward signs of anger without offering culture-specific skills for inner anger processing and diffusion that would dampen the subjective

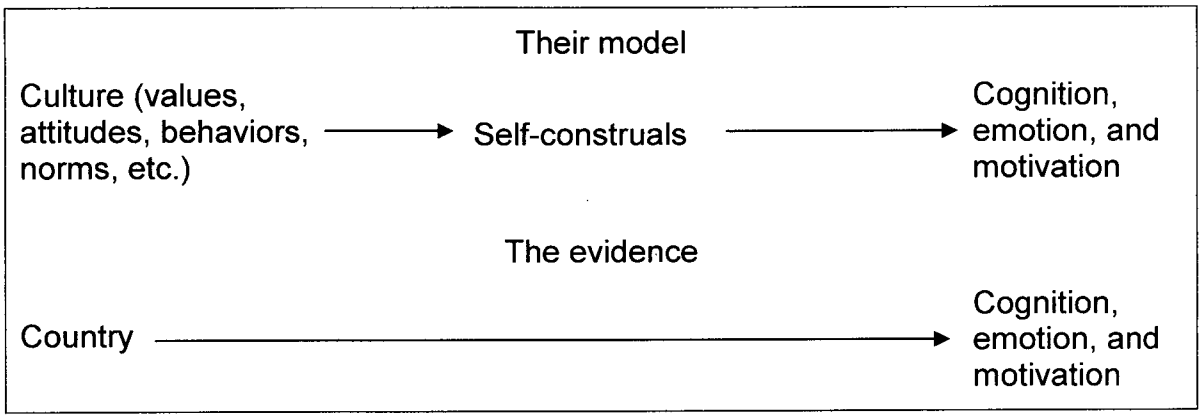
experience of anger. The Cantonese group by contrast, were able to utilize an anger coping strategy that did not require overt anger expression.

Of interest, the pattern of delayed SBP recovery for the English group compared to the Cantonese group was not observed for either DBP or HR. Obviously, results would have been strengthened by consistent findings across all three cardiovascular indices. However, it is not unusual to find disparate patterns of results across indices. The SBP result may be considered particularly meaningful in this sample as SBP has been shown to be a particularly good predictor among young people of development of hypertension at 10-year follow-up (Carroll et al., 2001), although there are discrepant views as to what point in the lifespan SBP becomes a significant predictor (Sesso et al., 2000; Franklin et al., 2001), and other factors such as fitness level may moderate the predictive relationship between various cardiovascular indices and CVD (Treiber et al., 2003).

Although these results are consistent with the model put forth by Markus and Kitayama (1991) arguing that culture influences self-construal and in turn, self-construal influences emotion, motivation and behaviour, thus far they do not actually test the model fully. This problem, initially raised by Matsumoto (1999), is illustrated in Figure 3.9. He argues that too often, cross-national differences are assumed to be the result of differences in self-construal, and self-construal assumed to result from cultural differences in individualism-collectivism. An obvious strength of the current studies' design is the inclusion of additional

measures of acculturation and self-construal with which a better test of the model can be performed.

Figure 3.9: Comparison of the logic underlying the Markus and Kitayama (1991) model and that underlying the evidence cited in support of it (taken from Matsumoto, 1999, p. 291).



Indeed, in the current study, cultural groups *did* differ on an important aspect of cultural identity, i.e., ability to speak Cantonese. Further, acculturation was specifically measured and it was demonstrated that those in the Cantonese group identified strongly with their heritage culture and that those in the English group, regardless of their race or ethnicity, identified strongly with North American culture. Thus, ability to speak one's heritage language was demonstrated to be an effective proxy measure of culture.

Acculturation was shown to relate to self-construal. Overall, identification with one's heritage culture was associated with a more interdependent self-construal and identification with mainstream North American culture (in Study Two) was associated with a more independent self-construal. In

turn, self-construal was associated with dependent variables for which between-group differences were noted. Specifically, interdependent self-construal was negatively associated with preference for anger expression. Independent self-construal was positively associated with both use of the anger suppression strategy and with higher SBP recovery values. This suggests that for interdependent selves, overt emotional expression does not feature prominently in response to anger. For independent selves, anger suppression is a prominent response to anger, and this likely accounts for the positive association between independent self-construal and SBP recovery values.

To summarize, the model put forth by Markus and Kitayama (1991) was, for the most part, supported by the findings of these studies. For the Cantonese group, group membership (i.e., ability to speak Cantonese) was related to identification with Chinese culture. Identification with Chinese culture was associated with interdependent self-construal. Interdependent self-construal was associated with a preference for anger responses that dampen the internal experience of anger, which may represent the mechanism to account for the quick SBP recovery observed in this group. For the English group, group membership was related to identification with mainstream North American culture. Group membership was also related to a preference for overt anger expression and attenuated SBP recovery when not able to express anger.

For the English group, what is missing in this chain of relationships is self-construal. Although independent self-construal was associated with relatively higher SBP recovery values, as was membership in the English group, this group

did not show particularly independent selves. This lack of a predicted finding is puzzling, particularly because both English group membership and independent self-construals were associated with slow SBP recovery, but may simply reflect methodological issues related to the assessment of self-construal.

A number of possible explanations exist for why the English group was not more independent, but instead tended to be relatively interdependent. Perhaps the samples used in the studies are in fact more interdependent than other Westerners. One explanation that seems likely is that of a reference group effect, proposed by Heine, Lehman, Peng, and Greenholtz (2002). The argue that when responding to Likert-scales, people generally evaluate themselves in comparison to similar others (their "reference group"). Therefore, people from different cultures evaluate themselves in comparison to different sets of similar others, thereby confounding the cross-cultural comparison. The result is that studies comparing cultural groups on constructs such as individualism-collectivism might fail to find a difference between groups (e.g., people from Eastern cultures are more collectivistic than those from Western cultures), despite widespread consensus by cultural experts in the field that such a difference does in fact exist. English participants in this study, in comparison to their referent, view themselves perhaps as being relatively interdependent. However, this raises the question as to why the Cantonese group did not also show a reference group effect. The answer may lie with the language priming manipulation, or more specifically that language *was* a prime for the Cantonese group, but not the English group. Participants in the Cantonese group were, of course, to some extent bicultural—

they identify readily with their Chinese heritage but outside their own homes they are presumably exposed to Canadian culture on a daily basis. They attend a Canadian university at which the vast majority of their classes are conducted in English. Because the majority of their university studies and perhaps daily activities occur in English, the predominant language of mainstream Canadian culture (outside the province of Québec), it follows that the relatively unusual opportunity to participate in a research study conducted in Cantonese (indeed, their participation was sought *because* of that ability) would not only serve as a powerful reminder of one's cultural identity, but also set mainstream Canadian culture as the referent with which to compare the self.

Conversely, for the English group, participating in the present study in English likely did *not* serve as a cultural prime. Doing so did not serve as a reminder of one's identification with mainstream North American culture, because the ability to speak English is relatively mundane and not unique to North American culture. Thus, the values, attitudes and norms, etc. that make up mainstream North American culture were not made salient for the English participants in the way that the values, attitudes and norms that make up Chinese culture were made salient for the Cantonese participants. As a result, the referent with which to compare the self for the English group was such that respondents did not rate themselves as being particularly independent.

The possibility of a reference-group effect clouding the present studies' assessment of self-construal represents a significant limitation. A future attempt to replicate the present studies should include in its design the use of cultural

primes for *both* the acculturating group as well as the mainstream cultural group to address this issue. With an adequate priming manipulation in place, the use of more prototypical cultural samples (e.g., a Western group of exclusively Caucasian/Northern European heritage), unlike the present studies, might result in maximizing the likelihood of finding between-group differences on measures of self-construal.

What can be concluded from the present study is that non-expression of anger does not *invariably* result in prolonged physiological arousal, the kind of which has been associated with risk of CVD development. Rather, it appears that non-expression through suppression of outward signs of anger is the culprit. Use of emotion inhibition strategies that target the inner experience of anger appear to result in relatively quick stress recovery. Thus, current findings do not support the notion that, "holding anger in," is necessarily unhealthy, as is popularly held in North American society.

The question arises as to why the two cultural groups differed as to their preferred anger response (suppression vs. distraction or reappraisal), when not able to openly express anger. It seems unlikely to be due to a relative lack of practice for Westerners. Although the stereotypical comparison between Eastern and Western cultures might be that people from Eastern cultures generally inhibit anger whereas people from Western cultures generally do not, in reality, anger inhibition is *also* the norm for people in Western cultures (Brosschot & Thayer, 1998). According to what is theorized about independent selves, in contrast to interdependent selves, the perception, interpretation and expression of ego-

focused emotions such as anger is paramount to maintaining the view of the self as a bounded and independent, autonomous entity. Internal states, such as anger, are thought to be a greater impetus for behaviour for independent, compared to interdependent selves. As a result, for Westerners, presumed to hold more independent self-construals, there is an underlying mandate to express anger, despite the need to inhibit that expression in the vast majority of anger-provoking events. In these situations, it follows that independent selves, rather than trying to distract themselves or come up with a less hostile interpretation of the event as might their interdependent counterparts, would instead focus on how they would like to have responded (i.e., overt anger expression) via imagined exposure.

A final implication has to do with treatment of problem anger, hostility and violence. In a variety of settings, there are psychological interventions designed to help people manage their anger (e.g., stress management for cardiac patients, anger management/violence prevention for violent offenders). Those who adhere to the popular notion that anger inhibition is generally unhealthy might wonder if teaching patients or clients to inhibit their anger might be doing more harm than good (especially when working with patients with known CVD). The present study suggests that if such a program provides strategies that target the inner experience of anger, as most do, then such anger inhibition would likely not result in a negative health impact.

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Appendix A

Questionnaires

Anger Scenarios Questionnaire

Anger Scenarios Questionnaire Participant #: _____

The following questionnaire lists a series of vignettes that are thought to elicit anger. For each vignette, we ask you to do 3 things. First, please rate how anger provoking the incident would be to you by circling a number on a scale from 1 to 7, in which 1 is *not at all angry* and 7 is *extremely angry*. Then rate each scenario as either *high* or *low* in terms of the degree of DAMAGE inflicted, INTENTIONALITY, and EXPECTEDNESS of the incident. Finally, several possible responses to this situation are listed. Please choose which one of the 4 responses you would be most likely to engage in if you were in that situation by circling the corresponding letter. Try not to spend too much time on any one question. There are no right or wrong answers. You might find that for some cases, you would be likely to engage in more than one of the responses (or none of them at all). If this happens, just try to choose the response that is the *most* likely.

1. You are having guests for dinner, and when you are about to make coffee you realize that the water supply has been cut off temporarily.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) call the hydro company and tell them how inconsiderate they are not to have given you notice of the shut-off
b) try not to let it show to your guests, but angrily think about what an inconvenience this is
c) remind yourself that otherwise, the party has gone really well
d) remind yourself that this happens only rarely and will be restored soon

2. A fellow worker is a liar and likes to gossip. One day you find out that he told the supervisor that you had not done a certain job.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) despite your anger, say nothing to him to avoid causing a scene
b) think about how he's just one person and your other co-workers are great
c) tell yourself it's not worth getting angry since you did the job, and he's not credible.
d) tell this co-worker to stop telling lies about you

3. One evening you are invited to an important party. Your regular barber is ill and you decide to have your hair cut by another barber who is an apprentice and already has a bad reputation. You find that your haircut is terrible and cannot be corrected.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) focus on other aspects of your appearance
b) think that he *is* an apprentice, it's a learning experience.
c) tell the barber just how dissatisfied you are

d) think about what an idiot you were to come here, and how terrible a barber he is, but say nothing

4. The electricity in your house is cut off even though you paid the bill a week ago; you discover that it was cut off by mistake, and should have been cut off in your neighbor's house.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) realize this is an honest mistake
b) call the hydro company to tell them how angry you are
c) not show it, but feel annoyed that the company couldn't get things right the first time
d) focus on other aspects of living

5. You wait in line to buy a ticket for the movies and, as often happens, someone is trying to push himself in ahead of you.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) tell the person to go to the back of the line
b) fume silently about how angry you are
c) focus on the fact that there are a lot of tickets left
d) do nothing, think to yourself that it might have been an accident or that some people just aren't very polite

6. The weather forecaster predicts rainy weather. You intended to take your umbrella but forgot to do so. On your way home it starts to drizzle, you cannot find shelter, and you get wet.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) do nothing, but think to yourself about how stupid you were to forget your umbrella
b) focus on something that has gone well for you that day
c) acknowledge that this is just what happens when it rains, no use getting upset
d) loudly curse the rain

7. You paid a big advance for an expensive gadget, but when you go to pick it up you discover that the shop has closed down and the shop owner has disappeared with all the money paid to him by his clients.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) try to let it go, because getting angry won't help
b) consider that perhaps the shop owner went bankrupt and didn't intend to rip you off
c) go home and tell your friends or family how angry you are
d) do nothing, except spend time thinking about what a jerk the shop owner is

8. You are taking a trip abroad. One day you return to your hotel from a visit to a museum. Although you have been cautious, and the place was full of guards, you discover that your wallet was stolen. Luckily, it contained a small sum of money and no documents.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) consider perhaps it wasn't stolen, maybe you just lost it
b) complain at the front desk
c) despite feeling angry, not say anything to hotel workers
d) think about how skilled the thief must have been to get past security

9. Your apartment is on the first floor and above you lives a family with two very naughty and undisciplined children. One day they throw pieces of paper onto your balcony.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) call their mother and give her a piece of your mind
b) quietly feel irritated at having to pick up after someone else's children
c) try to pay less attention to the problem
d) remind yourself that many children behave this way, and it's only paper

10. Your boss, who is a bitter and inconsiderate man, criticizes you in front of others and finds a lot of pleasure in doing so.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) feel very angry inside, but say nothing
b) focus your thoughts on the parts of your job you really enjoy
c) try to determine what criticisms are valid and ignore the invalid ones
d) confront your boss, and demand he apologize in front of your co-workers

11. In the morning, when leaving for work, you discover that at night someone let the air out of your car tires, scratched the paint, and broke a headlight.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) report the damage to the insurance company
b) consider that perhaps the vandal was drunk and out of control
c) scream, curse and yell, and perhaps kick the nearest object
d) quietly think about how angry you are about the damage to yourself on the cab ride to work

12. Due to the installation of a new computer in your company there are constant mistakes in paychecks. One month you get your paycheck and find that you have been paid a quarter of your salary, as already happened the previous month, and you are pressed to return a big loan at the time.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:

a) decide that you can't control whether or not there's a computer problem, no point in getting upset
b) go to payroll and let them have it
c) spend the drive home from work thinking how useless the new computers are
d) think about how to solve your current financial need

13. You bought a pack of cards when abroad, but upon returning home you discover that they sold you the wrapping without the cards.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) curse out loud and throw the box in the nearest trash can
b) quietly fume about having been fooled
c) curiously think about exactly what they must have done to make you think the package was full
d) consider that it may be an unintentional mistake

14. Before going to work you drink a cup of coffee and due to carelessness you stain your shirt.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) not say anything, but think to yourself about how clumsy you are
b) focus on what you want to get done at work
c) consider that at least the coffee didn't burn you, could have been worse
d) swear and grumble about how careless you were

15. You buy a very expensive vase after saving the money for it for along time. When you get home you put the vase on a table, and after a while you accidentally move the table and the vase falls and breaks into pieces.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) go buy another vase
b) consider how it is the vase fell (e.g., table wobbled, vase is top-heavy, hard floor, etc.)
c) scream loudly
d) quietly pick up the pieces, thinking of how terrible this is

16. A good friend of yours, known to be a confused and absent-minded person, borrows your car, wastes some fuel, but forgets to fill the tank or to reimburse you for it.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) remind yourself that your friend is known to be absent-minded
b) tell your friend how irritating that is
c) think about how inconsiderate your friend is
d) think to yourself, "Oh well," and go buy some gas

17. You go with friends to watch an interesting film, which you longed to see, and this is your only chance to do so. During the film two people sitting next to you chat and laugh in loud voices.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) tell them they are bothering everyone and they should be quiet
b) sit there thinking of angry this is making you
c) concentrate on the movie
d) think of how people have different ideas of what is appropriate during a movie

18. You bought a used car and every once in a while there is a new breakdown. One morning you are in a hurry to get to a very important meeting, the car does not start and it's obvious that you will not make it to the meeting on time.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) say nothing but think of how bad it is that you can't afford a better car
b) think about what you're going to do that day
c) remind yourself that this kind of thing happens to everyone from time to time
d) slam the car door while going to call a cab

19. You come to a party, put your coat on the hanger, and then you see a friend arriving after you, taking your coat off the hanger, throwing it negligently on a chair and hanging his coat on the same hanger.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) not say anything, but try not to think about it and not let it spoil your evening
b) think that maybe your friend has had a bad day
c) go tell your friend that you don't appreciate their disregard for your property
d) not say anything, but it would irritate you

20. You shop and spend a large sum of money in a certain store although you have been warned several times that the owner is dishonest. Afterwards you discover that the same merchandise costs only half the price in another store, but you cannot return your purchase.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) just not shop there anymore, no point in getting angry
b) confront the store owner, and announce loudly in front of other customers that this place is overpriced
c) leave the store without saying anything, fuming about being ripped off
d) think about what has gone well that day

21. For the past week television programs are cancelled because of a strike. One evening you stay at home and again most of the programs are cancelled.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) call the cable company to expression to them your frustration
b) sit there angrily wishing you were not so bored
c) decide to read a book instead
d) remind yourself this is a temporary situation you can do nothing about

22. You own a very young and mischievous puppy that is not yet trained. One evening you leave him alone in the house and upon returning you find that he tore the evening paper to shreds.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) be angry at yourself for not being more careful
b) think about how cute he is
c) think that he was just being playful, that's what puppies do
d) scold him

23. You chat with a friend. During you conversation the phone rings several times and each time it's a wrong number.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) try to ignore the ringing phone
b) recognize that the person calling was making a mistake without intent to interrupt you
c) angrily tell the person to stop calling you
d) try not to let your friend know you are annoyed

24. You are planning to go to Paris for an important exhibition and a few people warn you that you have to make hotel reservations beforehand, but because of many other arrangements you do not get around to doing it. You arrive in Paris and there is not one vacant room in the city.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) remind yourself that it is peak season, and other people are in the same situation
b) yell at the hotel clerk for not having any rooms
c) try not to show it, but would be very angry at yourself for not preparing better
d) think about making other arrangements like staying in a hostel

25. A driver attempts to park his car next to your new car and although there are a lot of parking places nearby, he accidentally crashes into your car and causes a lot of damage.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) get out of your car and yell at him for being so incompetent
b) despite feeling very angry, you calmly exchange information with him
c) try not to get angry, and focus on the details of exactly what happened, what damage, and what info you need for the insurance company.

d) consider that the driver might be new

26. The day before an important exam a good friend of yours borrows an important book that is not available anywhere, promises to return it in the evening, but does not do so. Later you find out that he had no intention of returning the book before the exam.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) not mention it, but inside you would still be angry
b) focus on how well you're still doing in your courses
c) remind yourself that these kinds of things show you who your real friends are
d) tell the friend that he is a jerk and you don't want to be friends anymore

27. You hired a secretary although her recommendations were dubious. One day you discover that she uses the office stationary for her personal correspondence.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) focus on her positive qualities
b) tell yourself that a lot of people use office supplies, no use getting upset
c) tell her to stop
d) not say anything, but it would still irritate you

28. A certain professor is unjustly strict and gives low grades. You work hard on a term paper, and as expected, get a low grade.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) consider that maybe you did actually miss something important on the exam
b) complain to the professor
c) think to yourself how unfair it is that you must suffer because of the professor
d) acknowledge that it's not worth getting upset, because everybody else who worked hard got a low grade too.

29. You ask your neighbor to buy something for you in the drugstore, and he forgets to do so.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) tell him just how much you needed the item
b) tell him it's ok, even though you're really annoyed
c) go get the medication yourself
d) understand that everybody forgets from time to time, so try not to feel angry

30. You go with your family to a restaurant where the food is superb and prices are low, but the service is terrible. There are many people in the restaurant; you wait a quarter of an hour and the waiter has not yet come to your table to take your order.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) wait quietly, getting more and more angry
b) focus on how good the food smells
c) consider that the staff are very busy
d) complain to the manager

31. Your boss has given an important and well-paying job to an extended family member of his/hers. You find this out from a memo that you read while alone in your office. You were interested in the job yourself, and your boss had actually promised it to you. The person who got the job has neither the experience, nor the academic qualifications, that you clearly possess.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) focus on your work and try not to dwell on the situation
b) think that maybe new employee really needed a job
c) tell co-workers what a jerk the boss is
d) say nothing, despite feeling really angry

32. You are on your way to a movie with friends. You are all hungry and pressed for time, so you decide to stop at a fast food restaurant. As you and your friends are all waiting to order, the counter person, who barely looks old enough to hold a job, is just chatting on the phone. You try repeatedly to get his/her attention for service, but he/she ignores you completely.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) think maybe the person is new and poor training is not his/her fault
b) yell at the employee to hurry up
c) stand there feeling angry
d) look around and see if there are other people waiting, check the menu board again

33. You are in a seminar class about to receive verbal feedback regarding a recently submitted term paper. You had committed a lot of time and effort to this report and, as such, you feel very proud of your work. However, in front of your classmates, your professor informs you that your paper is very unsatisfactory, and he/she actually begins to make fun of your apparent lack of ability.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) go to the professor later and inform him/her that you don't appreciate being made fun of
b) angrily sit there thinking of all the things you'd like to say, but can't
c) try to attend to the valid criticisms of your work rather than become angry about the professor embarrassing you
d) think that this is just one professor—other profs think your work is good

34. You are meeting with your professor during one of his/her office hours to discuss a recently submitted term paper. You had committed a lot of time and effort to this report and, as such, you feel very proud of your work. However, during the meeting, your professor informs you that your

report is very unsatisfactory, and he/she actually begins to make fun of your apparent lack of ability.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) angrily sit there thinking of all the things you'd like to say, but can't
b) try to attend to the valid criticisms of your work rather than become angry about the professor embarrassing you
c) think that this is just one professor—other profs think your work is good
d) go to the professor later and inform him/her that you don't appreciate being made fun of.

35. At your part-time job, a new employee (who is just 16 years old) has been hired and you are told to train this new person. The new employee has been given the only key and has agreed to meet you at work to let you in. You are on time, but the new employee does not show up. You wait for over one hour because there are important things scheduled that need to get done that morning. You have no idea why this person has failed to show up, and no one has notified you of any change in plans.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) remind yourself that at least you were there even if this person was not, so it's their problem
b) consider that the new employee ran into an emergency
c) call the new employee and yell at him/her over the phone
d) stand there thinking angry thoughts

36. You are in the university library having a private discussion with a friend about a controversial topic that has been in the news lately. You are trying to explain your side of the issue to your friend. Someone sits down at a table nearby just as you are explaining the most offensive details of the issue. This person overhears you and then loudly accuses you of being a racist. The accuser is a student that you recognize from one of your classes.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) think about how people can have mistaken impressions when they hear things out of context
b) yell back they don't know what they're talking about
c) say nothing, but think about how ignorant that person really is
d) concentrate on your discussion with your friend

37. You have a major class assignment, which must be done in a group. Your group members divide up the work on the assignment evenly. The day before the deadline, a fellow group member informs you and the rest of the group that he/she did not do his/her part. You know that it is now too late to complete the project and you and all the others will now miss out on at least 30% of the total class mark.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) tell that group member how angry you are and kick them out of the group

b) despite feeling really angry with the person, try not to show how it and at least get along while the group is together
c) think about how at least the rest of you did your work so it's not a total loss
d) consider that perhaps there were some exceptional circumstances that caused the member to not complete his task

38. You are participating in a class discussion when you make a comment contrary to the general tone of the discussion. Your friend speaks up and agrees with you. You are quite knowledgeable on the topic because you have recently written a paper on the topic for another course, so you are able to back up your comment with several facts. The professor dismisses your comment by telling you that your argument is invalid and he/she redirects the discussion.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) sit quietly thinking the professor is a jerk
b) think about how even though the professor did not agree, you made some good points and at least some people agreed with you
c) consider that maybe your argument isn't valid or could be improved
d) interject and insist that the professor cannot simply ignore you on this

39. You are out on a dinner date with your new partner (boyfriend/girlfriend). You have both ordered your meals. Your date notices that his/her former boyfriend/girlfriend is sitting alone at another table and he/she leaves you to go over and say hello. As you sit alone waiting for your meal to arrive, they are engrossed in an intimate conversation for over twenty minutes and they seem to be enjoying flirting with each other.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) focus on enjoying your meal and the ambience of the restaurant
b) think that perhaps the conversation is quite ordinary, not romantic
c) get up, tell your date you're not interested in them anymore and leave
d) not let it show that you're annoyed since you're trying to make a good impression

40. You are driving downtown after school one day. It is rush hour and you are driving down one of the busiest streets, taking great care because there is heavy traffic. Suddenly, a car enters the road dangerously from a side street, cutting you off, and almost causing you to have an accident. You notice that the car that cut you off had a large "STUDENT DRIVER" sign on the roof.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) note that you need to watch out for student drivers and compliment yourself for avoiding disaster
b) honk your horn at the student to let them know just how angry you are for their carelessness
c) do nothing, but grumble about it the rest of your drive
d) focus on driving right now, forget past encounters

41. You are bicycling across campus. You are in a hurry to get to class, but you are being careful because the streets are crowded with other students trying to get to their own classes. Another cyclist nearly collides with you and, while cycling away, shouts at you to watch where you are going.

Not at all angry 1 2 3 4 5 6 7 *Extremely angry* Damage: H / L Intentionality: H / L
Expectedness: H/ L

You would:
a) yell back at the other cyclist
b) say nothing, thinking of how stupid the other cyclist is
c) think about all the people you haven't collided with
d) consider your own share in contributing to accidents

Vancouver Index of Acculturation

VIA

Please answer each question as carefully as possible by circling *one* of the numbers to the right of each question to indicate your degree of agreement or disagreement.

Many of these questions will refer to your *heritage culture*, meaning the culture that has influenced you most (other than North American culture). It may be the culture of your birth, the culture in which you have been raised, or another culture that forms part of your background. If there are several such cultures, pick the one that has influenced you *most* (e.g., Irish, Chinese, Mexican, Black). If you do not feel that you have been influenced by any other culture, please try to identify a culture that may have had an impact on previous generations of your family.

Please write your *heritage culture* in the space provided._____

Use the following key to help guide your answers:

Strongly Disagree		Disagree		Neutral/ Depends		Agree		Strongly Agree
1	2	3	4	5	6	7	8	9

1.	I often participate in my *heritage cultural* traditions.	1 2 3 4 5 6 7 8 9
2.	I often participate in mainstream North American cultural traditions.	1 2 3 4 5 6 7 8 9
3.	I would be willing to marry a person from my *heritage culture.*	1 2 3 4 5 6 7 8 9
4.	I would be willing to marry a North American person.	1 2 3 4 5 6 7 8 9
5.	I enjoy social activities with people from the same *heritage culture* as myself.	1 2 3 4 5 6 7 8 9
6.	I enjoy social activities with typical North American people.	1 2 3 4 5 6 7 8 9
7.	I am comfortable working with people of the same *heritage culture* as myself.	1 2 3 4 5 6 7 8 9
8.	I am comfortable working with typical North American people.	1 2 3 4 5 6 7 8 9
9.	I enjoy entertainment (e.g., movies, music) from my *heritage culture.*	1 2 3 4 5 6 7 8 9
10.	I enjoy North American entertainment (e.g., movies, music).	1 2 3 4 5 6 7 8 9
11.	I often behave in ways that are typical of my *heritage culture.*	1 2 3 4 5 6 7 8 9
12.	I often behave in ways the are 'typically North American.'	1 2 3 4 5 6 7 8 9
13.	It is important to me to maintain or develop the practices of my *heritage culture.*	1 2 3 4 5 6 7 8 9
14.	It is important to me to maintain or develop North American cultural practices.	1 2 3 4 5 6 7 8 9
15.	I believe in the values of my *heritage culture.*	1 2 3 4 5 6 7 8 9
16.	I believe in mainstream North American values.	1 2 3 4 5 6 7 8 9
17.	I enjoy the jokes and humor of my *heritage culture.*	1 2 3 4 5 6 7 8 9
18.	I enjoy typical North American jokes and humor.	1 2 3 4 5 6 7 8 9
19.	I am interested in having friends from my *heritage culture.*	1 2 3 4 5 6 7 8 9
20.	I am interested in having North American friends.	1 2 3 4 5 6 7 8 9

Self Construal Scale

Self-Construal Scale

Instructions: Please respond to the following items by circling the number using the Likert scale, in which 1 = strongly disagree and 7 = strongly agree.

1. I have respect for the authority with whom I interact
   1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

2. It is important for me to maintain harmony within my group
   1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

3. My happiness depends on the happiness of those around me
   1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

4. I would offer my seat in a bus to my professor
   1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

5. I respect people who are modest about themselves
   1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

6. I will sacrifice my self-interest for the benefit of the group I am in
   1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

7. I often have the feeling that my relationships with others are more important than my own accomplishments
   1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

8. I should take into consideration my parents' advice when making education/career plans
   1 2 3 4 5 6 7

Strongly Disagree — Strongly Agree

9. It is important to me to respect decisions made by the group
1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

10. I will stay in a group if they need me, even when I'm not happy with the group
1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

11. If my brother or sister fails, I feel responsible
1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

12. Even when I strongly disagree with group members, I avoid an argument
1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

13. I'd rather say "No" directly, than risk being misunderstood
1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

14. Speaking up during a class is not a problem for me
1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

15. Having a lively imagination is important to me
1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

16. I am comfortable with being singled out for praise or rewards
1 2 3 4 5 6 7
Strongly Disagree — Strongly Agree

17. I am the same person at home that I am at school
1 2 3 4 5 6 7
Strongly — Strongly

Disagree Agree

18. Being able to take care of myself is a primary concern for me
1 2 3 4 5 6 7
Strongly Strongly
Disagree Agree

19. I act the same way no matter who I am with
1 2 3 4 5 6 7
Strongly Strongly
Disagree Agree

20. I feel comfortable using someone's first name soon after I meet them, even when they are much older than I am
1 2 3 4 5 6 7
Strongly Strongly
Disagree Agree

21. I prefer to be direct and forthright when dealing with people I've just met
1 2 3 4 5 6 7
Strongly Strongly
Disagree Agree

22. I enjoy being unique and different from others in many respects
1 2 3 4 5 6 7
Strongly Strongly
Disagree Agree

23. My personal identity independent of others, is very important to me
1 2 3 4 5 6 7
Strongly Strongly
Disagree Agree

24. I value being in good health above everything
1 2 3 4 5 6 7
Strongly Strongly
Disagree Agree

Appendix B

English Harassment Scripts

Script #1: "Look [participant name], you're always subtracting *way too slow*. You've got to do it *much faster*. Continue where you stopped."

Script #2: "[participant name], you're *still too slow and also inaccurate*. This *can't* be your best. Now try it again from where you left off."

Script #3: "You're obviously *not good enough* at doing this, *now try harder*. Keep going!"

Appendix C

Debriefing Manipulation Check

DEBRIEFING FORM

1. Do you have any impressions or comments about the study? Is there anything you feel we should know about? (*You are trying to find out whether they saw through the manipulation)*

2. How do you feel about the task?

*** Let them know the counting task is difficult for everyone, and tell them they did very well on the task****

3. Do you have any other questions or comments in regards to the study?