

**RELATIONS BETWEEN OPTIMISM, STRESS AND HEALTH
IN CHINESE AND AMERICAN STUDENTS**

By

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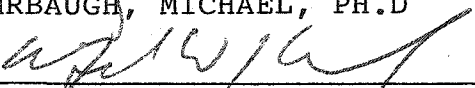

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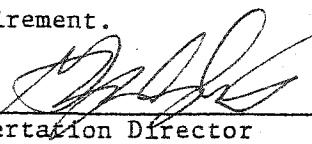
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ABSTRACT

Previous research indicates that optimism may have considerable positive effects on mental and physical health. However, only a few previous studies have explored differential effects of optimism on health and none have examined the effects of different levels of optimism. This study supports the importance of optimism on health in a sample of 238 Chinese college students and 206 American college students. Comparative results indicated that there were significant differences on measures of two levels of optimism, pessimism, and indicators of health. In general, American students were found to express more dispositional optimistic belief, better mental health, and lower state and trait stress levels than Chinese students. However, there was no difference in the level of explanatory optimism. In addition, there was no significant difference between Chinese subjects' scores of overall health and American students' scores. Chinese students demonstrate a "middle optimism" style. In addition, both optimistic styles in this study were found to be significantly related to stressful states measured by State Anxiety (Y1) Scale and Trait Anxiety Scale (Y2) in Chinese students. In contrast, in American samples, only the dispositional optimism, the *big* optimism, was found significantly but negatively related to the trait stress. In this study, the association between optimism and health - either little or big optimism - were not different between the two cultures, while the association between optimism and stress was quite different between the two cultures.

In the Chinese students, the association between big optimism and stress was stronger than in the American students.

Both moderate and mediate models were tested to clarify some of the mechanism among culture, gender, optimism/pessimism, stress and health. Culture was moderating the relation between optimism (*big vs. little* optimism) and three health components. Gender on the other hand, had no moderating effect in the relationship of *big vs. little* optimism/pessimism on any health outcomes. The prediction that stress is the moderator in the prediction of optimism on health was not supported in both cultural groups. However, either *big or little* optimism were found fully mediated by state or trait stress on overall health conditions as well as the physical and mental health, except that the *little* optimism was not found to be related to mental health. Among the *American* students, on the other hand, optimism as dominate predictor directly effected reports of health. Stress was not found to be a mediator in the predictive relationship of optimism and health in the American students.

CHAPTER 1. LITERATURE REVIEW AND RATIONAL

"Individuals are the authors of their own evolution...psychological selection is motivated not only by the pressures of adaptation and survival, but also by the need to reproduce optimal experiences. Whenever possible, people choose behaviours that make them feel fully alive, competent, and creative."(Fausto Massimini & Antonella Delle Fave, 2000).

Recently, there has been substantial progress in understanding the contribution of psychosocial factors to physical health. One such factor, optimism, or the expectation of positive outcomes, has been tied to better physical health (Scheier, Matthews, Owens, Magovern, Lefebvre, Abbott, & Carver, 1989) and more successful coping with health challenges (Carver, Pozo, Harris, Noriega, Scheier, Robinson, Ketchan, Moffat, & Clark, 1993; Stanton & Snider, 1993; Segerstrom, Taylor, Kenedy, Fahey, 1998). In the past 15 years and especially since the new millennium, research on positive belief and its implication for people's health and life have drawn a significant amount of attention by researchers. The Journal *American Psychologist* (Jan. 2000) collected 15 articles intensively discussing the relevant issues related to positive psychology [American Psychology Association (APA), 2000]. Actually, several recent theories about optimism have addressed that as an inherent aspect of human nature but with individual differences, optimism can be highly beneficial to various aspects of life, such as good mood, good morale, perseverance, effective problem solving; academic and occupational achievement. Further research has confirmed its relationship to good health, and to a high quality of life (Scheier & Carver, 1992; Scheier, 1993; Seligman, 1998; Peterson, 2000).

Optimism has demonstrated some effects on stress reduction and facilitated psychological functioning as well. People who hold generalized positive expectancies (dispositional optimists) have reported less mood disturbance in dealing with a variety of stressors, including adaptation to college (Aspinwall & Taylor, 1992; Scheier & Carver, 1992), breast cancer biopsy (Stanton & Snider, 1993) and breast cancer surgery (Carver et al., 1993). Other studies indicate that optimists in general have better quality of life after surgery (Fitzgerald, Tennen, Affleck, & Pransky, 1993; Scheier et al., 1989). Cohen et al., (1989) found that optimistic individuals possessed more T lymphocyte immune cells than pessimists to respond to stressors lasting less than one week. Other research has found evidence that being optimistic has better health outcomes with respect to HIV, especially with slower immune decline (Kemeny, Reed, Taylor, Visscher, & Fahey, 1998), later symptom onset (Reed, Kemeny, Taylor, Wang & Visscher, 1994) and longer survival time in AIDS (Reed, Kemeny, Taylor, Wang, & Visscher, 1994).

However, previous research indicates that the relationship between coping and health can be influenced by cultural factors. Different cultures may have different coping strategies to similar situations, and evaluation of health outcomes may also vary across cultures (Lee, 1989; Yu, 1999). What peoples' expectations can differ as well. Therefore, discussing the relationship between optimism, and health outcomes becomes more complicated, as suggested in several recent reviews (e.g. Scheier, & Carver, 1992; Scheier, Carver, & Bridges, 1993). Despite the abundant evidence from Western studies,

a similar effect has rarely been reported in other cultures. Few cross-cultural studies confirmed the benefits of optimism in the Asian population and some of the research reported mixed indications. One of the goals of this study was to further examine the relationship between optimism and health in Chinese and American cultures.

As background, a brief literature review on the studies of optimism, its relationship to health and coping and the effects of culture would provide basic understanding to guide the research in the future.

1.1. Optimism and cross cultural effects

Among the studies on optimism, two optimism scales have been most widely used-the Attributional Style Questionnaire (ASQ) (Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982) and the Life Orientation Test (LOT) (Scheier, & Caver, 1985). Both instruments have been widely used in English speaking populations as well as non-English speaking populations. Their implications for health have also been expressed in many studies. The following documentation presents some research using each instrument and its outcome in a cross-culture setting.

1.1.1 Attributional Style---Explanatory Optimism

Over the last decade evidence has accumulated that individuals differ in attributional style. It was also found that one psychological risk factor for people's depression is attributional style (Seligman, 1988). In the research of attributional style, optimism has been described as the habit of thinking that good events are caused by stable, global, and internal factors, whereas bad events are caused by unstable, specific, and external factors. It was found that optimistic people deal with depression better and their health is better than that of pessimists (Buchana, & Seligman, 1995; Peterson, Seligman, & Vailant, 1988; Seligman, 1991). Research also indicates that people from some cultural groups with a more optimistic attributional style express less helplessness and depression when facing uncontrollable negative life events. However, do Chinese people differ compared with other cultural group in attributional style? Would attributional style be a risk factor for depression in the Chinese population?

Several studies have approached Asian people's attributional styles. Crittenden & Lamug (1988) compared undergraduate students from Taiwan, Korea, the Philippines and the United States. All groups exhibited similar attribution patterns. For example, all of the groups tended to attribute life events to relatively stable causes. Anderson (1999) conducted a cross-cultural comparison of attribution and depression between Chinese and American undergraduates with the Attributional Style Assessment Test (Anderson et al., 1983). He found that overall there were few cultural differences in the relationship between attributional style and depression.

The other two studies specifically investigated the relationship between attributional style and depression. Zhang and Wang (1989) examined the concurrent correlations between the three dimensions of the attributional style and depression in Peking University undergraduate students. They found that subjects' depression was significantly correlated with their composite ASQ scores. In addition, Zhang and Wang calculated the difference scores between good and bad events on all three dimensions and found that depression was significantly correlated with the difference scores on the global and stable dimensions but not on the internal dimension.

Lee and Seligman (1997) compared the scores of the ASQ from 257 White American college students, 44 Chinese-Americans and 312 Chinese college students from Mainland China. They concluded that both American and Chinese-American college students were more optimistic than Mainland Chinese students. However, they also found that the Mainland Chinese students were less self-blaming and less likely to attribute their failure internally; while the American students more likely to attribute their success to themselves and more often attribute their failure to other people or circumstances than did mainland Chinese and Chinese American students.

Some researchers have investigated the relationship between attributional style and depression in Chinese children. Yu and Seligman (1999) tested some children in China and in the United States with the Children's Attributional Style Questionnaires (CASQ) (Seligman, 1984). They found that Chinese children's attributional style have a stable

correlation with their depressive symptoms, similar to the American children in the study. The change of the attributional style in both groups leads to the direct change of depressive symptoms. These results indicate that the relationship between attributional style and depression has cross-cultural effects. Au (1995) also found a significant correlation between academic attributional styles measured by CASQ and hopelessness, which was highly correlated with depression, measured by the Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974), in Hong Kong children. The stability scales had the strongest correlations with depression, followed by the globality scales. The internality scales had the weakest correlations. These data suggest that the stable and the globality dimensions are more significant than the internal dimension in the relationship between attributional style and depression.

Overall, the results from previous research repeatedly indicate that a maladaptive attributional style interacting with negative life events could make people vulnerable to depression, even in cross cultural studies. It was also found that compared to Western samples, the Chinese sample demonstrated more pessimistic features based on the previous measurements.

1.1.2. Life Orientation Test –Dispositional Optimism

The Life Orientation Test (LOT) was first developed by Scheier and Carver (1985) to assess the construct of dispositional optimism, which were defined as positive outcome

expectations. During the past decade, research using the LOT has demonstrated a significant amount of evidence that higher scores on the test have been shown to be associated with better health outcome in different populations, such as coronary patients (Desharnais, Godin, Jobin, Valois, & Ross, 1990; Scheier & Carver, 1992, 1993), gay men at risk for AIDS (Taylor, Kemeny, Aspinwall, Schneider, Rodriguez, & Herbert, 1992), and college students under academic stress (Aspinwall & Taylor, 1992).

The LOT has been revised (LOT-R) by Scheier, Carver, and Bridges (1994) in response to some controversies in using LOT in research. To assess dispositional optimism among Hong Kong Chinese more accurately a Chinese version of the LOT-R (C-LOT-R) has been developed (Cheng, 1997). It was found that the observed pattern of correlations between the test, symptom and effect reports were similar to that reported in prior studies with Western samples (Lai, 1994, 1995, 1997; Lai & Wan 1996). Optimistic students report fewer physical symptoms and negative effects, but more positive emotions (Lai, 1994, 1995, 1997, 1998; Lai & Wan, 1996; Cheng, Lee, Yu, 1998). Optimistic students tend to use more adaptive strategies to cope with academic examinations (Lai & wan, 1996).

Using this Chinese version-C-LOT-R, Lai also found that the dispositional optimism is an important personal resource for Chinese woman coping with unemployment in Hong Kong, and furthermore, optimistic individuals coped better with stress during the unemployment period (Lai & Wong, 1998).

There have been other studies on optimism using different optimistic scales. Chang (1996) used his own measurement of life orientation, which examined cultural differences in optimism and pessimism between Asian American and Caucasian American students. Based on the separate optimism and pessimism scores, Asian Americans were found to be more pessimistic, but not less optimistic, than Caucasian Americans. This is consistent with previous findings. These findings are consistent with the view that elevated pessimistic thinking is a distinct, culture specific component of the Asian population, but not in the Caucasian population.

Despite the evidence indicated by studies using either the ASQ, LOT-R, or other instruments, the Chinese population presented outcomes similar to Western samples. Researchers also noticed some possible problems. Lai (1998) emphasized that researchers should pay more attention to the optimism in Chinese people to identify a more specific dimension if using LOT-R. He argued that several aspects of the results reported in his study deserve further investigation. First, there are concerns with the potential differences in the conceptualization of optimism between Western and the Chinese cultures. In addition the revised version of the LOT is rarely used in research yet. Its relation with several other conceptually related scales (e.g. trait anxiety, neuroticism, and self-esteem) is only moderately reported, but it is highly correlated with the LOT (Scheier, Carver, & Bridges (1994). Another concern is that, although studies on optimism using the LOT have proliferated during the past decade, most of these have been carried out with

English-speaking samples in the West. The limited number of studies performed by Hong Kong Chinese was also based on these measures, which were developed in a Western culture. Lee (1998) addressed similar concern in one of his studies that he used the Chinese version ASQ to assess the optimistic beliefs in Chinese. As a consequence, the important differences in the conceptualization of optimism between Chinese and Western culture are down played. Therefore, although it is encouraging, the data mentioned here must be interpreted with caution in view of a major limitation concerning the use of the English tests among respondents who are not native English speakers.

In a review of Chinese wisdom of health, Koo (1987) discussed that for the Chinese, being optimistic means to be able to accept one's current life conditions positively, in addition to expecting good things to happen in one's life. In comparison, the definition of optimism by Scheier, & Carver (1985, 1987) was rooted on positive outcome expectancies. In other words, optimism as expressed by either the LOT or the ASQ may not be well suited to the Chinese culture. How important the central outcome expectancies are in the concept of optimism in the Chinese culture remains uncertain. This indicates one of the major limitations of using the commonly used optimistic scales to assess Chinese samples. A more culturally sensitive measurement of optimistic concept is needed for research in the future.

1. 2. Optimism, Stress and Health

There is a significant amount of research which indicates that positive emotional states are linked to positive physiological changes (Futterman, Kemeny, Shapiro, & Fahey, 1992 & 1994; Stone, Cox, Valdimarsdottir, Jandorf, & Dele, 1987; Stone, Neale, Cox, Napoli, Valdimarsdottir, & Kennedy-Moore, 1994; & Stone, Marco, Cruise, Cox, & Neale, 1996). Perhaps, then, positive beliefs may effect physiological changes positively. Studies of stress have lead investigators to further appreciate the important role that thoughts and beliefs play in our lives. Stress has been associated with illness in a number of well-controlled studies. Researchers (Peterson, 2000) have discussed a variety of thinking styles that may magnify the stress effects of events. They found that unpredictable and uncontrollable events cause people to become more stressed. A pessimistic view towards life events increases stress level, and thus, will more likely produce illness. On the other hand, positive thinking may serve as a safeguard against the health-threatening effects of stress. In contrast, it was found (Aspinwall & Taylor, 1997; Taylor, Kemeny, Aspinwall, Schneider, Rodriguez, & Herbert, 1992) that optimism, a sense of personal control and positive self-esteem have been linked to active coping which enable people to fight against or offset stressful events before they cause permanent damage. The potential to cope actively and proactively with respect to health may help to lessen adverse physiological effects of stress. A study by Segerstrom, Taylor, Kemeny, and Faheny (1998) provide more evidence to support this hypothesis. In this study, Segerstrom et al. found that optimism is highly associated with a higher number of CD4 (helper) T cells in stressed law school students. This was mediated partially by the positive mood associated with optimism.

Philosophers and scientists have also noted that exposure to trauma and other stressful life events does not have to develop into depression and despair (Frankl, 1963; O'Leary & Ickovics, 1995; Schaefer & Moos, 1992). Increasing evidence indicate that people can gain many positive outcomes from stressful events, such as gaining a deeper understanding of the meaning of life, developing better coping skills, enhancing one's social resources, establishing important personal priorities, and recognizing the value of social relationships (Leedham et al., 1995; Petrie, Buick, Weinman, & Booth, 2000; Rose et al., 1995; Shirfen, 1996). Some researchers emphasize that optimism may improve the ability to find meaning in one's life experiences, which is a valuable psychological resources and is believed to be associated with mental health (Franklin, 1963; Seligman, 1998; Taylor, 1989). These psychological resources become especially important when people confront risk –taking or threatening events (Taylor, 1983). In a study focused on individuals adjusting to HIV, Taylor et al., (1992) found that HIV- positive gay men who were unrealistically optimistic about the future course of their infection were better adjusted. This line of research indicates that these resources may act as buffers against the reality of advancing disease and death to the point that people face such experiences not only with psychological benefits but also with more resilient physical resources as well.

Consistent with this perspective, in several studies, researchers have found a relationship between dispositional optimism and lowering stressful events (Curbow, Somerfield,

Baker, Wingard, & Legro, 1993; Davis, Nolen-Hoeksema, & Larson, 1998; Tedeschi & Calhoun, 1996; Tennen, Affleck, Urrows, Higin, & Mendola, 1992). Scheier, Weintraub, and Carver (1986) attributed the health benefits associated with optimism to adaptive coping. Optimists, in comparison to their less optimistic peers, are more likely to use adaptive problem-focused strategies and less likely to engage in cognitive or behavioural avoidance during stressful encounters. Studies in which path analysis was pursued have served to confirm the significant mediating effect of coping (Scheier et al., 1989; Carver, Matthews, Owens, Magovern, Lefebvre, Abbott, & Carver, 1993).

Some other studies investigated the relationship between explanatory style and coping. Lin and Peterson (1990) tested the possibility that pessimistic individuals react helplessly regarding their symptoms, thereby aggravating disease. Ninety-six undergraduates were asked to complete measures of explanatory style, habitual response to illness and ways of coping during their most recent episode of illness. They found that subjects who explain events pessimistically, with internal, stable and global causes, reported more frequent illnesses during the past year and rated their overall health more poorly than those who habitually turn to external, unstable and specific explanations. When ill, the optimistic subjects would take more active steps to combat their illness than the pessimistic subjects. Results indicate that one channel leading from a pessimistic explanatory style to poor health is common (e.g. passivity in the face of disease).

Shelley Taylor (Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000) and her collaborators further argue that unrealistic optimistic beliefs about the future can protect people from illness. The results from numerous studies of patients with life-threatening diseases, such as AIDS, suggest that those who remain optimistic show symptoms later and survive longer than patients who confront reality more objectively. According to those authors, the positive effects of optimism are mediated mainly at a cognitive level. Taylor pointed out that, an optimistic patient is more likely to practice habits that enhance health and to enlist social support. It is also possible, but not proven, that positive affective states may have a direct physiological effect that retards the course of illness. As Taylor et al. notes, this line of research has enormously important implications for ameliorating health through prevention and care.

Despite the exciting outcome regarding optimistic beliefs on health and coping, there are few studies testing this hypothesis in the Chinese population. There is a cross-cultural challenge. In past studies there has not been enough data to demonstrate the cultural relevance of the adaptive values of personality and coping strategies. In a cross-cultural study (Gan Yiqun 1999), 616 university students (318 from Hong Kong and 298 from Hawaii) were invited to complete a series of questionnaires including Chinese Personality Assessment Inventory (CPAI), Life Satisfaction Questionnaire, the self-construal scale, and NEO-FFI personality test. Meanwhile, two scenarios were presented to the participants and they were required to fill in the C-H Way of Coping Inventory. Results indicated that the factor "relationship concern" has a different association with mental

health in the Chinese vs. the American culture regarding coping styles. Moreover, the combination of “relationship concern” and high “social potency” leads to a healthy personality profile. On the other hand, the combination of “relationship concern” with low “social potency” is related to somatization. This study improves our understanding of adaptive personality traits and coping styles in collective cultures, as compared to those from individualistic culture. These findings have implications for the practice of education and counselling in Asian countries.

In a book examining the development of ethnic identity and acculturation model of Chinese-Americans, Sue, Mak, Sue.(1989) attempted to relate the process of ethnic identity development and acculturation to mental health. It was found that the attitudes of an individuals' ethnicity, self-concept and their relations with the dominant culture affect their psychological adjustment and functioning. Lai (1995) found the LOT moderates the relation between hassles and somatic complaints. Lai & Wan (1996) discovered that optimistic students were found to use more adaptive strategies than their less optimistic peers to cope with academic examinations. Cheng (1997) confirmed again that the LOT could affect coping strategies, which in turn produce outcomes that are beneficial for health (Carver et al., 1993; Friedman, Nelson, Baer, & Lane, 1992; Scheier & Carver, 1987; Scheier et al., 1989). However, more research that is designed to clarify the concepts of optimism in the Asian population and their relationship to health and stress coping is needed.

1.3. Different Optimisms

Despite the research on optimism and its implication for health that have been conducted in Western and Asian countries in the past decades, studies to date have rarely compared more than one optimistic measurement and its impact in the same study. Therefore, after more than 30 years of studies focusing on optimism, there continues to be a lack of knowledge about the possibility of different optimistic measures targeting different components of optimism that they have different patterns of correlations. This line of research might be helpful in explaining some of the outcomes in the optimistic studies, especially those in cross-cultural settings. It may also significantly improve understanding about optimism in other cultures, such as in China, and the relationship between their optimism and health.

Tiger (1979) and Peterson (2000) argued that there are different levels of optimism in their book - *Little Optimism vs. Big Optimism*. Based on Tiger's explanation, *little* optimism focuses on detail and specific expectations about positive outcomes (e.g., *I will get a raise this month*), while *big* optimism refers to larger and less specific expectations (e.g., *our nation is on the edge of something great*). The big vs. little concepts of optimism seem to indicate that there are different levels of optimism and, further, that the implication of optimism may be different depending on its level. *Big* optimism seems to have more social acceptable expectation content, which is highly influenced by a broad cultural context, while *little* optimism leads to expected outcomes because it affects

specific actions that are applicable in concrete situations. In other words, the mechanisms behind the influence of optimism on some outcomes may depend on the different focus of that level of optimism.

This hypothesis has been tested in several studies. One of the remarkable correlates of optimism is good health (e.g., Peterson, 1988; Peterson, Seligman, & Vaillant, 1988; Scheier, 1987, 1992). This connection seems to happen through different channels, such as immunological robustness (Kamen-Siegel, Robin, Seligman, & Dwyer, 1991; Scheier, Matthews, Owens, Bridges, Magovern, & Carver, 1999; Segerstrom, Taylor, Kemeny, & Fahey, 1998; Udelman, 1982), absence of negative mood (Weisse, 1992), and health promoting behaviour (Peterson, Seligman, Yurko, Martin, & Friedman, 1998). The clarification of big -vs.- little optimism may improve our understanding of how it works for the benefit of well being (Peterson & Bossio, 1991). Doctors might better predict the course of a severe illness such as AIDS or cancer by big optimism working through the immune system and mood, whereas by changing behaviour and life style, we might prevent the onset of disease and the likelihood of traumatic injuries which is more influenced by little optimism (Peterson, et al., 1998).

These two optimisms are no doubt correlated; however, they seem to be created from different pathways. Therefore we need different strategies to approach them. Based on the definition of *big* -vs. -*little* optimism and context of different commonly used optimism instruments, the dispositional optimism measure of Scheier & Carver (1985)

and the Hope Measure of Snyder, Simpson, Ybasco, Borders, Babyak, & Higgins (1996) were considered index of *big* optimism because it expected some generalized responses about the future. Assessment of attributional style, seem to belong to the range of *little* optimism because it pays more attention on some specific causal explanations for concrete events.

Peterson (2000) hypothesized that *big* optimism might be more effective in promoting health promotion than little optimism, and *big* optimism may have a more interpersonal characteristic than little optimism, which has a more individualized component. He suggests that optimism should not be linked just to selfish concerns, and it need not relate just to individual benefits (Wallach & Wallach, 1983). *Big* optimism encourages society, and society, in return, provides people more options to fulfill their needs and therefore continue their optimism about life (Seligman, 1988). *Big*-optimism seems to have more hope than little optimism, which has greater pressure to be accurate. Considering optimism in the United States has long been entangled with individualism, does this indicate Americans might be more little optimistic, while Asian culture, which promotes interpersonal connection and the belief of unity of *Nature and –Human Being*, might utilize more big optimistic mechanism in their daily life.

1.4. The Chinese Conceptualization of Optimism

Previous studies in anthropology, psychology, and other sciences suggest that the Chinese are more group-oriented, whereas the Americans are more individual-oriented (Lee, 1993a; Lee & Ottatis, 1993; Triandis, 1995; Triandis, McCusker, & Hui, 1990). Eastern cultures are a collective culture. Asian people, the Chinese, in particular, are well known for their collective mind. They are also considered as a culture with a better health promoting strategy. May Chinese have more *big* optimism and therefore, actually facilitate their health? This question needs to be investigated further.

In order to answer this question, let us review some relevant studies. So far there are only a few studies using the original English version of the optimistic instruments, which have been conducted among Chinese in Hong Kong, mainland and the immigrants in the United States (Lai, 1994, 1995; Lai & Wan 1996; Chang, 1996; Lee, 1997). These findings are consistent with the view that elevated pessimistic thinking is a distinct, culture specific component of Asian sensibility, but not Caucasian. In a cross-cultural optimism study, Lee et al. (1997) also concluded from his data that the Americans are more optimistic than the Chinese subjects (both American Chinese and Mainland Chinese). However, he argued that the optimism difference between the mainland Chinese and the Caucasian Americans might be largely due to wealth or freedom. He suspected that the result was caused by modernization. Chang (1996) found the Asian Americans to be more pessimistic, but not less optimistic, than the Caucasian Americans. This result indicates a hint of misperception.

Some cross-cultural research has tried to analyze the personality feature in that culture to understand the outcome of previous studies. They indicated that collectivistic cultures are generally more modest (or self-effacing) than individualistic cultures (Triandis, 1990, 1994, 1995). Individualistic cultures may promote the self, whereas, collectivist cultures may promote modesty or self-effacement. In modest (self-effacing) societies, there are very few options about behaviour in any social situation (Hsu, 1983,1985). People habitually turn to misbehaviour more (e.g. *Did I do something that I should not have done?* and *Did I behave correctly?*). Such tendencies of negativity might be reasons for reducing the optimistic scores.

Ruggiero and Taylor (1997) found that minority group members tended to minimize discrimination and attributed their failure to themselves. By perceiving discrimination as a reason for failure, minority group members protected their performance state of self-esteem. In contrast, by minimizing discrimination, they protected their social state of self-esteem and maintained a perception of control in performance and social domains. Results suggest that minority group members minimize discrimination because the consequences of doing so are psychologically beneficial.

This asymmetry effect is consistent with other recent research (Lee, 1993a; Lee & Ottatis, 1993; Triandis, 1995; Triandis, McCusker, & Hui, 1990), which suggests that American culture is more individual-oriented and less group-oriented than the Chinese culture. They also state that Americans perceived themselves to be heterogeneous (i.e. to

be different from others), whereas Mainland Chinese perceived them to be homogeneous (i.e. to be similar to others). Chinese American and Mainland Chinese who are group or situation oriented tended to minimize their distance between themselves and others in order to promote harmony with others by making good events less internal than bad events. Obviously, the above studies did not provide support for the hypothesis that the Chinese might have more *big* optimistic view due to its cultural influence, Chinese are well known for their health philosophy and techniques regarding optimism as being beneficial to health (Koo, 1987). Research on optimism has multiplied during the past decade. However, in previous research, Chinese presented less optimistic characteristics compared to the American subjects. One of the reasons might be that most of these studies were carried out with instruments based on the optimistic concept of Western culture. It indicates that scientific data regarding the optimism-health relation among Chinese is deficient and not valid enough to demonstrate the true mechanism for health in the Chinese culture. As a consequence, the applicability of the concept of optimism, as assessed by either the LOT or the ASQ, to non-Western cultures remains to be investigated. Koo (1980) has reviewed the Chinese folk wisdom and concluded that being optimistic in Chinese means to be able to accept one's current life situation positively, in addition to expecting good things to occur in one's life. As contrast, the conceptualization of optimism of dispositional optimism theory is based on primarily on positive outcome expectancies. The potential difference in the conceptualization of optimism between Western and Chinese cultures might be the reason that the outcome

from previous cross-cultural optimism research is more controversial than the theoretical hypothesis.

1.5. Predictive Models of Optimism on Health

Beyond the belief that optimism and pessimism have a strong connection with health, some previous studies have indicated that the link between optimism and health have been significantly affected, either moderated or mediated, by some third variables, such as negativities (Chang 1996, 2001, 2002) and coping strategies (Change1998). Chang (2000) also provide some evidence that stress is associated with greater maladjustment. He found that PSS (Perceived Stress Scale, Cohen et al., 1983) was significantly and positively related to measure of subsequent psychological symptoms and hopelessness one month later, which provides further evidences to support the common belief regarding the negative effect of stress on health.

Baron and Kenny (1986) distinguished between the properties of the moderator and the mediator variables. Based on their definition, a moderator is a qualitative (e.g. sex, race, class) and quantitative (e.g. level of reward) variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent variables. Specifically, within a correlational analysis framework, a moderator is a third variable that affects the zero-order correlation between two other variables. On the other hand, a given variable may be said to function as a mediator to the

extent that it accounts for the relationship between the predictor and the criterion. Mediator explains how external physical events take on internal psychological significance. Whereas moderator variables specify when certain effects will hold, mediators speak to how or why such effects occur.

Based on Baron's descriptions of moderator and mediator, several variables in this study may function as either moderator or mediator. Cultural difference and gender have long been presented as important variables in studies of optimism (Lee, 1997; Chang 1996, 2002; Lai 1994, 1995, 1996). Studies examining how stress affects the predictive outcome of optimism/pessimism to health have not been reported. Only Chang (1996) found that highly pessimistic Americans used less coping behaviour, whereas highly pessimistic Asian Americans did use more problem-solving behaviour.

1.6. Purpose of the Present Study

Given the above assessment, the main purpose of the present study was to 1) examine the ethnic differences on measures of optimism, pessimism, stress and health. 2) further test the interactions between optimisms, levels of stress (both state and trait level) and indicators of health outcome; 3) examine the impact of different level of optimisms, *big* vs. *little* optimism, on health outcomes and its cross-cultural effect; 4) assess the role of optimism/pessimism in health, including both physical and mental health among two cultural groups with some moderator or mediator.

Consistent with previous findings, the investigator expected that measures of optimism/pessimism, stress and health components would be significantly interrelated with each other for both Chinese and American subjects. However the association between these variables were not expected to be identical for both cultural groups. Different level(s) of optimism, big vs. little optimism (were) expected with different association(s) to the health in two cultural groups. Considering the feature of collective feature in Chinese people, Chinese subjects were expected to express more big optimism than American subjects; in contrast, American subjects were expected to express more little optimism. In addition, consistent with previous findings, Chinese subjects were expected to experience more pessimism, higher stress and poorer health condition(s). Finally, it was predicted that, there are cultural differences in different prediction models of health. Specifically, it was expected that culture and gender would be moderators in the link between optimism/pessimism and health, whereas stress would be a mediator in the link between optimism/pessimism and health.

CHAPTER 2. METHODOLOGY

2. 1. Participants

Two different cultural groups were selected for comparison in this study, Chinese and American. The Chinese group (with 128 female and 110 male students) was recruited from four first year and second year classes in the Department of Education, a University in Beijing in China. The American group was recruited from 3 classes in the Department of Psychology, University of Arizona. There were a total of 215 American students who responded to the survey. Among the 215 American responses, 6 students turned in incomplete questionnaires and 3 students were beyond the required age. Their responses were ruled out of the final analysis. Therefore, a total of 206 (53 male and 153 female) were included in the final subsequent analyses. All subjects' age across both cultures ranged from 18 to 22 years. The mean of Chinese subjects' age was 19.31 years old and the mean of American students' age was 20.47 years old. Participation in this project was voluntary.

2.2 Measurement Instruments

Chinese and American subjects were compared with each other on 4 basic measuring instruments. They were the Life Orientation Test-Revised (LOT-R) for assessing dispositional (big) optimism, Attributional Style Questionnaire (ASQ) for evaluating

explanatory (little) optimism, SF-36 Health Survey for estimating their health condition, and S-T Anxiety Scale for assessing stress.

2.2.1. Measure of Big optimism-LOT: the revised Life Orientation Test (LOT-R) and its Chinese version (C-LOT-R).

The revised Life Orientation Test (LOT-R, Scheier et al, 1994) is a six-item measure (plus four filler items, for a total of 10 items) of individual differences in dispositional optimism-pessimism. Respondents were asked to rate the extent of their agreement to these items using a 5-point Likert-type scale ranging from 0 (strong disagree) to 4 (strong agree). The LOT-R is a brief modified version of the original LOT (Scheier & Carver, 1985) and has been found to correlate .95 with the latter (Scheier et al., 1994). The LOT (Scheier & Carver, 1985) is an eight-item measure (plus four filler items) of individual differences in optimism, or OPT (e.g., "In uncertain times, I usually expect the best"), and pessimism, or PESS (e.g., "If something can go wrong for me, it will"). Respondents are asked to rate the extent of their agreement to these items on a 5-point Likert-type scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). Evidence for constructing validity of the LOT has been reported by Scheier and Carver (1985). For Asian and Caucasian Americans, coefficient alphas were .72 and .75 for OPT and .76 and .77 for PESS, respectively. Higher scores in LOT-R indicate a greater tendency to expect more positive vs. negative outcomes.

The C-LOT-R has been translated from its English version LOT-R in Lai's study (1998). Lai indicated that the C-LOT-R is a psychometrically reliable and valid measure. In Lai's study, the mean is 3.9, SD is 3.3 and the Cronbach α is .70. The re-test after 5 months also received Cronbach α at 0.65. The test-retest coefficient is 0.66, which is closer to the English version test-retest coefficient 0.68 (Scheier et al., 1994). Construct validity, Convergent validity and discriminate validity have been demonstrated as well.

2.2.2 Measure of Small Optimism-ASQ: the Attributional Style Questionnaire (ASQ) and its Chinese version (ASQ-C).

The Attributional Style Questionnaire (ASQ) (Peterson & Seligman, 1984) measures causal explanations for positive and negative events on three dimensions: internality-externality, stability-instability, and globality-specificity (Schulman et al., 1989). There are 12 hypothetical events (6 good events and 6 bad events) within the 36 items of ASQ. Each of these situations is followed by a series of 4 questions in the same order. The First question asks for the one major cause of the events. The remaining three questions are arranged in the same order for each events measure three different dimensions: 1) whether the outcomes were due to something about them or something about other people (Internal or external); 2) will this cause again be present? (Stability or Unstability), and 3) does the cause influence just from this situation or other areas of their life (Globality or Specificity). The subjects will generate their own cause for each of a number of events, and then rate that cause themselves along a 7 – point scale

corresponding to these three dimensions. For a good event, a score of 1 is the lowest or worse possible score, whereas for bad events, a score of 1 is the highest, or best possible score. The scales are anchored so that external, unstable, and specific attributions received lower scores, whereas internal, stable, and global attributions receive higher scores. Several main scores will be received from the final profile: 1) ASQCP= Composite of all Positive events, high numbers mean greater optimism; 2) IP=Internal Attribution of Positive events; 3) SP=Stable Attribution of Positive Events; 4) GP=Global Attribution of Positive Events; 5) ASQCN= Composite of all Negative events, higher numbers mean greater pessimism; 6) IN=Internal Attribution of Negative Events; 7) SN=Stable Attribution of Negative Events; 8) GN=Global Attribution of Negative Events; 9) CPCN=CP – CN; Higher numbers of CPCN indicate more optimism. 10) HF=Summing across stable and positive dimensions, higher numbers mean greater hopefulness; 11) HC=Hopeless, summing across stable negative, higher number mean greater hopelessness; and global negative dimensions. Since the individual dimension score are only based on few questions, have much lower reliability and validity more reliance should be placed on the composite scores (CPCN, CP, CN).

The Chinese version of ASQ (ASQ-C) has been translated by Y.T. Lee and was used in his study in 1998. After his translation, this version was then evaluated by 15 Chinese native students in the United States in terms of English –Chinese equivalence, translated Chinese fluency, and Chinese cultural suitability, on a scale 1(not at all) to 9 (very much).

The means of three dimensions achieved 7.2, 7.13 and 6.6. The overall reliability of all 36 items is .82, which indicates that the C-ASQ has fairly good internal consistency.

2.2.3. Measure of Stress: State-Trait Anxiety Scale (STAI)

The stress level has been assessed by STAI (State-Trait Anxiety Inventory, Spielberger, Gorsuch, & Lushene, 1970). State anxiety (A-State) is conceptualized as a transitory emotional state that is characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity. Trait anxiety (A-Trait) refers to relatively stable individual differences in anxiety proneness, that is, to differences between people in the tendency to respond to situations perceived as threatening with elevations in A-State intensity (Spielberger et al., 1970). Smith et al. (1989) applied the scale measuring the trait-anxiety as a proxy for neuroticism. The trait scale of the State-Trait Anxiety Inventory also measures individual differences in proneness to react with an anxiety state when facing a wide range of potential sources of psychological stress. "How are you feeling right now" vs. "How do you generally feel" were two main contexts in this inventory to differentiate State or Trait Form. Participants are asked to respond on the basis of "How are you feeling right now" (State) or "how you generally feel" (Trait) to statements such as "I feel nervous and restless" and "I am a steady person." Items are scored on a 4-point scale ranging from *almost never* to *almost always*. High scores reflect high levels of negative affect and anxiety. Items are scored on a 4-point scale ranging from almost never to almost always. The STAI has been found

to have high internal consistency (.86-.95) and good test-re-test reliability (.64-.86; Spielberger et al., 1970). Two factors, Y1 original representing State-anxiety level, Y2 representing Trait-anxiety level have been selected as the index representing of different stress state and level.

The publisher of the STAI, MIND GARDEN, Inc provided the investigator with the Chinese version of the STAI (C-STAI), which has been reported being reliable and valid in previous study (Shek, 1993).

2.2.4. The Measure of Health: SF-36 Health Questionnaire

The SF-36 from the Medical Outcomes Study (Ware, Snow, Kosinski, & Gandek, 1993) was used to measure health-related quality of life. This instrument has excellent reliability and validity. It contains eight multi-item scales: general health perceptions, physical functioning, role limitations due to physical problems, bodily pain, mental health, vitality, role limitations due to emotional problems, and social functioning. Principal-components analysis, followed by varimax rotation of the 36 items, revealed eight factors at both times of assessment. Items are loaded on their respective eight scales. The authors have derived factor weights for the eight scales so that a mental health component score (MCS) and a physical health component score (PCS) can be created (Ware, Kosinski, & Keller, 1995). Weights are assigned to all eight scales (PF, RP, RE, GH, SF, BP, V, MH) to create MCS and PCS. The variables with the highest loading on

PCS (in order from highest to lowest) are physical functioning (PF), role limitations due to physical problems (RP), bodily pain (BP), and general health perceptions (GH). The variables with the highest loading on MCS are mental health (MH), role limitations due to emotional problems (RE), social functioning (SF), and vitality (V). Cronbach's alphas for the scales were high during the initial and follow-up interview (ranged from .80 to .91). Higher numbers indicate better health condition.

The Author of the SF-36 provided the investigator the Chinese version of the SF-36 (C-SF-36), which has been translated by an unidentified Chinese scholar. No psychometric study (HAVE) been done.

2.2.5. Cross-Cultural Psychometric Equivalency

The Chinese version of the SF-36 (SF-36-C) that the investigator received from the publishers has been back translated by both the investigator and a professor who speaks native Chinese and teaches Education at the University of Maryland, the United State. The different meanings of words have been discussed between the investigator and the professor. The original Chinese version has then been adjusted to match special cultural requirement(s) in mainland China.

2.3. Data Analysis Plan

A set of zero-correlations for all of the variables was computed in order to determine whether and how the present set of variables relate to each other. To compare the means of all measured variables, a series of One-Way ANOVA was conducted for optimism, pessimism, stress, and health factors. To test the moderator or mediation model, we conducted a series of stepwise regression equations using health components as dependent variables, whereas the optimism, pessimism, stress and their interaction product as predictors. SPSS is the basic statistic software to process the data.

CHAPTER 3. RESULTS

3.1 Relationship between Optimism, Stress, and Health Outcomes in Chinese and American Students

To examine the relationship between two stress states (Y1 and Y2), big (LOT) and small (ASQ) optimistic style, and three health components (TH, PCS and MCS); partial zero-order correlations were computed, controlling for gender, age and parent's marital condition with each ethnic groups. The results are presented in Table 1.

As Table 1 indicates in both Chinese and American samples, the *big* optimisms were significantly correlated with three health components. However, when the investigator conducted a series of Fisher z test (Anderson, 1995), to compare the correlation coefficient from Chinese and American subjects, there was no significant difference between the correlation coefficient of optimisms (both big and little) and health. (See Table 2) There was no significant difference in the correlation coefficient between pessimism and health in both cultures either. These results indicate that the degree of the association between

Table 1: Correlation Between All major Measures, Controlling for Age and Gender in Chinese and American Students

Measure	1	2	3	4	5	6	7	8
1 LOT	---	-.27**	.35**	-.08	-.18*	.37**	.30**	.40**
2 CN	-.17**	---	-.64**	.03	.03	-.23**	-.24**	-.28**
3 CPCN	.25**	-.66**	---	-.05	-.07	.35**	.36**	.42**
4 Y1	-.49**	.23**	-.30**	---	.72**	-.09	.011	-.05
5 Y2	-.49**	.23**	-.26**	.78**	---	-.04	.04	-.01
6 PCS	.31**	-.24**	.19**	-.60**	-.61**	---	.40**	.87**
7 MCS	.27**	-.10	.11	-.42**	-.40**	.37**	---	.80**
8 TH	.35**	-.21**	.19**	-.62**	-.61**	.85**	.81**	---

Note: Partial correlation: up-right portion of the data are for American students, and low-left portion of the data (bold part) are for Chinese students, For American samples, n= 206, for Chinese sample, n=238. LOT= Life Orientation Test; CP= Attributional Style Questionnaire (ASQ) Positive Component; CN= ASQ Negative Component; CPCN=difference between CP and CN; Y1=State Anxiety; Y2=Trait-Anxiety; PCS=Physical health Component; MCS=Mental health Component; TH= PSC+MSC *p<.05
 p<.01 * P<.001

Table 2. The result of z test for comparing of the correlation coefficient of the relationship between Optimism/Pessimism and Health/Stress in Chinese students and American students

<u>z test</u>	<u>LOT</u>	<u>CPCN</u>	<u>CN</u>
<u>Y1</u>	<u>2.07*</u>	<u>1.18</u>	<u>0.93</u>
<u>Y2</u>	<u>1.61</u>	<u>0.89</u>	<u>0.93</u>
<u>PSC</u>	<u>0.31</u>	<u>0.79</u>	<u>0.04</u>
<u>MSC</u>	<u>0.15</u>	<u>1.21</u>	<u>0.66</u>
<u>TH</u>	<u>0.16</u>	<u>1.16</u>	<u>0.34</u>

LOT= Life Orientation Test; CN= Negative Component of ASQ; CPCN=difference between CP and CN; Y1=State Anxiety; Y2=Trait-Anxiety; * z>1.96 means that there is significant difference between the correlation coefficient of the relation between Optimism/Pessimism and Health/Stress in two cultures

optimism and health in Chinese students is as much as degree of the association between optimism and health. However, when comparing the correlation coefficient of optimism and stress, it was found that there is a significant difference between the correlation coefficient of *big* optimism and state stress in both cultural samples (See [Table 2](#)). The association between optimism and stress in Chinese was significant, but no significant association between optimism and stress in American subjects was found in the present study.

3.1.1 Culture and Optimism

As shown in [Table 3](#), there was no significant difference between American subjects ($M = 3.44$, $SD = 2.551$) reported more *little* optimistic belief (ASQCPCN) and Chinese subjects [$M = 3.060$, $SD = 2.724$], $F(1,444) = 2.228$, $p = .131$]. If we compare another positive composite, ASQCP, of ASQ, however, we discover a significant difference between these two cultures. Chinese scores were significantly smaller than their American counterparts [$F(1,444) = 101.448$, $P < .000$]. This result supports the hypothesis of this study that Chinese would have less *little* optimism than Americans. When we compare the *big* optimism across these two cultures, as [Table 3](#) indicates, American students ($M = 15.50$, $SD = 3.641$) demonstrated highly significant more *big* optimism than their Chinese counterparts [$M = 12.107$, $SD = 3.457$, $F(1,444) = 101.448$, $P = .000$]. Unfortunately, these results did not support the hypothesis that Chinese would have more

big optimism than Americans, considering their special culture context. Figure 1 demonstrates the comparison of optimism and pessimism across two cultures.

Table 3: Ethnic Group Difference in Optimisms, Stress and Health State

Factors	Ethnic Group				F	p
	Chinese		American			
	M	SD	M	SD		
Optimism						
LOT	12.18	3.46	15.50	3.64	101.45***	.000
ASQCN	11.76	1.95	12.15	1.80	4.56*	.033
ASQCPCN	3.06	2.72	3.44	2.55	2.29	.131
Stress						
Y1	41.77	8.63	38.90	10.13	10.24**	.001
Y2	42.73	8.29	39.99	9.55	9.70**	.002
Health						
PCS	253.01	66.77	219.81	74.06	23.66***	.000
MCS	292.74	60.12	306.27	64.35	5.24*	.023
TH	547.11	105.78	526.08	118.53	3.41	.065

Note: n=444; LOT= Life Orientation Test; CP= Attributional Style Questionnaire (ASQ) Positive Component; CN= ASQ Negative Component; CPCN=difference between CP and CN; Y1=State Anxiety; Y2=Trait-Anxiety; PCS=Physical health Component; MCS=Mental health Component; TH= PCS+MCS *p<.05 **p<.01 ***P<.001

It is interesting to see that while Americans demonstrated higher *big* optimism, and a potential for higher *little* optimism, American students also showed, in this study, a higher level of pessimism (M= 12.147, SD=1.799), compared to the Chinese students (M=11.76, SD=1.949; F (1,443)= 4.564, P=.033]. This finding is particularly interesting because it seems to support the ongoing argument which states that the conceptualization

and assessment of optimism and pessimism are bidimensional constructs (see Chang, D'Zurilla, & Maydeu-Olivares, 1994 ; Dember et al., 1989 ; Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992 ; Scheier et al., 1994).

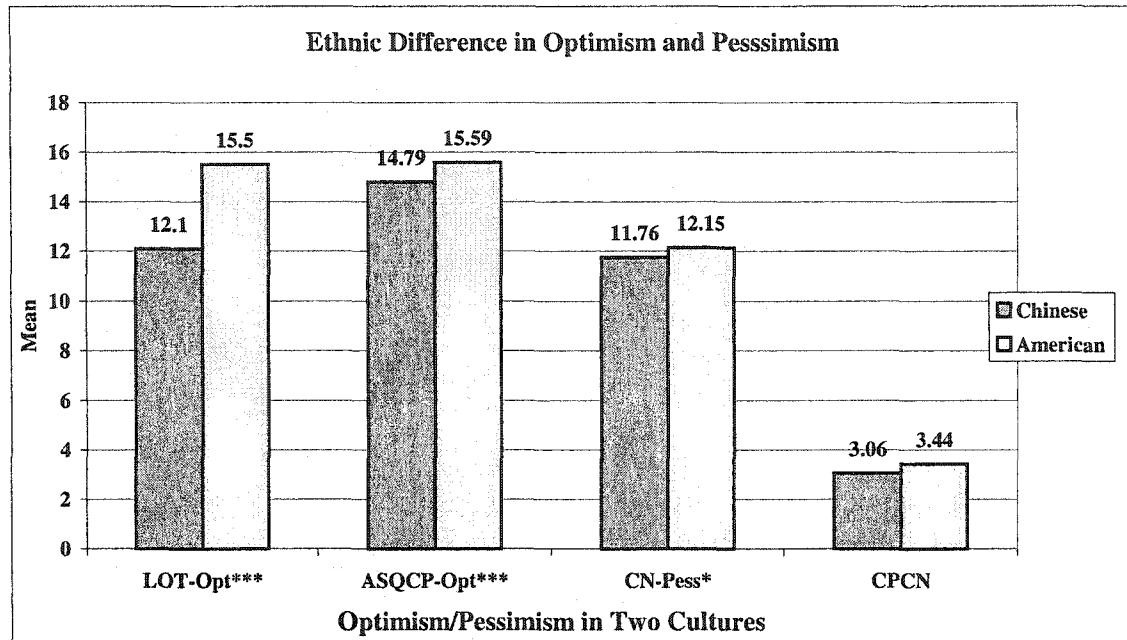
In order to gain a better understanding of the cultural impact on optimism and pessimism, we compared the scores from the subtests of ASQ using a series of one-way ANOVA. The results are organized in Table 3. Table 4 illustrates the relationship between optimism/pessimism and six subtests. Upon inspecting the data in Table 3 & 4, it reveals that: 1) Chinese students presented significantly more pessimistic tendency in some subtest, such as SN, than American students, except the internal attribution of negative events (IN) (will be discussed later). It was not supported by the overall scores of the composite pessimism (CN) as well; 2) all responses to three positive composites, as well as the Hopefulness (HF) demonstrated lower optimistic tendency in Chinese group (Chinese < American) 3) response to the internal attribution of positive and negative event (IP & IN) is a little complicated. Chinese students scored low in IP, which indicates that Chinese students give themselves less credit for incidents when they slip up; Chinese students scored high, however, on IN which means that they have less self-blame for bad events as well. The former (1 & 2) conclusions are consistent with the characteristics of Chinese people, whereas the later (3) one was inconsistent as expected. There might be different explanations regarding this unique finding and some of them will be discussed in chapter 5.

Table 4 Ethnic Difference in Optimism and Pessimism

Factors	Ethnic Group				F	P
	Chinese		American			
	M	SD	M	SD		
ASQ-Cp	14.79	2.02	15.58	1.98	17.24***	.000
IP	4.88	.85	5.42	.73	50.72***	.000
SP	5.14	.79	5.17	.75	.267	.61
GP	4.81	.95	5.01	.87	4.87*	.03
ASQ-CN	11.76	1.95	12.15	1.80	4.56*	.03
IN	4.08	.78	4.43	.71	23.94***	.00
SN	3.94	.80	3.88	.74	.79**	.01
GN	3.72	.99	3.83	.88	1.62	.21
HC	3.93	1.49	3.87	.70	.29	.59
HF	4.96	.84	5.09	.73	3.01	.08
ASQ-CPCN	3.06	2.72	3.44	2.55	2.29	.13
LOT	12.11	3.46	15.50	3.64	101.45***	.000

Note: N=444, Note: N=444, ASQ (Attributional Style of Questionnaire; ASQCP= Composite of all Positive events, high numbers mean greater optimism; IP=Internal Attribution of Positive events; SP=Stable Attribution of Positive Events; GP=Global Attribution of Positive Events; ASQCN= Composite of all Negative events, higher numbers mean greater pessimism; IN=Internal Attribution of Negative Events; SN=Stable Attribution of Negative Events; GN=Global Attribution of Negative Events; CPCN=CP – CN; Higher numbers of CPCN indicate more optimism. HF=Summing across stable and positive dimensions, higher numbers mean greater hopefulness; HC=Hopeless, summing across stable negative, higher number mean greater hopelessness; and global negative dimensions ***p<.001 **p<.01 *p<.05

As Figure 1, Table 3 & 4 demonstrate, Chinese students (M=12.107) did not present higher big optimism (LOT), as the hypothesis predicted in this study, than the American students (M=15.50) [F (1,443)=101.448, p=.000].

Figure 1: Ethnic Group Difference in Optimism and Pessimism

Note: $N=444$, Note: $N=444$, ASQ=Attributional Style of Questionnaire; ASQCP= Composite of all Positive events; ASQCN= Composite of all Negative events; CPCN=CP - CN; Higher numbers of CPCN indicate more optimism. *** $p<.001$ ** $p<.01$ * $p<.05$

3.1.2. Between Two Optimism Styles:

As Table 1 shows, in both groups ASQCP, ASQCPCN were significantly positively associated with LOT, but the coefficient rates were not very high, which indicates a weak association ($r= .165$ to $.344$); The coefficient r between ASQCN and LOT in Chinese students, was quite small as well though it was significant ($-.168$), while in the American students, the correlation between ASQCN and LOT is not significant. The correlations between CN and CPCN, however, were found to be quite high ($r= -.62$ vs. $-.64$) in both cultures, which indicates the possibility as the opposite function of its optimism partner

ASQCPCN. This finding is a little more controversial than the bidimensional model of ASQ optimism and pessimism. Since LOT-R-(C) was validated by Kai (1998) as a unidimensional structure of optimism vs. pessimism, the higher number indicates more optimism, whereas lower numbers mean more pessimism, pessimistic scores for LOT-R were not computed.

3.1.3. Culture, Optimism and Health:

In the Chinese group, as the low-left (bold part) data of Table 1 show, one's *big* optimism (LOT) was significantly and positively associated with health conditions across three health dimensions TH, PCS and MCS in this study, and was negatively associated with people's stress level across two stress states, Y1 and Y2. In contrast, *little* optimism measured by ASQCPCN, was only slightly significantly associated with overall health condition and physical health (TH and PCS), but not significantly with mental health condition (MCS). *Little* optimism was negatively associated with both stress states (Y1 and Y2) as well. Another optimism component of *little* optimism, ASQCP was found to be only positively associated with overall health condition (TH), but neither with physical nor mental health condition (PCS, MCS). *Little* pessimism, measured by ASQCN, was found to be negatively associated with overall health condition and physical health state but not with mental health function. It is worth mentioning that besides having *big* optimism and health being low to moderately correlated, all aspects of *little* optimism are minimally correlated with health components.

In the American group, as the up-right part in Table 1 shows, either *big* optimism (LOT) or *little* optimism (CPCN) were significantly and positively associated with overall health condition (TH), as well as physical and mental health states (PCS and MCS); even the little pessimism, CN, was found significantly and negatively associated with all health components (TH, PCS and MCS).

Although in both cultural samples, most of the optimism and pessimism factors were positively associated with health components, whether there was any significant difference in terms of the degree of the association. We conducted a Fisher z- test to serve this purpose. There was no significant z score for the relationship between optimism and health between two cultures were found, which indicates the association between optimism and health is as strong as in American students as in Chinese students. As Table 3 above indicates, American students had significantly better mental health than Chinese students. It did appear, however, that the American students reported more physical complaints as well. Furthermore, there was no difference in overall health between the two ethnic groups (Figure 2).

Since SF-36 actually has eight health components, if we look closely at each subtest, we discover the following comparison results presented in Table 5. As Table 5 above demonstrates, RE, SF, and MH were significantly different between Chinese and American students. Chinese students actually had more RE and MH than their Americans counterparts. This implies that Chinese students had a more stable mental health faculty

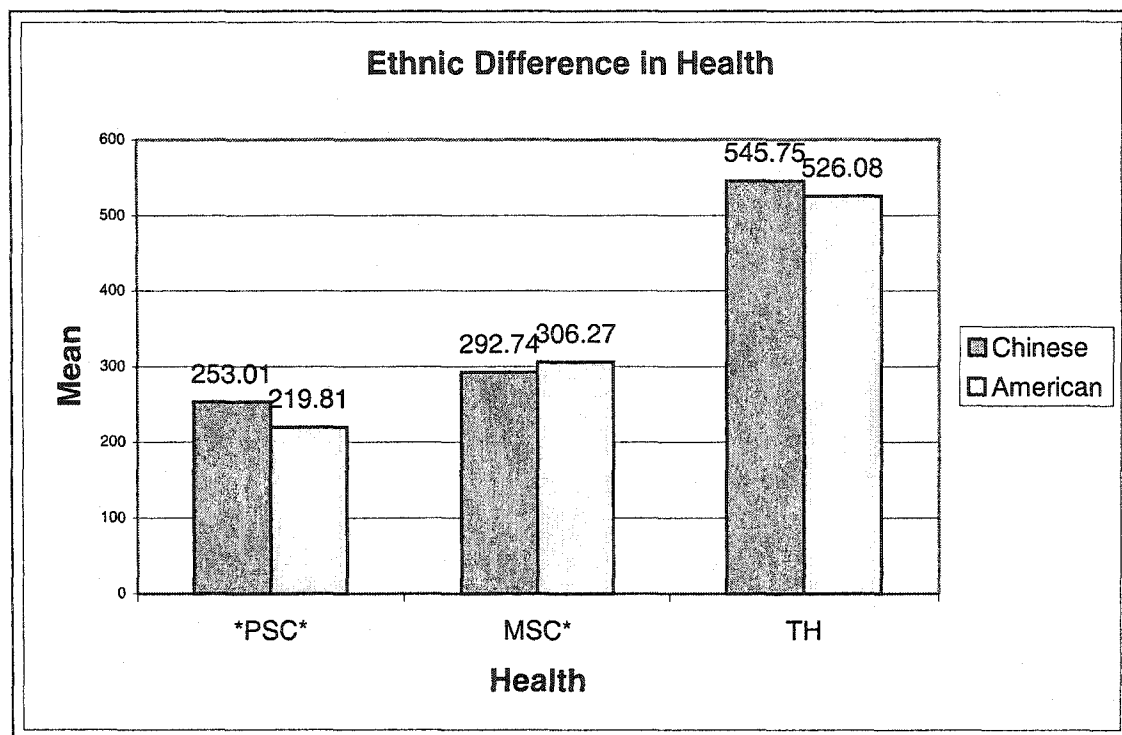
and much better emotional adjustment ability, therefore, in general, adapted to the environment and daily activities better. American students however, had more SF. This implies better social interaction and interpersonal relationships, which fits the difference of overall health condition in Chinese students and American students was at borderline significant level.

Table 5: Ethnic Group Difference in Health (ANOVA)

Factors	Ethnic Group				F	P
	Chinese		American			
	M	SD	M	SD		
PCS	253.01	66.77	219.74	77.06	23.66***	.000
RP	67.09	34.34	61.78	40.28	2.23	.136
BP	67.11	20.65	78.87	17.47	41.37***	.000
GH	68.09	18.56	71.50	19.25	3.59	.059
PF	91.30	11.32	93.33	11.79	3.43	.065
MCS	292.74	60.12	306.27	64.35	5.24*	.023
RE	45.87	39.05	35.95	41.93	6.64*	.010
SF	57.48	15.92	73.161	25.214	63.14***	.000
V	50.745	23.156	51.083	16.203	.89	.810
MH	68.759	16.454	59.43	18.057	32.36***	.000
TH	545.75	105.784	526.08	118.533	3.41	.065

*Note: N=444, PCS=Physical Health Component; MCS=Mental Health Component; TH=Overall Health; RP= Role Physical Function; BP=Body Pain; GH=General Health; RE=Role-Emotional; SF= Social Function; V=Vitality; MH=Mental Health; *** $p < .001$ ** $p < .01$ * $p < .05$*

Figure 2: One way ANOVA: Culture and Health



Note: N=444, Physical Health Component (PCS) = PF + RP + BP + GH; Mental Health Component (MCS) = RE + SF + V + MH; Total Health (TH) = PSC + MSC; *** $p < .001$ ** $p < .01$ * $p < .05$

3.1.4. Culture, Optimism and Stress:

As [Table 1](#) and [Table 2](#) show, the *big* optimism (LOT) was negatively associated with people's stress level across two stress states (Y1&Y2) in both groups. In contrast, *little* optimism (ASQCPCN or, ASQCP) was only negatively associated cross both stress states

(Y1 & Y2) in certain situations. For the Chinese students, however, the correlations between *big* optimism and two stress states were much higher than *little* optimism [$r = -.49^*$ (Y1) and $-.50^*$ (Y2) vs. $-.22^*$ to $-.159^*$]; whereas for Americans, the coefficient rates between *big* optimism and the two stress states (Y1 & Y2) were not so high ($r = -.082$ to $-.176^*$) and no correlation between *little* optimism and two stress states were found. For Americans, only *big* optimism (LOT) was negatively associated with Trait stress level (Y2). *Little* pessimism from ASQ also showed significant correlation with both stress levels (Y1 and Y2) in Chinese samples, but not in American samples.

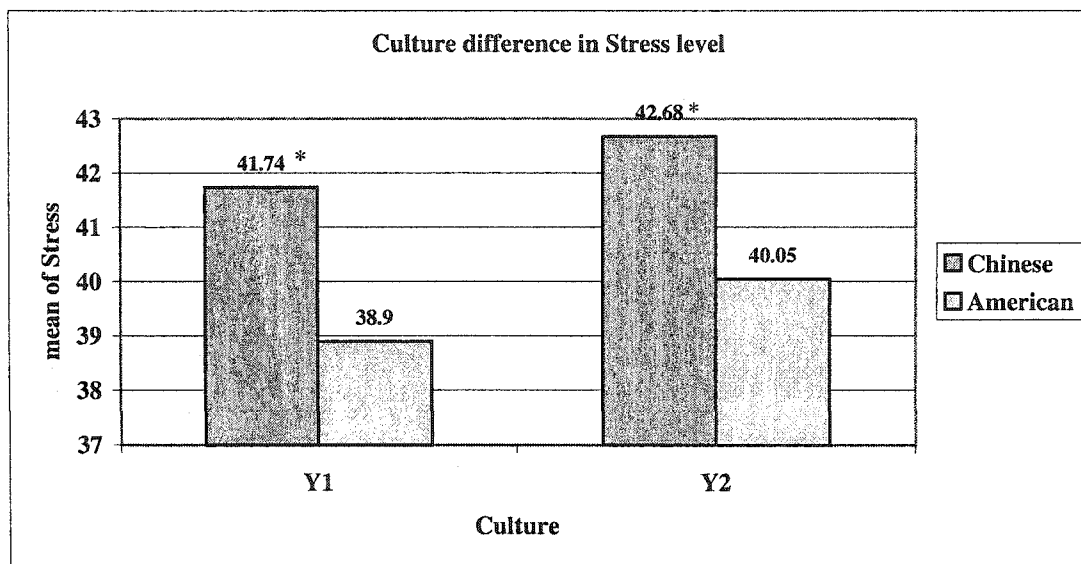
Overall, the *big* optimism seems to play a more important role in accounting for people's stress level across both cultures, with a stronger effect on the Chinese population. Considering the strong beliefs in the association between stress and health, this result indirectly supports the hypothesis of this study that *big* optimism would contribute more to people's health (In addition, for Chinese students, even the *big* pessimism, opposite as its *big* optimism partner, has an adverse effect on an individual's health)

Figure 3 presents results from a One Way ANOVA comparing the stress levels across two cultures.

As Figure 3 shows, Chinese students ($M = 41.74$, $SD = 8.62$) were experiencing a significantly more State stress assessed by Y1, compared to the American students ($M = 38.90$, $SD = 10.10$), $t(1, 235) = -3.11$, $p < .01$, as well as more Trait stress assessed by

Y2 ($M = 42.68$, $SD = 8.30$) than American students ($M = 40.05$, $SD = 9.57$), $t(1, 235) = -3.11$, $p < .01$.

Figure 3. One Way ANOVA: Culture and Stress



Note: $n = 444$, Y1=State Anxiety Score; Y2=Trait Anxiety Score; * $p < .01$

Furthermore, we conducted a further analysis on another two sub-dimensions of ASQ, Hopelessness (HC) and Hopefulness (HF) of ASQ. We found that among Chinese students, neither HC nor HF were significantly associated with the three health components (TH, PCS, and MCS). People who were more hopeful (HF) experienced significantly less State stress (Y1), however, no relationship with the trait stress (Y2) was indicated. In contrast, American students who felt more hopeless would experience significantly more State stress Y1, but not Trait stress (Y2). Furthermore it was found

that both hopeful and hopeless subtest scores were associated with overall health in American students, which means if an American student's current state was hopeless, it was very possible that he or she might develop some health problems; but if a American student was quite hopeful about his/her future, his or her chance was more likely to be healthier than one who was not hopeful. This pattern of associations was not found in Chinese students.

3.2. Other Influential Factors in the Link between Optimism/Pessimism and Health

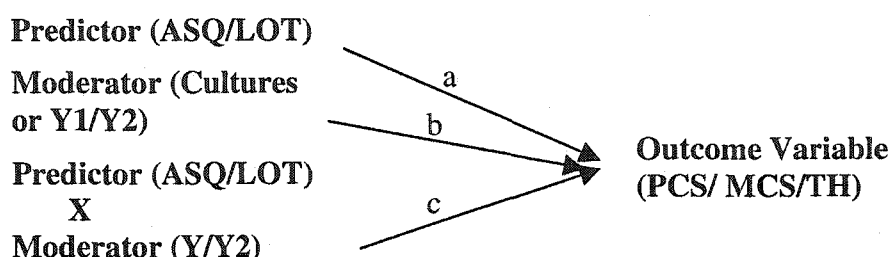
As the previous findings indicate, for both Chinese and American subjects, most of the variables of Optimism (assessed by ASQ and LOT), Stress (assessed by Y1 and Y2), Cultural groups and Health (PCS, MCS and TH) were significantly inter-correlated. To examine the predictive utility of each of the dimensions of Optimism, culture, gender, and Stress in accounting for variance in health, a series of stepwise regression analyses was conducted starting with the moderating model in the link between Optimism and health.

3.2.1 Testing the Moderator Model:

Based on the guidelines of Baron and Kenny (1986), to establish evidence for the proposed moderator model, one has to test whether the interaction between independent variable (predictor) and the proposed moderator variable will significantly account for the

cause of the outcome, beyond the main effects of predictors. (See Figure 4). In this study, there were three potential moderators, culture, gender and stress.

Figure 4. Moderator Model



Note: CPCN=Composite of Optimism in ASQ; CN=Composite of Pessimism in ASQ; LOT =Life Orientation Test, PCS=Physical Health Component; MSC=Mental health Component; TH= Overall Health Condition (PCS+MCS), Y1=State Anxiety Score; Y2=Trait Anxiety Score;

a) Culture as Moderator?

In this study, for each of the three equations, scores from the optimism (ASQ or LOT-R) and pessimism were entered as the first step, followed by cultural scores in the second step. Finally, to test for whether an Optimism/Pessimism \times Culture interaction was significant in this study, the multiplicative term was entered in the final step of the equation.

The results from these stepwise regressions indicated that for *big* optimism, culture and the interaction of LOT-R x Culture were found to add significant incremental validity in predicting either the overall health condition (TH) as well as the physical health (PCS), except MSC score; for *little* optimism, the interactions of little Optimism x Stress were found to significantly further augment the prediction of all three health components, including physical health and mental health. For *little* pessimism, pessimism and culture as well as the interaction of pessimism x culture was found to significantly further augment the prediction of overall health condition and mental health status. However, the interaction of Pessimism x Culture was the only significant contributor. Pessimism did not have significant effects on physical health for either the Chinese students or American students. It is worth to mentioning that the variance caused by either culture or the interaction of optimism/pessimism x culture was not very high, max 13.0% (average 11.5% for big optimism, average 6.3% for little pessimism, average 3.3% for pessimism), after controlling for the variances accounted for by each of the optimism/pessimism and culture. Culture seemed to play a more important role in the prediction that *big* optimism would effect on health more than *little* optimism.

b) Gender as Moderator?

Several stepwise regressions were computed on the prediction of optimism on health across both cultures, and to test whether gender could be a moderator in this link. The three health scores (PSC, MSC and TH) were entered. There was no significant

interaction of optimism x gender found in any links between optimisms (*big vs. little* optimism) and health conditions (PSC, MSC and TH), which indicates that gender was not a moderator in the link of prediction of optimism on health overall.

c) Stress as a Moderator?

A similar series of tests were conducted, in order to test whether stress is a moderator. Scores from the optimism (ASQ or LOT-R) were entered as the first step in a set of stepwise regressions, followed by Stress scores (Y1 or Y2) in the second step. Finally, to test for whether an Optimism \times Stress interaction was significant in this study, the multiplicative term was entered in the final step of the equation.

The results from these stepwise regressions indicated that *no* interactions between either *big or little* Optimism (LOT or ASQ-R) and Stress (by either State Anxiety Y1 or Trait Anxiety Y2) were found to add significant incremental validity in predicting either the overall health condition as well as the physical and mental health (PCS, MCS) in the Chinese students sample. In other word, the model that stress as a moderator in the link between *the* optimism and the health was not identified in this Chinese population. The association between *little* pessimism and overall health and mental health demonstrated a similar pattern as their optimism partner and did not demonstrate any significant interaction effect on health outcome. The Associations between *little* pessimism and physical health, however, were found moderated by both Y1 and Y2 with significant

interaction effect. The effects of Y1 and interaction between CN x Y1 together accounted for 37.7% of the variance. The effects of Y2 and interaction between CN x Y2 together accounted for 38.3% of the variance. There is an interesting phenomenon in the relation between pessimism and physical health. When the interactions between CN and stress were found significant account some amount of variance for health, the main effects of CN were reduced to a non-significant level. This phenomenon will be discussed in the next section regarding the 0+ mediating model.

In the American students' sample, we obtained similar results. No significant interaction effect between *big* Optimism (LOT) and *little* Optimism (ASQCPCN) x Stress (State Anxiety Y1 or and Trait Anxiety Y2) was found which could have had a significant effect on predicting an individual's health condition. The Pessimism measured by ASQCN, again, demonstrated no moderator effect as well. As was true with the Chinese finding, the model in which the stress was identified as a moderator in the link between optimism and health was not discovered in this American population.

3.2.2. Testing the Mediating Model:

Considerable previous research has found a link between optimism and positive well-being (Scheier & Carver, 1985, 1992; Carver, Pozo, Harris, Noriega, Scheier, Robinson, Ketchan, Moffat, & Clark, 1993; Stanton & Snider, 1993; Segerstrom, Taylor, Kenedy, Fahey, 1998). It was, often with a view that stress level is an important mediating variable between these two (e.g., Aspinwall & Taylor, 1992; Carver et al., 1993 ; Scheier

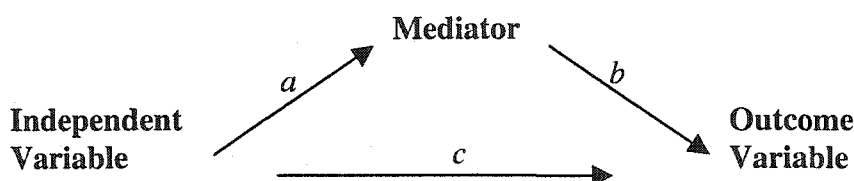
et al., 1986). Following the general guidelines of Baron and Kenny (1986), to establish evidence for the proposed mediation model of optimism, it would be necessary to meet three conditions, as Figure 5 indicates: 1) the variations in levels of the independent variable significantly accounted for variations in the presumed mediator (i.e. Path a), 2) variations in the mediator significantly accounted for variations in the dependent variable (i.e. path b), and 3) when Path a and b are controlled, a previously significant relation between independent variables and dependent variables was no longer significant, with strongest demonstration of mediation occurring when Path c was zero. However, when the Path c is not zero, this indicates the operation of multiple mediating factors. Because most areas of psychology treat phenomena that have multiple causes, a more realistic goal may be to see mediators that significantly decrease Path c rather than eliminating the relation between the independent variables and dependent variables altogether.

In this study, if the culture was a mediator, based on Baron's model, independent variable, optimism/pessimism, would significantly account for variations in the presumed mediator (i.e. Path a, culture). Obviously this path didn't seem to exist. Therefore the model that culture mediated the procedure of prediction of optimism/pessimism on health could not be confirmed.

On the other hand, if the stress was as a mediator in the link between optimism and health, the predicting conditions would be: 1) optimism would be shown to be significantly associated with stress (path a). 2) The stress variables would be shown to be

significantly associated with the health outcome in question (path *b*). 3) The association between optimism and the health outcomes (path *c*) should be less when controlling for the influence of stress (path *a* and *b*). A complete mediation would be indicated if the associations between optimism and stress, and between stress and health outcome were significant, but the previously significant association between optimism and outcome would become non-significant after controlling for the influence of stress.

Figure 5. Mediator Model



However, given the moderately strong correlations between the independent variables, the hypothesized mediators, and between the dependent variables, a more conservative approach was taken to control for co-variation at each level of analysis. For example, in determining the unique association between the optimism and the state-stress, a regression analysis was conducted by regressing stress Y1 simultaneously on *big* optimism (LOT-R), *little* Optimism (ASQCPCN), *little* pessimism (ASQCN), and trait Stress. Similarly, in determining the unique association between optimism and physical

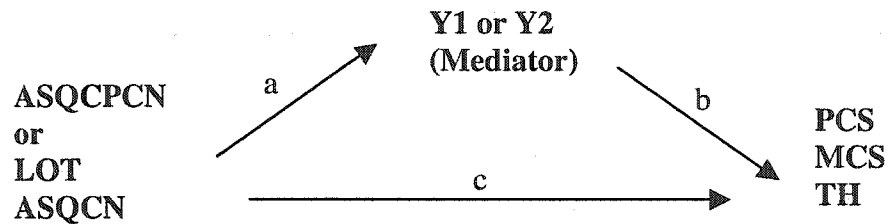
health PCS), a regression analysis was conducted by regressing PSC simultaneously on optimism (LOT-R), little Optimism (ASQCPCN), little pessimism (ASQCN), State stress and Trait Stress measures.

Results of conducting these more conservative analyses for Chinese are presented in Figure 6 & Figure 7. As Figures 7 show, the significant link between either *big* optimism or *little* optimism and Overall health was found to be completely mediated by state-stress as well as by the trait-stress. Similarly, the significant association between *little* pessimism and overall health was found to be completely mediated by either state-stress or trait-stress. The same steps were repeated for physical and mental health (PCS and MCS) as dependent variables. The significant links between either *little* optimism (ASQCPCN) or *big* optimism (LOT-R) and physical health component (PCS) were also found to be *completely* mediated by state-stress Y1 and trait-stress Y2. Furthermore the significant link between *little* pessimism (ASQCN) and the physical health component (PCS) was also found to be *completely* mediated by state-stress Y1 and trait-stress Y2.

Since the both CPCN, *little* optimism, and CN, the *little* pessimism showed no significant association with mental health component (MCS), therefore the CPCN/CN-Stress-MCS systems did not fit the criterion of mediation model, which means stress was not able to mediate the predictive procedure of little optimism on mental health.

In this study, Chinese students provided stronger evidence supporting the mediating model for people with either *little* or *big* optimistic style. Before controlling stress, either the ASQ or LOT—R accounted significantly for health (path c -before); Both optimism (LOT-R and ASQ) was significantly associated with stress (both state and trait stress levels (path a), and all stress levels also significantly negatively associated with overall health outcome and physical health (path b); When the stress variables (Y1 & Y2) were included in the stepwise regression and the influence of stress was controlled (both Y1 and Y2), no significant main effect was found for either LOT-R or ASQ (path c-after). Y1 and Y2 were the only significant main effect meaningful for overall health condition in general and physical health specifically. In other words, after controlling the stress, the little optimistic style of thought lost its power to predict an individual's health condition. Stress level then became the only factor contributing to health outcome. Consistent with the hypothesis, stress mediated the procedure of predicting the health outcome through the *big and little* optimisms.

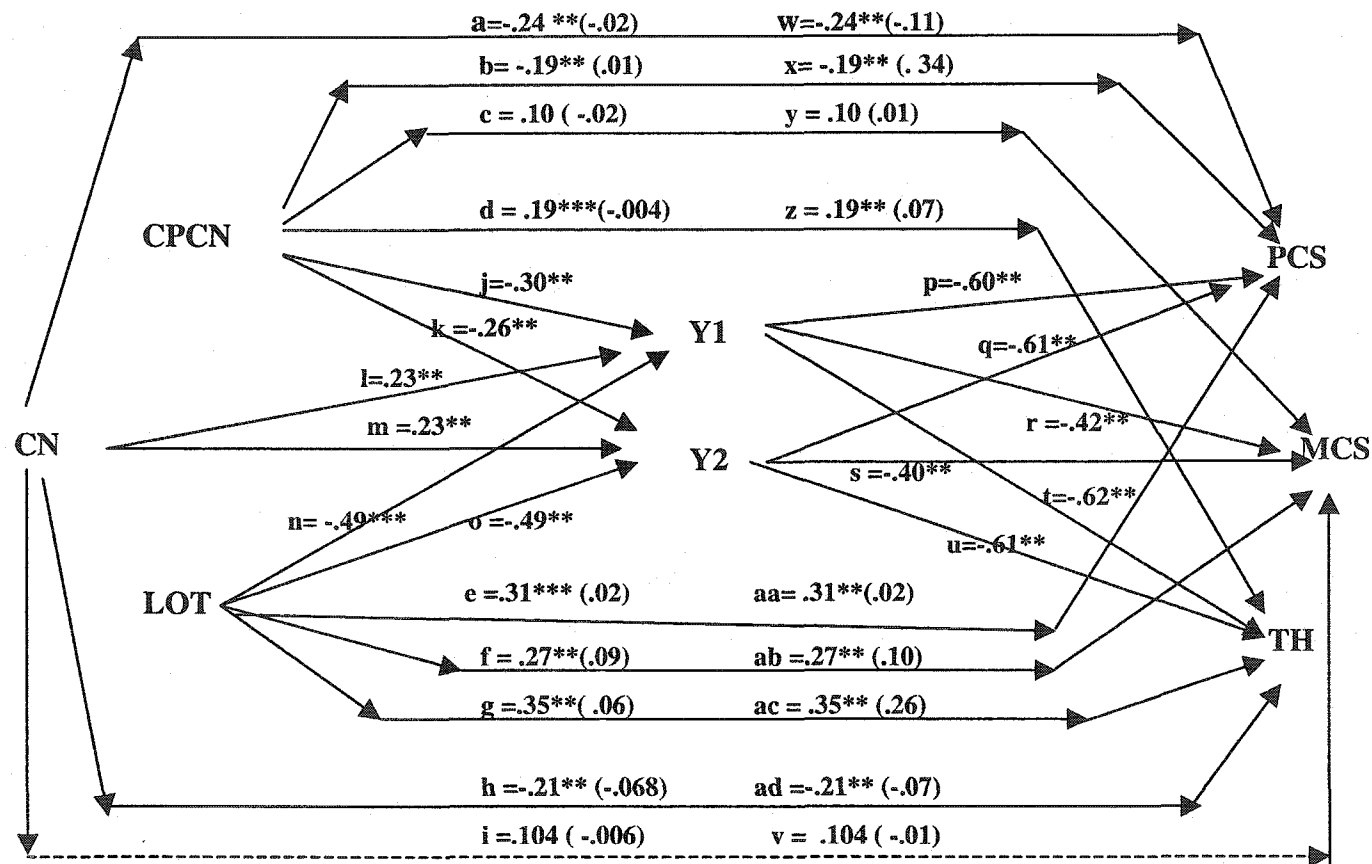
Figure 6. A Model of Stress as Mediator of the Relations Between Optimism (Pessimism) and Health Conditions (Simplified)



Note: CPCN=Composite of Optimism in ASQ; CN=Composite of Pessimism in ASQ; LOT =Life Orientation Test, PCS=Physical Health Component; MSC=Mental health Component; TH= Overall Health Condition (PCS+MCS), Y1=State Anxiety Score; Y2=Trait Anxiety Score;

In contrast, the reports for American students were inconsistent with expectations. The results of conducting path analysis for Americans indicated that optimism, both *little* (ASQCPCN) and *big* optimism (LOT-R) and *little* pessimism (ASQCN) had significant direct relationship with overall health conditions, as well as affecting physical and mental health functions, even after controlling for both stress statuses (Y1 and Y2). Table 8 & 9 demonstrate that between all the optimism/pessimism and health variables with/without control of stress, there were significant associations. These findings suggested that the stress is not a necessary factor in the link between optimism/pessimism and health for American students. Figure 8 shows the results of the path analyses in the relations between optimism (pessimism) and health conditions in American.

Figure 7. Results of the Path Analyses in the relations between Optimism (Pessimism) and Health Conditions in Chinese



Note: CPCN=Composite of Optimism in ASQ; CN=Composite of Pessimism in ASQ; LOT=Life Orientation Test, PCS=Physical Health Component; MCS=Mental health Component; TH= Overall Health Condition (PCS+MCS), Y1=State Anxiety Score; Y2=Trait Anxiety Score; All numbers represent standardized beta weights. Numbers in parentheses represent value after control the stress (y1 and y2)

**Table 6. Results of Path Analysis Between Optimism and Health,
Before/After Controlling of Stress in Chinese Students**

Factor Pairs	Beta	Factor Pairs	Beta	Factor Pairs	Beta (before)	Factor/ groups	Beta (after)
CPCN-Y1 (j)	-.31**	Y1-TH (t)	-.62**	CPCN-TH	.19**	CPCN-TH/y1 (d)	-.004
CPCN-Y2 (k)	-.26**	Y2-TH (u)	-.61**	CPCN-TH	.19**	CPCN-TH/y2 (z)	.067
LOT-Y1 (n)	-.49**	Y1-TH (t)	-.62**	LOT-TH	.35**	LOT-TH/Y1 (g)	.061
LOT-Y2 (o)	-.49**	Y2-Th (u)	-.61**	LOT-TH	.35**	LOT-TH/Y2 (ac)	.263
CPCN-Y1 (j)	-.31**	Y1-PCS (p)	-.60**	CPCN-PCS	-.19**	CPCN-PCS/y1 (b)	.011
CPCN-Y2 (k)	-.26**	Y2-PCS (q)	-.61**	CPCN-PCS	-.19**	CPCN-PCS/y2 (x)	.035
LOT-Y1 (n)	-.49**	Y1-PCS (p)	-.60**	LOT-PCS	.31**	LOT-PCS/Y1(e)	-.020
LOT-Y2 (o)	-.49**	Y2-PCS (q)	-.61**	LOT-PCS	.31**	LOT-PCS/Y2 (aa)	.02
CPCN-Y1 (j)	-.31**	Y1-MCS (r)	-.42**	CPCN-MCS	.10	CPCN-MCS/y1 (c)	-.02
CPCN-Y2 (k)	-.26**	Y2-MCS (s)	-.40**	CPCN-MCS	.10	CPCN-MCS/y2 (y)	.01
LOT-Y1 (n)	-.49**	Y1-MCS (r)	-.42**	LOT-MCS	.27**	LOT-MCS/Y1 (f)	.085
LOT-Y2 (o)	-.49**	Y2-MCS (s)	-.40**	LOT-MCS	.27**	LOT-MCS/Y2 (ab)	.10

Note: CPCN=Composite of Optimism in ASQ; N=Composite of Pessimism in ASQ; LOT =Life Orientation Test, PCS=Physical Health Component; MCS=Mental health Component; TH= Overall Health Condition (PCS+MCS), LOT-PCS/Y=Lot regression on PCS controlling Y1. ALL other pairs in the second and third columns indicated similar regression relations. All numbers represent standardized beta weights.

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

**Table 7. Results of Path Analysis Between Pessimism and Health,
Without/With Controlling of Stress in Chinese Students**

Factor Pairs	Beta	Factor Pairs	Beta	Factor Pairs	Beta(bef. stress)	Factor/groups	Beta
CN-Y1(1)	.23**	Y1-TH(t)	-.62**	CN-TH	-.21**	CN-TH/Y1(h)	-.07
CN-Y2 (m)	.23**	Y2-Th(u)	-.61**	CN-TH	-.21**	CN_Th/Y2(ad)	-.07
CN-Y1(1)	.23**	Y1-PCS(p)	-.60**	CN-PCS	-.24**	CN-PSC/Y1(a)	-.02
CN-Y2 (m)	.23**	Y2-PCS(q)	-.61**	CN-CPS	-.24**	CN-PCS/Y2(w)	-.11
CN-Y1(1)	.23**	Y1-MCS(r)	-.42**	CN-MCS	.10	CN-MSC/Y1(i)	-.01
CN-Y2 (m)	.23**	Y2-MCS(s)	-.40**	CN-MCS	.10	CN-MCS/Y2(v)	-.01

Note: CPCN=Composite of Optimism in ASQ; N=Composite of Pessimism in ASQ; LOT =Life Orientation Test, PCS=Physical Health Component; MCS=Mental health Component; TH= Overall Health Condition (PCS+MCS), LOT-PCS/Y=Lot regression on PCS controlling Y1. ALL other pairs in the second and third columns indicated similar regression relations. All numbers represent standardized beta weights.

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

**Table 8. Results of Path Analysis Between Pessimism and Health,
Without/With Controlling of Stress in American Students**

Factor Pairs	Beta	Factor Pairs	Beta	Factor Pairs	Beta (before)	Factor/ groups	Beta (After)
CN-Y1(1)	.03	Y1-TH(t)	-.05	CN-TH	-.28**	CN-TH/Y1 (h)	-.27***
CN-Y2 (m)	.03	Y2-Th(u)	-.01	CN-TH	-.28**	CN_Th/Y2(ad)	-.27***
CN-Y1(1)	.03	Y1-PCS(p)	-.09	CN-PCS	-.23**	CN-PSC/Y1(a)	-.23***
CN-Y2 (m)	.03	Y2-PCS(q)	-.04	CN-CPS	-.23**	CN-PCS/Y2(w)	-.23***
CN-Y1(1)	.03	Y1-MCS(r)	.01	CN-MCS	.24**	CN-MSC/Y1(i)	-.24***
CN-Y2 (m)	.03	Y2-MCS(s)	.04	CN-MCS	.24**	CN-CS/Y2(v)	-.246***

Note: CPCN=Composite of Optimism in ASQ; N=Composite of Pessimism in ASQ; LOT =Life Orientation Test, PCS=Physical Health Component; MCS=Mental health Component; TH= Overall Health Condition (PCS+MCS), LOT-PCS/Y=Lot regression on PCS controlling Y1. ALL other pairs in the second and third columns indicated similar regression relations. All numbers represent standardized beta weights.

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

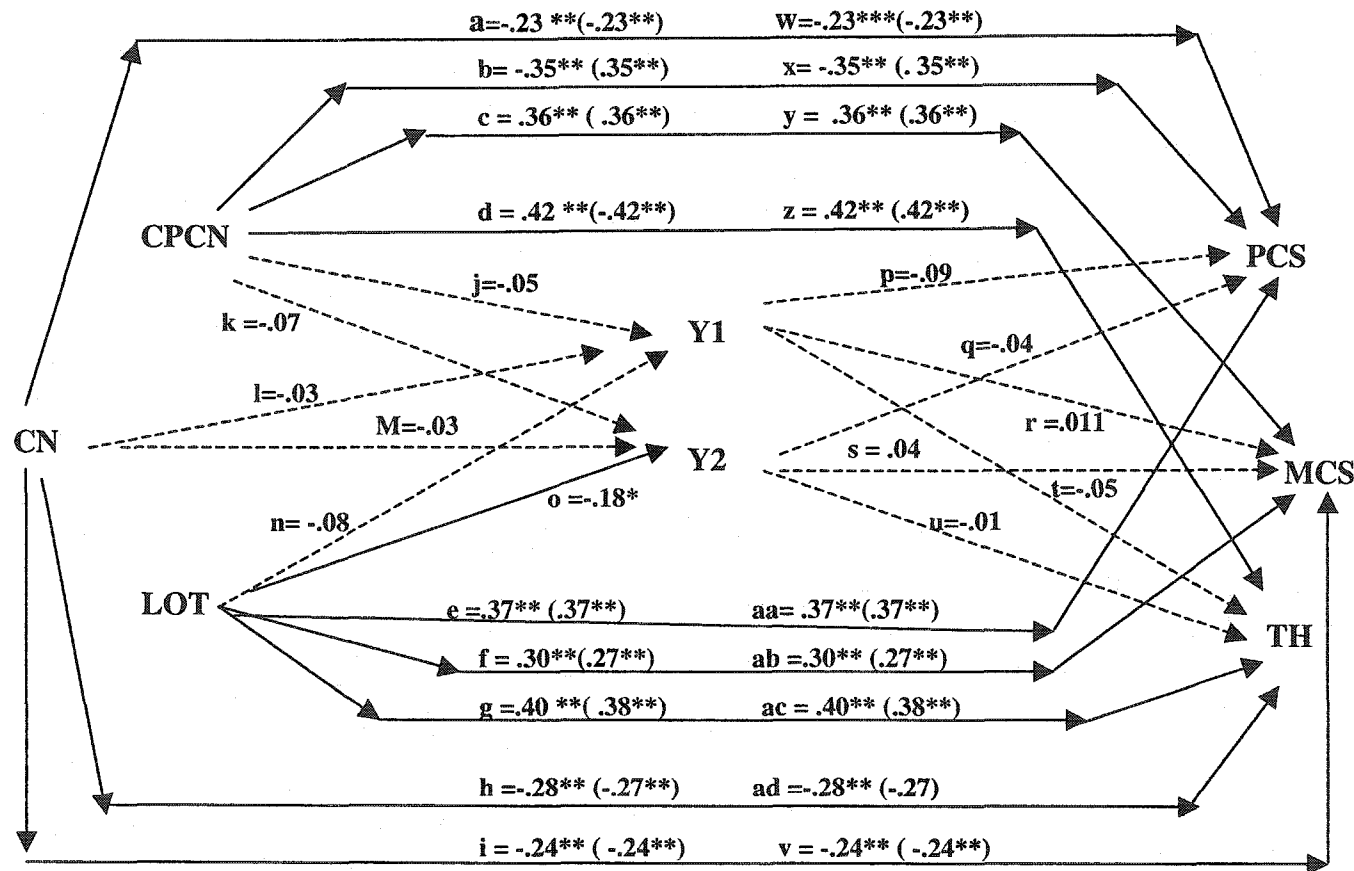
**Table 9. Results of Path Analysis Between Optimism and Health,
Before/After Controlling of Stress in American Students**

Factor Pairs	Beta	Factor Pairs	Beta	Factor Pairs	Beta (Before)	Factor/ groups	Beta (After)
CPCN-Y1 (j)	-.05	Y1-TH (t)	-.05	CPCN-TH	.42**	CPCN-TH/y1 (d)	.42***
CPCN-Y2 (k)	-.07	Y2-TH (u)	-.01	CPCN-TH	.42**	CPCN-TH/y2 (z)	.42***
LOT-Y1 (n)	-.08	Y1-TH (t)	-.05	LOT-TH	.40**	LOT-TH/Y1 (g)	.38***
LOT-Y2 (o)	-.18*	Y2-Th (u)	-.01	LOT-TH	.40***	LOT-TH/Y2 (ac)	.38***
CPCN-Y1 (j)	-.05	Y1-PCS (p)	-.09	CPCN-PCS	.35**	CPCN-PCS/y1 (b)	.35***
CPCN-Y2 (k)	-.07	Y2-PCS (q)	-.04	CPCN-PCS	.35***	CPCN-PCS/y2 (x)	.35***
LOT-Y1 (n)	-.08	Y1-PCS (p)	-.09	LOT-PCS	.37**	LOT-PCS/Y1(e)	.36***
LOT-Y2 (o)	-.18*	Y2-PCS (q)	-.04	LOT-PCS	.37**	LOT-PCS/Y2 (aa)	.36***
CPCN-Y1 (j)	-.05	Y1-MCS (r)	.01	CPCN-MCS	.36**	CPCN-MCS/y1 (c)	.36***
CPCN-Y2 (k)	-.07	Y2-MCS (s)	.04	CPCN-MCS	.36**	CPCN-MCS/y2 (y)	.36***
LOT-Y1 (n)	-.08	Y1-MCS (r)	.01	LOT-MCS	.30***	LOT-MCS/Y1 (f)	.27***
LOT-Y2 (o)	-.18*	Y2-MCS (s)	.04	LOT-MCS	.30***	LOT-MCS/Y2 (ab)	.27***

*Note: CPCN=Composite of Optimism in ASQ; N=Composite of Pessimism in ASQ; LOT =Life Orientation Test, PCS=Physical Health Component; MCS=Mental health Component; TH= Overall Health Condition (PCS+MCS). LOT-PCS/Y=Lot regression on PCS controlling Y1. ALL other pairs in the second and third columns indicated similar regression relations. All numbers represent standardized beta weights. *p<.05,*

***p<.01 *** p<.001*

Figure 8. Result of the path analyses in the relations between Optimism (Pessimism) and Health Conditions in American



Note: CPCN=Composite of Optimism in ASQ; CN=Composite of Pessimism in ASQ; LOT =Life Orientation Test, PCS=Physical Health Component; MSC=Mental health Component; TH= Overall Health Condition (PCS+MCS), Y1=State Anxiety Score; Y2=Trait Anxiety Score; All numbers represent standardized beta weights. Numbers in parentheses represent value after control the stress (Y1 and Y2)

A stepwise regression analyses for each health components with each possible predictor, such as *big* vs. *little* optimism, pessimism, stress states, gender, and their interactions between optimism and gender or stress, LOT-R, the *big* optimism accounted for the largest amount of the variance in overall health (26% of the variance), in addition, it also accounted for 17 % of the variance for mental health and 14% of the variance for physical health. Little optimism, on the other hand, was found to account 18%, 13% and 12.2% for overall health, mental health and physical health. This indicates that big optimism demonstrated stronger predictive effect than little optimism to all health outcomes. Table 10 shows the results of the stepwise regression analyses with the amount of variance accounted for by significant predictors (including interactions) of each health criterions for American students.

Since in the final model, both little optimism and big optimism together only accounted for 44% of the variance in overall health, other factors are probably more important than stress and optimism in contributing to the prediction of the optimism on the health status among American students--- such as negative affectivity, as reported by Chang (2002). Chang (2002) found that the association between optimism (LOT-R) and psychological disturbance were mediated by negative affectivity and lack of positive affectivity. It would be appropriate to explore this area with further research.

Table 10: Stepwise Regression Analyses Showing Amount of Variance Accounted for by Significant Predictors of Each Health Criteria for American Students

Health	Optimism	Beta	R	R Square
TH	LOT-R	.40***	.51	.26
	CPCN	.42***	.42	.18
MSC	LOT-R	.30***	.41	.17
	CPCN	.36***	.32	.13
PSC	LOT	.37***	.38	.14
	CPCN	.35***	.35	.12

*Note: CPCN=Composite of Optimism in ASQ; N=Composite of Pessimism in ASQ; LOT =Life Orientation Test, PCS=Physical Health Component; MSC=Mental health Component; TH= Overall Health Condition (PSC+MSC).All numbers represent standardized beta weights. *p<.05, **p<.01 *** p<.001*

Overall, for American students, both big and little optimism dominated the predictive power to health without the influence of stress, though there might be other unknown factors that might regulate this procedure. These results support the long held common belief as well as findings from many previous studies that there is a strong relationship between optimism and positive health outcomes (Scheier & Carver, 1985, 1992). In contrast, for the Chinese students, the influence of optimism on health was dependent on a person's stress level and ability to cope with abrupt stressful situations.

The results from our studies are inconsistent with popular theory, as some would argue the belief that the ASQ is actually a bidimensional structure model with the optimism and

pessimism playing separate roles. In this study, however, when results include both cultures, pessimism, as the optimistic composite of CPCN, was found account for people's health as well. In other words, while we could say optimism promotes people's health, we could also say that people who hold more pessimistic belief in their life would easily develop poor health conditions. These conclusions are true especially in American culture.

Since the stress was a major mediator in the association between optimism/pessimism and health for Chinese people, we split both state-stress Y1 and trait-stress Y2 by their mean to low and high stress groups. The mean of the *big* Optimism was also plotted with low and high state stress (Y1) level, presented in [Figure 9](#). The means for overall health conditions were plotted with low and high state-stress (Y1), as presented in [Figure 10](#); As these two graphs illustrated, the change of optimism were parallel with the change of health condition. Similar pattern was found with Y2 as well.

As these two figures show, the optimistic level was higher in the low stress group than in the high stress group. This means that people who were able to maintain a relaxed state were more optimistic. Similarly, people's health condition were better in low stress groups than in high stress groups, furthermore, people who were more relaxed usually have better health. This finding is consistent with the theory that stress leads to health disturbances.

Figure 9. Plot of the Mean of the Optimism on Low-High Stress Groups

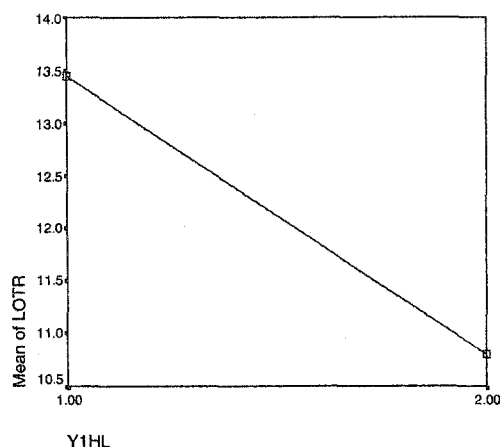
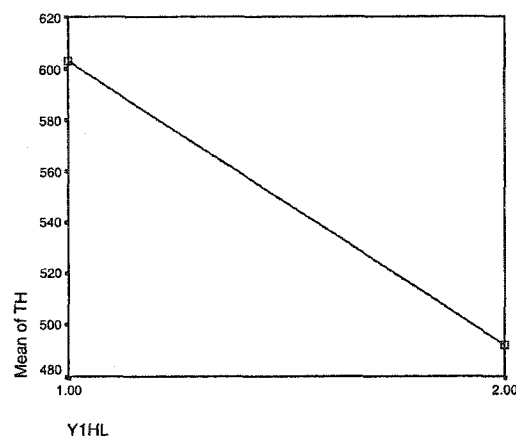


Figure 10. Plot of the Mean of overall Health Low-High Stress Groups

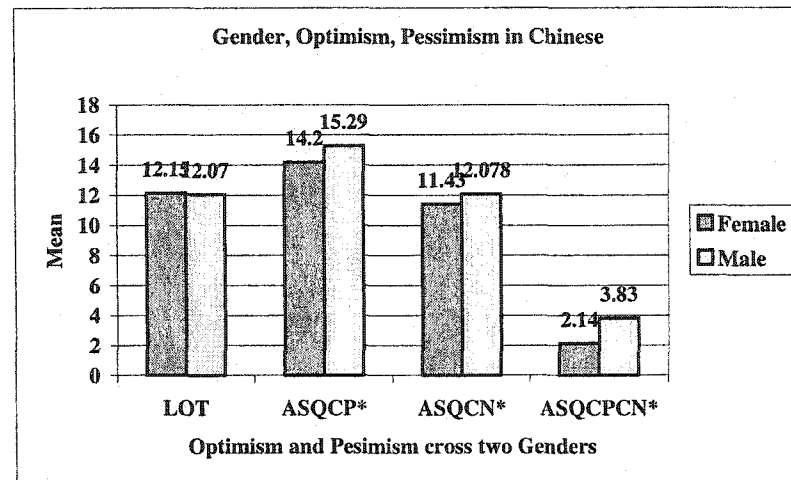


Note: Y1HL=1 means low stress group, Y1HL=2 means high stress group, LOT-R=dispositional (big) optimism, TH=overall health condition

3.3. Gender and Optimism:

Furthermore, for Chinese, as [Figure 11](#) and [Table 11](#) indicate, male students ($M = 3.830$, $SD = 2.728$) rated significantly higher explanatory optimism, assume as in the *little* optimism assessed by the ASQCPCN than female students ($M = 2.144$, $SD = 2.430$), $F(1, 235) = 24.290$, $p < .000$. However, there was no significant difference between genders in either their response to the dispositional optimism, or the *big* optimism, measured by LOT-R-C. In addition, the male students ($M=11.49$) also rated significantly higher on *little* pessimism (ASQCN) than female students ($M=12.078$) [$F(1,230)= 5.241$, $P= .023$]. This finding seems to support the bi-dimensional model of explanatory optimism.

Figure 11. Gender, Optimism, Pessimism in Chinese Students

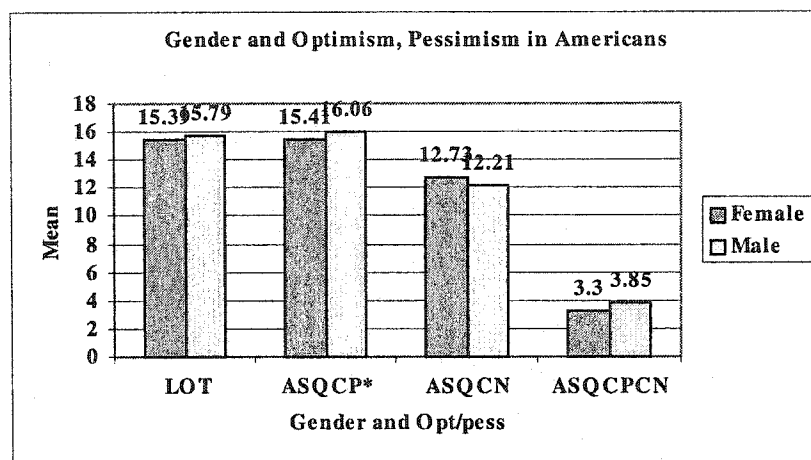


*Note: LOT=Life Orientation test; ASQPCP=Attributional Style Questionnaire, Composite of Positive Events; ASQCN=ASQ Composite of Negative Events; ASQPCPN=ASQCP-ASQCN, * $p < .001$*

For Americans, however, as [Figure 12](#) and [Table 12](#) show, male students ($M = 16.06$, $SD = 1.98$) rated significantly more optimistic, measured by the positive composition of ASQ, ASQCP, than female students ($M = 15.41$, $SD = 1.95$), $F(1, 198) = 4.2$, $p < 0.04$; However, there was no significant difference in the overall little optimism scores in the ASQPCPN across genders, nor in *big* optimism measured by LOT-R-C. Therefore, the difference of optimism across two genders in the American samples was not consistent. In other words, the American male students might not be more optimistic than female students. Furthermore, no significant difference in pessimistic belief across two genders was found as well. It seems that male students in both cultures had more little optimistic than

females. Hence, gender seems to have been a more important factor for Chinese than American students in the relationship between their optimistic and pessimistic levels.

Figure 12. Gender, Optimism, Pessimism in American Students



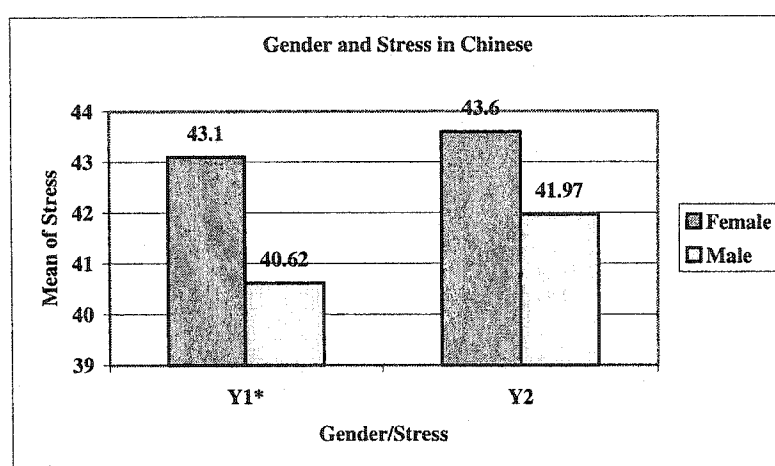
*Note: LOT=Life Orientation test; ASQCP=Attributional Style Questionnaire, Composite of Positive Events; ASQCN=ASQ Composite of Negative Events; ASQPCPN=ASQCP-ASQCN, * $p < .05$*

3.4. Gender and Stress:

Furthermore, for the Chinese subjects, female students ($M = 43.10$, $SD = 7.11$) reported significantly more state-stress assessed by Y1 than male students ($M = 40.62$, $SD = 9.64$), $F(1, 230) = 2.22$, $p < .027$, see [Figure 13](#). There was no significant difference between genders in their response to trait-stress measured by Y2. As contrast, for Americans, neither state nor trait stress was found to be significantly different across two genders.

Hence, gender seemed to be a more important factor for Chinese students than for Americans in terms of the overall stress level.

Figure 13. Gender and Stress in Chinese Students



Note: Y1= State Stress, Y2=Trait Stress, $p < .05$

Table 11 & Table 12 exhibit the gender differences in Optimism/ Pessimism, Stress and Health in both cultural groups.

Table 11: Gender Differences in Optimisms, Stress and Health in Chinese Students

Factors	Ethnic Group				F	P
	Female		Male			
	M	SD	M	SD		
Optimism						
LOT	12.11	2.84	12.07	3.34	.228	.633
ASQCN	11.43	1.83	12.08	1.93	5.12*	.025
ASQCPCN	2.14	2.41	3.83	2.61	22.46***	.000
Stress						
Y1	43.1	6.71	40.62	8.47	5.92*	.016
Y2	43.6	6.65	41.97	8.27	2.482	.117
Health						
PCS	251.85	58.59	258.75	65.53	.676	.412
MCS	297.53	57.15	292.59	57.65	.411	.522
TH	549.39	90.83	551.34	103.82	.022	.882

Note: n=444; LOT= Life Orientation Test; CN= ASQ Negative Component; CPCN=difference between CP and CN; Y1=State Anxiety; Y2=Trait-Anxiety; PCS=Physical health Component; MCS=Mental health Component; TH= PCS+MCS
 * $p < .05$ ** $p < .01$ *** $P < .001$

Table 12: Gender Difference in Optimisms, Stress and Health in Americans Students

Factors	Ethnic Group				F	p
	Female		Male			
	M	SD	M	SD		
Optimism						
LOT	15.39	3.19	15.79	3.10	.023	.881
ASQCN	12.72	1.69	12.21	1.91	1.139	.287
ASQCPCN	3.30	2.36	3.85	2.76	.762	.384
Stress						
Y1	39.09	9.61	39.24	9.39	.010	.921
Y2	40.03	9.09	39.31	9.53	.237	.627
Health						
PCS	221.06	73.15	231.89	78.28	.766	.383
MCS	305.45	64.1+6	318.15	52.88	1.548	.215
TH	526.51	115.95	550.04	102.97	1.578	.921

Note: n=444; LOT= Life Orientation Test; CN= ASQ Negative Component; CPCN=difference between CP and CN; Y1=State Anxiety; Y2=Trait-Anxiety; PCS=Physical health Component; MCS=Mental health Component; TH= PCS+MCS
 *p<.05 **p<.01 *** P<.001

CHAPTER 4. DISCUSSION

4.1. Relationship Between Culture, Optimism/Pessimism, and Health

Clearly, in this current study, we found a cultural effect that Asian American and Caucasian American students differed along a number of important individual differences and outcome variables. Although there are still many unclear points regarding the relationship between optimism and health, especially in a cross cultural context, this study, however, revealed that optimism, either dispositional optimism, the *big* optimism, measured by LOT-R-(C), or explanatory Optimism, the *little* optimism, measured by ASQ, were significantly associated with overall health condition as well as physical and mental health states in both Chinese and American students samples. These results are consistent with previous studies which indicate that optimism, or the expectation of positive outcomes, has been tied to better physical health (Scheier, Matthews, Owens, Magovern, Lefebvre, Abbott, & Carver, 1989; Scheier & Carver, 1992), more successful coping with health ailments (Carver, Pozo, Harris, Noriega, Scheier, Robinson, Ketchan, Moffat, & Clark, 1993; Stanton & Snider, 1993; Segerstrom, Taylor, Kenedy, Fahey, 1998.), and less vulnerability to the onset of symptoms (Reed, Kemeny, Taylor, & Visscher, in press), and longer survival time in AIDS (Reed, Kemeny, Taylor, Wang, & Visscher, 1994.). There was one exception that the little optimism and pessimism, the explanatory optimism and pessimism were found not significantly association with the physical health.

In addition, both optimistic styles in this study were found to be significantly related to stressful states measured by State Anxiety (Y1) Scale and Trait Anxiety Scale (Y2) in Chinese students. These results are consistent with those found in other studies as well (Chang and Rand, 2000; F. Cohen et al., 1989; Segerstrom, 1998). For example, in Edwards' study, he found stress as measured by the Perceived Stress Scale (PSS) to be significantly and positively associated with several dimensions of optimism. Cohen found that dispositional optimists had more T lymphocyte immune cells than pessimists in response to stressors. Optimism was found to be associated with better mood, higher numbers of helper T cells, and higher natural killer cell cytotoxicity in one of Segerstrom's studies among law students in their first semester of study. In contrast, in American samples, only the dispositional optimism, the *big* optimism, was found significantly but negatively related to the trait stress. These results might mean that, for American people, holding generalized, long term, positive expectation of their future would be more inclined to develop a more relaxed, easy going personality to deal with daily stressful conditions; For the Chinese, gaining either optimistic style would improve their ability to deal with daily stressful situations, as well as develop an easy, stress-free demeanour. These characteristics are consistent with many Eastern philosophies regarding well-being.

Beyond these correlational findings, it is worth noting that significant differences were also revealed between Chinese and American groups on mean levels of different

optimisms, stress states, overall health, physical health and mental health status. In general, American students were found to express more dispositional optimistic belief, better mental health condition, lower state and trait stress level than Chinese students. However, there was no difference in the level of explanatory optimism. In addition, there was no significant difference between Chinese subjects' scores of overall health and American students' scores. Chinese students presented *less* pessimism measured by ASQ and better physical health status. The last two findings are inconsistent with that it was presented in the previous findings that Chinese were *more* pessimistic (Scheier & Carver, 1985; Marshall et al., 1992; Edwards 1996), and are contradictory as the general public's stereotype of Chinese people (Cheng, 1994-2002; Lee, 1997), that Chinese have more somatic complaints.

Overall, these comparative findings can have important implications for understanding important cultural differences among individuals. In this study, the association between *big* optimism and over all health ($r=.35$) seemed to be stronger than the association between *little* optimism and over all health ($r=.19$) in Chinese students, while in the American students the association between *little* optimism and over all health ($r=.42$) was slightly stronger than the correlation between *big* optimism and over all health ($r=.40$). The difference between big optimism and little optimism was somewhat larger in Chinese students (.16) than in American students (.02).

In addition, American students' optimistic beliefs, either dispositional or explanatory optimisms, were significantly related to mental health as well as physical health meaning that people with more optimism think and believe that they will have better chance of obtaining a better health condition. In the Chinese group, however, the explanatory optimism, the little optimism, was only significantly associated with physical, not with the mental health status. Based on the definition, explanatory optimism focuses on detail and specific expectations about positive outcomes (e.g., *I will get a raise this month*), therefore it leads to expect immediate outcomes because it affects specific actions that are applicable in concrete situations. The situational stressful challenge seemed to have less impact on Chinese people's mental health. On the other hand, the *big* optimism, expected positive outcome in the future seemed to be the more important factor for Chinese subjects' health than the *little* optimistic believes. This finding is consistent with some ancient health philosophy such as Taoism. Taoism emphasizes very much on the quality of life and longevity. There are many stories in the Chinese history stating that some masters in Taoism (e.g. Lao Zi), have been living very long life with healthier life style and extraordinary capabilities. The main theme in Taoism is promoting an easy-going and nature oriented life style with a view of life to minimize situational struggling and seek long terms benefits.

4.2. Big and Little Optimism

One of the main purposes of this study was to evaluate the relation between *big vs. little* optimism and test the effects of dispositional optimism and explanatory optimism on health, within the same study using same populations, so that we can compare and better understand these two concepts regarding optimism. The concepts of *big* optimism and *little* optimism were first introduced by Tiger in 1979. Both Tiger and Peterson believe that there are different levels of optimism and it might trigger different mechanism of their function. This was the first research to study the relationship.

The initial motives for selecting this topic came from another under-tested concept--- *big virtue and little virtue*, with which the current investigator has some anecdotal experience from her Traditional Chinese Qigong, Yan Xin Qigong practice. In the philosophy of the Yan Xin Qigong, it is believed that the *big* virtue is more important in terms of its influence on people's health in specific areas and life in general than little or middle virtue. Big virtue is defined as setting big goal to do goodness contributing to the benefit of all peoples in the world and living beings in the Universe, as well as for the best living condition and quality on the earth. It is a product associated with the collective and holistic view of the universe. Little virtue is associated with the daily goodness with merciful heart and caring behaviour, which is more situational and specific. Therefore cultivating *big* virtue becomes a required technique and gaining big virtue becomes the goal for practitioners.

Although it was predicted that Chinese may carry more *big* optimism based on their collective thinking style and holistic view of life than Americans, Chinese students in current study did not support this hypothesis. In other word, American students demonstrated more general, less specific optimism, *big* optimism. There was, however, no significant difference of *little* optimism in these two cultural groups. These results are consistent with those obtained in other studies looking at ethnic differences between Asian and Caucasian Americans on dispositional optimism (e.g., Chang, 1996a , 1996b), but inconsistent with the Chang's study in 2002. It is inconsistent with findings based on studies looking at more specific outcome expectancies, little optimism (Lee & Seligman, 1997). Chinese students, presents less pessimistic belief in this study, which is inconsistent as the findings in most of the previous studies as well. For instance, Chang (2002) found that Asian Americans, compared with Caucasian Americans expressed higher PESS (pessimistic score) but did not differ on OPT (optimistic score). Zane, Sue, Hu, and Kwon (1991) also reported that Asian Americans, compared with Caucasian Americans, were significantly higher in their pessimism about feeling guilty and anxious, but did not significantly differ in their optimism about maintaining a positive relationship, expressing ideas and feelings, and achieving a target goal across several different social situations. The explanation that the Chinese students scored lower on pessimism in this study is not quite clear.

If we put this finding in a social context and check some of the other special characteristics of this sample, it makes more sense. First of all, these Chinese subjects are

college students, studying in Beijing, the capital of China. The economic reform, the development and improvement in many areas in the past 20 years has made many changes in China, including people's confidence about their future. Therefore, it is possible that the younger generation has a much less pessimistic outlook than previous generations. Secondly, the Chinese subjects used in this study, most are direct consequences of China's One-Child Policy. These "Only-Child" children in the family have been raised and spoiled by surrounding relatives and have the tendency to take advantage of their parents and blame their parents or others for any personal problems. It is worth mentioning that the data presented in this study have similar findings as the data reported by Lee in 1997 in his study comparing the optimism in three groups: American, American Chinese and mainland Chinese students.

Overall, the view of life in this young Chinese population was different than those used in previous studies. From the "less optimism, more or no difference of pessimism" in previous finding to "less pessimism, no difference in optimism", this change indicates that Chinese people's environment of life seem to be marching towards a more positive direction. It is worth mentioning, however, that considering that the Chinese students were a very selective sample in China, it may not be representative of the Chinese population in general.

Another important, but under investigated reason which would make the findings regarding Chinese being less pessimistic more acceptable or rational is the essence of the

life-philosophy in the Chinese culture. Three major educational schools, Daoism, Confucianism and Buddhism, have inextricably influenced Chinese people's belief about life, and about future, which fundamentally served to cultivate a very confident population. All three schools from different angles discuss a common topic---life, whether it is regarding the view of life, the meaning of life, the wisdom to achieve a better life (a healthier life), the strategies in dealing with problems in life, etc. The definitions of life in Eastern philosophical contexts usually place "Human Life" in a large picture, a more systemic context, such as social life or universal life. For instance, a hypothesis in Daoism is the "Human being and Universe are One". One of the successful applications of these philosophies is Traditional Chinese Medicine. By living with an understanding of these life philosophies, and inheriting wisdom passed down from hundreds of generations, Chinese people have developed the character pattern of internal confidence with external humility. A personality scale that would be sensitive to the two features of personality (Dual Personalities) has yet to be developed. Lin (1998) once reported that the Chinese, for example, have been characterized as being both sociocentric members of family groups as well as rugged individualists.

Furthermore, considering another very influential thinking style in Confucianism, "Staying in the Middle", which has significantly influence on most Chinese interpersonal relationships; we can easily profile this mainstream Confucian concept in this study by tracing the Chinese proverb, "not more optimism, and not more pessimism either" (what I terms *middle optimism*). Based on Tiger's explanation, *little* optimism focuses on detail

and specific expectations about positive outcomes, while *big* optimism refers to larger and less specific expectations. *Big* optimism seems to be more socially acceptable, which is highly influenced by a broad cultural context, while *little* optimism leads to expected outcomes because it affects specific actions that are applicable in concrete situations. *The concepts of big vs. little* optimism seem to indicate that there are different levels of optimism, however, the profile of Chinese responses to both *big* and *little* optimism indicate that in some cultures there might not be such a clear line between *big or little* optimism in individual. A “*middle optimism*” in Chinese, for instance, might be more practical. The other findings from this study, such as Chinese people reporting better physical health, no difference on overall health condition, compared to their American counterparts, provide some evidence for the possible implication of this “middle optimism”.

Nevertheless, whether the conclusion that Chinese are more pessimistic itself is still open to question. While some scholars believe that Chinese people are more pessimistic, and therefore more susceptible developing a depressive mood, in one of Yen’s study (2000), on the other hand, the intercultural comparison found that Chinese students had the lowest levels of somatic depressive symptom endorsement compared to both U.S. groups. Many scholars are also aware of the limitations in their respective studies. Their conclusions were based on the fact that many previous studies adapted the optimism instruments from western prototypes. When western optimism scales are obviously designed in the specific culture and language, the issue of validity is always a question.

Several Chinese scholars, such as Lee (1997), Yen (2000) and other scholars who had never conducted optimism related studies, all called for the need of a Chinese optimism inventory, which needs to be more investigated in the research in the future.

It seems that the mechanisms behind the influence of optimism on our lives may be more complicated than we think. The clarification of *big -vs.- little* optimism or “*middle* optimism” may improve our understanding of how one’s cognitive status works for the benefit of an individual’s well-being. Further research is needed to determine the appropriateness and usefulness of identifying distinct optimism norms for different cultural groups.

4.3 How Does the Optimism/Pessimism Work?

4.3.1. Culture and gender as moderator?

Some previous studies identified culture as an important factor in the link between optimism and health (Chang, 1996, 2001; Lee, 1997). This study confirmed further more that students from two different cultures responded differently in terms of the level of optimism and the function of optimism. Culture was found to moderate the relation between optimism (*big vs. little* optimism) and three health components, including physical health and mental health, except the relation between *big* optimism and mental health. These findings demonstrate the important implication of cultural factors in

predicting health. Gender on the other hand did not show any moderating effect in the links of *big vs. little* optimism/pessimism on any health outcomes.

4.3.2. Stress as a moderator or mediator?

One of the purposes of the present study was to examine the value of an integrative model that included optimism and stress as predictors of health outcomes/effect. The presented results indicated that the two types of optimisms were significantly related to stress level and stress was also significantly related to health conditions among Chinese students. In order to better understand the predictive process, this study performed two series of regression analyses to test two models of the predictive effect of optimism on health. The prediction that stress is the moderator in the prediction of optimism on health was not supported in current data in both cultural groups.

The mediating model, on the other hand, with stress as the mediator was clearly demonstrated *only* in the Chinese students sample in this study. Either *big or little* optimism were found fully mediated by state or trait stress on overall health conditions as well as the physical and mental health, except that the *little* optimism was found not related to mental health. These tests indicated that stress was better as a mediator, not a moderator account for the confounding effect of optimism on health in Chinese students. It probably means that in the Chinese population, people staying in high stress levels would reduce the benefit from their optimism. Or another indication that, for people who

are skilled in stress management, therefore usually easily maintain a calm and peaceful mind, their optimistic thinking and belief would contribute more to their health, than those who usually stay in a high stress and anxious state. The present preliminary findings also point to the potential value for counsellors working with Asian clients to place greater efforts on reducing stress by some conventional as well as alternative approach, followed by attempts to increase optimistic tendencies for Chinese people.

While stress was discovered neither as a moderator nor as a mediating model in the link between optimism/pessimism and health among the *American* students, optimism as a dominate predictor directly effecting on health brought up another interesting fact. The regressions of optimism with all three-health variables as dependent variables and two optimistic variables, *big vs. little* optimisms, pessimism, and two stress states, state vs. trait stress, as predictors, indicated only two main effect variables. The *big and little* optimisms were shown to have a significant main effect on health, while controlling all other variables in this study. *Pessimism*, however, did not exhibit any significant impact in this predictive procedure. This finding is consistent with the finding in one of Cheng's recent studies (2002). In this study, Cheng investigated the relationship between cognitive and affective variables and psychological disturbances. He found that pessimism may not be the only risk factor for psychological disturbance, and therefore hypothesized that we should look for functions from other cognitive factors. Although this finding is different from the traditional belief that negative cognition has a strong link to adverse health outcomes (Beck, 1991 ; Dobson & Kendall, 1993 ; Hewitt & Flett,

1991), it supports, however, the new trends of psychology, the positive psychology initiated by Prof. Seligman and other positive psychologists, who emphasize the function of positive cognition and behaviours.

The lack of pessimism affecting health in American samples in this study indirectly suggests to the clinical professional that when working with American clients, focusing on helping client develop more positive thinking, cultivating more positive beliefs and choosing more positive behavioural management plans might be more efficient therapeutic strategies. In addition, for Americans, other factors that play more important roles contributing to the predictive effect of optimism on health should be investigated and be brought to the attention of current clinical practitioners.

Given these supportive findings for our integrative model, the present set of findings may offer researchers a useful framework for understanding the development and causes of general health problems. Results from this study indicate that there is a strong association between big optimism and stress for Chinese people. This may mean that stress is an important factor, which might minimize the contribution of *big* optimism to the health condition. That is, although being optimistic is likely to contribute to the well-being, among Chinese people, the presence of a stressful state may be an interruption in this process. The factor of stress might directly and indirectly regulate the severity as well as the course of some health problems in the Chinese population, even among the optimistic people.

Lack of stress effects in the prediction of optimism on health in American students, on the other hand, presents a new view in terms of health maintenance and prevention. The fact that stress plays an important role in health has been well accepted, especially in the past 20 years. It was claimed more that 90% people visit the doctors are stress related problems. Stress management interventions have been developed for the benefit of health. Many skills for stress management and relaxation purposes have been imported from other countries, such as Yoga, Tai Chi and Chinese Qigong. Breathing exercise and more popular techniques are well applied in clinical work. Do those stress management techniques really work? If yes, which component plays the primary effect to the health outcomes? In one of the traditional Chinese Qigong, Yan Xin Qigong, it is believed that the 95% of the benefits come from cultivating "virtue, the 5% comes practicing the meditative technique. This knowledge seems bring to the field of health new wisdom and strategies. The mechanisms of most current stress management techniques for health are questionable. The mechanisms of how the stress contributes to disease and health needs further research.

Since the correlation between *little* optimism and health is smaller than the *big* optimism, therefore we can propose that the effect of *little* optimism on health is less important than *big* optimism. No doubt, however, we will have to await the results of longitudinal studies which can best address such issues. Strong negative association between *big* optimism and stress may provide another path to improve the quality of health. People

with more *big* optimism might easily develop a better stress management strategy that is not only useful for coping with daily stressful situations, but helpful in cultivating a relaxed personality which would positively reinforce the development of a more positive thinking style, decision making procedure, and action plan in the long run. Furthermore, since the correlations show that *big* optimism remains closely related to all health perspectives, it may be that focusing on developing a broader, more optimistic view about life, such as setting high goals, and a long term plan, better prepare the individual to fit into and contribute to society and contribute to a greater feeling of overall well-being

4.4. Optimism/Pessimism and Mental Health:

In this study, Chinese had better physical health status, but they showed no difference in mental health when compared with their American counterparts. This is unusual in a study related to Asian populations because several cross-cultural studies have reported that Asian populations possess more emotional problems (Chang 1996, 2002; Zhang 1989; Guo, 1987; Lee 1997). Mental health overall is an underestimated and under-investigated field in Chinese. Chinese people generally have less awareness regarding mental problems; therefore they may not be familiar with the standard evaluation process and thus underestimate their problem. In addition, Chinese people are famous for their high tolerance of difficulty, which therefore probably also increases their threshold for psychological disturbances. On the other hand, Chinese people usually have strong

feelings about the social consequences, the stigma associated with mental illness, therefore their sensitivity may make the self-report evaluation related to mental health an under-reported result.

Another point, which may be the most important reason, is that Chinese students have reported less mental health problems. This might be influenced by the fact that Chinese culture has fundamentally nurtured inward oriented cognitive styles that cultivate and facilitate the internal peace and harmony, thus contributing to overall health. Many relevant philosophies, as the three main educational and philosophical schools mentioned above, and methods have been re-introduced and emphasized in the Chinese society, especially in the past 20 years, such as Dao De Jin, Buddicism philosophy, Confucianism, Qigong, Tai Chi, Yoga etc. Many young students have been either influenced by their parents, neighbours, and media promotion, or have been involved personally in practice and apply some of the techniques to maintain their own calm mind. Therefore, they may report less mental disturbance. Overall, since this is an under-investigated field, more research would be necessary to disclose the characteristics of mental health for Chinese people and its implication.

4.5. Limitations of This Study

Several potential limitations to the present study must be recognized:

First, although this study assessed cultural differences based on participants' self-identification to one of two ethnic categories (viz., American vs. Chinese), it has been brought up as a major limitation of such methods in cross-cultural studies (Betancourt & López, 1993). According to Phinney (1996) , the concept of ethnic culture should be multidimensional, rather than unidimensional; therefore it reflects a number of important individual-difference determinants (e.g., country of origin, degree of acculturation, ethnic identity). Clearly, it would be important to extend the present findings in future studies that take into account the role of more specific cultural dimensions on optimism, stress, and health. For example, one may be interested in examining cultural differences in optimism between different Chinese age groups, different Chinese sub-cultural groups (e.g. mainland Chinese, Taiwanese or Hong Kong Chinese, American born Chinese etc.) and comparing them with non-Asian American groups.

Second, this study should include more measures other than stress, such as affectivity, and some more specific health index, such as depression in mental health. We might be able to discover a better model describing the link between optimism and health, especially in American culture.

Third, all data in this study were self-reports. More objective measurements of stress, such as skin resistance for stress level, or laboratory data of numbers of T cells representing physical health, would not only bring us closer to the mechanism of optimistic styles on health, but the reduction of individual bias.

Fourth, the present findings are based on responses at one time point obtained from a non-clinical (college student) population. Accordingly, responses on the different measures of psychological disturbance used in the present study were viewed to reflect general health condition (Gotlib, 1984), rather than signs of situational feeling. Therefore, it is difficult to make strong inferences about the generalizability of the present findings to other, including, disturbed populations. Thus, it would also be important to examine the relationships among the present variables in populations in which there might be greater variability in physical adjustment or well-being. A better design would be longitudinal studies in which, using subjects with either physical or mental health problems, collecting measures of stress and health status in two or more time points, then comparing the differences in people with different optimistic styles.

Lastly, one must keep in mind that the present results are based on a cross-sectional design, making it difficult to draw any inferences about the causal relations among the present study variables. Hence, future studies that assess for these variables across time can help clarify the causal relations between them. Clearly, additional research is needed to address these important issues.

CONCLUSION

In conclusion, the present findings indicate that it is important to assess cultural difference when studying the function of some cognitive factors such as optimism and pessimism. Big optimism seemed to play a more important role in predicting health than little optimism. The links between optimism and health were largely mediated by stress levels for the Chinese subjects; this was not the case for the American subjects. These different results suggest that conventional cognitive models of health and health improvement strategies (e.g., Beck, 1967, 1976; Beck & Emery, 1985; Beck et al., 1979) may not necessarily be appropriate for different ethnic populations. The evolution of positive psychology may point to a more efficient and effective way of achieving a sense of well-being in different cultures.

APPENDIX

Appendix I. Explanatory Optimism vs. Pessimism (examples):

Permanent: Permanent vs. Temporary

Bad events

Permanent (Pessimistic)

"No one will ever want to be friends with me at Bywood."

Temporary (Optimistic)

"It takes time to find a new best friend when you move to a new school."

Good events

Temporary (pessimistic)

"Dad had been spending time with me because he's been in a good mood lately"

Permanent (Optimistic)

"Dad loves to spend time with me"

Pervasiveness: Specific vs. Global

Bad event

Global (Pessimistic)

"Teacher are unfair."

Specific (Optimistic)

"Mrs. Robinson is unfair."

Good event

Specific (Pessimistic)

"I am smart at math."

"I got to play Oliver because I am a good singer."

Global (Optimistic)

"I'm smart."

"I got to play Oliver because I've got a lot of talent."

Personal: Internal vs. External

Bad event

Internal (Pessimistic)

"fail a course, I am stupid."

External (Optimistic)

"The room is too noisy."

"the teacher is no good."

Good event

(External Pessimistic)

"I got a good teacher."

Internal (Optimistic)

"I am a good student."

General Self-Blame

(Permanent, pervasive, internal))

"I got a C on the test because

I am stupid"

"I got picked last in gym class again.

No one likes me."

Behavioral Self-Blame

(Temporary, specific, and external)

"I got a C on the test because

I did not study hard enough."

"I got picked last in gym class again.

I'm no good at soccer!"

Appendix II. Dispositional Optimism Scale: LOT-R

LOT-R Instructions: Please answer the following questions about yourself by indicating the extent of your agreement using the following scale:

- [0] = strongly disagree
- [1] = disagree
- [2] = neutral
- [3] = agree
- [4] = strongly agree

Be as honest as you can throughout, and try not to let your responses to one question influence your response to other questions. There are no right or wrong answers

- _____ 1. In uncertain times, I usually expect the best.
- _____ 2. It's easy for me to relax.
- _____ 3. If something can go wrong for me, it will.
- _____ 4. I'm always optimistic about my future.
- _____ 5. I enjoy my friends a lot.
- _____ 6. It's important for me to keep busy.
- _____ 7. I hardly ever expect things to go my way.
- _____ 8. I don't get upset too easily.
- _____ 9. I rarely count on good things happening to me.
- _____ 10. Overall, I expect more good things to happen to me than bad.

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