

CITY UNIVERSITY OF HONG KONG

**Academic Stress and Health Outcomes among College
Students: A Comparative Study in Hong Kong
and Mainland Chinese Students**

A Report Submitted to
Department of Applied Social Studies
in Partial Fulfillment of the Requirements for
the Bachelor of Social Sciences in Psychology

by

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Abstract

The number of mainland students in Hong Kong is increasing, especially in the sector of college. However, limited amount of empirical studies were conducted to address the differences between local Hong Kong students and their mainland counterpart. Questionnaires were distributed to 230 Hong Kong and mainland China students in two Universities in Hong Kong. In this study, the academic stress level was compared using Gadzella's (1991) Student-life Stress Inventory (SLSI). Health statues were compared using Ware's (1993) Medical Outcome Study: Short-form 36 (MOS SF-36). Coping was also compared, assessed by Folkman and Lazarus's (1985) Ways of Coping-Revised (WOC-R). The mediating effect of coping was examined. Academic self-efficacy, was assessed by Yuen's (2005) Academic Development Self-Efficacy Scale (Chinese version) extracted from the Life Skills Development Inventories (Junior Secondary Form). The moderating effect of academic self-efficacy was examined. Result showed that Hong Kong students were more stressful, and there is a negative relationship between stress and health. Neither the mediating effect of coping nor the moderating effect of academic self-efficacy was proved significant, but coping was proved to exert mediating effect on the relationship between place of birth and health. Health care professionals and school administrative should help students to tackle the stress experienced. It was believed that through more investigations into the mediating and moderating variables of stress-health relationship in local sample would more effective intervention program be produced.

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Thesis Submission Declaration Form

City University of Hong Kong
Department of Applied Social Studies

Thesis Submission Declaration Form

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Student No.:

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Course Code: SS4708

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Chapter 1: Introduction and Literature Review

There is an increasing number of students studying abroad in higher education sector, for example, college. In Hong Kong, there were only 536 non-HK undergraduate students in 2001. The number rose to 3979 in 2007-08 academic year. The ratio of non-HK undergraduate to Hong Kong students rose from 6% at 2006 to 7% at 2007 (University Grants Committee, Hong Kong, 2008). This non-HK population composed largely of students from mainland China. By understanding how mainland students differ from their Hong Kong counterparts, universities can provide more effective counseling and guidance programmes and services to ensure a good adjustment to the education setting in Hong Kong.

1.1 Academic stress

For many students, college life is stressful, particularly for the new ones (Noel, Levitz & Saluri, 1985). They have to adapt socially, academically to the new setting. The extent of change may be greater for non-local students, especially when they entered an environment with cultural difference and speak different languages. (Essandoh, 1995; Mori, 2000). According to Mallinckrodt & Leong (1992), studying abroad is a stressful experience for a lot of exchange students. The pressure to perform in school is more acute in Asian societies, for example Singapore (Isralowitz & Ong, 1990). The researches conducted so far focus mainly on foreign exchange students who had different nationality with the host country. However, mainland Chinese students who are going to finish their undergraduate degree in Hong Kong were rarely studied. In this study, whether there would be different level of perceived stress between Hong Kong and mainland Chinese students (who are studying at Hong Kong) would be the first concern. And it was hypothesized that mainland Chinese students would perceive a higher level of stress, when compared to local Hong Kong

students.

Hypothesis 1: Mainland Chinese students
would perceive higher level of stress

1.2 Stress and health

Based on the cognitive-relational perspective of stress, which was guided mainly by Lazarus and Folkman (1984), stress and health relationship was heavily studied. In 1988, DeLongis, Folkman, and Lazarus found that as the daily stress encountered by an individual increased, there were more physiological symptoms. The same relationship was obtained in 1999, in Natvig and Albrektsen's study. Lazarus & Folkman (1984) proposed that as stressors accumulated, an individual's coping ability will possibly be challenged, this will build up demand for their physical or psychological resources. It is the mechanism explaining the positive relationship between number or amounts of stressor and illness. This research aimed at testing whether this relationship could be found in student population, who experienced academic stress. It was hypothesized that the higher the academic stress experienced by college students, the poorer would be the health outcomes.

Hypothesis 2: There would be a negative relationship
between academic stress and health outcomes.

1.3 Stress, Coping and Health in college students

The associations between the variables: stress, coping and health measured in different dimension have been found in various populations, including college

students (Nakeno, 1991). According to Lazarus and Folkman (1984), they proposed coping and cognitive appraisal to be the major mediators of “*stressful person-environment relationship*” and their “*immediate and long-range outcomes*”.

According to Lazarus and Folkman (1986), “*cognitive appraisal is a process through which the person evaluates whether a particular event in the environment is relevant to his or her well-being, and if so, in what ways.*” Primary appraisal is an evaluation of an event’s meaning for personal well-being. After primary appraisal, an event or situation may be estimated as challenging, threatening or harmful. An individual will then try to see if anything could be done to prevent harm or to solve the stressful situation, or even to find some benefit from it. It is the secondary appraisal. Different strategies that come across the individual’s mind in secondary appraisal were collectively coined as “*coping ways*”. These ways of coping have different themes such as to change the situation, to accept it, to find more information about it, or simply hold back from doing any impulsive act. These are different ways of coping. They should not be conceptualized as different kinds of methods, but different types of processes (Folkman & Lazarus, 1988).

During secondary appraisal, coping may occur in order to deal with the stressful situation. An individual choose from a list of coping methods and implement which he thinks was the most appropriate. Coping (Lazarus & Folkman, 1984) is defined as “*the person's constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the person's resources*”. Coping effectiveness can be measured in terms of how much the situation was altered (in an adaptive way) or how well the negative emotion that came along was managed. After secondary appraisal, adaptational outcomes evolve. Adaptational outcomes include somatic health, morale and social functioning

(Lazarus and Folkman, 1984). The stress, coping and health outcomes relationship, especially the mediating role of coping, would be examined in this study. The relationship was illustrated in Figure 1.

Hypothesis 3a: There would be a mediating role of coping on the relationship between academic stress and health outcomes in college students.

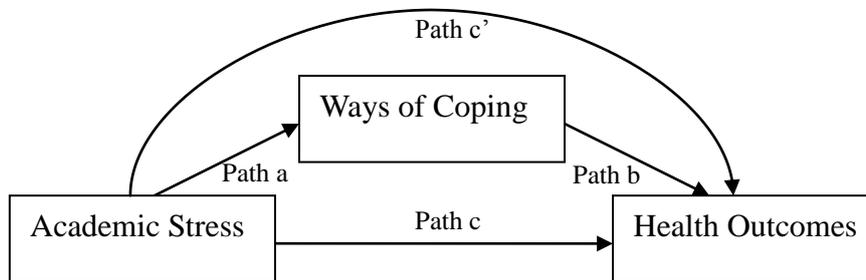


Figure 1. Diagram illustration of the proposed mediating effect of ways of coping on academic stress and health outcomes.

Based on Lazarus & Folkman's theoretical framework, it may be true that different coping strategies may be incorporated by different individuals, or group of individuals, that affects the adaptiveness of outcomes. On the other hand, differences in health outcomes may be affected by place of birth. If there is such a relationship, it is necessary to find out the mechanism behind its operation. In this study, it aimed at finding out whether mainland Chinese students and Hong Kong students would incorporate different coping strategies, and further examining the mediating role of these coping variables in the relationship between place of birth and health outcomes. It was hypothesized that the Hong Kong and mainland Chinese students would have different preferences of coping style, and these differences could be used to explain the observed effect of place of birth on health outcomes, if these differences had ever

existed. The relationships were illustrated in Figure 2.

Hypothesis 3b: Hong Kong and mainland Chinese students would have different ways of coping, and these differences mediate the effect of place of birth and health outcomes.

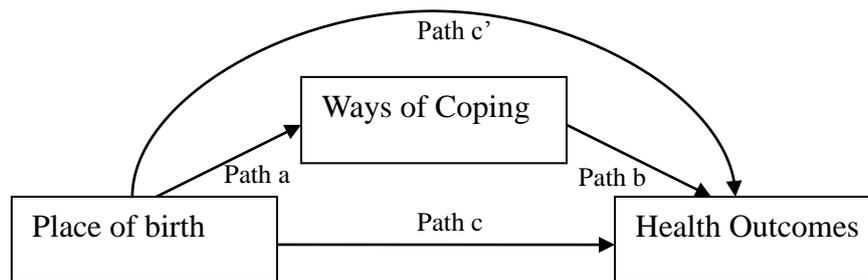


Figure 2. Diagram illustration of the proposed mediating effect of academic stress on place of birth and health outcomes.

1.4 Academic Self-efficacy, Coping and Stress

Study to date had not fully examined all the variables proposed in Lazarus and Folkman's (1984) theory, where most of them focus only on the relationship between cognitive appraisals and coping (Kuyken & Brewin, 1994). Person-related variables were less studied comparatively (Cinelli & Ziegler, 1990), one of them was self-efficacy.

The definition of self-efficacy, according to Bandura (1997), was "*the belief in one's capabilities to organize and execute courses of action required to produce given attainments*" (p. 3). When applied in educational settings, students who were high in self-efficacy were also more persistent, determined and had high achievement (Bandura, 1986; Schunk, 1981; Zimmerman, 1989). Academic self-efficacy could be defined as one's perceived capability to perform given academic tasks at desired levels (Schunk, 1991).

Comparative study revealed that Hong Kong workers had lower general self-efficacy score than Beijing's workers (Siu, Spector, Cooper & Lu, 2005). The same difference in academic self-efficacy was expected between Hong Kong and China's students. Students high in academic self-efficacy used cognitive strategies that were more effective in learning and use it more frequently. With respect to time management, they are more effective. They showed better management on their learning environments and to perform self-monitoring and adjust their own effort. The ability to handle the stressors encountered in challenging situations (e.g. college) with a more positive attitude towards the problems, and not underestimating the availability of coping resources, are typical responses of people having higher self-efficacy. Challenge appraisal, instead of threat appraisal, will be resulted. A challenge appraisal is found to correlate negatively with students' experience of stress, and a reduction in reports of illness but more positive ratings of satisfaction with college life (Chemers, Hu & Garcia, 2001). In short, students high in academic self-efficacy tend to cope with stress better as they used challenge appraisal more often. Difference in coping strategies used, rather than appraisal, would be studied in this study. As it is believed that mainland Chinese students will be more stressful, and that they are of higher academic self-efficacy, it was one of the aims of this research to find out whether self-efficacy would moderate the effect of the stress on health outcomes. Moreover, it was hypothesized that the path from academic self-efficacy to health outcomes would be mediated by the coping strategies used. The mediating and moderating variables in stress-health relationship were illustrated in Figure 3.

Hypothesis 4: Self-efficacy would serve as a moderator of stress-health relationship, while coping still exerted

its role in mediating the stress-health model.

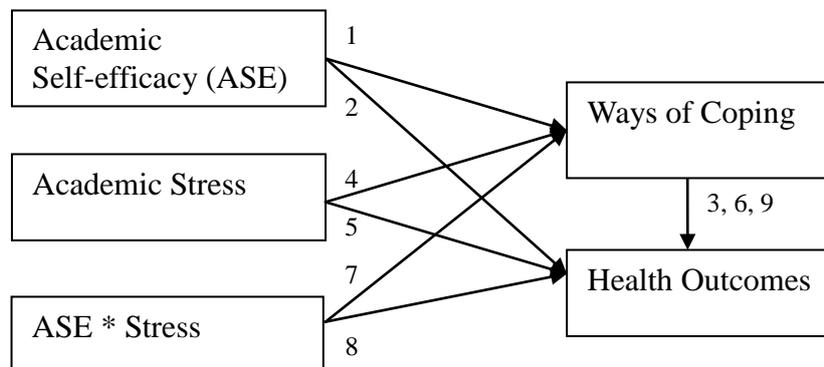


Figure 3. Diagram illustration of the proposed moderating effect of academic self-efficacy and mediating effect of ways of coping on stress-health relationship.

Chapter 2: Methodology

2.1 Participants

Questionnaires were administered to year 1 and year 3 undergraduate students (n=230) studying at two Universities in Hong Kong. Participants were made up of 118 Hong Kong students and 112 students from mainland China. There were 56 foundation year students from mainland China, and 58 year 1 Hong Kong students. There were in total 116 final year students from the two places. All participants were under age 30. The majority (61.3%) of participants were female. Table 1 listed participants' demographics.

Table 1
Descriptive statistics of the Samples' Demographic

Variable	Total sample (n = 230)	China students (n = 112)	Hong Kong students (n=118)
Age			
20 or below	108 (47%)	57	51
21-30	122 (53%)	55	67
Gender			
Male	89 (38.7%)	33	56
Female	141 (61.3%)	79	62
Year of study			
Foundation	56 (24.3%)	56	0
Year 1	58 (25.2%)	0	58
Year 3	116 (50.4%)	53	63

2.2 Measures

There were five parts in the questionnaire, including 1) the Academic self-efficacy; 2) Academic stress; 3) Health outcomes; 4) Ways of coping and lastly the demographic data.

2.2.1 Academic self-efficacy. To measure academic self-efficacy, Yuen and his colleagues' (2007) Academic Development Self-efficacy scale (Chinese version)

extracted from the Life Skills Development Inventories (Junior Secondary Form) were used (Cronbach's alpha = .90). Although it was developed especially for junior school's students, the items were also suitable for measuring college student's academic experiences (e.g. item 2: Master the answering techniques in exams and tests and item 16: Design a timetable for myself and act accordingly). This scale was named Academic Development Self-efficacy scale, and the concept was first proposed by Schunk (1991). The instrument was then adapted to use for junior and senior high school students by Yuen (2007). The scale consisted of 20 items which require participants to rate in percentage the capability to perform the behavior from: Definitely cannot do it (0%), to Definitely can do it (100%) at 10% intervals. It measures five dimensions of academic development self-efficacy namely 1) Time management; 2) Study and Examination skills; 3) Learning from Friends; 4) Educational planning and 5) Being a Responsible Learner. A copy of the original scale was attached in Appendix A.

2.2.2 Academic stress. For the student's academic stress, Gadzella's (1994) Student-life Stress Inventory (SLSI) was used. The items in the inventory reflect on- and off-campus life of a student. There were two sections, stressors and reactions in the scale. Only the former part was included in this study to fit the current research needs. There were five types of stressors: Frustrations, Conflicts, Pressures, Changes and Self-Imposed stress. Participants answered the 23 items by rating each item in a 5-point Likert scale (from 1 = never to 5 = most of the time). The 7-item Frustration subscale measures frustration that is due to delays, daily hassles to reach goals, lack of resources available etc. The 3-item Conflict subscale measures academic stress produced by having two or more desirable and undesirable alternatives, and goals with positive and negative impacts. The 3-item Changes subscale assesses academic

stress that is due to life changes and other changes. The 6-item Self-Imposed stress subscale measures stress due to students' need to compete or the need to be loved, for example. And the 4-item Pressure subscale measures academic stress resulting from competition, deadlines and work overload etc. Cronbach's alphas were .77, .75, .62, .78 and .59 for the five subscales respectively. A copy of the original scale was attached in Appendix B.

2.2.3 Health outcomes. In assessing the health outcomes, the Medical Outcome Study: Short-form 36 (MOS SF-36) that was developed by Ware, Snow, Kosinski, Gandek (1993) was used. It assesses eight health concepts including: Perceived general health (5 items); Physical functioning (10 items); Social functioning (2 items); Bodily pain (2 items); Vitality (4 items); Physical role (4 items); Emotional role (3 items); and Mental health (5 items). There is a single item concerning participants' general health compared to one year ago. Standardization of raw scores was obtained following the suggestion of the Manual and Interpretation Guide (Ware, 1993). Cronbach's alphas were .81, .89, .55, .75, .72, .76, .78 and .79 for the eight subscales respectively. It provides a comprehensive view of a person's health status. A copy of the original scale was attached in Appendix III.

2.2.4 Coping. Folkman and Lazarus had been popular in the field of stress study. In this study, their Ways of Coping-Revised (WOC-R) Scale was used and it was developed from a study of the ways of coping college students used to deal with an examination (Folkman & Lazarus, 1988). This version is more suitable than other WOC scale for investigations because it is highly relevant to college students. It included 66-item in the questionnaire asking about the cognitive and behavioural strategies that students used to deal with the internal and/ or external demands of a stressful situation encountered, which were referred to as academic stress in the

current study. Items were rated by a 4-point Likert scale from 0 = does not apply and/or not used to 3 = used a great deal. There are eight subscales including:

Problem-focused coping, PF (11 items); Wishful thinking, WT (5-items); Detachment, D (6-items); Seeking social support, SS (7-items); Focusing on the positive, POS (4-items); Self blame, B (3-items); Tension reduction, TR (3-items) and Keep to self, KS (3-items). The Cronbach's alphas were .80, .76, .64, .68, .70, .52, .46 and .56 respectively. A copy of the original scale was attached in Appendix IV.

2.2.5 Demographic. Simple demographic data such as age, sex, place of origin, and year and mode of study would be collected in the last part of the questionnaire.

Chapter 3: Results

3.1 Descriptive statistics

Table 2 presents the results of the hierarchical regression analysis. Groups of predictor variables were entered in different steps progressively. The background variables, which also acted as control variables were entered first. These variables did not significantly predict health outcomes ($F(4, 225) = .67, p > .05$). In Step 2, mean score of all stress sub-scales of SLSI were added to the model. The R^2 was significantly increased ($F(5, 224) = 17.57, p < .001$), suggesting that stress significantly predicted health outcomes after controlling for background variables, and it accounted for 27% of change in health outcome. In Step 3, means of the eight ways of coping from WOC-R were added to the model. Although stress and coping together could explain more the variance in health outcomes (R^2 from .28 to .37), the contribution of coping was 9% only. Finally, in Step 4, academic self-efficacy was added. The R^2 was statistically significant ($F(13, 216) = 9.79, p < .001$), suggesting that together, academic self-efficacy add significant predictive utility for health outcomes over and above the other predictor variables. These variables together accounted for 38% of variance in health outcomes.

Table 2
Hierarchical Regression of Independent Variables on Health

Steps and predictor variable	R^2	ΔR^2	B
Step 1	.012	.012	
Gender			-13.44
Age			-.858
Year of study			-3.037
College			6.715
Step 2	.282***	.270***	
Stress			-5.879***
Step 3	.371	.089***	
Coping			
1. PF			1.686
2. WT			-1.224
3. D			1.128
4. SS			0.517
5. POS			1.574
6. B			-0.437
7. TR			0.409
8. KS			-0.589
Step 4	.382	.011*	
ASE			1.368*

3.2 Research question 1: Stress among Hong Kong and China students

Independent sample t-test was conducted to compare the level of perceived stress between Hong Kong and mainland China students. Table 3 describes the descriptive statistics of academic stressors from SLSI for mainland Chinese and Hong Kong students. In general, Hong Kong students scored higher in all but one subscales, the Self-imposed stress. But only in two out of the five stressors' scores: Frustration and Pressure were the difference statistically significant. Overall, Hong Kong students perceived significantly higher levels of stress ($M = 70.5, SD = 10.5$) than their mainland China counterparts ($M = 67.5, SD = 11.2$) as indicated by the sum of stress scores, $t(223) = 2.09, p = .04$.

Table 3
Means and Standard Deviations of Academic Stressors by Place of Birth

	<i>M (SD)</i>		<i>t</i>
	Mainland China students	Hong Kong students	
Stressors			
Frustration	18.0 (4.46)	19.6 (4.02)	2.88 **
Conflict	8.54 (1.94)	8.84 (1.85)	1.18
Pressure	12.5 (2.74)	13.2 (2.49)	1.98 *
Changes	8.63 (2.36)	9.16 (2.50)	1.67
Self-Imposed	19.8 (3.41)	19.7 (3.06)	-0.30
Sum of stress	67.5 (11.2)	70.5 (10.5)	2.09*

* $p < .05$, ** $p < .01$

3.3 Research question 2: Relationship between academic stress and health outcomes

The health outcomes survey (MOS SF-36) findings revealed that general health of students was good. Some of the students reported that their health condition was good ($n = 78, 34\%$) in the question “in general, would you say your health is...” under General Health Perception subscale. Table 4 lists the descriptive statistics of both raw scores and standardized scores of the eight subscales in the MOS SF-36. The standardized subscales scores were obtained by the formula listed under Table 4. An index of health was computed by adding the scores of the 8 subscales. The values obtained in this study were compared to a study conducted by Li and colleagues (2003) which had normalized the scores obtained from 1000 mainland household. The ‘normed value’ column presented in the following Table 4 shows the health conditions of the subjects aged between 18-44 in Li’s study. The scores obtained in present study were comparable to Li’s data except for the four subscales. Sample collected in present study showed lower scores in social functioning ($M = 74.5, SD = 18.8$), bodily pain ($M = 73.3, SD = 20.5$), physical role functioning ($M = 75.8, SD = 85.3$), and emotional role functioning ($M = 51.4, SD = 85.3$) while lower scores indicated a poorer health.

Table 4
Means and Standard Deviations of Raw and Standard Scores of Students' Health Conditions, Compared to Normed Value

	<i>M(SD)</i>		
	Raw scores	Standardized scores (0 to 100)	Normed value
MOS SF-36 subscales			
General Health Perception	17.6 (4.05)	62.8 (20.3)	60.0 (19.8)
Physical Functioning	28.1 (3.00)	90.6 (15.0)	86.0 (18.0)
Role Functioning-Physical	7.03 (1.29)	75.8 (32.3)	85.3 (29.0)
Role Functioning-Emotional	4.54 (1.25)	51.4 (41.5)	85.3 (30.5)
Social Functioning	7.96 (1.51)	74.5 (18.8)	84.2 (16.9)
Bodily Pain	9.33 (2.05)	73.3 (20.5)	85.0 (17.8)
Vitality	14.6 (3.11)	52.9 (15.5)	53.3 (20.3)
Mental Health	20.0 (4.17)	59.9 (16.7)	57.9 (21.4)
Index of health	109.1 (13.6)	541.1 (111.6)	597 (173.7)

A high score indicates a healthier state.

Transformed Scale = [(Actual raw score – lowest possible raw score)/ possible raw score range] × 100

A correlation test was taken to find out the relationship between academic stress and health outcomes. In general, stress was correlated negatively with health, as indicated by the negative Pearson correlation between Sum of stress and Index of Health, $r(230) = -.52, p = .000$. The regression of health on stress yielded a β of $-.50$ and $R^2 = .25$, which means that an increase of 1 unit of measure in stress will lead to a 0.5 unit of decrease in health and stress alone can account for 25 % of variance observed in health outcomes. Sum of stress was also correlated negatively with all the subscales of MOS SF-36 measures of health from $r(230) = -.21, p < .01$ of Physical Role Functioning to $r(230) = -.52, p < .01$ of Mental Health. The correlation was only insignificant for the single item measuring respondents' perception of their health compared to one year ago. Alternatively, Index of Health correlates with all the five subscales measuring Academic stress (r from $-.21$ of Self-imposed stress to $-.49$ of Frustration stress, $p < .01$). Table 5 lists the results of intercorrelations of these variables.

Table 5

Correlations of Health Outcomes with Academic Stress

	Sum of stress ²	Self-imposed stress	Frustration stress	Conflict stress	Pressure stress	Change stress
Index of health ¹	-.52***	-.21**	-.49***	-.37***	-.46***	-.43***
Compare to 1-year ago	-.08	-.09	-.04	-.03	-.08	-.07
General Health Perception	-.25***	-.05	-.25***	-.17*	-.26***	-.19**
Physical Functioning	-.26***	-.12	-.25***	-.24***	-.14*	-.23***
Role Functioning: Physical	-.21**	-.13	-.15*	-.12	-.24***	-.17*
Role Functioning: Emotional	-.28***	-.20**	-.22**	-.20**	-.24***	-.21**
Social Functioning	-.35***	-.24***	-.25***	-.24***	-.30***	-.30***
Bodily Pain	-.31***	-.09	-.29***	-.19**	-.31***	-.27***
Vitality	-.46***	-.16*	-.44***	-.30***	-.43***	-.40***
Mental Health	-.52***	-.21**	-.51***	-.37***	-.42***	-.42***

1. Index of health is the summing of the raw scores of the 8-subcales in SF-36.

2. Sum of stress is the sum of the scores in the five subscales of SLSI

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 6

Means, Standard Deviations, and Correlation Between Variables in Study

Variable	<i>M</i>	<i>SD</i>	1	2								3	4
				a	b	c	d	e	f	g	h		
1. Academic Stress	69.0	11.0	-	.19*	.40**	.14	.24**	.01	.26**	.23**	.36**	-.52**	-.18*
2. Ways of Coping													
a. PF	1.66	0.45		-	.45**	.39**	.56**	.60**	.57**	.36**	.26**	.19*	.30**
b. WT	1.47	0.65			-	.50**	.45**	.31**	.48**	.31**	.40**	-.15	-.09
c. D	1.27	0.52				-	.26**	.44**	.32**	.36**	.38**	.05	-.07
d. SS	1.65	0.49					-	.48**	.38**	.36**	.09	.07	.15
e. POS	1.64	0.61						-	.38**	.36**	.16	.30**	.23**
f. B	1.57	0.60							-	.25**	.38**	-.02	.01
g. TR	1.01	0.60								-	.21*	.01	.03
h. KS	1.32	0.64									-	-.21*	-.09
3. Health outcomes	109.1	13.6										-	.35**
4. Academic Self-efficacy	135.9	23.9											-

All the means and correlation were calculated with raw scores.

* $p < .01$; ** $p < .001$

3.4 Research question 3a: Would coping be a mediating variable on the relationship between stress and health?

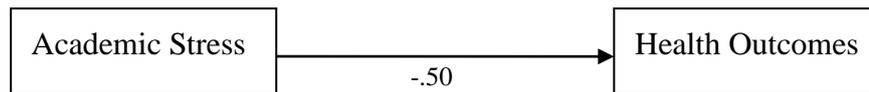
Table 6 lists the means, standard deviation and correlations between major variables of the present study. Academic stress was significantly and positively correlated with ways of coping (except POS), but negatively with health outcomes and also academic self-efficacy. In the eight ways of coping, only PF, POS and KS were significantly correlated with health outcome, all in positive direction except KS. Academic self-efficacy was significantly correlated with stress in a negative way but with health in a positive way. A positive correlation was found between PF and POS coping.

To test whether the effect of stress and health was mediated by coping, the procedure suggested by Baron and Kenny (1986) was used. To provide evidence for the mediation, the following criteria should be met: a) Stress is related to mediating variable, coping; b) the mediating variable coping is related to health outcomes; and c) the mediating variable coping reduces the regression coefficient of stress on health outcomes, because the relationship is partially accounted for by the mediating variable. In other words, path a and b in Figure 1 should be significant and c' should be smaller than c. When all the three conditions are met, a mediation exists.

Table 7 reports the regression analyses that examine the mediation hypothesis.

First of all, path c in figure 1 should be significant. So, the dependent variable health outcome was regressed on the predictor academic stress (Step 1). Standardized T-scores were used whenever possible. Academic stress was significantly associated with health outcome ($\beta = -.50, p < .001$), thus, path c was significant. The requirement for mediation in Step 1 was met. Next, to establish that academic stress was related to the proposed mediator ways of coping, the eight different ways of coping were regressed on academic stress (Step 2) one by one to test path a in figure 1. Academic stress was significantly associated with certain ways of coping: PF ($\beta = .19, p < .01$), WT ($\beta = .40, p < .001$), SS ($\beta = .24, p < .01$), B ($\beta = .26, p < .001$), TR ($\beta = .23, p < .001$) and KS ($\beta = .36, p < .001$) and thus path a was significant for six ways of coping. And only these six were included in the next step. To test for the mediation effect of coping variables, health outcomes was simultaneously regressed on both the six ways of coping and academic stress (Step 3). Among the six ways of coping, only one, the PF coping ($\beta = .25, p < .01$) was still significantly associated with health outcomes after controlling for academic stress. Path b was significant for one mediating variable. This step also provided an estimate of the relation between academic stress and health, after controlling for ways of coping (path c'). If path c' is reduced to zero, we have evidence for complete mediation. However, path c' was still significant ($\beta = -.54, p < .001$), it even showed a greater value than path c ($\beta = -.50, p$

< .001), and this suggested an absence of mediating effect of coping on relationship between academic stress and health outcomes. Figure 1 could be simplified into the following figure.



3.5 Research question 3b: Did ways of coping mediate the effect of place of birth on health outcomes?

A comparison of the preference of ways of coping between Hong Kong and mainland China's students is presented in Table 8. After ranking the average score of way of coping, ranking differences for the first three preferences: PF, SS and POS were observed. In Hong Kong students, the use of SS, PF and POS were the first three choices. In mainland Chinese students, the order changed to POS, PF and SS.

Although the order was different, the nature of these coping styles was positive and adaptive. For the remaining ways of coping, the scores of both samples in B, WT, KS, D and TR were in rank 4 to 8. The differences of the mean scores were significant for PF, SS, POS and B, which represented the first four ranks for both samples.

Similar regression procedures were carried out in testing the mediation hypothesis. Table 9 presents the relevant regression analyses. First of all, the dependent variable

health outcome was regressed on the predictor place of birth (Step 1, path c in figure 2). Standardized T-scores were used. Place of birth was significantly associated with health outcome ($\beta = .15, p < .05$), path c was significant. The requirement for mediation in Step 1 was met. Next, the eight different ways of coping were regressed on place of birth (Step 2) one by one to test path a of figure 2. Place of birth was significantly associated with certain ways of coping: PF ($\beta = .26, p < .001$), SS ($\beta = .18, p < .01$), POS ($\beta = .28, p < .001$) and B ($\beta = .20, p < 0.01$), and thus path a was significant for four ways of coping. And only these four would be included in the next step. To test for the mediating effect of the four coping variables, health outcomes were simultaneously regressed on both the four ways of coping and place of birth (Step 3). Two ways of coping, POS ($\beta = .27, p < .01$) and B ($\beta = -.19, p < .05$) were still significantly associated with health outcomes after controlling for place of birth. Path b was significant for two mediating variables. This third regression equation also provided an estimate of the relation between place of birth and health, after controlling for ways of coping (path c'). If path c' is reduced to zero, ways of coping is a good mediator. From the regression result, path c' was not significant ($\beta = .101, p = .129$), and this suggests a presence of mediating effect of POS and B coping on relationship between place of birth and health outcomes. Figure 2 could be re-constructed into the following figure.

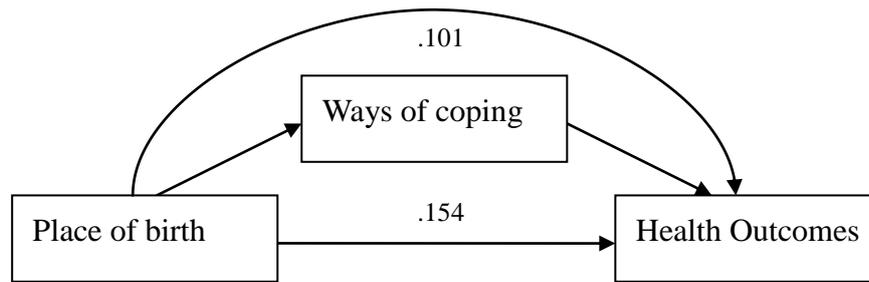


Table 7

Regression Analysis for the Mediating Effects of Coping Variables on Stress and Health Outcomes

Testing Steps	B	SE B	β
Step 1 (Path c)			
Outcome: health			
Predictor: ASE	-5.60	0.64	-.50**
Step 2 (Path a)			
Outcome: ways of coping			
1. PF	0.19	0.065	.19*
2. WT	0.40	0.061	.40**
3. D	0.14	0.066	.14
4. SS	0.24	0.064	.24**
5. POS	0.01	0.066	.01
6. B	0.26	0.064	.26**
7. TR	0.23	0.064	.23**
8. KS	0.36	0.06	.36**
Predictor: ASE			
Step 3 (Path b and c')			
Outcome: health			
Mediator: ways of coping			
1. PF	2.77	0.856	0.25*
2. WT	-0.73	0.802	-0.07
4. SS	0.66	0.797	0.06
6. B	-0.39	0.801	-0.04
7. TR	1.04	0.683	0.09
8. KS	-0.38	0.723	-0.03
Predictor: ASE	-5.99	0.697	-0.54**

Note. $R^2 = .25$ for step 1; $R^2 = .33$ for step 3; $\Delta R^2 = .08$ for step 3.

PF= Problem-focus coping; WT= Wishful thinking; D= Detachment; SS= Seeking social support; POS= Focus on positive; B= Blame to self; TR= Tension reduction, KS= Keep to self and ASE =

Academic Self-efficacy.

* $p < .01$; ** $p < .001$

Table 8

Comparison of Means, Standard Deviation and Rank of Preference of Ways of Coping Between Hong Kong and China Students

Ways of coping	HK			China			<i>t</i>
	<i>M</i>	<i>SD</i>	Rank	<i>M</i>	<i>SD</i>	Rank	
PF	1.55	.46	2	1.78	.40	2	-4.00**
WT	1.39	.63	5	1.55	.66	5	-1.83
D	1.22	.48	7	1.32	.56	7	-1.49
SS	1.56	.51	1	1.73	.45	3	-2.78*
POS	1.47	.57	3	1.81	.61	1	-4.37**
B	1.46	.55	4	1.69	.61	4	-3.05*
TR	0.97	.60	8	1.05	.61	8	-1.07
KS	1.28	.67	6	1.36	.61	6	-0.96

Note. Average scores of each scale were used.

PF= Problem-focus coping; WT= Wishful thinking; D= Detachment; SS= Seeking social support;

POS= Focus on positive; B= Blame to self; TR= Tension reduction, and KS= Keep to self.

* $p < .01$; ** $p < .001$

Table 9

Regression Analysis for the Mediating Effects of Coping Variables on Place of Birth and Health Outcomes

Testing Steps	<i>B</i>	<i>SE B</i>	β
Step 1 (Path c)			
Outcome: health			
Predictor: place of birth	34.4	14.6	.154*
Step 2 (Path a)			
Outcome: ways of coping			
1. PF	5.12	1.28	.257**
2. WT	2.41	1.31	.120
3. D	1.97	1.32	.098
4. SS	3.61	1.30	.181**
5. POS	5.55	1.27	.278

6. B	3.95	1.30	.198**
7. TR	1.40	1.32	.070
8. KS	1.26	1.32	.063
Predictor: place of birth			
Step 3 (Path b and c')			
Outcome: health			
Mediator: ways of coping			
1. PF	1.41	1.05	.126
4. SS	-0.93	0.88	-.083
5. POS	2.97	0.92	.266*
			*
6. B	-2.15	0.86	-.193*
Predictor: place of birth			
	22.6	14.8	.101

Note. $R^2 = .024$ for step 1; $R^2 = .104$ for step 3; $\Delta R^2 = .08$ for step 3.

PF= Problem-focus coping; WT= Wishful thinking; D= Detachment; SS= Seeking social support;

POS= Focus on positive; B= Blame to self; TR= Tension reduction, and KS= Keep to self.

* $p < .05$; ** $p < .01$; *** $p < .001$

3.6 Research question 4: If China students had higher Academic Self-efficacy, would this explain more the effect of ways of coping on health outcomes?

Results of independent sample t-test showed that mainland Chinese students scored significantly higher in academic development self-efficacy than Hong Kong students. The means and standard deviation of academic development self-efficacy of mainland China's students were 143.4 and 23.4, while that of Hong Kong students were 128.8 and 22.2. The difference was statistically significant, $t(229) = -4.85$, $p < .001$.

Similar regression procedures were carried to test for the mediating role of ways of coping on the path from academic self-efficacy to health outcomes (paths 1, 2 and 3 in figure 3). Table 10 summarizes the relevant regression analyses. First of all, the dependent variable health outcome was regressed on the predictor academic self-efficacy (Step 1, path 2). Standardized T-scores were used. Academic self-efficacy was significantly associated with health outcome ($\beta = 0.272$, $p < .001$), path 2 was significant. The first requirement for mediation relationship was met. Then, the eight different ways of coping were regressed on academic self-efficacy (Step 2, path 1) one by one. Academic self-efficacy was significantly associated with three ways of coping: PF ($\beta = 0.30$, $p < .001$), SS ($\beta = 0.15$, $p < .05$) and POS ($\beta = 0.23$, $p < .001$), and thus the relationship was significant for three ways of coping. And only

these three would be included in the next step. To test for the mediation effect of the three coping variables, health outcomes were simultaneously regressed on both the three ways of coping and academic self-efficacy (Step 3). One way of coping POS ($\beta = 0.26, p < 0.01$), was still significantly associated with health outcomes after controlling for academic self-efficacy. Path 3 was significant for POS coping. This path also helps estimating the relation between academic self-efficacy and health, with ways of coping being controlled. However, the relationship was still significant ($\beta = 0.23, p < 0.01$), and this suggested an absence of mediating role of coping on the path from academic self-efficacy to health outcomes. On the other hand, the mediating role of coping on the path from academic stress to health outcomes (path 4, 5 and 6 in figure 3) was discussed previously in research question 3a.

To test for the moderation effect of academic self-efficacy, multiple regression analyses was carried out in which the cross product of academic self-efficacy and stress (ASE x Stress) was added to the relevant main effects, with health outcomes score as the dependent variable (Baron & Kenny, 1986). Referring to figure 3, path 2, 5 and 8 were tested. ASE, academic stress and the interaction term were regressed on health outcomes simultaneously. In this analysis, a significant effect ($\beta = -0.52, p < .05$) was only found for the stress main effect (path 5). The focus of concern, interaction effect was not significant ($\beta = 0.06, p = .84$). The moderating effect of

academic self-efficacy was not supported. Table 11 lists the results. Both ASE and stress were regrouped into categorical variable according to the T-scores. For those scored under 50 were labelled as 1 and otherwise 2. One-way ANOVA provided a graphical representation of the relationships of ASE, stress and health. The results were presented in figure 4. As there is no moderating effect of coping on ASE and health, the mediating-moderating effect (path 7, 8 and 9 in figure 3) originally proposed was not conducted.

Table 10

Regression Analysis for the Mediating Effects of Coping Variables on Academic Self-Efficacy and Health Outcomes

Testing Steps	<i>B</i>	<i>SE B</i>	β
Step 1 (Path c)			
Outcome: health			
Predictor: ASE	3.04	0.71	.272***
Step 2 (Path a)			
Outcome: ways of coping			
1. PF	0.30	0.063	.304***
2. WT	-0.09	0.066	-.092
3. D	-0.07	0.066	-.068
4. SS	0.15	0.065	.153*
5. POS	0.23	0.064	.233***
6. B	0.01	0.066	.011
7. TR	0.03	0.066	.031
8. KS	-0.09	0.066	-.086
Predictor: ASE			
Step 3			
Outcome: health			
Mediator: ways of coping			
1. PF	-0.22	0.971	-.020
4. SS	-0.97	0.865	-.086
5. POS	2.85	0.898	.255**
Predictor: ASE			
	2.59	0.735	.232**

Note. $R^2 = .074$ for step 1; $R^2 = .120$ for step 3; $\Delta R^2 = .046$ for step 3.

PF= Problem-focus coping; WT= Wishful thinking; D= Detachment; SS= Seeking social support; POS= Focus on positive; B= Blame to self; TR= Tension reduction, KS= Keep to self, and ASE = academic self-efficacy

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 11

Regression Analysis for the Moderating Effects of Academic Self-efficacy on Stress and Health Outcomes

Steps and Predictor variable	<i>B</i>	<i>SE B</i>	β
ASE	1.56	2.71	.14
Academic Stress	-5.75	2.72	-.52*
ASE x Stress	0.011	0.055	.062

Note. $R^2 = .03$ for step 1; $R^2 = R^2 =$

Standardized T-score were used. ASE= Academic Self-efficacy

* $p < .05$

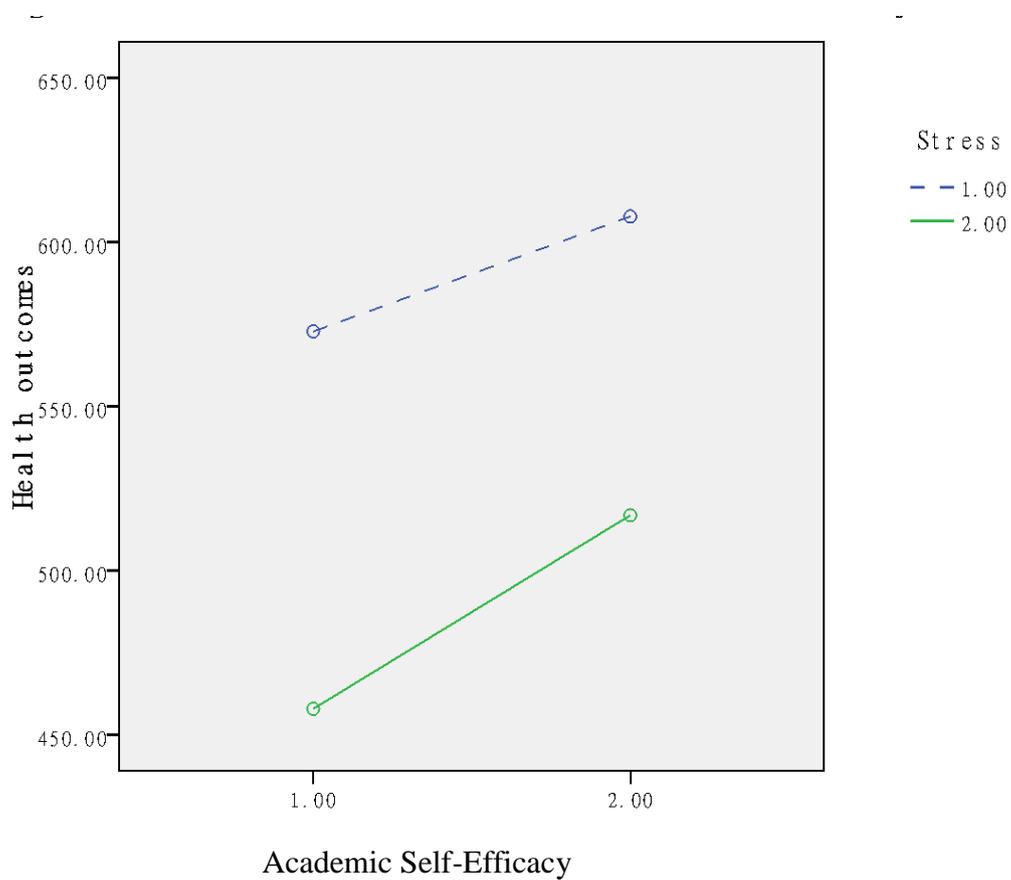


Figure 4. Moderating effect of academic self-efficacy on stress-health relationship.

Chapter 4: Discussion and Conclusions

4.1.1 High stress of HK students

In this study, it was found that Hong Kong students perceived higher academic stress than their mainland counterpart, which was contradictory to the hypothesis. Hong Kong people are stressful and the high stress of Hong Kong student was not a new finding. In one study conducted by a local university which included about 8000 participants (Wong, Cheung, Chan, Ma, & Tang, 2006), the stress scores of first-year college student was higher than those of the general population, and also the same pattern was found in other previously published data (Lovibond & Lovibond, 1995; Crawford & Henry, 2003). It implied that Hong Kong students suffered greater stress than the local general population and international samples. The other important finding of the study conducted by Wong and colleagues (2006) was that, the prevalence rate of moderately or severely stress symptoms was 26.5% (n = 2101). The authors stated that moderate severity of symptom or above are possible to result in some functional impairment and may be alarming for the concern parties such as health care professionals and school administrator.

4.1.2 Stress and health relationship

The relationship between stress and health was heavily studied and well-established. Many studies found an association between them (for reviews, see

Creed, 1985; Dohrenwend & Dohrenwend, 1974, 1978; Rabkin & Streuning, 1976).

Another finding of the present study was the significant negative relationship of stress and health. There were plenty of evidences supporting the stress-illness relationship (Jones & Bright, 2007). For physical health, Glaser and colleagues have found that higher psychological stress was associated with higher occurrence rate of infectious diseases (Glaser et al., 1987). Moreover, Cobb and Steptoe (1996) found that people who reported experiencing more stressful life events were at greater risk for developing upper-respiratory infection.

Participants of this study demonstrated poorer health when compared to the normed value from a Chinese community sample (Li & Shen, 2003). They scored lower in physical and emotional role functioning, social functioning and also bodily pain subscales of SF-36 than the normed values. Although the difference was not proved by statistical procedure to be significant, the difference was large and deserved attention. And the standardized T-value of emotional role functioning, vitality and mental health scored lower than 60. Emotional role functioning subscale included three questions assessing the influence of emotion on daily activities. Vitality subscale assessed feeling of energetic/fatigue. Mental health subscale assessed depressed mood and anxiety. This implied that the sample had poorer mental health than physical health.

Stress is believed to affect health both through direct physiological mechanisms and indirectly through the alteration of health-related behaviors. Brantley and Garrett (1993) had summarized the proposed models of stress-health relationship after reviewing the literature. The mechanism included changes in physiological functioning, increased high risk behavior and inadequate coping, etc. The interest of this study was on the coping pathway and effort was devoted to examine its mediating effect on stress-health relationship.

4.1.3 Stress, coping and health

Coping was found to correlate with health in this study. Regression analysis showed that PF, POS and B were significant predictor of health in different mediating pathways, although the mediating role of coping in overall on stress-health relationship was not significant. It was also found that among the eight ways of coping, both Hong Kong and mainland China students indicated higher frequency in using SS, PF and POS (rank 1 to 3). By referred back to table 4, all these three coping were positively correlated with health outcomes, and the positive correlation were significant for Problem-focus and Focus on positive coping. A comparative study using 274 immigrant secondary students from China, Japan and Korea found that social support coping was the most frequently reported coping strategy (Yeh & Inose, 2002). The role of these coping variables should not be ignored.

In relation to stress and health, coping did not show a mediating effect in the present study. The relationship between stress and health was so strong that coping did not significantly reduce its effect on health. The observation that coping was not a mediator of stress-health relationship was also found in some studies. One of them was conducted by Chiu (1996) using Chinese adolescent as sample, which only found a positive correlation of avoidance coping and psychological distress. Another study conducted by Devereux and colleagues (2009) only proved a partial mediating effect of wishful thinking on the perceived work demands and emotional exhaustion relationship. It appeared that coping may serve other functions in stress-health model. As in one study conducted by Hastings and Brown (2002), they found that on the challenging behavior exposure and staff emotional exhaustion relationship, maladaptive emotion-focused coping exerted a moderating role. Coping may serve other roles such as moderator, or predictor, in model with health as dependent variables.

In the present study, coping was found to mediate the place of birth and stress relationship. In other words, the effect of place of birth on health could be mediated through coping. And the coping that contributed to mediating effect were POS and B. The frequent use of POS and B either improve health or impair health, as they show opposite sign in the regression model. It is important to encourage students from a

place of high risk to poor health outcomes to practice adaptive coping strategy, POS; and to discourage the use of maladaptive coping strategy, B. The picture maybe that mainland Chinese student incorporate positive thinking coping in daily life, but their Hong Kong counterpart used to blame themselves. The mechanism of Focus on positive by mainland Chinese students is found to lead to more favorable health outcomes. Positive coping strategies seem to be a very important protective factor for maintaining good mental health for students who study abroad. The mechanism of how Hong Kong students develop the negative coping strategies of blaming oneself should be carefully examined further. Self-blame behaviors and thoughts should be addressed directly in primary and secondary prevention programs of mental health promotion for college students in Hong Kong. To clarify, the sample may need to be split and tested separately. More studies will be needed to support for this mediating relationship and to provide explanation for the mechanism.

4.1.4 Academic self-efficacy

In the transactional model proposed by Lazarus and Folkman (1984), cognitive variables play an important role in affecting what coping strategies a person would adopt. The perception of an event will influence the level of perceived stress. So, individual differences such as personality, situational context, past experience and cultural difference may have a role in stress-health relationship. Hong Kong students

and mainland Chinese students perceived different levels of stress. One contributing factor would be individual difference such as personality trait. In this study, academic self-efficacy was a proposed moderator of stress, as it was believed that it would change the strength of the relationship between stress and health. But this study did not prove such a relationship. In other words, level of academic self-efficacy would not affect the strength of stress-health relationship. However, it is found that there was a significant correlation between academic self-efficacy and health in a positive direction. Although it did not interact with stress, it could significantly predict health.

In addition to self-efficacy, other scholars were interested in studying the moderating effect of self-esteem. For example, Gerber & Pühse (2008) conducted a cross-sectional study which included 407 Swiss students and found that self-esteem had a negative correlation with psychosomatic complaints as well as level of stress perceived. But the moderation effect of both physical activity and self-esteem were not supported in stress-symptoms relationship. Self-esteem could not buffer against the strong effects of academic stress on psychosomatic health. Another study conducted by Wei and colleagues (2008) studied 354 international students from Asia, including Hong Kong and found that perceived discrimination, reactive coping, and self-esteem, altogether interacted significantly in predicting depressive symptoms. These areas of the literature provide evidence that, although stress alone could not

sufficiently explain negative health outcomes, moderating or mediating effect of other variables were hardly observed due to the strong and direct effect of stress on health. Another reason that such moderating or mediating relationship could not be observed may be due to a common phenomenon of Eastern culture. As Sinha & Watson (2007) had found in their cross-cultural study, the relationship between stress and coping with psychological symptoms was less salient in their Indian sample than the Canadian sample. The stress-health model is so well-established in Western samples but its applicability to the Eastern culture awaits further investigation.

4.2 Implication

Physical exercise is believed to be a good way to reduce stress and its effect on health has been well-documented (see Cooper, 1973; Fixx, 1977; Folkins & Sime, 1981; Hull, Young, & Ziegler, 1984). In our sample, Tension Reduction was not a favorable option. It is not frequently used to reduce stress. One item in TR subscale asked explicitly about the usage of jogging and exercise. The mean of respondents' score on this item was 1.13 (out of 3). It matched with real life observation. Hong Kong students seldom spend their leisure time on exercise, they would rather go shopping or have entertainment such as watching movie. Insight should be provided for the teenagers and college students on how worse a situation could be when stress is not effectively dealt with using more adaptive coping strategies.

Hong Kong students reported higher stress than their mainland counterpart, but they both indicated similar preference on ways of coping. This information may be useful for the health-care professionals including university counselors and officers of student development department. Lower stress in mainland Chinese students may be a result of effective and supportive school policy. But the seemingly less vulnerable population, Hong Kong students, in fact deserves more resources in tackling with stress. They should be taught with skills in using Focus on positive coping, as it was proved to exert a buffering effect on the place of birth and health relationship.

The poorer mental health than physical health as indicated in the MOS-SF-36 data deserves the attention of scholars and health care practitioners. Finding a similar result of poor mental health in college samples, Bayram & Bilgel (2008) suggested that only being aware of the problem could there be solution, and intervention need to be introduced early, while support services should be appropriate.

4.3 Limitations

Despite the richness of the questionnaire content, the data collected in the present study was not fully utilized. For example, stress was computed as one score instead of breaking down into five subscales. Similar treatment was done to MOS-SF-36 in giving a single score indication of health. The detail part of the instrument was not examined, while a summed score was used. This may provide a too simplified picture

on the interaction among the sub-scales, and the construct. Ways of coping could not be combined and these eight scores had already yielded a somewhat complicated picture. If further study was going to be done on this same data set, it is believed that much could be done.

Another limitation lies in the observation that Hong Kong students tended to score lower in scales that did not have reversed items, such as ways of coping (WOC) and academic development self-efficacy scale. This may be explained by social desirability effect (Edward, 1957). This effect explains the tendency for individual to behave in a socially desirable way. Mainland students may present themselves in a more socially desirable way, or Hong Kong students may be less aware of the social desirability issue. Some scholars had the same concern and conducted experiment to test for the effect of anonymity on social desirability. Although there was no difference of the social desirability score between the anonymity and non-anonymity condition (Lai, 1996), caution should be made on the possible effect of social desirability effect on the data validity in stress-health relationship.

4.4 Future direction

The absence of mediating effect of coping on stress-health relationship in Chinese samples may suggest that the mediating variable may not be universal and other predictors may exist in Eastern culture. Effort should be made in indentifying these

macro-variables. On the other hand, individual difference should still be the focus of research. In identifying these micro-variables, intervention plan could be tailor-made. This study failed to establish a moderating or mediating variable in stress-health relationship, so, effort should be made to establish some pathways, hopefully as robust as that of stress to health outcomes, to increase the understanding of the mechanism behind.

4.5 Conclusion

The negative relationship between academic stress and health outcomes was proved. The high stress of Hong Kong students deserves attention, while their mental health condition seems to worth even more attention. Intervention may aim at targeting their coping strategies by increasing the use of physical exercise but decreasing self-blame coping. Coping did not mediate relationship between stress and health but it mediated that of place of birth to health. Academic self-efficacy was also not moderating stress-health relationship. One goal of future study should be on clarifying the mechanism of stress health relationship.

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Appendix A

Academic self-efficacy: Yuen and his colleagues' (2007) Academic Development Self-efficacy scale (Chinese version) extracted from the Life Skills Development Inventories (Junior Secondary Form).

請細心閱讀下列各題，接著你能掌握該項技能的信心程度，圈出最適當的答案。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
絕不能					可能					絕對
做到					做到					做得到

1. 妥善分配和掌握時間。
2. 掌握測驗和考試的答題技巧。
3. 向就讀專上學院的朋友了解就讀專上學院所遇到的困難。
4. 為升學尋找資料，作好準備。
5. 遵守學校和課室的規則（如：不遲到）。
6. 做事有計劃
7. 提升自己聆聽，說話，閱讀，寫作和計算技巧。
8. 在選擇升學途徑(如：專上院校或外國進修) 遇上問題時，向朋友請教解決的方法。
9. 搜集各升學途徑(如：專上院校或外國進修) 的資料和它們提供的課程內容。
10. 在學校裡，尊重他人。
11. 在指定時間內，完成需要做的事情。
12. 培養良好的學習習慣。
13. 在升學時，向朋友索取大學或其它大專院校的資料。
14. 選擇適合自己的專上學院。
15. 行使學生應有的責任和權利。
16. 為自己編排時間表，並付諸實行。
17. 在測驗 / 考試前，有充足的準備。
18. 在升學時，徵詢朋友的意見。
19. 取得有關獎學金和經濟資助的資料。
20. 考慮自己的行為所帶來的後果。

Appendix B

Academic stress: Gadzella's (1994) Student-life Stress Inventory (SLSI)

1 = never, 2 = seldom, 3 = occasionally, 4 = often, 5 = most of the time.

A. As a student (frustration):

1. I have experienced frustrations due to delays in reaching my goals.
2. I have experienced daily hassles which affected me in reaching my goals.
3. I have experienced lack of sources (money for auto, books, etc.).
4. I have experienced failures in accomplishing the goals that I set.
5. I have not been accepted socially (became a social outcast).
6. I have experienced dating frustrations.
7. I feel I was denied opportunities in spite of my qualifications.

B. I have experienced conflicts which were (conflicts):

8. Produced by two or more desirable alternatives.
9. Produced by two or more undesirable alternatives.
10. Produced when a goal had both positive and negative alternatives.

C. I experienced pressures (pressure):

11. As a result of competition (on grades, work, relationships with spouse and/ or friends).
12. Due to deadlines (paper due, payments to be made, etc.).
13. Due to an overload (attempting too many things at one time).
14. Due to interpersonal relationships (family and/ or friends, expectations, work responsibilities).

D. I have experienced (changes):

15. Rapid unpleasant changes.
16. Too many changes occurring at the same time.
17. Change which disrupted my life and/ or goals.

E. As a person (self-imposed):

18. I like to compete and win.
19. I like to be noticed and be loved by all.
20. I worry a lot about everything and everybody.
21. I have a tendency to procrastinate (put off things that have to be done).
22. I feel I must find a perfect solution to the problems I undertake.
23. I worry and get anxious about taking tests.

Appendix C

Health outcomes: Ware and colleagues' (1993) Medical Outcome Study: Short-form 36 (MOS SF-36).

STANDARD SF-36, BOOKLET FORM - PAGE ONE OF FIVE

THE MOS 36-ITEM SHORT-FORM HEALTH SURVEY (SF-36)

INSTRUCTIONS: This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.

Answer every question by marking the answer as indicated. If you are unsure about how to answer a question, please give the best answer you can.

1. In general, would you say your health is:

(circle one)

- Excellent 1
- Very good 2
- Good 3
- Fair 4
- Poor 5

2. Compared to one year ago, how would you rate your health in general now?

(circle one)

- Much better now than one year ago 1
- Somewhat better now than one year ago 2
- About the same as one year ago 3
- Somewhat worse now than one year ago 4
- Much worse now than one year ago 5

3. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

(circle one number on each line)

ACTIVITIES	Yes, Limited A Lot	Yes, Limited A Little	No, Not Limited At All
a. Vigorous activities , such as running, lifting heavy objects, participating in strenuous sports	1	2	3
b. Moderate activities , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1	2	3
c. Lifting or carrying groceries	1	2	3
d. Climbing several flights of stairs	1	2	3
e. Climbing one flight of stairs	1	2	3
f. Bending, kneeling, or stooping	1	2	3
g. Walking more than a mile	1	2	3
h. Walking several blocks	1	2	3
i. Walking one block	1	2	3
j. Bathing or dressing yourself	1	2	3

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

(circle one number on each line)

	YES	NO
a. Cut down on the amount of time you spent on work or other activities	1	2
b. Accomplished less than you would like	1	2
c. Were limited in the kind of work or other activities	1	2
d. Had difficulty performing the work or other activities (for example, it took extra effort)	1	2

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

(circle one number on each line)

	YES	NO
a. Cut down the amount of time you spent on work or other activities	1	2
b. Accomplished less than you would like	1	2
c. Didn't do work or other activities as carefully as usual	1	2

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

(circle one)

- Not at all 1
 Slightly 2
 Moderately 3
 Quite a bit 4
 Extremely 5

7. How much bodily pain have you had during the past 4 weeks?

(circle one)

- None 1
 Very mild 2
 Mild 3
 Moderate 4
 Severe 5
 Very severe 6

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

(circle one)

- Not at all 1
 A little bit 2
 Moderately 3
 Quite a bit 4
 Extremely 5

9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks -

(circle one number on each line)

	All of the Time	Most of the Time	A Good Bit of the Time	Some of the Time	A Little of the Time	None of the Time
a. Did you feel full of pep?	1	2	3	4	5	6
b. Have you been a very nervous person?	1	2	3	4	5	6
c. Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
d. Have you felt calm and peaceful?	1	2	3	4	5	6
e. Did you have a lot of energy?	1	2	3	4	5	6
f. Have you felt downhearted and blue?	1	2	3	4	5	6
g. Did you feel worn out?	1	2	3	4	5	6
h. Have you been a happy person?	1	2	3	4	5	6
i. Did you feel tired?	1	2	3	4	5	6

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

(circle one)

- All of the time 1
 Most of the time 2
 Some of the time 3
 A little of the time 4
 None of the time 5

11. How TRUE or FALSE is each of the following statements for you?

(circle one number on each line)

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
a. I seem to get sick a little easier than other people	1	2	3	4	5
b. I am as healthy as anybody I know	1	2	3	4	5
c. I expect my health to get worse	1	2	3	4	5
d. My health is excellent	1	2	3	4	5

Appendix D

Coping: Folkman and Lazarus's Ways of Coping-Revised (WOC-R) Scale

Please read each item below and indicate, by using the following rating scale, to what extent you used it in the stressful situation.

Not Used: 0

Used Somewhat: 1

Used Quite a Bit: 2

Used A great deal: 3

1. Just concentrated on what I had to do next – the next step.
2. I tried to analyze the problem in order to understand it better.
3. Turned to work or substitute activity to take my mind off things.
4. I felt that time would make a difference – the only thing to do was to wait.
5. Bargained or compromised to get something positive from the situation.
6. I did something which I didn't think would work, but at least I was doing something.
7. Tried to get the person responsible to change his or her mind.
8. Talked to someone to find out more about the situation.
9. Criticized or lectured myself.
10. Tried not to burn my bridges, but leave things open somewhat.
11. Hoped a miracle would happen.
12. Went along with fate; sometimes I just have bad luck.
13. Went on as if nothing had happened.
14. I tried to keep my feelings to myself.
15. Looked for the silver lining, so to speak; tried to look on the bright side of things.
16. Slept more than usual.
17. I expressed anger to the person(s) who caused the problem.
18. Accepted sympathy and understanding from someone.
19. I told myself things that helped me to feel better.
20. I was inspired to do something creative.
21. Tried to forget the whole thing.
22. I got professional help.
23. Changed or grew as a person in a good way.
24. I waited to see what would happen before doing anything.
25. I apologized or did something to make up.
26. I made a plan of action and followed it.

27. I accepted the next best thing to what I wanted.
28. I let my feelings out somehow.
29. Realized I brought the problem on myself.
30. I came out of the experience better than when I went in.
31. Talked to someone who could do something concrete about the problem.
32. Got away from it for a while; tried to rest or take a vacation.
33. Tried to make myself feel better by eating, drinking, smoking, using drugs or medication, etc.
34. Took a big chance or did something very risky.
35. I tried not to act too hastily or follow my first hunch.
36. Found new faith.
37. Maintained my pride and kept a stiff upper lip.
38. Rediscovered what is important in life.
39. Changed something so things would turn out all right.
40. Avoided being with people in general.
41. Didn't let it get to me; refused to think too much about it.
42. I asked a relative or friend I respected for advice.
43. Kept others from knowing how bad things were.
44. Made light of the situation; refused to get too serious about it.
45. Talked to someone about how I was feeling.
46. Stood my ground and fought for what I wanted.
47. Took it out on other people.
48. Drew on my past experiences; I was in a similar situation before.
49. I knew what had to be done, so I doubled my efforts to make things work.
50. Refused to believe that it had happened.
51. I made a promise to myself that things would be different next time.
52. Came up with a couple of different solutions to the problem.
53. Accepted it, since nothing could be done.
54. I tried to keep my feelings from interfering with other things too much.
55. Wished that I could change what had happened or how I felt.
56. I changed something about myself.
57. I daydreamed or imagined a better time or place than the one I was in.
58. Wished that the situation would go away or somehow be over with.
59. Had fantasies or wishes about how things might turn out.
60. I prayed.
61. I prepared myself for the worst.
62. I went over in my mind what I would say or do.
63. I thought about how a person I admire would handle this situation and used that as

a model.

64. I tried to see things from the other person's point of view.

65. I reminded myself how much worse things could be.

66. I jogged or exercised.

Appendix E

The Finalized version of Questionnaire in Chinese version

本問卷為一項有關學業壓力與其影響的研究。本問卷主要目的為對香港及內地大學生的學業壓力作進一步了解，所以答案沒有對錯之分，參與者只需按指示如實作答便可，而問卷內容將只用於研究用途，所有資料絕對保密，請放心填寫。而問卷資料將於研究結束後銷毀。你的合作有助推動社會科學研究，謝謝參與。

第一部份

請細心閱讀下列各題，接著你能掌握該項技能的信心程度，圈出最適當的答案。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
絕不能做到					可能做到				絕對做得到	

4. 妥善分配和掌握時間。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

5. 掌握測驗和考試的答題技巧。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

6. 向就讀專上學院的朋友了解就讀專上學院所遇到的困難。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

4. 為升學尋找資料，作好準備。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

5. 遵守學校和課室的規則 (如：不遲到)。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

6. 做事有計劃。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

7. 提升自己聆聽，說話，閱讀，寫作和計算技巧。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

8. 在選擇升學途徑(如：專上院校或外國進修) 遇上問題時，向朋友請教解決的方法。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

9. 搜集各升學途徑(如：專上院校或外國進修) 的資料和它們提供的課程內容。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

10. 在學校裡，尊重他人。

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
絕不能做到					可能做到				絕對做得到	
11. 在指定時間內，完成需要做的事情。										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
12. 培養良好的學習習慣。										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
13. 在升學時，向朋友索取大學或其它大專院校的資料。										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
14. 選擇適合自己的專上學院。										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
15. 行使學生應有的責任和權利。										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
16. 為自己編排時間表，並付諸實行。										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
17. 在測驗 / 考試前，有充足的準備。										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
18. 在升學時，徵詢朋友的意見。										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
19. 取得有關獎學金和經濟資助的資料。										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
20. 考慮自己的行為所帶來的後果。										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

第二部份

	1	2	3	4	5
作為一個人	從不	很少	中間	經常	大部份時間
1 我喜歡競爭和勝利。	1	2	3	4	5
2 我喜歡被注意及受所有人歡迎。	1	2	3	4	5
3 我為所有事和所有人憂心。	1	2	3	4	5
4 我有一個將事情拖延的傾向。	1	2	3	4	5
5 我覺得我必須為所遇上問題找到完美的解決方法。	1	2	3	4	5
6 我為考試擔憂及焦慮。	1	2	3	4	5

第三部份

	1	2	3	4	5
	從 不	很 少	間 中	經 常	大 部 份 時 間

作為一個學生

1 我由於在「爭取達到目標」途中遇上延誤而感挫敗。	1	2	3	4	5
2 我曾經歷日常生活上的掙扎 (例如: 感到孤單, 與人爭論),這影響了我去達至自己的目標。	1	2	3	4	5
3 我曾感到資源不足 (如: 金錢、書本等)。	1	2	3	4	5
4 在嘗試完成我設下的目標中途,我感到失敗。	1	2	3	4	5
5 我感到在社交生活中不被接納 (成圈外人)。	1	2	3	4	5
6 我經歷戀愛上的挫敗。	1	2	3	4	5
7 就我的才幹而言,我感到我被大材小用。	1	2	3	4	5

我曾經歷_____ (配對以下的題項) 衝突 / 矛盾

1 由兩個或以上的有利因素而產生的	1	2	3	4	5
2 由兩個或以上的不利因素而產生的	1	2	3	4	5
3 由一個有利有弊的目標而產生的	1	2	3	4	5
	從 不	很 少	間 中	經 常	大 部 份 時 間

我經歷由_____ (配對以下的題項) 引起的壓力

1 競賽 / 競爭的結果 (如: 成績、工作、與配偶 / 朋友的關係)。	1	2	3	4	5
2 期限 (功課、繳費等)。	1	2	3	4	5
3 過度疲勞 (同時參與多項活動)。	1	2	3	4	5
4 人際關係 (家庭、朋友、期望、工作等)。	1	2	3	4	5

我曾經歷

1 來得很急並令我不愉快的改變。	1	2	3	4	5
2 太多同時間進行的改變。	1	2	3	4	5
3 影響我一生 / 我的目標的改變。	1	2	3	4	5

請圈出最適合的答案

1	總括而言，你認為你的健康狀況是…	很棒	很好	好	普通	差
2	相比一年以前，你會怎樣形容你現在的健康狀況？	好多了	好少許	差不多	差少許	差多了

以下為一些關於你平日的活動的描述，你的健康狀況有否為該活動帶來限制呢？如有，有多大限制？

活動種類	有，很大限制	有，少許限制	沒有限制
1 劇烈活動（如：跑步，舉重，伸展運動等）	1	2	3
2 普通活動（如：搬桌子，吸塵，保齡球和哥爾夫球等）	1	2	3
3 搬或攜帶食品雜貨	1	2	3
4 走幾層樓梯	1	2	3
5 走一層樓梯	1	2	3
6 彎腰，彎身或跪下	1	2	3
7 步行多於一哩路程	1	2	3
8 步行幾條街	1	2	3
9 步行一條街	1	2	3
10 洗澡或自己穿衣	1	2	3

於過去四星期，你有否因身體的健康狀況而遇上以下問題？

	有	沒有
1 減少用於工作或其他活動上的時間	1	2
2 完成比你預期所想的少	1	2
3 參與的工作或其他活動種類受限制	1	2
4 在工作或進行活動時遇上困難（如需付出更多氣力）	1	2

於過去四星期，你有否因情緒狀況（如焦慮、沮喪）而遇上以下問題？

	有	沒有
1 減少用於工作或其他活動上的時間	1	2
2 完成比你預期所想的少	1	2
3 工作或做其他活動時不及往常小心	1	2

請圈出最適合的答案

- 1 於過去四星期，由於身體或情緒狀況而影響你的日常社交活動（家人，朋友，鄰里，或小組）的程度是…
 完全沒有 有少許 一般 有很多 影響極大
- 2 過去四星期內，你曾經歷的身體疼痛為…
 完全沒有 輕微 一般 中等 嚴重 非常嚴重
- 3 過去四星期內，疼痛為你日常工作帶來多少影響（包括外出工作和家務）？
 完全沒有 有少許 一般 有很多 影響極大

以下的題目為關於閣下的感受，請根據過往四星期的經歷，圈出最能代表你的答案。

	沒 有 這 感 受	很 少	有 時	經 常	大 部 份 時 間	所 有 時 間
1 你有否感到精力充沛？	1	2	3	4	5	6
2 你有否覺得自己神經質或緊張？	1	2	3	4	5	6
3 你有否覺得自己跌到谷底，旁人都無法令你開懷？	1	2	3	4	5	6
4 你有否感到平靜和安祥？	1	2	3	4	5	6
5 你是否很有幹勁？	1	2	3	4	5	6
6 你有否感到灰心和悶悶不樂？	1	2	3	4	5	6
7 你有否感到筋疲力竭？	1	2	3	4	5	6
8 你是否一個開朗的人？	1	2	3	4	5	6
9 你有否感到疲倦？	1	2	3	4	5	6

過去四星期內，你有多少時間受身體或情緒狀況而影響社交活動（如探朋友，親人等）？

經常 大部份時間 有時候 少許時候 從不

若用於描述你，以下的句子有多適合 / 準確？

	絕對正確	不知道	絕對錯誤
1 我似乎比其他人易生病	1	2	3
2 我跟其他人一樣健康	1	2	3
3 我預期健康會變差	1	2	3
4 我的健康狀況很棒	1	2	3

第四部份

當面對壓力，以下所列舉的方法，你有多經常使用？

	不 會 使 用	某 程 度 使 用	較 多 使 用	常 常 使 用
1 只集中於我將要怎樣做，下一步做什麼。	0	1	2	3
2 我嘗試分析問題，好讓我了解得更好。	0	1	2	3
3 轉而投入工作或其他代替的活動，讓我可以分心一下。	0	1	2	3
4 我覺得時間改變一切，凡事只要等待就可以解決。	0	1	2	3
5 討價還價或妥協讓步，以取得事情的正面得著。	0	1	2	3
6 我做了一些我認為沒有幫助的事，但至少我在做。	0	1	2	3
7 嘗試說服負責的人改變他的決定。	0	1	2	3
8 與人傾談，從而找出更多關於該狀況的資料。	0	1	2	3
9 批評或教訓自己。	0	1	2	3
10 嘗試不要把選擇範圍縮小，給自己多點空間。	0	1	2	3
11 希望奇蹟會發生。	0	1	2	3
12 跟隨命運的安排，認為自己一時倒霉。	0	1	2	3
13 當沒事發生，如常生活。	0	1	2	3
14 我嘗試收藏自己的感情。	0	1	2	3
15 嘗試往好方向想，或看事情的光明面。	0	1	2	3
16 比平常睡得多。	0	1	2	3
17 我向引致問題的人表達憤怒。	0	1	2	3
18 接受他人的同情及理解。	0	1	2	3
19 向自己說一些令自己好過一些的話。	0	1	2	3
20 我充滿靈感，去做一些有創意的事。	0	1	2	3
21 嘗試忘記整件事。	0	1	2	3
22 我尋求專業的幫助 (如師長、專家)。	0	1	2	3
23 認為自己往好的方面改變，或向好的方向成長了。	0	1	2	3
24 在做任何事前，我先等著看看有什麼會發生。	0	1	2	3
25 我感到歉意，或嘗試作出補救。	0	1	2	3

26	我做一個行動計劃並依著做。	0	1	2	3
27	我接受了我第二喜歡的選擇。	0	1	2	3
28	我某程度上表達自己的感受。	0	1	2	3
29	明白或發現自己是引致問題的原因	0	1	2	3
30	在經歷之後的我比經歷之前的我好。	0	1	2	3

當面對壓力，以下所列舉的方法，你有多經常使用？		不 會 使 用	某 程 度 使 用	較 多 使 用	常 常 使 用
31	與對問題有實際和具體幫助的人傾訴。	0	1	2	3
32	離開一段時間，例如去旅行或休息一會。	0	1	2	3
33	為了令自己覺得更好，我進食、喝酒、抽煙、用藥或吸毒…諸如此類。	0	1	2	3
34	接受一些挑戰，或做一些危險的事。	0	1	2	3
35	我行事不會太過倉促或依據自己直覺。	0	1	2	3
36	找到新的信念。	0	1	2	3
37	要有傲骨 / 骨氣，咬緊牙根去面對。	0	1	2	3
38	重新發現什麼在於生命中至為最要。	0	1	2	3
39	改變其中一些事物，令事情變得更好。	0	1	2	3
40	通常避免與人接觸。	0	1	2	3
41	不讓它困擾我，抗拒想得太多。	0	1	2	3
42	我向一位我尊敬的親友或朋友尋求建議。	0	1	2	3
43	不讓他人知道事情有多壞。	0	1	2	3
44	把情況想得輕鬆，拒絕把它看得太嚴重。	0	1	2	3
45	向某人訴說我的感受。	0	1	2	3
46	堅持自己立場，爭取一己所想。	0	1	2	3
47	向其他人發洩。	0	1	2	3
48	回想過去，自己也曾處於相似境況。	0	1	2	3
49	我知道該怎樣做，所以我加倍努力去完成它。	0	1	2	3
50	抗拒相信事已發生。	0	1	2	3

51	我向自己保證，下次結果會有所不同。	0	1	2	3
52	想出幾個方法去應付問題。	0	1	2	3
53	接受事實，因為它沒法改變。	0	1	2	3
54	我嘗試不讓自己的感受過於擾亂其他事情。	0	1	2	3
55	希望我可以改變事實或自己的感受。	0	1	2	3
56	我改變了自己一點。	0	1	2	3
57	我想像自己身處在一個比現在更好的時空。	0	1	2	3
58	希望事情會過去，或某程度上已過去。	0	1	2	3
59	幻想事情會怎樣完結或有何結果。	0	1	2	3
60	我祈禱。	0	1	2	3

當面對壓力，以下所列舉的方法，你有多經常使用？	不 會 使 用	某 程 度 使 用	較 多 使 用	常 常 使 用
61 我為最壞的作打算。	0	1	2	3
62 我在心中預想自己將會做什麼或說什麼。	0	1	2	3
63 我想像一個我崇拜的人會怎樣處理這情況，並以他作為榜樣 / 模範。	0	1	2	3
64 我嘗試由其他人的角度去看事物。	0	1	2	3
65 我提醒自己事情可以有多壞。	0	1	2	3
66 我慢跑或做運動。	0	1	2	3

第五部份

1. 性別：	男 <input type="checkbox"/>	女 <input type="checkbox"/>	
2. 年齡	20 以下 <input type="checkbox"/>	21-30 <input type="checkbox"/>	31 或以上 <input type="checkbox"/>
3. 年級			

Foundation year

Year 1

Year 2

Year 3

4. 院校

香港中文大學

香港大學

香港科技大學

香港城市大學

浸會大學

香港理工大學

其他

5. 出生地

香港

香港以外的地方

6. 廣東話流利程度

完全不懂					足以應付 日常對答					本地人程度
0	1	2	3	4	5	6	7	8	9	10

7. 電郵 (email): _____

全卷完 謝謝！