

## A Quantitative Study on Impacts of Different Types of Stressors on Sense of Belonging among College Students in Hong Kong

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### *Abstract*

The relationship of stress and sense of belonging is widely discussed. However, knowledge involving categorization of five types of stressors including frustrations, conflicts, pressure, changes and self-imposed towards belongingness is relatively weak. Therefore, the study examines the impacts of the stressors and their interactions with demographic factors on sense of belonging. The examination attach to the perspective of resource theory. Its core proposition is that resources are the determinants of quality of life. A survey of 180 college students provided data for analysis. Results showed that frustrations and pressure directly affect sense of belonging while conflicts, pressure and self-imposed cause influences indirectly through the interactions with background characteristics. Moreover, it is found that each of the five types of stressors had its own mechanism for affecting sense of belonging. At the end, some suggestions were made to reduce stress and improve sense of belonging among students.

### **Introduction**

The relationship between stress and well-being of individual is an old topic that many investigations have already addressed. However, under different contexts and cultures, the phenomenon may transpire in a different way, and it can provide a certain reference value. Compared with work-family conflict, stress induced in college life is relatively uncharted. The increasing number of undergraduate students hints that it is not a negligible issue.

What making the issue more urgent is the increasing rate of undergraduates self-murdering. Studies have been done to investigate the prevalence of suicidal attempt. For example, a study in Taiwan showing self-reported data collected from a nationally representative sample of 2,835 college students; 11.90% of females and 8.87% of males reported they had attempted suicide in the preceding 12 months (Chou et al. 2013). Although the discourses may be different, many research addressed the relationship between stress and suicidal attempt. The main stream to deduce the relationship is that stress leads to depression, and depression induces the thought of suicide (Reyes-Rodríguez et al. 2013; Hochberg et al. 2013). Though the focus of this study is not on suicidal behaviors, the above example shows an extreme way that stresses influence quality of life.

In the aspect of policy making, promoting quality of life represents a core value of public policy development (Hulse & Stone, 2007). Discovery of significant influencing factors for quality of life can provide important insights to policy makers for improving the current system. Researchers suggest that sense of belonging serves as an important indicator of one's subjective evaluation of life conditions (Phillips, 2006). The following is the concern about the development of college students, who are one of the selected groups, because it decides the future of the city or even country. For example, the stress students experience in college may affect their academic performance, and many of them attribute their successes and failures to their experiences of internal and external stressors (Carvalho et al. 2009). Studies show that a high stress level may affect not only academic performance but also all aspects of student health (Shaikh et al. 2004). Therefore, the focus of the study is on the relationship between the stress and sense of belonging under the context of university life.

## Literature Review

### *Stress of college students*

Adjusting to university life is a major transition for young adults, as they have to overcome the unfamiliarity of the university environment. Therefore, entering college is by nature a stressful experience (Gan et al. 2010). In college, students have to contend with a series of new challenges. In addition, they lose the daily instrumental support of family and the learning environment of the high school. A great structural change occurs in their family and school life. Expected to be independent, students have to do their own laundry, organize their schedules, arrive at classes and work on time, attend to their own meals and physical health, and allocate sufficient time for studying (Larson, 2006). Failing at these demands may mean low grades, debt, interpersonal problems, and even dropping out of school (Arnett, 2004). It is not surprising then that these emerging adults, who may feel that their future is at risk, experience persistent stress in daily academic life for many reasons (Larson, 2006).

To generate a more detailed and meaningful picture of stress and sense of belonging, stress is analyzed according to five types of stressors, which are frustrations, conflicts, pressure, changes and self-imposed. While applying to college students, firstly, frustrations refer to feeling of failure to meet goals on time, lack of resources (money for auto, books, etc.), being social outcast and dating trouble. Second, conflicts refer to the feeling when individuals have to make decisions. Those decisions can involve double appealing alternatives, double avoiding alternatives, or alternatives that complicatedly contain both appealing and avoiding elements. Third, pressures refer to the feeling induced by competition, deadlines, workload and interpersonal relationships. Competition can be in work, grades, and relationships with friends or spouse. Deadlines may refer to that of college work (like examinations and papers) or payments to be made.

On the other hand, pressure due to the workload normally refers to feeling of overload, while that of interpersonal relationship involves their feeling towards expectations of family and friends, and the work responsibilities. Fourth, the stress associated with changes considers the rapidness, frequency, unpleasantness and impacts to life of those changes. Last but not least, self-imposed stress involves competitiveness, perfectionism, anxiousness and attention demand.

### ***Sense of belonging***

Sense of belonging to society is a crucial aspect of quality of life worth investigation and promotion. Different definitions can be found while scanning for the concept of sense of belonging. It may be because of its abstract nature. Some scholars describe belongingness under school context as ‘the extent to which students personally feel accepted, included, respected, and supported by others in the social environment of school’ (Goodenow 1993).

Besides the above description, sense of belonging is defined by Hagerty and colleagues as ‘the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment.’ In their study, two fundamental characteristics of sense of belonging were indicated. The first one is that ‘the person experiences being valued, needed, or important with respect to other people, groups, objects, organisations, environments, or spiritual dimensions’ and the second one is that ‘the person experiences a fit or congruence with other people, groups, objects, organisations, environments or spiritual dimensions through shared or complementary characteristics’ (Hagerty et al. 1992).

Another definition proposed by Baumeister (1995) is that ‘human beings have a pervasive drive to form and maintain at least a minimum quantity of lasting, positive, and significant interpersonal relationships’. Further, they proposed that belongingness is a need, a corollary being that too little belongingness is harmful, specifically ‘real, potential, or imagined changes in one’s belongingness status will produce emotional responses, with positive affect linked to increases in belongingness and negative affect linked to decreases in it’ (Baumeister et al. 1995).

Leary and colleagues have suggested five categories, being macro-level groups such as villages or communities, instrumental coalitions such as work groups, intimate mating or sexual relationships, kin relationships, and supportive friendships. They argued that individuals are motivated to maintain both general belongingness and specific relationships in these key domains (Leary et al. 2008). In addition, Cockshaw’s research used factor analysis to demonstrate that the domains and general belongingness are distinct constructs (Cockshaw et al. 2013).

As rudimentary research on the relationship between stressors and sense of the belonging, this study focused on the general belongingness only, but not other specific domains. Firstly, the general kind of sense of belonging points to respect by others and

the absence of social exclusion. Second, high level general belongingness should be related to optimism about the future (Phillips 2006). Moreover, the sense of belonging involves the social identity, recognition, social participation, social cohesion, morale, and tolerance (Lavis and Stoddart 2003; Tindall and Wellman 2001). In addition, the belief that life is controllable in the society and the feeling of not being lost should also be included as elements of sense of belonging (Bohnke 2008). Through the optimization of the civil and economy society, all the above features are valuable to society (Dayton-Johnson 2003).

### **Resource theory**

Resource theory is the guidepost for understanding the impacts of various stressors, background characteristics, and their interactions on sense of belonging (Cheung et al. 2012). The main discourse of resource theory is that resources are the determinants of quality of life (Diener & Fujita 1995). Base on resource conservation theory, the increase in one's resources would raise quality of life and stressors that deprive one's resources would weaken quality of life (Hobfoll and Schumm 2002). The focus for the conservation of resources is that the need for adjustment is prompted by the flow of resources (Ennis et al. 2000). It means that the need for restoring resources or finding alternatives is generated when there is loss of resources. Quality of life can be maintained if the restoration of resources is successful. Otherwise, privation of resources may induce the use of other resources, and this increase the burden on other resources. Similarly this burden can become the burden of another kind of resource. This positive feedback of loss would multiply the harm of original resource loss.

There are four suggested models explaining the relationship between stressors, resource and well-being of individual: the independent model, the stress-suppression model, the counteractive model and the resource-deterioration model (Ensel & Lin, 1991). The discourse of resource conservation theory matches mostly with the resource-deterioration model. It states that resources mediate the relationship between stressors and distress. Stressors deplete resources and subsequently lead to distress.

However, findings of Chokkanathan's study (2009) support the stress-suppression model and reject the other three models. The stress-suppression model assumes that resources decrease the likelihood of stressors, which in turn diminishes psychological distress. For example, when there is a higher level of social support, the likelihood of one being abused diminishes.

As mentioned above, substitution of alternative resources may be needed in the conservation of resources. On the basis of resource exchange theory, resources are either hard or soft in nature. Hard resources involve goods, money and service and soft resources involving status, information and love (Tornblom and Vermunt 2007). Research show that the substitution would be more effective if the alternatives is of the same kind of resources as the lost one. On the other hand, the substitution would be less

effective with compensative resources of fungible or similar kinds. Substitution among hard resources would be more effective in resource conservation than substitution between hard and soft resources. More specifically, the theory maintains that “love is more substitutable with service and status than is others; service is more substitutable with goods and love; goods are more substitutable with service and money; money is more substitutable with goods and information; information is more substitutable with money and status; and status is more substitutable with love and information.” In this connection, personal or familial background characteristics provide resources to substitute for or restore lost resources. This is how the resource substitution thesis operates.

In opposite to the positive feedback of resource loss, the theory of resource enhancement states that resource gain can become more useful with enhancement of existing resources. For example, if a rich person gains more information or knowledge, he or she can make a better investment to earn even more, and hence increase the quality of life.

Apart from the resource substitution and enhancement theses, certain personal or familial conditions are consuming or competing for resources (Williams and Govan 2005). In this case, deprivation of resources would be especially stressful, based on this resource competition thesis. The theses of resource substitution and resource competition therefore maintain different predictions about the conditional impact of a stressor. Furthermore, resource theory also posits that increased resources are useful to heighten quality of life through the process of use or transformation. This transformation would in turn be contingent on resources inherent in personal and familial characteristics. Both the resource substitution and transformation essentially entails the activation of existing resources.

Conservation, exchange, and activation of resources are then likely to be responsible for the impact of each of the personal and familial stressors, characteristics, and their interactions on quality of life, in terms of sense of belonging (Cheung et al. 2012). The five types of stressors examined include frustrations, conflicts, pressure, changes and self-imposed. The background characteristics examined include gender, age, marriage, school hour, work hour, personal income, family income and the number of family members.

### ***Unique Context of Hong Kong***

In Hong Kong, the situation is more complicated because of the multi-culture characteristic. This would make Hong Kong a distinctive place for testing the cross-cultural generality of the nexus of stressors and sense of belonging. Hong Kong has characteristics both dissimilar from and compatible with Western, industrialized societies. Such a feature makes Hong Kong an appealing place to test theories and build knowledge in a way that grounded but not redundant.

On one hand, with China as the mother country, there is Eastern culture flowing with the blood of Hong Kong people. This kind of Eastern culture provides values of collectivism. Under the values, stressors may push the individual to look for social assistance. The help seeking behaviors may increase the sense of belonging and hence the quality of life. This condition matches with the counteractive model.

On the other hand, due to historic and developmental factors, Hong Kong receives the strike of Western culture. It cultivates the mindset of individualism to Hong Kong people. With such a mindset, the individual's achievement is emphasized. When people feel stress, they try their best to solve the problem on their own. It results in a decrease in sense of belonging.

In all, by measuring the stress induced by different stressors and sense of belonging, the relationship can be investigated. Also, how the impacts of stressors vary under different personal background characteristics remain unclear. If a significant association can be found between different types of stressors and sense of belonging, with detailed illustration of intervening factors, it will be a great reflection for public policy makers, especially of the educational system, to review the current structure.

### **Research questions**

1. What is the situation of undergraduate students in facing different stressors?
2. How is their sense of belonging to the society?
3. Is there any association between stressors and sense of belonging?
4. Are personal or demographic characteristics influential on the association between stressors and sense of belonging?
5. Do the interactions between stress components and background information generate interacting effect on sense of belonging?

### **Hypothetical Impacts of Stressors**

According to resource theory mentioned above, generally, stress should be negatively related to sense of belonging. Hence all the five components, which are frustrations, conflicts, pressure, changes and self-imposed, also influence sense of belonging negatively. Although, the direction of impact is the same, it is believed that the five components of stress influence sense of belonging independently with different mechanisms.

### **Hypothetical Impacts of Background Characteristics** (see table 1)

Demographic characteristics affect sense of belonging to a certain extent and the influences are predicted according to resource theory. Interactions between stress components and background information may generate interacting effects on sense of belonging. First of all, age is believed to have a positive influence on sense of belonging because it may gather the resources of information, status, and money for the person,

which can accumulate through living in society (O’Rand 1996). Thus, under the prediction of resource substitution theory, age should produce positive effect when interact with frustrations, conflicts and pressure by providing better solutions or alternative resources to the problems. However, the increase of age is expected to make one’s life more stable. Under this assumption, greater adjustment may be needed when age interacts with changes resulting in greater consumption of resource. In addition, the increase in age is generally associated with increases in the expectation of oneself and the tendency to compete and pursue perfectness. This further magnifies the effect of self-imposed stress. Therefore, the interaction of age with changes and self-imposed may produce a negative effect to sense of belonging.

For the influence of gender, even though the world (especially in developed regions) is on the way pursuing an equal status of the man and woman, there is still an obvious discrepancy in their social role and status at the moment. The man is still at more superior and important positions. In addition to the congenital physically less powerful and emotionally unstable, being female is generally less resourceful in the society. This makes the female more vulnerable to stress so that the interactions of different stressors and being female are expected to have negative effect on sense of belonging. However, it is difficult to tell whether gender makes a difference in the frequency and seriousness of decision making. Therefore, the interacting effect involving gender and conflicts is unclear.

For marital status, Solomon states that marriage can confer the couple with resources of love, status and service (Solomon 2006). It means that the relationship can offer alternative resources for substitution whenever there is loss of resource. Therefore, married people should be more capable in facing stressors like frustrations, conflicts, and pressure with the support of love, service and status. Like age, the life and relationship becomes more stable when people get marry, and a greater adjustment is needed when changes occur. At the same time, marriage brings the person with a more complicated family structure. And the family status or role depends on the success of the family, work, and other ways of resource provision (Cheung et al. 2012). Hence, marriage may become a source of conflicts. Therefore, when marriage interacts with frustrations and pressure, positive effect is expected and when marriage interacts with changes, negative effect is expected. For the interaction between marriage and conflicts, its outcome should be a complicated mixture consisting both positive and negative elements, and the final direction of effect depends on which element is stronger.

According to resources competition theory, the school or work hours occupy the time for the individual to do other things. This kind of clash is expected to produce negative effect because it increases the burden and responsibility of the person, for example, increasing workload and more deadlines to meet. And at the same time, it produces more conflicts and hinders the person to achieve one’s goals.

Income serves as the primary source of money obviously. The income is clearly a contributor to quality of life and sense of belonging (Harter and Arora 2010). It is an important kind of resource because it represents how much resources the person have in the society. The value of money is that it can be used to buy the resource one needed. This quick transformation nature of money allows substitution to occur effectively. Therefore, it is expected that the interactions between income and the five types of stressors would produce positive effect to sense of belonging.

Table 1  
*Hypothesized interaction effects on sense of belonging base on resource theory*

	<b>Frustration</b>	<b>Conflicts</b>	<b>Pressure</b>	<b>Changes</b>	<b>Self-imposed</b>
<b>Age</b>	+	+	+	-	-
<b>Female</b>	-	-	-	0	0
<b>Marriage</b>	+	+/-	+	-	0
<b>School / work hour</b>	-	-	-	-	-
<b>income</b>	+	+	+	+	+

+: positive interaction effect, meaning the mitigation of the stressful effect; -: negative interaction effect, meaning the aggravation of the stressful effect; 0: no or unclear interaction effect

### Methodology

Quantitative analysis was done in this research. Data collection was held in the form of a survey. A self-administrated questionnaire was used as the data collecting method to collect data from the respondents. Questionnaires were given to 180 university students as respondents with the convenience quota sampling method. Data were collected on 15/4 - 17/4. To increasing the diversity of respondents, data were collected in three different places, which are AC2 G/F CSC, AC2 4/F CSC and the information space in library, with 60 quotas each. Although the questionnaire is filled in a self-administrated way, there was staff standing by at the venue so that respondent can seek help if there are any things of the questionnaire unclear to them.

Basic statistics (see Table 2) showed that the average age of respondents was 20.97 years old for the sample. Within the 180 respondents, 37.2% are male. In the sample, 93.9% were single, only 0.6% was married and 5.6% stated other marital status. For weekly school hours, the sample showed an average of 17.32 hours, ranged from 2 to 30 hours per week. For weekly work hours, the sample showed an average of 8.13 hours, ranged from 1.5 to 52 hours per week. Family income had an average of \$32600 per month. Personal income has an average of \$1577. The average number of family member is 4.01, ranged from 1 to 7 family numbers.

The Student-life Stress Inventory (Gadzella, 1994) was the instrument used to collect data. The inventory had 51 items listed under two sections: types of stressors and



reactions to stressors. The types of stressors can be further divided into five categories, which are frustrations, conflicts, pressures, changes and self-imposed. The reactions to stressors section can be divided into four categories, which are physiological, emotional, behavioral and cognitive. Since the reaction to stressors is not the concern of this study, only the first sections of the inventory will be used. The items of the inventory are listed in table 3. Subjects responded to the inventory by rating each item using a rating format with never, seldom, occasionally, often, and most of the time. The values for each of the categories were summed and recorded. To obtain the total scores for the inventory, the recorded values for the five categories were added. The Cronbach's Alpha of the scale was .851 for the 23 items. The internal consistency reliability for the five sub-categories measure of frustrations, conflicts, pressure, changes and self-Imposed were .753, .664, .698, .804 and .703 respectively.

The measure of sense of belonging follows the scale used by C. Cheung et al. (2012) in a similar study. It obtains a mean score from seven items, consisting of two positively phrased items and five negative phrased items. The two positively phrased items are: "I am optimistic about the future" and "on the whole, my life is close to how I would like it to be". The five negatively phrased items are: "In order to get ahead nowadays, you are forced to do things that are not correct", "I feel left out of society", "life has become so complicated today that I almost can't find my way", "I don't feel the value of what I do is recognized by others" and "some people look down on me". These items employed a rating scale ranging from "strongly disagree" to "strongly agree." Internal consistency reliability for the seven-item measure was .711.

**Table 2** Mean and standard deviation (N=180)

Variable	Mean	SD
Sense of belonging	3.20 $\phi$	0.55
Overall stress	3.18 $\phi$	0.44
Frustrations	2.95 $\phi$	0.56
Conflicts	3.09 $\phi$	0.66
Pressure	3.56 $\phi$	0.70
Changes	2.97 $\phi$	0.76
Self-imposed	3.33 $\phi$	0.58
Age	20.97	2.30
Gender	1.63 $\phi$	0.49
Marital status	1.12 $\phi$	0.46
Weekly school hours	17.32	7.82
Weekly work hours	8.13	15.42
Monthly personal income	1577.08	2403
Monthly family income	32600	53906
No. of family member	4.01	0.921

$\phi$ : range 1-5

$\phi$ : 1=male, 2=female

$\phi$ : 1=single, 2=married, 3=other

**Table 3** Items for measuring stressors.

Stressors	Items
Frustrations	A. As a student: 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.
Conflicts	B. I have experienced conflicts which were: 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.
Pressures:	C. I experienced pressures: 11. As a result of competition (on grades, work, relationships with spouse and/or friends). 12. Due to deadlines (papers 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).
Changes	D. I have experienced: 15. Rapid unpleasant changes. 16. Too many changes occurring at the same time. 17. Change which disrupted my life and/or goals.
Self-imposed	E. As a person: 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.

The data analysis was operated with the help of IBM SPSS Statistics 19. The analysis of sense of belonging was basically based on linear regression analysis. The analysis operated in four major steps, with the first step entering the overall stress and the sub-categories of stress, that are the five types of stressors, including frustrations, conflicts, pressure, changes and self-imposed. The second step added demographic data. The third step considered the interactions between the stressors and background characteristics. That third step involves two parts of work: The first part is a step by step selection procedure to find out significant interactions out of possible interactions, and the other adding each set of interactions alternatively. The sets of interactions included those involving gender, age, marriage, school hour, work hour personal income, family income and number of family member. Lastly, the fourth step of the regression analysis included only the significant predictors of sense of belonging in the regression model.

**Results**

The average sense of belonging in the undergraduate students was at a moderate level of 3.20. The mean of their stress is 3.18. For different components of stress, which are frustrations, conflicts, pressure, changes and self-imposed stress, the average scores are 2.95, 3.09, 3.56, 2.97 and 3.33 respectively. (See table 2) Although all the five types of stressors are at a moderate level, college students showed a relatively higher rating in pressure and self-imposed stress.

A correlation analysis (See table 4) was done between sense of belonging and the five types of stressors. Results showed that all the five types of stressors had highly significant correlations with sense of belonging. This matched the expectation of resource theory. The overall stress was negatively correlated to sense of belonging with amplitude of .596. Among the five types of stressors, frustrations had the greatest correlation to the sense of belonging with correlation coefficient of -.610. Changes had the second greatest correlation with correlation coefficient of -.482. Pressure is in the middle with correlation coefficient of -.384. Self-imposed stress and conflicts had the smallest correlation with sense of belonging with correlation coefficient of -.265 and -.258 respectively.

Table 4  
*Correlation of stress and sense of belonging*

	Sense of belonging
Overall stress	-.596***
Frustrations	-.610***
Conflicts	-.258***
Pressure	-.384***
Changes	-.482***
Self-imposed	-.265***

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

Table 5  
*Standardized effects on sense of belonging of four regression model*

Predictors	(1)	(2)	(3)	(4)
Frustrations	-.497***	-.456***	-.373***	-.415***
Conflicts	.049	-.037	-.014	
Pressure	-.186**	-.160	-.333***	-.414***
Changes	-.114	-.135	-.090	
Self-imposed	-.051	-.107	-.036	
Female		.043	.012	
Age		.187*	.109	
School hours		.139	.100	
Work hours		.038	.152	
Personal income		.247*	.116	.223**
Family income		.237	.146	
Family income per capital		-.261	-.096	
Self-imposed x school hours			.161*	.210**
Pressure x work hours			.342***	.330***
Conflict x family income per capital			-.248**	-.227**
Pressure x family income per capital			-.180*	-.226**
<b>R Square</b>	<b>.430</b>	<b>.555</b>	<b>.706</b>	<b>.668</b>

(1) Events of the previous year as predictors only; (2) Background characteristics added as control factors; (3) interactions between events and background characteristics added; (4) significant predictors only, based on the stepwise selection procedure

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

The result of the four steps of regression analysis is shown in the table 5. In the first step, the five components of stress were put into the regression model. The regression model gives an R Square of 0.43. It means that 43% of variance was explained by the model. In the model, ‘frustrations’ shows a Beta value of -.497 with *p* value less than 0.001. On the other hand, ‘pressure’ shows a negative influence of Beta = -.186 with *p* value less than 0.005. The three other components, conflicts, change and self-imposed shows insignificant relationship with sense of belonging.

In the second step, demographic factors were added to the model. Information added included gender, age, school hours, work hours, personal income, family income and family income per capital. This model gives an R Square of 0.555, showing 56% of explanation power. Similar as the first model, ‘frustrations’ shows a strong negative influence on sense of belonging with high significance. However, pressure and the three other components do not shows significant relationship with sense of belonging. For demographic factors, only age and personal income show significant relationship with sense of belonging. Both of them show positive relationship with ‘age’ giving a beta of

0.187 and ‘personal income’ giving a Beta of 0.247. Other background factors did not show any significance.

In the third model, four interactions were filtered out during the stepwise selection procedure and they were added to the model. This model gives an R Square of 0.706, showing 71% of explanation power. The ‘self-imposed - school hours’ interaction shows a Beta of 0.161 with  $p$  value less than 0.05. The ‘Pressure – work’ interaction shows a positive relationship of very high significance with beta = 0.342 and  $p$  value less than 0.001. The ‘conflict – family income per capital’ interaction shows a highly significant negative relationship with sense of belonging. It’s Beta = -0.248 and  $p$  value is less than 0.005. The last interaction selected is the ‘Pressure – family income per capital’. It shows a negative relationship of -0.18 with  $p$  value less than 0.05.

In the fourth model, only the significant predictors of sense of belonging were included. This model gives an R Square of 0.668, showing 67% of explanation power. Although the explanation power of this model is a bit less than that of the third model, all the components in this model show very high level of significance. Similar as previous models, ‘frustrations’ and ‘pressure’ showed a negative relationship with sense of belonging with betas of -0.415 and -0.414 respectively. For demographic factors, only personal income showed a significant relationship of 0.223. For the four interactions, “Self-imposed – school hours” interaction give a highly significant influence of 0.210 and “pressure – work hours” interaction significantly affected sense of belonging with beta = 0.33. Both of them showed significant enhance towards sense of belonging. The other two interactions diminish sense of belonging significantly. “Conflict – family income per capital” interaction and “pressure – family income per capital” interaction shows a negative relationship with sense of belonging with Beta of -0.227 and -0.226 respectively.

In all, the regression models showed that among the five stressors, only frustrations and pressure significantly discourage sense of belonging. The relationship of other stressors and sense of belonging can only stay in the “correlated” level. For the background characteristics, only age and personal income showed significant positive influence to sense of belonging. The more valuable findings are on the interactions of stressors and background characteristics. Four interactions had been found to have significant influence on sense of belonging. “Self-imposed – school hours” interaction and “pressure – work hours” interaction significantly enhance sense of belonging. On the other hand, “conflict – family income per capital” interaction and “pressure – family income per capital” interaction diminish sense of belonging significantly. The predictors in the fourth model explained 67% of variance of the sense of belonging, which was already quite high.

## Discussion

There are three notable findings in the study. First, stressors diminish sense of belonging while age and personal income generally enhance sense of belonging, which matched the expectation of resource theory. Second, the influences of different type of stressors were independent to each other. They had their own mechanism in affecting sense of belonging. Third, four interactions were been found to have significant influences on sense of belonging and the influences were quite different from the prediction done before.

The first finding is good evidence for using resource theory to explain direct impacts on sense of belonging. However, the question comes to why the relationship of those stressors (like conflicts, changes and self-imposed) and sense of belonging can only stay in the “correlated” level, but not significant influence. A similar condition happened in Cheung’s study (2012). They found that most of the stressors did not erode sense of belonging. They explain the phenomenon in two ways. First, those stressors did not deprive resources to an extent that can weaken sense of belonging. Second, the availability of resources from personal, familial, and/or societal sources is able to compensate for resource loss caused by the stressors. According to the first explanation, whether the stressors can deprive resources is the crucial factor to make significant influence. Then two attributes have risen for further discussion. One is the strength and another is the nature of the stressors. When applying the result of the present study, it is found that the strength of stressors is less likely to be the determining factor. When considering the rating of stressors from the respondents (table 2), it should show the strength of the stressors in a certain extent. So although the rating of pressure is the highest and it gives significant influence, other stressors seem not following this pattern. Like frustrations, it is the most significant stressors to predict sense of belonging, yet the rating of it is the lowest among the five stressors. And for self-imposed stress, the rating of it is the second highest, but still no significant relationship can be found towards sense of belonging directly. These are the reasons why strength of the stressors is less likely to be the determining factor. When talking about how the nature of the stressors affects their predicting power on sense of belonging, the focus should be on what resources the stressor deprives. Back to the definition, frustration is the feeling of failure in achieving something, conflicts emphasizes the decision making process, pressure comes from workload and responsibility, changes focus on adjustment process and self-imposed is about expectation. From this brief summary, it is found that the two significant variables, frustrations and pressure, result in more concrete and realistic kind of resource consumption. Comparatively, conflicts and self-imposed, which had no direct significant influence on belongingness, result in more abstract and spiritual need. This further explains why some stressors show significance in direct relationship to sense of belonging, while some stressors show no significance in direct relationship but have significant influence in indirect ways, which are the interactions with background

characteristics. This kind of conjecture is interesting and able to explain the phenomenon. However, the analysis is still rough and the support is weak. Therefore, further studies have to conduct a test the correctness of this conjecture.

The second finding is about the independence of the five types of stressors in influencing sense of belonging. Since all of them are under the topic of stress, it comes to a question that “do they affect belongingness in the same way?” If the answer is positive, there is no point to divide stressors into these five categories for analysis. Fortunately, the result of present study showed that this categorization is meaningful in investigating the relationship between stress and sense of belonging. First of all, the construct validity had been tested (see table 6). Result showed that each construct has high convergent validity and divergent validity with others. Second, the correlation coefficients between different stressors and belongingness (see table 4) showed obvious differences in the correlation test. Third, in the linear regression models (see table 5), each stressor shows an obviously different Beta and *p* value with others. Most importantly, each stressor showed different means to influence sense of belonging. For frustrations, it directly diminished sense of belonging but do not show any interacting effect with demographic factors. For self-imposed and conflicts, although they did not show any directly influence, they produce significant interacting effect with background characteristic towards belongingness. For pressure, it influenced sense of belonging in both direct and interacting means. Lastly, changes did not show any significance in neither direct nor indirect influence. Integrating the about clues, it is believed that each type of stressor had their own mechanism in affecting sense of belonging. Further investigation is worth to advance knowledge towards the relationship between stress and sense of belonging.

The third finding is about the four interactions which produce significant effect to sense of belonging. The interesting point is that the interacting effect is just as opposite of the prediction. Originally, the “Self-imposed – school hours” interaction was expected to produce a negative influence on sense of belonging. It is because according to the resource theory, competition of resource results in a drop of quality of life. Resource loss would lead to difficulty in meeting self-expectation and achieving perfect. As a result, the self-imposed stress would be magnified, and hence result in diminishing of sense of belonging. However, the finding of present study was that the “Self-imposed – school hours” interaction generated positive interacting effect and enhanced sense of belonging. Similarly, the “pressure – work hours” interaction was expected to produce adverse effect on sense of belonging because the work hours had occupied the resources for one to reduce pressure so that students of higher work hours was expected to be more stressful and have low sense of belonging, but again, the finding of present study was that the “pressure – work hours” interaction generated positive interacting effect and enhanced sense of belonging.

Table 6  
 Correlation test of the 23 items for measuring stressors

1	.502**	.403**	.397**	.203**	.293**	.196**	.197**	.257**	.267**	.187*	.130	.110	.194**	.407**	.297**	.324**	.142	.103	.137	.017	.117	.190*
.502**	1	.281**	.324**	.198**	.269**	.194**	.100	.181*	.166*	.098	.111	.280**	.200**	.414**	.355**	.384**	.155*	.177*	.147*	.127	.110	.172*
.403**	.281**	1	.321**	.306**	.383**	.214**	.306**	.256**	.139	.160*	.063	.129	.284**	.355**	.320**	.351**	.175*	.139	.205**	.040	-.003	.138
.397**	.324**	.321**	1	.194**	.256**	.256**	.258**	.313**	.253**	.276**	.124	.256**	.238**	.385**	.244**	.327**	.074	.119	.176*	.106	.071	.186*
.203**	.198**	.306**	.194**	1	.508**	.328**	.182*	.173*	.135	-.017	-.089	-.083	.381**	.302**	.259**	.381**	-.018	-.100	.183*	.016	.082	.097
.293**	.269**	.383**	.256**	.508**	1	.359**	.135	.277**	.227**	.096	.007	-.036	.444**	.349**	.271**	.316**	.021	.023	.148*	.031	-.028	.191*
.196**	.194**	.214**	.256**	.328**	.359**	1	.176*	.122	.222**	.061	-.010	.012	.156*	.236**	.160*	.251**	-.044	-.148*	.110	.176*	.011	.219**
.197**	.100	.306**	.258**	.182*	.135	.176*	1	.358**	.435**	.154*	.019	.109	.234**	.121	.130	.148*	.120	.051	.167*	-.010	.176*	.132
.257**	.181*	.256**	.313**	.173*	.277**	.122	.358**	1	.399**	.161*	.038	.064	.287**	.203**	.322**	.256**	.121	.029	.173*	.035	.154*	.155*
.267**	.166*	.139	.253**	.135	.227**	.222**	.435**	.399**	1	.276**	.116	.118	.188*	.286**	.187*	.273**	-.006	.081	.074	.157*	.173*	.151*
.187*	.098	.160*	.276**	-.017	.096	.061	.154*	.161*	.276**	1	.471**	.487**	.264**	.330**	.084	.215**	.160*	.168*	.164*	.097	.284**	.262**
.130	.111	.063	.124	-.089	.007	-.010	.019	.038	.116	.471**	1	.560**	.206**	.277**	.101	.189*	.189*	.203**	.103	.119	.144	.185*
.110	.280**	.129	.256**	-.083	-.036	.012	.109	.064	.118	.487**	.560**	1	.231**	.228**	.263**	.235**	.194**	.174*	.130	.166*	.204**	
.194**	.200**	.284**	.238**	.381**	.444**	.156*	.234**	.287**	.188*	.264**	.206**	.231**	1	.373**	.259**	.359**	.144	.122	.228**	.092	.158*	.200**
.407**	.414**	.355**	.385**	.302**	.349**	.236**	.121	.203**	.286**	.330**	.277**	.339**	.373**	1	.525**	.617**	.117	.140	.202**	.121	.104	.212**
.297**	.355**	.320**	.244**	.259**	.271**	.160*	.130	.322**	.187*	.084	.101	.228**	.259**	.525**	1	.594**	.114	.129	.229**	.144	.181*	.231**
.324**	.384**	.351**	.327**	.381**	.316*	.251**	.148*	.256**	.273**	.215**	.189*	.263**	.359**	.617**	.594**	1	.161*	.183*	.303**	.206**	.216**	.241**
.142	.155*	.175*	.074	-.018	.021	-.044	.120	.121	-.006	.160*	.189*	.235**	.144	.117	.114	.161*	1	.487**	.224**	.224**	.358**	.200**
.103	.177*	.139	.119	-.100	.023	-.148*	.051	.029	.081	.168*	.203**	.194**	.122	.140	.129	.183*	.487**	1	.270**	.157*	.254**	.094
.137	.147*	.205**	.176*	.183*	.148*	.110	.167*	.173*	.074	.164*	.103	.174*	.228**	.202**	.229**	.303**	.224**	.270**	1	.164*	.383**	.467**
.017	.127	.040	.106	.016	.031	.176*	-.010	.035	.157*	.097	.119	.130	.092	.121	.144	.206**	.224**	.157*	.164*	1	.339**	.265**
.117	.110	-.003	.071	.082	-.028	.011	.176*	.154*	.173*	.284**	.144	.166*	.158*	.104	.181*	.216**	.358**	.254**	.383**	.339**	1	.344**
.190*	.172*	.138	.186*	.097	.191*	.219**	.132	.155*	.151*	.262**	.185*	.204**	.200**	.212**	.231**	.241**	.200**	.094	.467**	.265**	.344**	1

Red: frustrations; Blue: conflicts; Green: pressure; Gray: changes; Orange: self-imposed

Explicated with resource theory, the enhancement of belongingness or quality of life should be resulted from the increase of resource. Thus the explanation is that, in the “Self-imposed – school hours” interaction, school hours serve as a source of resources but not a cause of conflict. School time is much more positive than negative in students’ mind. It can provide resources like knowledge and friendship. Hence the stress coming from self-expectation can be resolved. Similarly, the “pressure – work hours” interaction, work hours can serve as a source of social networking, and more importantly, provide incomes to the individuals. It is especially true for college students because most of the students work in a part-time mode and their salary is calculated by the hours they worked. With a better financial condition and social network, stressors like payment deadline or heavy workload can be resolved more effectively, resulting in relief of pressure and increase in sense of belonging. In addition, school and work hours can provide an effect of distraction so that people would not focus too much on the stressors and hence become less stressful.

On the other hand, for the interactions of “conflict – family income per capital” and “pressure – family income per capital”, the results are different from expectation. Originally, they were expected to have positive effect towards sense of belonging since income is obviously a useful kind of resources. Nevertheless, the results turned out to be negative. This implied that the family income per capital (FIPC) cannot serve as a substitution to compensate the resource loss due to the stressors, yet makes the situation even worse. The reason why FIPC cannot serve the compensating function is that with the good economy of Hong Kong, students may have a basic personal income for their daily expense and the financial condition of their financial families is healthy, so that



there is no family burden on them. Simply speaking, their burden is light and money is not the thing they lack. To explain the adverse effects come along with FIPC, the concept of relative deprivation is used. A main proposition of relative deprivation is that one's expectation would rise when the person live in an environment rich in resources. Once the expectation cannot be fulfilled, the feeling of being exploited would be induced. Back to the case, individual would perceive more about the good economy with high FIPC. Then, their expectation towards quality of life increases. Once they realize that their situation is not as good as they expectation or imagination, comparison and jealousy is induced and the effect of stressors will be enlarge. The reason why "self-imposed – family income per capital" interaction is insignificant is that, even though both self-imposed and relative deprivation focus on expectation, their subject is different. Self-imposed stress is about the expectation on oneself while the expectation of relative deprivation focuses on how the environment provides satisfaction.

### **Recommendations**

According to the above findings, there are two simple suggestions to reduce stress and improve sense of belonging of students.

Based on the finding that school hours and work hours can have positive interacting effect with stressors, I suggest that on one hand, the university can increase the flexibility for students to join different lectures. On the other hand, the university can set up more campus internship or work position. These allow students to increase their school and work hours according to their needs.

To tackle the problem of relative deprivation, the education system should focus more on the development of values in students. More programs should be organized to adjust the perception and expectation towards the relationship between them and the society or family. Meanwhile, the responsibility of them should be emphasized so that there will be a better balance in responsibility of society and themselves in their mindset. As a result, the chance of having unrealistic expectations about the society or family can be reduced.

These suggestions can wishfully provide a better condition for students' development in Hong Kong by reducing stress and improving sense of belonging of them.

### **Acknowledgement**

I would like to take this opportunity to express my gratitude to all those who support me to complete this thesis.

I would like to acknowledge my instructor Dr. Chau-kiu Cheung. Thank you for inspiring to apply academic thinking style in problem identification and analysis. Your comments and advices are always useful and insightful. Moreover, I am grateful to learn new statistical analytic techniques from you. Thank you for your patience in teaching and assisting me throughout the whole process.

In addition, I would like to show my thankfulness towards my fellow classmates. Thank you for sharing your ideas to me and cheering me up when I was dispirited.

Finally, I would like to thank the lecturers who have taught me in these two years. I have learnt a lot from you all. Thanks for teaching me and my classmate with hearts.

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