

Physical Activity Level among Mainland Chinese students in Hong Kong and its Relationship between Acculturation Stress, Social Support and Self-Efficacy

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ABSTRACT---*The main study objective was to investigate the physical activity levels among Mainland Chinese students in Hong Kong and has what kind of relationship with the factors of acculturation stress, social support and self-efficacy. Data from three Hong Kong universities, Hong Kong City University, Hong Kong Baptist University and Hong Kong Polytechnic University. In total, 293 Mainland Chinese students (23-28 years, 63.6% females) were recruited in this study. All participants completed the validated questionnaires. Results of this study reveal that acculturation stress and self-efficacy had positive relationship with moderate physical activity, while, social support was not direct correlation with moderate physical activity. Meanwhile, social support had a negative relationship with acculturation stress and positive correlation with self-efficacy. Results from the multi-step regression model also indicated that the social support and moderate physical activity was mediated by acculturation stress and self-efficacy. Controlling for social support, acculturation stress and self-efficacy were positively influence moderate physical activity. Findings of this study indicated the close relationship between physical activity and the three important factors when experienced a new environment. Regular physical activity helps adopting to different culture and improve confidence of self-management. The finding also illustrated the importance of regular physical activity among Mainland Chinese students in Hong Kong.*

Keywords--- physical activity level, acculturation stress, social support, self-efficacy

1. INTRODUCTION

As a special Administrative Region of China, Hong Kong has its own laws, currencies and educational system (Li & Bary, 2007). Such a special character, plus its deep internationalization, Hong Kong has attracted a significant amount of immigrants from mainland China since its return in 1997. Among these new immigrants, students are the most notable population that is dramatically increasing in its size in recent years. Mainland Chinese students often see the institutions in Hong Kong as a stepping-stone for further international education. According to the Education Bureau, there were approximately 10,030 Mainland undergraduate students in 2013 and 35,000 taught graduate students from 2010 to 2013 studying in eight universities in Hong Kong (Education Bureau, 2014). Nevertheless, this is just the beginning. In an effort of making Hong Kong an education hub in Asia, the Hong Kong government is trying hard to increase the diversity of their student population. It is believed that the number of non-local students will continue to increase in next few years, and the Mainland Chinese students would be of the largest among this population (Cheung, 2012).

However, although Hong Kong and Mainland China have a great amount of similarities, Mainland Chinese students still have to face substantial challenges when studying and living in Hong Kong from the culture and language differences (Ysang, 2010). Unlike their local classmates, Mainland Chinese students have to overcome the period of acculturative stressors (Lu, 1998). Potential adjustment difficulties might cause serious psychological problems and they could also associate with the symptoms of anxiety, depression and even suicidal behavior among Mainland Chinese students (Cho, 1990). If not well managed, these issues would have significant impact on their mental and physical health, and further reduce their life satisfaction studying in Hong Kong (Chan, 2002). Among various practices in helping Mainland Chinese students to minimize the adjustment stress living in Hong Kong, physical activity might be the easiest and the most efficient way that students can do to improve physiological and psychological health (National Physical Activity Plan, 2001). Regular physical activity is beneficial in decreasing anxiety and depression and to stimulate better cognitive function (Centers for Disease Control, 2011).

For students in a new environment, participating in physical activity provides a chance to reduce the feeling of social isolation and improve social interaction skills (Yan, 2011). A study on Chinese female students in US universities supported this point of view. Bardley (2006) indicated that Chinese female students see physical activity as a good way to make local friends and to reduce socio-culture adjustment stress (Bardley, 2006). Meanwhile, lack of physical activity

is one of the major causes of overweight problems among students in overseas universities. Bucher (2008) studied that international students in the United State, and found that international students, especially those from Mainland China experienced unexpected weight gain due to the lack of appropriate physical exercise and an unbalanced diet. It would be of an easy conclusion that physical activity should receive more attention for its role in health among Mainland Chinese student population studying in Hong Kong.

A simple but serious fact is the generally low physical activity levels among Mainland Chinese students found in both foreign and domestic universities. Most of the Chinese college students did not meet the national health guidelines, which suggest of three times of 30 minutes of moderate-to-vigorous physical activity per week (Haskell, 2007). In a survey on students of the Hong Kong University, Wong and Yam (2005) mention that 31% Mainland Chinese students did not participate in physical activity. Similar sedentary lifestyle was also found in domestic universities, as students usually spend more time on video games, computer or television instead of physical activities (Wu, 2007). Cheung (2012) also indicated that the majority of users of the Wai Hang Sports Center of Hong Kong Baptist University are foreign international students. Mainland Chinese and local Hong Kong students do not exercise regularly. Therefore, to investigate the physical activity level and explore potential reasons behind the low physical activity level among Mainland Chinese student population in Hong Kong would be urgent and informative.

Acculturation stress and Physical Activity

Previous studies have used the acculturation experience to study immigrants in a new environment among various populations, especially the international students in oversea universities. Acculturation is defined as the process that individuals have to experience when moving into a new environment, including the time he/she spends on adjusting to the culture. Berry and Kim (1987) suggested that the acculturation stress is the major reason for decreasing status in psychological, physical and social aspects when an individual arrives in a new environment. This phenomenon is frequently found in US because of the coexistence of various ethnic groups and diverse cultures, especially in higher education institutions when they have a large population of international students.

In a study on the acculturation stress of international students, Kim (2009) suggested that English language proficiency, academic pressure, cultural adjustment, financial concern, perceived racial discrimination and future concern are the main acculturative stressors among Asian international students in US universities. Similarly, Cheung (2012) studied Mainland Chinese students in Hong Kong and indicated four major psychological adjustment stresses: language, academic, social and cultural, financial adjustments. Among them, the language stress is considered the biggest issue for this population since Mainland Chinese students have to deal two unfamiliar languages (i.e., Cantonese and English) at the same time. Cultural differences such as food, climate, social values and the concern about future career are some other sources of acculturation stress when Mainland Chinese students living in Hong Kong (Cheung, 2008).

Andersen (2001) investigated the relationship between physical activity and acculturation stress among American adults who migrated to US from Canada and Spain. The study found that individuals who were native English speakers have higher physical activity than those whose native language is Spanish. Kim (2009) also found that low physical activity levels were closely related to low English language proficiency among Korea international students in US universities. Students in this study regard language as a barrier constraining their communication with local peers when participating in physical activity. Mainland Chinese students in US universities have experienced the same problem of embarrassment in English speaking when engaged in the physical activity grouped the student unions (Yan, 2010). Since Mainland Chinese students might face similar or even higher acculturation stress when they study in Hong Kong, the negative impact on the physical activity level should be expected according these research findings. Therefore, we propose:

Hypothesis 1: Acculturation stress would have a negative relationship with the physical activity level among Mainland Chinese students in Hong Kong.

Social Support and Physical Activity

Social support is another factor that has been widely associated with physical activity (McAuley, 1995). Social support is defined as the formal and informal information people received from organization or other people (Cohen & Morris, 2002). Schaefer (1981) suggests that social support is a mediator influencing the both psychological and physical health among individuals. People with low social support are more likely to involve with psychological symptoms and physical diseases. On the other hand, the more social support ones receive from friends or family, the more physical activity opportunities would decrease physical and mental problems. Lox (2006) defined the social support as a particular sort of social influence that could affect physical activity levels. Kim (2009) also found that low level of physical activity is related to less social support from friends or family among Korean women in US.

Schaefer (1981) classified the multi-dimension social support into three sub-dimensions, named emotional, informational and companionship. Usually, different sources of social support from friends, family members or experts along with different types of supporters are the main facilitations when doing physical activity (Yoder, 2001). Hamel (2008) indicated that participants' physical activity levels have significant relationship with the social support from family members, peers, gym advisers and coaches. Kim (2009) investigated 215 Korean international students in Bryan and College Station area and found physical activity level greatly associated with social support. The study suggested that social supporter would positively affect physical activity level. With the same logic, support of from local friends and classmates would be important for Mainland Chinese students to participate more in physical activities in Hong Kong.

Therefore, we propose:

Hypothesis 2: Social support would have a positive relationship with physical activity level among Mainland Chinese students in Hong Kong.

Self-Efficacy and Physical Activity

Self-efficacy is defined as an individual's belief or faith, or confidence in his/her ability to accomplish certain tasks (Bandura, 1997). In addition, self-efficacy would influence an individual's choices of tasks, performance levels of the tasks and the effort towards to the tasks. Numerous studies have found the positive connections between self-efficacy and physical activity (Pauline, 2011). College students with high self-efficacy would have stronger beliefs in their ability in accomplishing physical tasks. Mainland Chinese students in US universities have been identified as the one of groups that has the lowest physical activity level and it is believed that this phenomenon was due to low self-efficacy and confidence to performance well in front of local classmates (Yan, 2010).

Rogers and Sullivan (2001) classified the self-efficacy into three different self-awareness behaviors, named tasking, coping and scheduling self-efficacy. Wendy (2001) examined the three different types of self-efficacy and their relationship with physical activity among 203 adults in Canada. Finding of the study indicated a big difference existing between coping and scheduling self-efficacy. Tasking self-efficacy emphasizes on one's confidence in his/ her ability to complete a task (Bandura, 1997). In the current study, it is referred to accomplishing the task when participating in physical activity. For example, how confident the participant can engage in at least 3 times of 30 minutes of moderate-to-vigorous physical activity in a regular week. Coping self-efficacy refers to how confident an individual can overcome difficulties when participate in physical activity (Blanchard, 2002). Finally, scheduling self-efficacy examines one's confidence to arrange their time and responsibilities when doing physical activity (Brawley & Weston, 2005). For example, Mainland Chinese students with high scheduling self-efficacy would report being confidence in organizing their time for physical activity no matter what happens. Therefore, we propose:

Hypothesis 3: Self-efficacy would have a positive relationship with the physical activity level among Mainland Chinese students in Hong Kong.

Social Support and Acculturation Stress

Crist and Burant (2003) suggested that the social support is a significant factor in social adjustment, especially for individuals who are experiencing life change or transition. Social support works as a buffer that benefits on psychological symptoms when people encounter acculturation stresses and helps physical health when associates with physical activity participation (Lau, 2006). Ye (2006) studied the relationship between acculturation stress and social support in a sample of 112 Chinese international students. The study showed that students with higher emotional and informational support from same racial groups have less acculturation adjustment stressors in foreign universities. Besides, Yan (2010) indicates that Chinese female international students are one of the least active groups in US. Factors contributing to this phenomenon includes: enjoy time by themselves, engage in academic accomplishment and lack of social support. Under this circumstance, if they have more advisers or friends who can motivate them to participate in physical activity, fewer acculturation adjusting problems could be expected when experienced cultural difference. Therefore, we propose:

Hypothesis 4: Social support would have a negative relationship with acculturation stress among Mainland Chinese students in Hong Kong.

Hypothesis 5: Social support would mediate the relationship between acculturation stress and physical activity among Mainland Chinese students in Hong Kong.

Self-Efficacy and Social Support

Social support could play a role as a mediator that provides a buffer on the relationship between self-efficacy and physical activity, especially in young adolescents (Jackson, 2000). In most cases, young adolescents present incapability of overcoming barriers to do physical activity consistently. Low quality of physical education received from school result in lacking confidence to do physical activity and the perception of limited skills, especially for Asian students (Frisby, 2011). Such a situation could be improved if they have one or more friends available to exercise together. Moreover, unlike the active culture in US, little Asian students can cultivate exercise as a habit unless monitored by supervisor (Cardinal, 2009). At a certain extent, social support can encourage higher self-efficacy when taking physical activity. Therefore, we propose:

Hypothesis 6: Social support would have a positive relationship with self-efficacy among Mainland Chinese students in Hong Kong.

Hypothesis 7: Social support would mediate the relationship between self-efficacy and physical activity among Mainland Chinese students in Hong Kong.

2. METHOD

Participants

Mainland Chinese students in Hong Kong universities were the target population of this study including both postgraduates and undergraduates. The majority of populations who participated in this study were mainly from Hong Kong Polytechnic University, Hong Kong Baptist University and Hong Kong City University. A total of 293 questionnaires were valid from the total of 325 distributions.

Measurement

Questionnaire used in this study could be divided into five parts, which include acculturation stress part, social support part, physical activity part, self-efficacy part and participants' demographic information. Physical activity measured by the International Physical Activity Questionnaire (IPAQ), which was developed for cross-national assessment of physical activity (Marshall & Bauman, 2003). The short (7-item) version of this scale was adapted to measure vigorous-intensity activity, moderate-intensity activity, walking activity, and sitting in a regular week. Yang and Clum (1995) developed the index of life stress (ILS) to measure the acculturative stress among Asian international students. This study modified the ILS into 14 items of 7-point Likert scale and four acculturative stressors: Cantonese and English language proficiency, academic pressure, cultural and social adjustment and future concern. The response range was originally from 0 (never) to 7 (very often) to test the adjusting stress they feel live in Hong Kong.

Social support in this study was measured by a multidimensional scale developed by Chogahara (1999). A total of 9 items in a multidimensional approach to was used to estimate how often friends play companionship, informational or emotional role to support Mainland Chinese students participate in physical activity. The Self-efficacy was measured by revised scale from McAuley (1990) self-efficacy barriers in exercise measurement, which includes a 12-item instrument and focuses on self-efficacy related to how confidence to engaging in physical activity when facing some situations.

Besides descriptive analysis, a multi-step regressions analysis was conducted to test our hypotheses.

3. RESULTS

The demographic information and physical activity levels for the sample are presented in table 1. The majority of respondents were female (63.6%). The majority of those responding were educated at postgraduate level (59.5%), followed by undergraduate (36.7%). In a regular week, only 95 Mainland Chinese students do moderate physical activity in three days between 30 minutes and 90 minutes in a regular week. More than 70 percent of participants sit over 4 hours in average in a day.

For the reliability of measurements, Cronbach's alpha scores were calculated. The alpha scores for most of the construct exceed the minimum recommended level of 0.70 (Devellis, 1991), including acculturation stress ($\alpha = 0.769$); social support, ($\alpha = 0.833$); and self-efficacy, ($\alpha = 0.784$).

Hypotheses testing

Based on the result of factor analysis, bivariate correlation evaluated the relationship between independent variables (acculturation stress, social support and self-efficacy) and dependent variable (physical activity) (table 2). Acculturation stress has been found significantly correlated with moderate physical ($r = .159, p < .01$) and self-efficacy ($r = .261, p < .01$). Social support has no significant correlation with moderate physical activity ($r = .091, p > .05$). In table 3, multiple step regression analysis indicated that the relationship between social support and moderate physical activity was mediated by acculturation stress and self-efficacy ($\Delta F = 8.904, p < .01$). Controlling for social support, moderate physical activity was positively influenced by acculturation stress ($\beta = .128, p < .05$) and self-efficacy ($\beta = .242, p < .01$).

4. DISCUSSION

There are numerous literatures revealing insufficient physical activity phenomenon among young generations all over the world (Miller, 2007). It is not surprising to find the result of low physical activity levels among Mainland Chinese students in Hong Kong. Most of them could not meet the national guidelines of engaging in at least 30 minutes and three times of moderate-to-vigorous physical activity in a regular week (Troiano, 2008). Instead, the physical activity time was replaced by sedentary lifestyle, which the video games, computer and television have all contributed to a decrease in physical activity (Niggel, 2004). Results in this study indicated that the majority of students sit over 4 hours in a day at a desk or watching television.

Furthermore, the object of this study was to investigate physical activity level and its relationship with acculturation stress among Mainland Chinese students in Hong Kong. Unexpectedly, the results indicated that the acculturation stress was positively related with moderate physical activity. It is opposite to the hypothesis that acculturation stress has negative relationship with physical activity. The result can associate with the benefit of doing physical activity. If students believe that regular physical activity may help to decrease the adjusting stress, they might want to do more exercise when they feel pressure. Besides, regular physical activities give college students chances to improve interaction skills and reduce the feeling of social isolation when they exercise with local students (Yan, 2010). Nonetheless, one of the limitations of this study is limited information on the activity pattern of Mainland Chinese students. If more detail information about their physical activity habit is available, it might be easier to explain why the higher acculturation stress is related to higher level of moderate physical activity.

Although, friends as a source of social support has been proved as an effective way when compared with other sources like parents or expert support (Tsang, 2008), the results in this study showed no relationship between social support and moderate physical activity. In Hong Kong, the majority of students had no opportunity to live together in dormitory instead they had to find the place to live by themselves outside the campus. This gave them little chance to know each other and have to cultivate the feeling of being alone. Mainland Chinese students have little chance to receiving support from friends to take exercise, not alone participate in physical activity together. Communicating in Cantonese could be a failure in doing physical activity together with Hong Kong students.

This study also found the social support as a mediator to influence the relationship between acculturation stress and self-efficacy with moderate physical activity. Social support from friends served as a mediator of self-efficacy for seeking support. This suggests that friends can promote physical activity involvement in student population. Friends can encourage one to be physically active and give confidence to overcome potential difficulties (Michael, 2007). However, this discussion focuses on the idea that friends' motivation in a positive direction. Yet it may occur the situation that Mainland Chinese students have negative attitude towards on these barriers as well at sometimes. If friends encourage participating in physical activities, however, one may have schedule conflicts or exam on the following day, the sense of the responsibility of physical activity would decrease.

Table 1. Demographic Information and Physical Activity Level

Variables	Category	N	%
Age	18-22	118	40.1
	23-28	172	58.5
Gender	Male	107	36.4
	Female	187	63.6
Educational Level	Undergraduate	108	36.7
	Postgraduate	176	59.5
Length of residence in Hong Kong	Less than one year	184	62.6
	One year to three years	78	26.5
	4+ years	210	71.4
Moderate PA	Days 2Day	87	29.6
	3Days	95	32.3
	Hour(s) 0-0.5 hour	86	29.3
	0.5-1.5 hours	124	42.2
Sitting	Hours 3-4 hours	53	18.0
	4+ hours	210	71.4

Table 2. Bivariate Correlations between Physical Activity levels and Acculturation Stress, Social Support, Self-Efficacy

Variables	ACT	SUT	SET	MODPA	SIT
Acculturation Stress	1	-.146*	.109	.159**	.177**
Social Support		1	.489**	.091	-.136*
Self-efficacy			1	.261**	-.103
Moderate PA				1	-.071
Sitting					1

*Significant at .05 level

**Significant at .01 level

Note. ACT= Acculturation Stress; SUT= Social Support; SET= Self-Efficacy; MODPA= Moderate Physical Activity; SIT= Sitting

Table 3. Multiple Regression Analysis the Factors influence the relationship between Moderate Physical Activity level and Acculturation Stress, Self-efficacy variables after controlling for Social Support

Factor	R	R ²	ΔR^2	F	ΔF	β	p
Step 1	.087	.008	.008	2.173	2.173		
Social Support						.087	.142
Step 2	.282	.080	.072	10.987**	8.094**		
Social Support						-.004	.957
Acculturation Stress						.128	.032
Self-efficacy						.242	.000

*Significant at .05 level

**Significant at .01 level

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