The Influence of Physical Activity on Emotional Intelligence

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Research Report

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Abstract

This study aimed at investigating the influence of physical activities (PA) on emotional intelligence (EI) among full-time undergraduate students at The Education University of Hong Kong. The research first identified the level of EI and PA among the participants and then analysed the data through a linear multiple regression test, using students' last year Grade Point Average (GPA) as a controlled variable to predict the value of EI with PA. The present research used a survey to collect data from 57 Year 2 or above students, using a convenience sampling. The Schutte Self-Report Emotional Intelligence Test (SSEIT) (Schutte, Malouff, Hall, Haggerty, Cooper, Golden, & Dornheim, 1998) and the International Physical Activity Questionnaire (IPAQ) (Craig et al., 2003) were used to measure the participants' EI and PA; students' last year GPA was collected from the demographic section of the survey. There was no significant relation between PA and EI, suggesting that PA did not significantly predict value of EI, controlling GPA. Possible explanations included restriction of range, non-reliable results from SSEIT, and limitations in data collection.

Key words: Emotional Intelligence, Physical Activity, Grade Point Average

The Influence of Physical Activity on Emotional Intelligence

Emotion affects our performance, including job and sports performance (Cote & Miners, 2006; Lazarus, 2000). It is important to know that specific emotions affect our sport performance differently and the ways we regulate and express the emotions can lead to diverse results; One may perform poorly and aggressively when he is angry, however, some may channel the anger into strength and express them as "constructive anger", allowing them to perform better (Lazarus, 2000). Therefore, the ability in regulating and expressing emotions is essential in our daily live and this ability is conceptualized as emotional intelligence (EI). The relations between EI and sports are often examined, and they are positively related as athletes must regulate and express their emotions to perform well in competitive sports (Parnabas, Abdullah, Rahim, Shapie, & Parnabas, 2014). Study also showed that elite student athletes have a better EI than non-athlete students since they are required to have a good control of emotions during the competition and training (Zamanian, Haghighi, Forouzandeh, Sedighi, & Salehian, 2011). However, it is interesting that some studies also found a positive relation between exercise volume or physical activity (PA) and EI (Al Sudani & Budzynska, 2015; Bhochhibhoya, Branscum, Taylor, & Hofford, 2014; Gáspár, Soós, & Szabo, 2017; Zysberg & Hemmel, 2018), meaning that simply by being physically active, rather than participating in competitive sports, EI may also be enhanced. To further explore the relations between EI and PA, specifically how well can PA predict one's EI, this research was being proposed.

Literature review

Emotional Intelligence

The term EI was created by Salovey and Mayer (1990) and they defined EI as the "the ability to monitor one's own and others' feelings and emotions, to discriminate among them

and to use this information to guide one's thinking and actions" (p. 189). Scholars (Mayer, Salovey, Caruso, & Sitarenious, 2001) later redefined EI as the ability in identifying different forms of emotions, the meanings and relations between emotions, and using this knowledge to assist oneself in daily life functioning. To further analyse EI, a four branches model of EI was developed, which included recognizing emotions, making use of emotions in thinking process, comprehension of emotions and directing emotions to facilitate one's personal growth (Mayer, et al., 2001). As comprehending emotions involves reasoning and cognitive processing, scholars suggested that the branch of understanding emotions in EI is highly correlated with one's cognitive ability; on the other hand, scholars also believed that EI is related to one's personality, especially for the branch of emotion management (Mayer, et al., 2001).

Table 1

The Four-Branch Model of emotional intelligence and its relations to intellgience and personality (Mayer, et al., 2001)

Branch	Description	Relation to intelligence and personality
4. Managing emotion	Ability to manage emotions and emotional relationships for personal and interpersonal growth	Interface with personality and personal goals
3. Understanding emotion	Ability to comprehend emotional information about relationships, transitions from one emotion to another, linguistic information about emotions	Central locus of abstract processing and reasoning about emotions and emotional information
2. Facilitating thought with emotion	Ability to harness emotional information and directionality to enhance thinking	Calibrates and adjusts thinking so that cognitive tasks make use of emotional information
1. Perceiving emotion	Ability to identify emotions in faces, pictures	Inputs information to intelligence

Nowadays, there are three major models to interpret EI, which are ability EI, trait EI, and mixed EI. The ability EI model is originated from the above concept suggested by Salovey and Mayer (1990). Trait EI is a relatively new concept and it is defined as the "constellation of emotional self-perceptions located at the lower levels of personality" (Petrides, Pita, & Kokkinaki, 2007). Trait EI is wholly separated from the cognitive ability and it is conceptualized as a personality trait, which is suggested to be positively related to Myers's (1998) Big Five personality trait (Chakrabarti & Chatterjea, 2017). According to Petrides (2011), an alternative name for this construct is *trait emotional self-efficacy* as trait EI concerns people's ability in self-perceptions of their emotions. One of the clearest differences between ability EI and trait EI is their assessment methods. Unlike the measurement of ability EI, measurement of trait EI does not concern the performance (Petrides, Pita, & Kokkinaki, 2007). The only measure that is explicitly based on trait EI theory is the TEIQue (Trait Emotional Questionnaire) (Petrides, 2009). Consider that researches have found an association between one's personality traits and PA level (Allen & Laborde, 2014; Tolea, Terracciano, Simonsick, Metter, Costa Jr, & Ferrucci, 2012) and that trait EI is deeply related to one's personality, it is not suitable to use trait EI in the current study because PA will be correlated with the EI if trait EI is adopted. Besides, this study sees EI as a cognitive ability and one's personality is not the focus of this study

On the other hand, mixed ability is based on Goleman (2006) model, which includes five components, namely self-awareness, self-regulation, motivation, empathy and social skills. This model mixes intelligence with personality to explain one's competency in emotion and social domains, especially in workplace (Goleman, 2006). Once again, as this study sees EI as a cognitive ability rather than a personality trait, Goleman's model (2006) may not be the best assessment tool for current study. Apart from the personality perspective, Goleman's model (2015) focuses on assessing one's social competence, which is more

commonly used in studying the general performance of oneself, rather than studying one's competency in dealing with emotions. Brackett and Mayer (2003) even described the mixed model of EI as misleading because it tries to combine different distinct traits into one psychological construct as EI, including "common sense, wellbeing, persistence, and good interpersonal skills" (p.1157).

Therefore, this study adopted Salovey and Mayer's model of EI, an ability-based model, a widely accepted definition of EI (Zeidner, Roberts, & Matthews, 2002). Indeed, there are more than one test being designed to map onto Salovey and Mayer's model of EI, such as Schutte Self-Report Emotional Intelligence Test (SSEIT) (Schutt et al., 1998) and the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey & Caruso, 2002). Both tests are reliable and valid in measuring ability EI, however, there are 141 items in the MSCEIT and it takes 30-45 minutes to complete. Considering the difficulty in seeking participants to take part in a one-hour study, the SSEIT is preferred. Thus, the SSEIT was selected as the measurement to measure EI since it is created closely based on Salovey and Mayer's four branches model of EI and it only requires no more than 10 minutes to finish the test (there are only 33 items in SSEIT) (Mayer et al., 2001).

Although SSEIT is a globally and commonly used measurement for EI, its factor structure has been unclear, and it has been mostly classified into four or six-factor model (Petrides & Furnham, 2000; Saklofske, Austin, & Minski, 2003; Gignac, Palmer, Manocha, & Stough, 2005). The common factors include appraisal of emotions, utilizing emotions and regulation of emotions. Meanwhile, it is important to know that even though emotion is universal itself, the way Asians and Westerners perceive, process and express them are different (Nisbett, 2004). Western culture promotes individualism and Eastern culture values collectivism (Lim, 2016). Lim (2016) identified that people who share individualism promote the uniqueness of a person, expressing one's inner feelings, emotions and influencing others;

In contrast, under the influence of collectivism, Easterners are encouraged to restrain themselves in expressing emotions as fitting in the groups and not affecting others are more important than expressing one's emotions (Lim, 2016). Lim (2016) also reported that Westerners value, promote, experience and prefer high arousal emotions (angry, distressed, excited, afraid, enthusiastic) more than low arousal emotions (calm, relaxed, sleepy, sad, satisfied, peaceful) compared with Easterners. Another research (Mesquita, 2001) also suggested the individualists and collectivists perceive emotions differently, for example, collectivists see emotions as a signal of change in reality like beliefs about self, others and the relationships between self and others, while individualists see emotions as an internal signal only and a subjective feelings rather than using emotions as an indication for beliefs. Another difference between collectivists and individualists mentioned by Mesquita (2001) is that collectivists would share their emotions mainly after ensuring others share the same emotions and behave accordingly, however, individualists believe sharing emotions is just another way of sharing information. Based on the above differences, we can know that Westerners and Easterners do not perceive, handle and express emotions similarly, therefore, there is a need to modify the factor model so that the test is valid to measure Hong Kong people's EI. In present study, a Chinese version of SSEIT translated by Liu (2008) and a modified six-factor model suggested by Zhoc, Li and Webster (2017) were used.

Physical Activity (PA)

According to World Health Organization (WHO) (2010), PA refers to "any bodily movement produced by skeletal muscles that requires energy expenditure". PA does not limit to exercise or sports which are planned and organized activities, but includes those non-sports activities, such as nonoccupational walking, doing housework and gardening (WHO, 2018). Having enough PA improves one's health, including physical, psychological, and emotional health (Li, Lu, & Wang, 2009; WHO, 2018). PA has also been a widely used health indicator

as physical inactivity is now regarded as the fourth leading risk for global morality (WHO, 2010).

To operationalize PA, the concept of metabolic equivalent (MET) is introduced. According to WHO (2010), one common reference in quantifying the intensity of PA is to use the rate of the rate of energy we spent while sitting at rest, which is equal 1 MET. The calculation of MET-minutes/week was adopted from the *Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ) – Short and Long Forms* (IPAQ Research Committee, 2005), for example, the total work MET-minutes/week is calculated by summing up the Walking + Moderate + Vigorous MET-minutes/week scores at work, and the walking MET-minutes/week at work = 3.3 * walking minutes * walking days at work, etc.. According to the IPAQ Research Committee (2005), moderate PA are those require modest physical effort and make us breathe somewhat harder than usual, such as carrying light loads, sweeping, washing windows, double badminton and bicycling at a regular pace. Moderate PA also refers to activities that speed up the heart rate to 50 to 70% of one's maximum heart rate (220 minus one's age) and one should be sweating and able to talk but not to sing when he or she is doing moderate PA (American College of Cardiology, 2015). Vigorous PA, on the other hand, according to the IPAQ Research Committee (2005), are those require hard physical effort and make us breathe much harder than usual, such as heavy lifting, digging, climbing stairs, running, fast bicycling and aerobics. Vigorous PA should speed up the heart rate to 70 to 85% of one's maximum heart rate and carrying on a conversation should be difficult for him or her when he or she is doing vigorous activity (American College of Cardiology, 2015).

Both categorical and continuous scores can be generated from IPAQ, however, IPAQ Research Committee (2005) suggested presenting the continuous indicator (minutes/week or

MET–minutes/week) in terms of median rather than means because many populations have shown a non-normal distribution in energy expenditure.

According to the WHO (2010), the recommended PA levels for adults aged 18-64 years are engaging in at least 150 minutes of moderate-intensity physical activity per week or do at least 75 minutes of vigorous-intensity physical activity per week, or an equivalent combination of moderate- and vigorous-intensity activity. Yet, physical inactivity is common among university students. A research showed that there was a large number of university students whose leisure-time PA was below recommended levels in 23 countries (Haase, Steptoe, Sallis, & Wardle, 2004). In Hong Kong, inactivity is a serious issue. According to the Department of Health (2017), more than half of the local population in Hong Kong was not physically active, adults aged 18 to 64 did not have any moderate physical activity (bicycling at a regular pace and double tennis for at least 10 minutes in a week). In Hong Kong, Lee and Loke (2005) reported that there was only a total of 35.5% of university students participated in vigorous PA such as running and cycling for 20 minutes or more at least three times a week. The same study also showed that no more than half of the students took part in recreational PA often (Lee & Loke, 2005).

There are a few methods to measure PA, such as completing daily log, wearing heart-rate monitor and completing a self-reported questionnaire/ survey once a week. A study reported that the three measures produced consistent results in terms of general PA, however, the estimated time spent in different levels of PA were not always consistent due to different understandings towards the definition of hard/ very hard (moderate/ vigorous intensity) PA between log and questionnaire (Ainsworth, Bassett, Strath, Swartz, O'Brien, Thompson, … Kimsey, 2000). Consider that all the methods can produce similar results, survey was adopted in this study for the reason of convenience. While different countries may develop their own PA questionnaires, the Behavioural Risk Factor Surveillance System (BRFSS) (the Centers

for Disease Control and Prevention (CDC), 1984) and the International Physical Activity Questionnaire (IPAQ) (Craig et al., 2003) are the two most popular measurements of PA that are widely used in the world. However, Brown, Bauman, Chey, Trost, and Mummery (2004) stated that the above surveys produced a large difference in the results (reported PA times) as they were designed differently. Brown et al. (2004) also suggested that completing different surveys may confuse the respondents' understanding of the levels of PA, therefore, they stressed the importance of using the same survey for population monitoring purposes. Consider that the Department of Health (2017) in Hong Kong has been using questions (eg. During the last 7 days, on how many days did you do vigorous physical activities? Vigorous physical activities are those that make you breathe much harder and your heart beat much faster than normal, e.g., running, aerobics, football, swimming, heavy physical work, jogging, etc., and you did these activities for at least 10 minutes at a time.) that are similar to the IPAQ (During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling? How much time did you usually spend doing vigorous physical activities on one of those days?) to measure citizen's PA, the current study adopted the IPAQ in measuring PA.

There are two forms of IPAQ, full form (long) and the short form. One of the main differences between them is the inclusion of job-related PA section. Although the population in current study is full-time university students, there are many students who work as a part-time worker. A research (Society for Community Organization, 2017) suggested that more than 80% of tertiary students in Hong Kong work as a part-time worker regularly and therefore, their job PA should be counted as well. Besides, the IPAQ Research Committee (2005) pointed out that IPAQ long form generally produce higher prevalence estimates in PA than short form because the participants are being asked more detailed questions. Taking these factors into account, long version of IPAQ was used to measure participants' PA level.

There are two methods in calculating the total physical activity (continuous) score (IPAQ Research Committee, 2005) in the long version of IPAQ. The first one is summing up the Total MET-minutes/week (at Work + for Transport + in Chores + in Leisure) and the second method is to sum up the walking MET-minutes/ week + moderate MET-minutes/ week + total vigorous MET-minutes/week. They are equivalent to each other and this study used the first computing method as it is more convenient.

Grade Point Average (GPA)

GPA is a summary score that reflects a student's average performance during a period of time, such as one semester and one academic year. According to the EdUHK Student Handbook (The Education University of Hong Kong, 2018a), EdUHK student's GPA is calculated by the sum of the product of Grade Point Equivalent (GPE) earned for each course attempted (including failed courses) and its credit points, divided by the total number of credits attempted within a programme. In other words, GPA is the weighted average of grades, with course credits as the weights.

GPA was used as a controlled variable in current study to investigate the unique effect of PA on EI. Originally, EI has been associated with academic performance as ability EI was suggested to be a predictor of academic performance (Schutte et al., 1998). Indeed, this association can be explained by the fact that studying requires the ability to regulate and use emotions in order to promote thinking, improve attentiveness as well as perform well under stress (Zhoc et al., 2017). Australian scholars also found that different dimensions of EI can significantly predict adolescent's Maths and Arts performance (Downey, Mountstephen, Lloyd, Hansen & Stough, 2008). In fact, the ability of regulating emotions is even more important in university education as assignments are always longer and more difficult than secondary education. However, it is surprising that there are studies which yield a different

result, suggesting there is a weak or no association between GPA and EI (Brackett, & Mayer, 2003; Newsome, Day, & Catano, 2000; O'Connor Jr & Little, 2003). Even within one single study, the relations between GPA and EI can be different and it may depend on the subjects/ majors that are being tested (no significant association between GPA and EI as a whole population of university students but a positive correlation between GPA and EI among students who study in the Faculties of Business and Social Sciences) (Zhoc et al., 2017). Such diverse results can be explained by the fact that the measurements of EI were not consistent in the above studies and that the relations between EI and academic performance may be different according to different subjects (EI may be a better predictor of academic performance if the subjects require more emotional and social skills like liberal arts) (Parker, Saklofske, Wood, & Collin, 2009). Zhoc et al. (2017) also pointed out that most of the majors and subjects provided by the Faculty of Business and Economics and Faculty of Social Sciences are people-oriented subjects, like psychology, social work, and political science, which require students to have a better ability of recognizing oneself and other's emotions in order to better interpret and understand human behaviours. Besides, most of the above studies (Brackett, & Mayer, 2003; Downey et al., 2008; Newsome et al., 2000; O'Connor Jr & Little, 2003; Parker et al., 2009; Schutte et al., 1998;) were conducted in Western context and may not be applicable in Eastern context. Eastern culture emphasizes excellent performance and performing better than others in standardized tests while Western culture focuses more on participation in learning and the mastery of knowledge, rather than comparison (Suansing, 2017 October). Such cultural differences may create more pressure on Eastern students and the emphasizes on performance may contribute to higher GPA in Eastern students as well. Consider that the study of Zhoc et al. (2017) was conducted in Hong Kong, which helps lessen the possible effect of cultural difference and most of the students are studying a people-oriented program (mostly Bachelor of Education program) at EdUHK, it is expected

that the GPA would be a valid and good predictor on EI in current study. Hence, GPA was used as a controlled variable in this study to determine the effect of PA on EI. Participants were asked to write down their last year GPA in the demographic section of the survey.

Significance of EI in university education

University life is full of challenges, especially in academic, since attendance is no longer required, and teaching staff generally do not contact students, students are solely responsible for their own studies. University students also need to deal with much more stress compared with secondary students as they may need to worry about romantic relationships, family, income and the future of being a graduate (The University of Adelaide, 2014). The university life can be hard without emotional abilities as research has supported that EI is negatively correlated with job's stress and positively correlated with time management (Bokharaeian, SetareSobh, Rahimi, & Zare, 2014), suggesting that people with high EI have a better time management and are able to manage stress more efficiently. It is believed that with a tight schedule of learning in university, students must have a good EI to plan time for study and sports. On the other hand, EI is also associated with positive social relationships; it is correlated to communication skills, relationship management skills, self-monitoring skills and social skills (Ensari, 2017). In fact, PA may be related to one's social relationship directly because there are numerous team sports, and students may prefer doing PA with friends, like chatting and walking along the campus and using sport facilities with a group of friends.

As mentioned above, some studies showed a positive relation between exercise volume or physical activity (PA) and EI (Al Sudani & Budzynska, 2015; Bhochhibhoya et al., 2014; Gáspár, Soós, & Szabo, 2017; Zysberg & Hemmel, 2018), however, all of them were conducted in Western context and focused on adolescents with a small sample size. It is

important to note that Westerners and Chinese do not share the same method in dealing with emotions or the level of physical activity. According to the WHO (2016), Westerners generally engage in physical activity less often than Chinese, suggesting Westerners and Chinese have different levels of EI (as mentioned above) and PA. Yet, the relations between the two in Western and Chinese countries may or may not be the same. But one thing that is certain is that Westerners generally face less stress than Chinese (Zipjet, 2017). As Ciarrochi, Deane, & Anderson (2002) mentioned, people with a higher level of skill in managing other's emotions (one common element in EI) tends to adapt stress better and have less suicidal thoughts. Therefore, stress may moderate the relations between EI and PA in Chinese context, suggesting there may be a different relation and the need to carry out the current study.

Although a Taiwan study (Li et al., 2009) addressed the same relation, Taiwan culture is different from Hong Kong. Hong Kong is a more stressful city compared with Taiwan, especially in physical health (Zipjet, 2017). As research (Por, Barriball, Fitzpatrick, & Roberts, 2011) suggested that EI is negatively related to perceived stress, but a higher EI helps people to acquire effective coping strategies to deal with stress. Consider that the amount of stress Hong Kong citizens face is greatly different from Taiwanese's, their EI shall not be similar. Thus, the Taiwan study may not be applicable in Hong Kong society, suggesting it is necessary to carry out this study. Another difference between current study and Li et al.'s (2009) study is that they adopted the Bar-On EQ-I (Bar-On, 1997), which is a controversial measures in assessing EI because there are factors that may not be relevant, such as "independence", "reality-testing" and it neglects some relevant factors including "emotion perception", "emotion expression", and "emotion regulation" (Pérez, Petrides, & Furnham, 2005). Therefore, both the PA levels and the EI scores that are obtained from current study are expected to be different from Li et al.'s (2009) study. The present study is also different from Li et al.'s (2009) study in terms of the population. Their participants were

limited to full-time freshmen students, rather than senior university students. The present study focused on full-time Year 2 students or above as collecting freshmen's data may reflect the transition from high school, thus may not be generalized to the population of university students. It is important to note that some studies focus on the transition period as they are a unique population, especially in terms of EI study (Parker, Duffy, Wood, Bond, & Hogan, 2005; Parker, Summerfeldt, Hogan, & Majeski, 2004). Given that the measurement and the population are different from the previous study, this present study has its own importance and necessities. Moreover, unlike previous researches, this research focus on investigating the strength of PA in predicting EI among university students in Hong Kong by using student's last year GPA as a controlled variable to measure the distinctive predictability of PA on EI, rather than exploring the relations between them only.

Research Objectives and Questions

The study was guided by the following objective:

1. Investigating the predictability of respondents' physical activity on their emotional intelligence, with GPA as a controlled variable.

Research questions for the study is as follows:

1. With GPA as a controlled variable, how well is the respondents' physical activity level in predicting their emotional intelligence?

With the aim of investigating the predictability of Hong Kong full-time undergraduate students' levels of PA on EI, the present study was proposed. To my knowledge, this is the first study to investigate such relations in Hong Kong and the second study to use the SSEIT to measure EI among university students in Hong Kong. This study is also the first study to

use GPA as a controlled variable to study the relation between EI and PA. It will serve as another reference of establishing the relations of PA and GPA on EI and using the SSEIT in Hong Kong and Eastern countries.

Methodology

Participants

Convenience sampling was adopted, year 2 or above full-time undergraduate students from the Education University of Hong Kong (EdUHK) were the targeted participants. The reason why year 1 students were excluded was because year 1 was a transition period and studying them separately is common (Blair, 2017; Dzurec, Allchin & Engler, 2007). Based on G*Power priori analysis (Faul, Erdfelder, Buchner, & Lang, 2009), to carry out a two-tailed multiple linear regression *t*-test (fixed model, single regression coefficient, two predictors) with α = .05, power = .8, effect size Cohen's f^2 = .15, the necessary sample size is 55. In the end, 57 participants were recruited.

Measuring Instrument

Participants' EI was measured through the Schutte Self-Report Emotional Intelligence Test (SSEIT) (Schutt et al., 1998), and their PA was measured through the International Physical Activity Questionnaire (IPAQ) (Craig et al., 2003). Participants' last year GPA was collected in the demographic section of the survey. The Chinese version of SSEIT (Liu, 2008) (Appendix A) and IPAQ (Patterson, 2011) (Appendix B) were used in the survey.

Schutte Self-Report Emotional Intelligence Scale (SSEIT) The SSEIT is developed by Schutte et al. (1998) (also known as the Emotional Intelligence Scale and Assessing Emotions Scale). It is a short measure of general EI that has been used widely in numerous research (Schutte et al., 2001). The SSEIT is a self-report questionnaire which consists of 33 items (e.g. "I know when to speak about my personal problems to others") that

are scored on a 5-point Likert scale ranging from 1 to 5 (“strongly disagree” to “strongly agree”). Different factor scores were calculated by summing up the item responses (items 5, 28, and 33 are reversely counted) according to the factor model. The higher the score in different factors means the better the individuals perform in relative domains of EI.

The SSEIT has good internal consistency reliability (mean $\alpha = .87$ for 27 studies; Schutte, Malouff, & Bhullar, 2009) and test-retest reliability (two-week test-retest reliability of .78; Schutte et al., 1998). In terms of convergent validity, Schutte et al. (1998) reported that SSEIT is correlated with theoretically related constructs, such as ability to regulate emotions, control impulsivity and optimism. There is also a predictive validity between SSEIT and first-year Grade Point Average (GPA) (Schutte et al., 1998). Further studies suggested that SSEIT is correlated with task performance as well (Carmeli & Josman, 2006).

A Chinese version of SSEIT (Liu, 2008) (Appendix A) was adopted in this study. The translation process is as follows. Liu (2008) first invited a psychology graduate student and an English translation graduate student to conduct literal translation on the SSEIT. Later, she compared and analysed the above two translated questionnaires and created the first draft of the Chinese version of SSEIT. Liu (2008) invited other psychology graduate students to modify the first draft, especially on the usage of words so that the Chinese version of SSEIT is compatible with Chinese culture and grammar (i.e. second draft). English graduate students are asked to translate the second draft back to English and compared it with the original English version of SSEIT to ensure the accuracy of the translation. Finally, Liu (2008) conducted a small scale of conference which consisted of 30 psychology graduate students to discuss and amend the translated version of SSEIT. Liu (2008) reported this version of SSEIT has a high internal consistency (α ranging from .579 to .891) and the result is valid with the original SSEIT, using the factor analysis approach.

In this study, a modified six-factor model suggested by Zhoc et al. (2017) was adopted. Zhoc et al. (2017) reported that six-factor model was the best-fitted model for SSEIT after the review of literature and this modified version is more theoretically in agreement with Salovey and Mayer's (1990) model of EI. The six factors are appraisal of emotions in the self (AES), appraisal of emotions in others (AEO), emotional expression (EE), emotional regulation of the self (ERS), emotional regulation of others (ERO), and utilization of emotions in problem solving (UEPS) (Zhoc et al., 2017). Figure 1 shows the grouping of the items into the six factors, for example, item 6 (EI6) is under the factor of AES. Consider that this six-factor model has been used on the Hong Kong university students with a high internal consistency (McDonald's Omega for the six factors ranged from .85 to .93) and validity (criterion validity between GPA in the Faculties of Business and Social Sciences, personal growth, total student learning outcome and students' satisfaction towards their university experience) (Zhoc et al., 2017), this six-factor model was adopted for the current study.

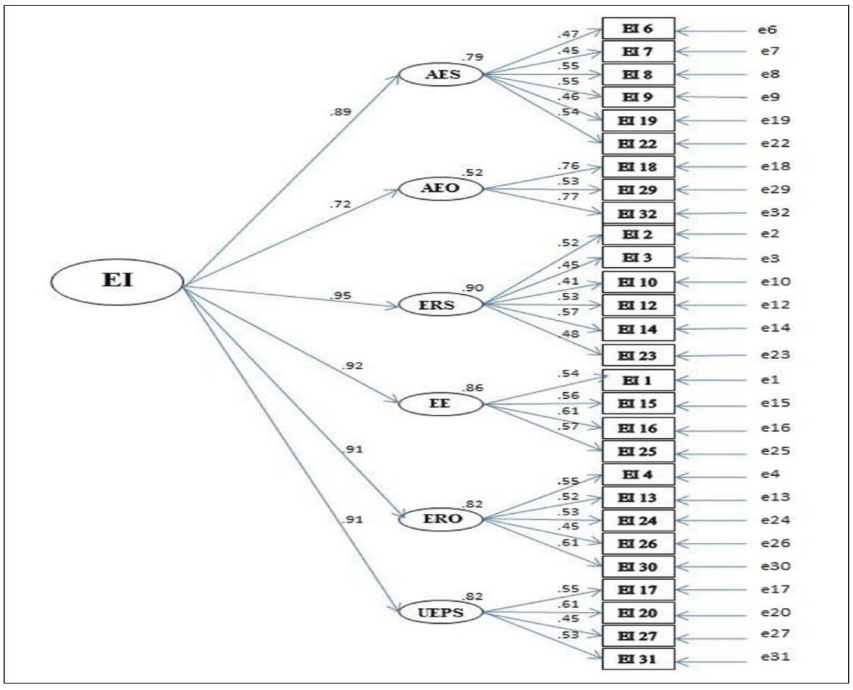

Figure 1. The modified six-factor model (Zhoc et al., 2017)

International Physical Activity Questionnaire (IPAQ) The IPAQ (Craig et al., 2003) is a universal scale measuring the physical activity and inactivity among adults aged 15-69. This measure is extensively used in researches and it has been translated into different languages. Craig et al. (2003) conducted a global comparison of the usage of IPAQ in 12 countries and concluded that the test-retest reliability for the long IPAQ questionnaires was .80 (Spearman correlation coefficients ranging from .46 to .96, but the average was .80 in 12 countries). In terms of the criterion validity, there was a moderate agreement between the long version of IPAQ and the Computer Science Application (CSA) accelerometer, a common method in measuring one's PA using accelerometer (pooled $\rho = .33$, 95% CI .26–.39; Craig et al., 2003).

IPAQ is a self-report questionnaire concerning participants' last 7 days PA (7 days prior to assessment). It consists of four parts of physical activity, which are job-related PA, transportation PA, housework PA and leisure time PA. There is also a part asking about the time participants spent on sitting, which is a measure of inactivity. The Chinese version of long form of IPAQ (IPAO-LC) (Patterson, 2011) (Appendix B) was used in this study. A study (Macfarlane, Chan & Cerin, 2011) has been done to find out the reliability and validity of using the IPAQ-LC to study adults PA in Hong Kong. According to the above study, the test-retest reliability (ICC) for different domains of activities (working, transport, sitting and leisure) laid between .71 to .97; Although the ICC for the domain of domestic was unacceptably low (.22), the effect size was small (.31) (Macfarlane et al., 2011). In terms of validity, there were significant Spearman correlations between the IPAQ-LC with the accelerometery and the total step counts (for overall PA only) (r=.35 and r=.36) (Macfarlane et al., 2011). Although Macfarlane et al. (2011) noticed that the results of the IPAQ-LC was only correlated with the PA-log weakly (r=.13), they explained that such poor correlation may be because of the differentiation in the intensity of the exercises in the PA-log and the

IPAQ-LC, especially in the sub-group of "moderate intensity". Overall, Macfarlane et al. (2011) reported that the IPAQ-LC is a reliable and valid measure of PA in Hong Kong context.

A total score can be calculated by summing up the Total MET-minutes/week (at Work + for Transport + in Chores + in Leisure) and it can also be categorised into 3 levels, as suggested by the IPAQ Research Committee (2005) (see Table 2). The total score was the focus of the present study and it was used to analysis the relations with EI. As the total score is a continuous score, even if most of the participants share the same level of PA, the researcher was still able to distinguish the relatively physical active and inactive students. The sitting question, on the other hand, was used as a reference for physical inactive.

Table 2

Guidelines on categorizing the total MET-minutes/week in three levels (IPAQ Research Committee, 2005)

Levels of total MET-minutes/week	Requirement(s)
High	Vigorous-intensity activity on at least 3 days achieving a minimum Total physical activity of at least 1500 MET-minutes/week or 7 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum Total physical activity of at least 3000 MET-minutes/week
Moderate	3 or more days of vigorous-intensity activity (for example, running, fast swimming, single tennis) of at least 20 minutes per day or 5 or more days of moderate-intensity (for example, carrying light loads, bicycling at a regular pace, double tennis) activity and/or walking of at least 30 minutes per day or 5 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum Total physical activity of at least 600 MET-minutes/week
Low	not meeting the above two categories

Procedure

A survey was conducted. Printed questionnaires and online Google forms were distributed in the university library (1/F; discussion zone) and through a messaging app, WhatsApp, with the aim of reaching different students with diverse levels of PA. The data collection was held in mid and late February.

The aim and the procedure of this study was listed on an information sheet (Appendix D), which was provided before the participants taking part in the study. Participants was asked to sign a consent form (Appendix C) after reading the information sheet. The choice of not participating or withdraw from the study was given and reminded in the consent form. Students was asked to fill in the demographic information (including their last year GPA), the SSEIT (Appendix A), and the IPAQ (Appendix B) respectively. To protect the subjects' confidentiality, envelopes was given to the participant along with the questionnaires. Participants were welcomed to fold the completed questionnaires and put them into the envelopes before returning them to the researcher. The collected data was used only for this study and was erased permanently. Participants was invited to leave their contacts in the demographic information if they want a copy of this report.

Data Analysis

Statistical Package for Social Sciences (SPSS) was used for statistical analysis. Descriptive statistics were reported and used to examine the distribution of the data. Before using the linear multiple regression to determine the predictability of PA (independent variable [IV]) on EI (dependent variable [DV]), holding participant's last year GPA as a controlled variable (CV), the assumptions for carrying out a linear multiple regression were checked. The multiple correlation coefficient, *R*-squared, was reported and its changes from a hierarchical regression was used to determine how much variance in the PA can be accounted

for EI; to find out the significance of PA in predicting EI, the *t*-test was used (Statistics Solutions, 2013). A significantly positive regression coefficient was hypothesised, however, there was no significant zero-order correlation between PA and EI.

Results

Participants' demographic information

There was a total of 57 data originally, however, 4 data were deleted because they recorded a zero in total MET, which is impossible. Given that a full-time healthy student must walk or do chores for at least 10 minutes, they should have at least 33 MET (10*3.3). After running the correlation analysis, one more datum was removed as it was an influential point (the slope increased by 0.4 if he/ she is included). As a result, the study consisted of a total of 52 data. There were 34 female (65%) and 18 males (35%). The gender ratio matched the full-time students gender ratio in EdUHK (2.61:1; Female: Male) (The Education University of Hong Kong, 2018b). All participants were Chinese. To ensure there would be enough active students, some PE students (35%) were invited to participate in this study and the academic disciplines of the participants were listed in the Table 3. Participants' last year GPA were ranged from 2.34 to 3.94 (M = 3.17, SD = .296).

Table 3

Academic Disciplines of the Participants

Major	*n* (%)
Business, Accounting and Financial Studies	2(3.8)
Chinese Language	4(7.7)
Early Childhood Education	3(5.8)
English Language	3(5.8)
Global and environmental Studies	1(1.9)
Mathematics Education (P)	7(13.5)
Music	1(1.9)
Physical Education	19(36.5)
Psychology	4(7.7)

Table 3 (continued).

Social Science	6(11.5)
VA	2(3.8)
Total	52(100)

EI assessed by SSIET

Table 4 showed the internal consistency for the six-factor model in the current study. The Cronbach's Alpha for the six factors were generally below .7, except the overall EI. It is believed that the lower alpha is possibly due to the small number of items in each factor. However, as Di Iorio (2006) suggested, .7 should not be the definite cut-off point in assessing relatability, especially for the shorter scale. Di Iorio (2006) also pointed out that lower alpha value may in fact suggesting higher interrelations between the items. Therefore, consider that each factor is unique and the fact that they are essential in interpreting one's EI level, no factor was deleted and the overall EI was used as the DV in the study. Table 4 also demonstrated the range and the mean of the overall EI and each factor of EI in SSEIT.

Table 4

Descriptive Statistics of Factors of EI Assessed by SSEIT and the Internal Consistency for the Six-Factor Model

Measure	Possible range	Observed range	Mean (SD)	Cronbach's Alpha
Overall EI	28-140	88-131	109.98 (8.835)	.775
Appraisal of emotions in the self (AES)	6-30	19-29	24.10 (2.286)	.519
Appraisal of emotions in others (AEO)	3-15	7-15	12.06 (1.420)	.699
Emotional expression (EE)	4-20	9-20	15.62 (1.870)	.619
Emotional regulation of the self (ERS)	6-30	19-30	24.63 (2.318)	.626
Emotional regulation of others (ERO)	5-25	11-24	18.77 (2.777)	.672
Utilization of emotions in problem solving (UEPS)	4-20	10-18	14.81 (1.961)	.431

PA assessed by IPAQ

As questions in each domain are not directly related to each other, for example, a person can do a lot of moderate PA but no vigorous PA in a week. Also, participants are suggested to skip questions in the domains if they find themselves are not related to it. Therefore, there is no need to calculate the reliability of IPAQ. The current study's result suggested that students generally have a high level of PA as the median of Total MET per week is 3740, which is considered as a high level (IPAQ Research Committee, 2005). However, the time students spent on sitting (in terms of minutes) is high at the same time (*M* = 3245, *SD* = 1267), which means students generally sit for 54 hours per week and 7 hours per day.

As mentioned above, many populations do not have a normal distribution in calculating MET (IPAQ Research Committee, 2005), current study is in no exception. The distribution of the Total MET was non-normally distributed, with skewness of 1.71 (*SE* = .330) and kurtosis of 4.00 (*SE* = .650). In order to use regression analysis to find out the predictability of PA on EI, the data was required to be normally distributed. As a result, the data was transferred into normal distribution using natural log. The data before and after transformation were shown in the Table 5.

Table 5

Descriptive statistics for the Total MET and the Log-normal Total MET

	Total_MET	LN_total_MET
Mean	5126.120	7.9772
Std. Deviation	4999.5865	1.23952
Variance	24995864.800	1.536
Skewness	1.712	-.716
Std. Error of Skewness	.330	.330
Kurtosis	4.004	.073
Std. Error of Kurtosis	.650	.650

Multiple Regression Assumptions Checking

The first assumption for multiple lineat regression is that there must be a linear correlation between the variables. After transforimg the data from IPAQ into a log-normal data, there was a weak linear correaltion between EI and PA and an influential point was delected as mentioned above (shown in Figure 2). The second assumption is that the errors between observed and predicted values (the residuals of the regression) are normally dstributed, the P-P plot in Figure 3 showed that the this assumption was fulfilled. The third assumption is that there is no multicollinearity in the data. No multicollineartiy refers to no too highy correalted IVs and it can be checked using the Variance Inflation Factor (VIF) and tolerance. Accoridng to the Statistics Solutions (2013), the VIF "indicate(s) the degree that the variances in the regression estimates are increased due to multicollinearity". The acceptable value of VIF is below 5 and for toleracne is greater than .01 and less than .2 (Hair, Ringle & Sarstedt, 2011). The VIF and the tolerance for this study was shown in the Table 6. The last assumption is homoscedasticity, the errors (residals) should be constant across different level of *x* as shown in the Figure 4. The above results suggested that the data fulfilled the assumption for carrying out the linear multiple regression analysis.

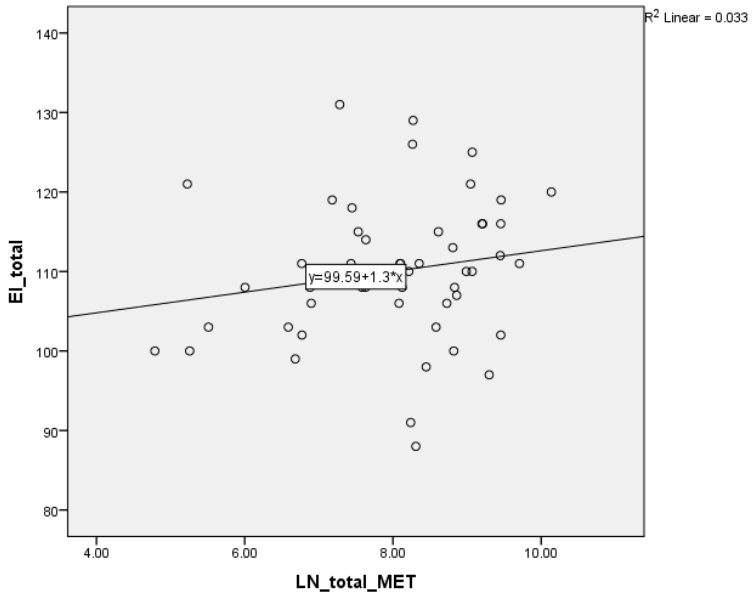

Figure 2. The Scatterplot of EI and PA

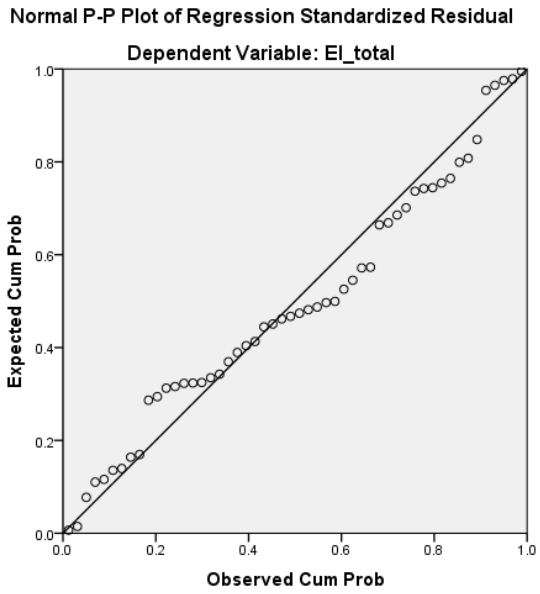

Figure 3. The P-P plot of Regression Standardized Residual

Table 6

Variance Inflation Factor (VIF) and Tolerance for the Multiple Regression Assumption Checking

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	80.348	17.324		4.638	.000		
GPA	5.315	4.250	.178	1.251	.217	.944	1.060
ln_total_met	1.603	1.015	.225	1.580	.120	.944	1.060

a. Dependent Variable: EI_total

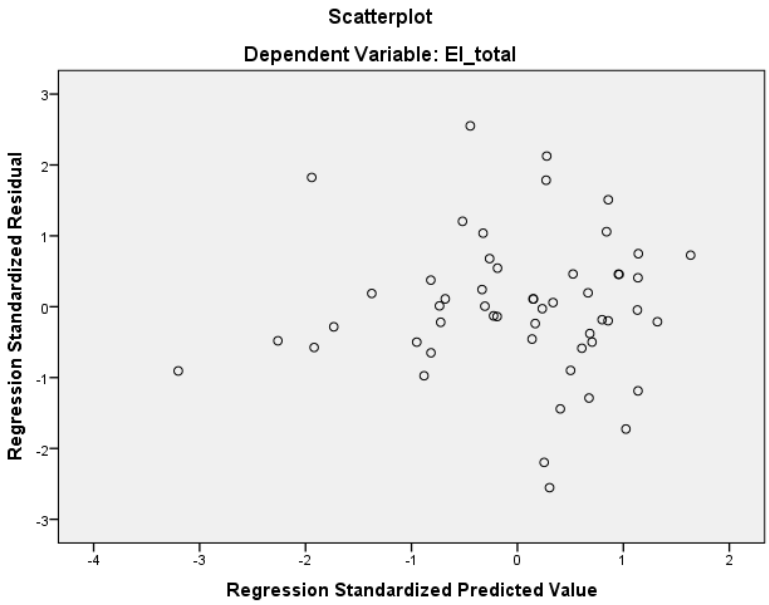

Figure 4. The Scatterplot of Residuals Versus Predicted Values

Regression analysis for PA on EI

After conducting the above assumption checking, a multiple linear regression was conducted to see if PA, controlling with GPA, predicted the EI. It was found that both variables, PA and GPA, were not statistically significantly in predicting EI ($F(2, 49) = 1.65, p = .202, R^2 = .063$). The result showed that PA and GPA did not significantly predict the value of EI ($PA,\ b = .225, t(49) = 1.25, p = .217; GPA, b = .225, t(49) = 1.58, p = .120$).

Discussion

There is no relation between PA and EI, according to this study. The result against the previous research results (Al Sudani & Budzynska, 2015; Bhochhibhoya et al., 2014; Gáspár et al., 2017; Zysberg & Hemmel, 2018). There are some possible reasons to explain the results. One possible explanation is the *restriction of range*. As suggested by Goodwin and Leech (2006), one of the factors that may affect the size of *r* is the limited amount of variability in the variable, resulting in a data that cannot truly reflect the correlation that one may have. A study of people's Body Mass Index (BMI) (Bland & Altman, 2011) supported

that restriction of range is common in real-life indeed. In Bland and Altman's (2011) study, there was a significant change in the correlation between waist measurement and BMI when the range was being restricted (from a positive correlation (r = .85) for BMIs over 35 to no correlation (r = -.09) for BMIs between 30 and 35). In Bhochhibhoya and his coworkers' (2014) study, they found a positive correlation between EI and PA. However, the range of EI in their study (Bhochhibhoya et al., 2014) was significantly higher range than the current study (their range was 105, from 33 to 138). In the current study, the possible range for EI was 112 (from 28 to 140), but the observed range was just 43 (from 88 to 131) (Table 4). There is a huge difference in the ranges of the EI between the two studies, therefore, it is possible that current study has the limitation of restricted range.

Another possible reason that may explain why there is no relation between PA and EI is the composition of total MET. The current IPAQ only requires participants indicate their time spent on PA, but there is no information in whether they engaged the PA alone or with others, for example, walking and/or jogging alone or with friends. It is possible that doing PA alone or with others can influence the EI as people are required to express and interpret emotions when they are in group activities. However, it is interesting to know that although students sit a lot per week, they still have a generally high level of PA, suggesting sitting time may not be a good indicator of physical inactivity.

On the other hand, there is also no relation between GPA and EI, conforming the same results from Brackett and Myer (2003), Newsome et al. (2000) and O'Connor Jr and Little (2003). It is possible that GPA is too vague in indicating academic performance as there are many possible factors that leading to a good or bad GPA.

There were some limitations in this study. To commence with, the six-factor model was not very reliable in current study, although it was reliable in previous studies (Zhoc et al., 2017). One great difference between Zhoc and his co-worker's (2017) study and current

study is that they used the McDonald's Omega to interpret the reliability and current study used the Cronbach's alpha. It may be the reason of having different internal reliability, therefore, it is suggested to replicate the study using different factor models of SSEIT.

There were also two imitations in the data collection. The first limitation was the time of the data collection. The data was collected mainly in mid to late February, which was a special month for Chinese as the Chinese New Year (CNY) was in February this year. It is possible that the participants had different patterns of PA (more gatherings than usual) and/or had more memory errors in reporting PA after CNY (questions in IPAQ asked the participants to think of the PA in last 7 days). The second limitation was that almost half of the participants were Year 5 students as this research adopted convenience sampling. Last year students may not be able to reflect the PA pattern of the general university students as they may have different academic workload than the ordinary undergraduates. Thus, the results may not be able to generalize to the population of the undergrad students in EdUHK.

It is suggested to replicate the study in different population, for example, students with non-human related subjects and people with other occupations. Amendment in IPAQ is also suggested as well, given that the research received feedbacks from some participants mentioning the wordings were confusing and misleading, especially in indicating the time they spent in terms of days.

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Appendix A

The Chinese version of SSEIT (Liu, 2008)

性別：
學科：
年級：
上學年ＧＰＡ：

下面每個題目都和你的情緒有關。請根據你在絕大多數時間和場合的實際情況進行選擇。每個題目有五個選項：“非常不同意”、“有些不同意”、“不確定”、有些同意”、“非常同意”。請選擇一個最符合您的答案，在相應的欄內打”✓”。這不是考試，答案沒有對錯之分。請如實作答，謝謝!

		非常不同意	有些不同意	不確定	有些同意	非常同意
1	我知道何時向別人說出自己的問題					
2	當面臨困難時，我會記起曾遇到過類似困難並克服了它們					
3	我希望能做好我所嘗試的大多數事情					
4	別人很容易信任我					
5	我很難理解別人的表情、動作等非語言信息					
6	人生中的一些重要事件使我反思甚麼重要，甚麼不重要					
7	當我心情改變時，我看到了新希望					
8	情感使我的生活變得豐富					
9	我知道自己某時的情緒狀態					
10	我期望有好的事情發生					
11	我喜歡與別人分享我的心情					
12	我知道如何保持積極情緒					
13	我會安排別人喜歡的事情					
14	我尋找一些使自己快樂的事情					
15	我能意識到傳達給別人的非言語信息					
16	我能使自己給別人留下好印象					
17	當我心情好時，問題很容易解決					
18	通過察言觀色，我能知道別人的心情					
19	我知道自己心情變化的原因					
20	心情好時，我能想出許多好主意					
21	我能控制自己的情緒					
22	我能區分自己某時的情緒，如焦慮與抑鬱					
23	通過想像我做的事情會有好結果來激勵自己					
24	當別人做得好時，我會稱讚他們					
25	我知道別人傳達的非言語信息					
26	當別人告訴我他們人生中的一件重要事情時，我感覺好像自己也經歷過					
27	心情變化時，我可能會有新想法					
28	面對挑戰，我認為自己會失敗所以選擇放棄					
29	通過觀察，我能知道別人的情緒狀態					
30	別人情緒低落時，我幫助他們心情變好					

Appendix A (continued)

31	面對困難，我保持好心態，鍥而不捨					
32	通過語調，我可以知道別人的心情					
33	我很難理解別人的感受					

Appendix B

Chinese version of long form of IPAQ (Patterson, 2011)

國際身體活動問卷

這個問卷會問你在最近 7 天花在身體活動的時間，請仔細回答每一條問題，即使你認為自己是一個沒有活動的人。也請你想一想你在工作時、在家的活動，例如家務和園藝、從一個地方到一個地方的交通時間及你在空閒時所做的運動與娛樂。

想一想在最近 7 天裡你做過的高強度和和中強度的活動。高強度的身體活動所指的是要耗費大量體力並使你的呼吸比正常費力、急促很多的活動，例如：快步行、跑步、游泳、跳繩、搬重物、拍類運動（單打）、球類活動；中強度的活動指的是需要適度的身體負荷並且讓你呼吸比正常費力一些的活動，例如：步行、搬輕物、慢踩單車、拍類運動（雙打）。

<u>第 1 部份：工作相關的身體活動</u>

第 1 部份是關於你的工作，包括家裡以外支薪的和不支薪的工作，例如：兼職、補習、做義工、上課和實習等等，但不包括在家裏非支薪的工作，如家務、園藝工作、一般維修的工作及照顧家人，這些非支薪的工作將會在第 3 部份時詢問。

1. 你現時有從事在家以外的支薪或非支薪的工作嗎？

☐ 有

☐ 沒有　　答沒有 ➡ 請跳至第 2 部份：交通

下一條問題是關於你在最近 7 天內所做的支薪或非支薪工作有關的身體活動，但不包括從家來往工作場所的身體活動。

2. 最近 7 天期間，你有否在工作中做了高強度的身體活動？例如在工作期間搬運重物、挖掘、繁重的建築工作或是走樓梯等活動？僅回想每次至少花 10 分鐘的那些身體活動。

_____每週幾天

☐ 沒有相關的身體活動　　答沒有 ➡ 請跳到問題 4

3. 承上題，在工作天時，你通常花多少時間在這些高強度的身體活動上？

_____ 每天幾小時
_____ 每天幾分鐘

4. 再一次，僅回想你每次至少花 10 分鐘的那些身體活動。
在最近 7 天期間，你花多少天在做像是提輕物等的中強度身體活動？不包括走路。

_____ 每週幾天

☐ 沒有與工作相關的中強度身體活動　　答沒有 → 請跳到問題 6

5. 承上題，在工作中，你通常花多少時間在中強度的身體活動？

_____ 每天幾小時
_____ 每天幾分鐘

6. 最近 7 天期間，你在工作中花多少天走每次至少 10 分鐘的路？請不要計算你往返工作場合屬於交通性質的走路。

_____ 每週幾天

☐ 沒有與工作相關的走路　　答沒有 → 請跳至第 2 部份：交通

7. 承上題，在工作中，你通常花多少時間在走路上？

_____ 每天幾小時
_____ 每天幾分鐘

第 2 部份：與交通相關的身體活動

此部分與你用那種交通工具從某地移動到某地有關，包括來往工作場合、商店、電影院等。

8. 最近 7 天期間，你有多少天是搭乘機動車的，如：地鐵、巴士、汽車或電車等？

_____ 每週幾天

☐ 沒有搭乘機動交通工具　　答沒有 → 請跳至問題 10

9. 承上題，你通常花多少時間搭乘地鐵、巴士、汽車、電車或任何機動交通工具？

_____ 每天幾小時
_____ 每天幾分鐘

現在只回想你到工作場所、出差或某地到某地騎單車或走路的時候。

10. 最近 7 天期間，你花多少天從事從某地到某地每次至少 10 分鐘的騎單車？

_____ 每週幾天

☐ 沒有從某地到某地騎單車　　答沒有 → 請跳至問題 12

11. 承上題，你通常花多少時間騎單車從某地到某地？

_____ 每天幾小時
_____ 每天幾分鐘

12. 最近 7 天期間，你花多少天從事從某地到某地每次至少 10 分鐘的走路？

_____ 每週幾天

☐ 沒有從某地走路到某地 → 跳到第 3 部份：家事、房子維修及照顧家人

13. 承上題，你通常花多少時間從某地走路到某地？

_____ 每天幾小時
_____ 每天幾分鐘

第 3 部份：家事、房屋維修及家庭照護

此部份與你最近 7 天在家周遭所做的一些身體活動有關，如家務、園藝工作、一般維修工作及照顧家人。

14. 僅回想你所做的每次至少 10 分鐘的身體活動。最近 7 天期間，你有多少天在家從事高強度的身體活動，像是提重物？

_____ 每週幾天
☐ 沒有任何高強度的身體活動　　答沒有 → 請跳至問題 16

15. 承上題，你通常在家花多少時間從事高強度的身體活動？

_____ 每天幾小時
_____ 每天幾分鐘

16. 再一次，僅回想那些你從事每次至少 10 分鐘的身體活動。最近 7 天期間，你有多少天在家從事中強度的身體活動，像是提輕物、打掃、洗窗或進行園藝等活動？

_____ 每週幾天
☐ 沒有中強度的身體活動　　答沒有 → 請跳至問題 18

17. 承上題，你通常花多少時間在從事中強度的身體活動？

_____ 每天幾小時
_____ 每天幾分鐘

第 4 部份：遊憩、運動及休閒時的身體活動

此部份與你最近 7 天裡所做的遊憩、運動、健身及在休閒時的身體活動有關。請不要包含之前你已提及的任何活動。

20. 不要計算任何你提及過的走路，最近 7 天期間，你在休閒時花多少時間從事每次至少 10 分鐘的走路？

_____ 每週幾天
☐ 在休閒時沒有進行走路/散步的活動　　答沒有 → 請跳至問題 22

21. 承上題，在休閒時，你通常花多少時間走路？

_____ 每天幾小時
_____ 每天幾分鐘

22. 只要回想那些你從事每次至少 10 分鐘的身體活動。最近 7 天期間，在休閒時你有多少天從事高強度的身體活動，像是有氧運動、跑步、快騎單車或快泳等活動？

_____ 每週幾天
☐ 在休閒時沒有進行高強度強的身體活動　　答沒有 → 請跳至問題 24

23. 承上題，你通常花多少時間在休閒時進行高強度的身體活動？

_____ 每天幾小時
_____ 每天幾分鐘

24. 再一次，僅回想那些你從事每次至少 10 分鐘的身體活動。最近 7 天期間，在休閒時你進行了多少天的中強度身體活動，像是一般的速度騎單車、一般的速度游泳及網球雙打等活動？

_____ 每週幾天
☐ 沒有在休閒時進行中強度的身體活動 →請跳至第 5 部份：坐著的時間

25. 承上題，你通常花多少時間在休閒時進行中強度的身體活動？

_____ 每天幾小時
_____ 每天幾分鐘

第 5 部份：坐著的時間

最後的部分與你在休閒時、工作期間、上課、在家或做作業的坐著時間有關，這包括你花在書桌、與朋友會面、讀書或坐或躺看電視、手機的時間，但不要包含已經提及過的搭乘機動交通工具的坐著時間。

26. 最近 7 天期間，你通常在非假日時間(上課天、工作天) 花多少時間坐著？

_____ 每天幾小時
_____ 每天幾分鐘

27. 最近 7 天期間，你通常於週末花多少時間坐著？

_____ 每天幾小時
_____ 每天幾分鐘

問卷最後，感謝你的參與

Appendix C

Consent form

THE EDUCATION UNIVERSITY OF HONG KONG
Department of Psychology

CONSENT TO PARTICIPATE IN RESEARCH

The Influence of Physical Activity on Emotional Intelligence

I, _____, hereby consent to participate in the captioned project supervised by Mr LAM Hui Ming John and conducted by Leung Ho Ching, who are staff and student of Department of Psychology and Department of Health and Physical Education in The Education University of Hong Kong.

I understand that information obtained from this research may be used in future research and may be published. However, my right to privacy will be retained, i.e.,my personal details will not be revealed

The procedure as set out in the **attached** information sheet has been fully explained. I understand the benefits and risks involved. My participation in the project is voluntary.

I acknowledge that I have the right to question any part of the procedure and can withdraw at any time without negative consequences.

Signature: _____

Name of Participant: _____

Date: _____

Appendix D

Information sheet

INFORMATION SHEET

The Influence of Physical Activity on Emotional Intelligence

You are invited to participate in a project supervised by Mr LAM Hui Ming John and conducted by Leung Ho Ching, who are staff and student of Department of Psychology and Department of Health and Physical Education in The Education University of Hong Kong.

This study aims at investigating the influence of physical activities (PA) on emotional intelligence (EI) among full-time undergraduate students at The Education University of Hong Kong (EdUHK). The research will first identify the level of EI and PA among the participants and then analyse the data through a linear multiple regression test, using students' last year Grade Point Average (GPA) as a controlled variable to predict the value of EI with PA.

There will be 55 participants in this study. Participants are selected from the EdUHK canteen, library and sports center and you are chosen for this research as you are the targeted participants (Year 2 or above full-time undergraduate students at the EdUHK).

You will be asked to write down your major and year of study, last year GPA and complete two questionnaires, which are the Chinese version of International Physical Activity Questionnaire (Long form) (IPAQ) and the Chinese version of Schutte Self Report Emotional Intelligence Test (SSEIT). The completion of the study will take 5 minutes. There will be no compensation for participating in this study. However, you can have the experience of participating a psychological study and get to know more about your PA levels and EI.

There will be no potential risk or discomfort in participating in this research. Your participation in the project is voluntary. You have every right to withdraw from the study at any time without negative consequences. All information related to you will remain confidential and will be identifiable by codes known only to the researcher.

This research will be published in the form of thesis and oral presentation. Results will not be given to you, but you are welcomed to ask for the results or individual score in the IPAQ and SSEIT if you are interested. If you would like to obtain more information about this study, please contact me by email at @s.eduhk.hk or telephone number , or my supervisor Mr LAM Hui Ming John by email at @eduhk.hk.

If you have any concerns about the conduct of this research study, please do not hesitate to contact the Human Research Ethics Committee by email at hrec@eduhk.hk or by mail to Research and Development Office, The Education University of Hong Kong.

Thank you for your interest in participating in this study.

Leung Ho Ching