

Emotional Intelligence as an Underlying Psychological Mechanism on Physical Activity among Malaysian Adolescents

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Abstract: As we all know the benefits of physical activity (PA) on physical and mental health are well established. However, inactivity among adolescents in Malaysia is still prevalent. This study examined whether emotional intelligence (EI) was one of the underlying psychological mechanisms that may associated with the current low levels of PA adherence. Therefore, the purpose of the study was to examine whether EI plays a role as the potential underlying mechanism of PA behavior among Malaysian adolescents in secondary schools. A total of 270 sixteen year old students were recruited from a few Malaysian secondary schools. It was found that students with higher physical activity (among those who are school athletes) in a week had better total EI scores and composite subscale scores. The findings of this study provide further support claims that there is a positive relationship between increased levels of EI and physical activity. Thus, the importance of higher emotional intelligence skills is seen to be one of the upmost important agenda that should be looked at in public schools to help on promoting exercise and physical activity participation. It is highly recommended that the programs should be targeted at the maximum level towards individual who were sedentary and low active.

Key words: Emotional intelligence • Physical activity • Adolescents

INTRODUCTION

Physical activity is one of the best way to improve general health and keeping obesity at bay [1]. Studies have shown that adolescents that are active at a young age, will persist throughout their lives [2, 3]. Therefore, a healthier generation can be mold where risk of stroke and coronary heart disease, type 2 diabetes mellitus as well as colon cancer can be minimized. Besides that problems involving psychological, emotional and social development, such as lack of self-esteem and discrimination can also be at the minimum [4-7].

Even though physical activity as a whole for Malaysian adults has increased from 56.3% to 64.8% [8], other studies that involves Malaysian adolescents are quite disturbing. According to the study by Dan, Mohd

Nasir & Zalilah (2011), about one third (34%) and 61.5% of their adolescent respondents were in the low physical activity and moderate level category with the mean of physical activity of 2.06 ±0.45 (low physical activity category) [9]. Furthermore, the obesity level among children and adolescent has slightly increased from 10.8% to 12% [8].

This is probably due to the rapid change of lifestyle among the Malaysian adolescents that is less labour activity patterns such as going to school by car or school bus rather than walking, more indoor activities such as video games rather than playing football on the field and increase sedentary habits due to the wide use of technology. In fact, a study by Andres (2006) revealed that there is lack of interest in exercise and sport activities participation among youth and adolescent. If this trend

continues, it will have a tremendous detrimental effect as the health of the next generation would be affected in the long run. Reily, Methven, & McDowell (2004) showed that obesity and morbidity incidences in children and adolescents are associated with both short-term and long-term consequences, although the latter may be of a greater health concern. Short-term consequences of physical inactivity can increase the risk of obesity and will promote low self-esteem, adverse social interactions, behavioural problems, clinical conditions such as asthma and systemic inflammation [10]. While long-term consequences of obesity (due to sedentary lifestyle) may include type -1 diabetes mellitus, increased cardiovascular risks and premature mortality in adulthood [10].

According to Li, Lu & Wang (2009), PA also plays an important role in enhancing the emotional health as well. According to them, emotions are an integral and significant aspect of human nature and the motivation for behaviour [11]. In other words, physical activity can be motivated with a strong emotional adapt qualities. The ability of being able to tell differences in capabilities to recognize/perceived, understand, manage and use emotions in both intrapersonal and interpersonal contexts is known as emotional intelligence (EI) [12]. Emotional intelligence (EI) is a relatively new construct [13] that has gathered momentum due to proposals that measures of EI are related to a number of desirable outcomes, including health behaviors such as exercise and physical activities.

Thus, this study aims to examine whether EI plays a role as the potential underlying mechanism of PA behavior among Malaysian adolescents or more specific Malaysian secondary students.

Literature Review: Adolescence is a period in human growth and development that occurs after childhood and before adulthood, from ages 10 to 19. It represents one of the critical transitions in life span and is characterized by a tremendous pace in growth and change that is second only to that of infancy [14]. The biological process that happens during this period of time drives many aspects of growth and development, with the onset of puberty marking the passage from childhood to adolescence. The biological determinants of adolescence are fairly universal; however, the duration and defining characteristics of this period may vary across time, cultures and socioeconomic situations. This period has seen many changes over the past century namely the earlier onset of puberty, keeping trends of urbanization, wide use of global communication and social networking, daring sexual attitudes and risky health behaviours [15].

Many studies have shown the dramatic declines of physical activity during the adolescent period [9, 16]. A study by Lim (2005) also showed similar result where 44% of adolescents studied were in the sedentary category. If this trend is not taken seriously by policy makers and health educationers, the younger generation will be bombarded with many chronic diseases. Therefore, it is utmost important to determine or identify factor/s that could promote physical activity such as emotional intelligence (EI).

According to Mayer *et al.* (2000), EI has four hierarchical skill levels that range in complexity in terms of how individuals identify/perceived, understand, manage and use emotions. Appraisal and recognized sometimes referred to perception of emotion is the lowest skill level. The next level involves evaluating and usage of emotional experiences, for example weighing emotions against one another and against other sensations and thoughts. The third level involves understanding and reasoning about emotions. Each emotion follows its own specific rules. Each emotion changes according to its own characteristics' rules; includes the ability to identify emotions, know how they change and reason about emotions accordingly. Last but not least, the fourth and the highest skill level includes the management and regulation of emotions, such as knowing how to calm down after being really nervous or angry.

Individuals with high emotional intelligence are able to enhance their intrinsic motivation to the fullest and respect other individuals around him. This will indirectly improve performance in terms of productivity and focus in general [17]. Furthermore, students who have a high level of emotional intelligence were found to have a higher grade achievement compared with children who have a low level of emotional intelligence [18]. In addition, students with higher emotional intelligence can also develop communication skills and problem solving skills better [19].

There are a variety of comprehensive models of emotional intelligence used to describe emotional intelligence. These models do not contradict each other but there are differences in the perception of emotional intelligence. However, almost all models do include three main categories, namely to interpret emotions, controlling emotions and use of emotions in problem solving.

The study of emotional intelligence on adolescents who are in the transition from childhood to adulthood can provide insight into the formation and development of emotional intelligence elements in the school programs. Since emotional intelligence plays a key role in quality

interaction with others and the success of everyday life [20] studying emotional intelligence on adolescent can help promote better health behaviors including physical activity. High EI has been shown to be associated with young adults and adults who engage in regular physical exercise [1, 11]. In a previous study, using the Emotional Intelligence Scale [21], Davidson (2004) found that adults that exercise regularly had significantly higher EI than the non exercisers.

Presently, even though there are studies done on the correlation between PA and EI, but none was done on adolescents. Therefore, it is high time to investigate if EI plays a role as the potential underlying mechanism of PA behavior among adolescent.

Research Methodology: Participants were recruited from two schools in Melaka, Malaysia. 142 male and 128 female form four students, 16 years of age participated by using random sampling. All subjects were asked to sign an informed consent form before filling the General Demographic Questionnaire, Emotional Intelligence Scale (EIS; Shutte *et al.*, 1998) and International Physical Activity Questionnaire (PAQ-A; Kowalski, Crocker & Kowalski, 1997).

There were two main instruments used in the study. The EIS is a 33-item measurement scale of emotional intelligence by Schutte *et al.*, (1998). Items for this test were initially constructed on the basis of the theoretical work of Salovey and Mayer (1990) and represent three inter-related dimensions: (a) appraisal and expression of emotion, (b) regulation of emotion and (c) utilization of emotion. Items are rated on a 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree). A series of studies by Schutte *et al.*, (1998) revealed adequate internal reliability estimates for the scale at .87 and above and two week test-retest reliability of .78. For this study the EIS was conceptualized as a 5-subscale of 19 items model of emotional intelligence was used and suggested by Lane *et al.* (2009). The five subscales are: utilization of emotions appraisal of other's emotions, optimism, appraisal of one own emotions, emotional regulation and social emotional intelligence. The modified EIS was used to compensate the aim of the study to have a brief instrument meant for adolescents who commented that there were too many questions with the pilot study using with the original 33-items. The alpha coefficient in the present study was 0.87, which indicates an internally reliable scale. Range of scores possible for the test is 19 to 95.

Physical activity was assessed using the official Malay language version translated from the *Physical Activity Questionnaire for Adolescents* (PAQ-A; Kowalski, Crocker Kowalski, 1997). The questionnaire was developed to measure level of physical activities among adolescents age 14 to 19 years for the past week. There were nine items altogether with first eight items based on 5 scale *Likert* while the ninth item was an open ended question. Range of score was between 14 to 70. The Alpha Cronbach value for the PAQ-A instrument is 0.85. For the purpose of the study, physical activity levels were also classified into three categories: low, moderately active and highly active according to their scoring. Those who scored lower than 27 were in the sedentary or low active category (LAc), 28 to 51 were in the moderate category (MAc) and 52 and above were the highly active participants (HAc).

The data was collected in a period of two weeks at two selected schools in Melaka. Permission for the study was granted by the District Office of Education at Melaka. Questionnaires were completed anonymously and the additional data (demographical) requested were gender, race, religion, family income and years in sport. SPSS version 20 (SPSS Inc., Chicago, IL, USA) was used to analyze data. The three different levels of physical activity (PA) groups (HAc, MAc, LAc) were the independent variables while EI was the dependent variable. A factorial analysis of variance for independent groups was computed to determine the differences in EI scores among secondary students (male/female) participating in different levels of PA. Two (acquired for male and female) one-way ANOVA and post hoc analyses were also performed for multiple comparisons of the three different levels of PA groups on the six EQ subscales. The level of significance was set at 0.05 for all statistical analyses.

RESULTS AND DISCUSSION

Out of the 270 subjects, 19.6% were categorized into HAc PA group, 42.9.7% as the MAc group, and 37.4% into the LAc group. The descriptive data of the subjects are presented in Table 1.

Based on the data given from Table 1, there were more males [114 boys (45.9%)] that was in the high and moderate physical activity group compared to the female students (20.4%). Moreover, more adolescent girls were in the low active groups compared to males. Significant F of 0.824 > 0.05 from the Levene's Test of Equality of Error Variance showed the data meet the assumption of

Table 1: Subjects divided to three levels of physical activity (PA) groups (n=248).

Group	High Active PA (Hac)		Moderate active PA (MAc)		Low active PA (LAc)	
	Male	Female	Male	Female	Male	Female
N	40	13	74	42	47	54
Years in sports	5.3±2.5	4.7±2.3	3.9±1.3	3.5±2.3	2.8±1.7	1.9±1.8

Table 2: Factorial ANOVA on gender, level of PA group and EI

Source	SS	df	MS	F	p
Gender	639.7	1	639.7	29.6	0.00
Physical activity group	1238.5	2	619.3	28.7	0.00
Interaction	213.2	2	106.6	4.9	0.10
Error	5750.6	266	21.6		
Total	7842				

Table 3: Univariate F ratios comparing emotional intelligence (EI) of the three levels of physical activity groups between genders

EI subscales	Mean ± SD		F		P		Post hoc
	Male	Female	Male	Female	Male	Female	
Total EI							
HAc	87.8±4.7	83.6±3.6					
MAc	73.7±14.3	76.7±11.6					
LAc	66.0±11.4	64.2±13.4	13.45	16.69	0.004*	0.001*	HAc>MAc>LAc (male & female)
Appraisal of others emotions							
HAc	21.8±5.4	23.9±1.5					Hac=MAc=LAc (Male)
MAc	20.8±3.7	20.3±3.9					
LAc	18.2±3.9	17.8±3.6	1.66	3.73	0.08	0.03*	Hac=MAc>LAc (Female)
Appraisal of own emotions							
HAc	13.2±2.7	13.8±1.1					Hac=MAc>LAc (Male)
MAc	11.6±2.3	12.3±1.7					
LAc	10.2±3.9	12.2±2.1	5.36	3.38	0.04*	0.06	Hac=MAc=LAc (Female)
Regulation of emotions							
HAc	9.6±0.4	9.3±0.4					Hac=MAc>LAc (Male)
MAc	7.4±1.3	7.9±2.0					
LAc	6.3±1.6	5.9±3.7	8.91	9.69	0.005*	0.003*	Hac>MAc>LAc (Female)
Social Skills							
HAc	7.6±2.4	12.6±2.8					Hac=MAc=LAc (Male)
MAc	6.7±2.7	10.4±2.3					
LAc	6.5±2.9	9.3±2.6	1.94	3.94	0.06	0.03*	Hac>MAc>LAc (Female)
Utilization of emotions							
HAc	23.8±3.4	24.2±3.2					Hac>MAc>LAc (Male)
MAc	20.6±2.2	20.2±2.8					
LAc	18.6±2.8	17.2±1.7	4.74	5.76	0.02*	0.01*	Hac>MAc>LAc (Female)

equality of variance (homogeneity test). There was a significant main effects for gender on EI scores, $F(1, 266) = 29.6$, $p = 0.00$, meaning there is a significant differences between EI and gender (males and females). Besides that, there was a significant main effects for physical activity groups on EI scores, $F(2, 266) = 28.7$, $p = 0.00$, meaning there is a significant differences between EI and the physical activity groups (HAc, MAc, LAc). However, there was no significant interaction effects between gender and physical activity groups, $F(2,266) = 4.9$, $p = 0.1$ (Table 2).

The univariate F ratios (one-way ANOVA) comparing the three PA group regard to total EQ and the six EQ subscale measures are presented in Table 3. As for males, there was a significant differences ($p < 0.05$) in the three PA groups for the subscales of regulation, appraisal of one's own emotion and utilization of emotions; but no significant difference ($p > 0.05$) was found for the appraisal of others emotion and social skills subscale. The post hoc tests of the three PA groups were used to determine which pairs of means were significantly different. The mean subscale scores for the utilization of emotions

of the HAc PA group was significantly higher than that of the MAc and the LAc groups. The mean subscale scores for the regulation of emotion, appraisal of one own emotion and appraisal of others emotion of MAc PA group was higher than the LAc group. Furthermore, the total EI scores of the HAc and MAc PA groups were both significantly higher ($p < 0.05$) than that of the LAc group.

For females however, there was a significant differences ($p < 0.05$) in the three PA groups for the subscales of social skills, regulation and utilization of emotions and; but no significant difference ($p > 0.05$) was found for the appraisal of own emotion subscale. The post hoc tests of the three PA groups were used to determine which pairs of means were significantly different. The mean subscale scores for appraisal of others emotion of the HAc and MAc group was significantly higher than that of the LAc groups. Furthermore, the total EI scores of the HAc and MAc PA groups were both significantly higher ($p < 0.05$) than that of the LAc group.

DISCUSSION

The findings of the current study provide further support on the claims that there is a positive relationship between increased levels of EI and physical activity. The current findings are in line with those of Li *et al.* (2009), Roxana *et al.* (2012) and Sklofske *et al.* (2007). It was found that the secondary students that had higher physical activity in a week had better total EI score and composite subscale scores. This study found that the higher the level of PA, the higher the scores for the appraisal of one own emotion and regulation of emotions which are consistent with the finding from previous studies that PA has benefit on an individual's sense of self worth and self perception [22]. With that note, students with high levels of PA and obviously EI will benefit the most when they are able to demonstrate effective working with others in their assignments or group work and their direct contact with teachers. Apart from that, positive associations were also found between PA and appraisal of others emotion and PA with utilizations of emotion which are line with the study by Biddle (2000). This means students with high self control and positive thinking, in other words, those with high control of emotions will not resort to unhealthy solutions when facing with difficulties, but on the contrary, they will proactively seek for techniques to cope with distressed situation. Gender differences were also identified in this

study regarding the total EI scores and composite subscale scores. In general, females scored significantly to more subscale scores than males. Moreover, females scored significantly higher than males, similarly to the findings from other studies (Ciarrochi *et al.*, 2000) and Roxana *et al.* (2012). Pugh (2002) claims that 'male-female differences in expressiveness are well established' with female demonstrate better ability to perceive and express emotions successfully.

Furthermore, females seem to score higher in appraisal of others emotions, regulation of emotions and social skills. This is probably because men and women have different styles of coping especially with stressors. Males are believed to be more likely to confront a problem head-on and also are assumed to be more likely to deny a problem exist [23]. Women or adolescent girls on the other hand are believed to exhibit a more emotional response to problems and are expected to spend more time discussing problem with friends and families [23]. Studies also show that females are more likely than males to cope with emotion-oriented behaviours and to seek social support [24]. These stereotypes are seen through this study and maybe so it is seen true in almost all parts of the world where emotional expressiveness is the core of differences between the genders. Femininity and female roles are associated with the ability to experience, express and communicate emotions to others and to empathize with other's feelings, whereas masculinity and male roles are defined as the ability to suppress and control one's emotions.

However, this study did not see any significant differences among of different physical activity levels among the females for appraisal of one's own emotion as discovered by previous study by Roxana *et al.* (2012). This is probably due to the instability of one's emotions among the adolescents who is still searching on their self identity. Similar to the study done by Li *et al.*, (2009) and Roxana *et al.*, (2012) although we found positive relationships between PA and EI, however, this does not mean that EI causes high PA. It is equally possible that good PA is the effect of good EI as the students with high EI may simply be more active and exercise driven. Hence, more research must be done to clarify this issue.

In conclusion, it is high time that emotional intelligence programs be implemented in public schools so that good exercise attitude can be fostered in their everyday lives. However, longitudinal research designs are necessary in order to explore the long-term effects of physical activity on EI and vice versa.

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