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The Relationship between Self-determination Motivation and Eating Behaviour of Obese Students

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ABSTRACT

The World Health Organization (WHO) (2008) reported that overweight and obesity are the fifth major risk for global deaths. At least 2.8 million adults die every year due to overweight or obesity. This study was performed to examine the relationship between motivation and eating behaviour among obese students. This quantitative study involved 400 form four and form five students with Body Mass Index (BMI) of 25.00 and above. This study was conducted in the Federal Territory of Kuala Lumpur. The data of this study were collected based on the *Behavioral Regulation in Eating Questionnaire* (BREQ) by Mullan, Markland and Ingledew (1997). Whereas the eating behaviour questionnaire was adapted from *Child Eating Behavior Qestionnaire* (CEBQ) (Santos, Gonzalez, Smalley, & Cataldo, 2011). The findings of this study clearly showed that self-determination motivation of the obese students was at a moderate level (M=3.12, SD=0.59). The results also clearly showed that there was a significant relationship between motivation and eating behaviour of the obese students. Majority of the respondent (76.0%) possessed moderate level of self-determination motivation. Those who possessed high self-determination motivation were around 17.3% (69 respondents) while those who possessed low self-determination motivation were around 68% (27 respondents). The findings indicate that, overweight students and students with obesity possessed moderate internal and external motivation towards healthy eating habit. They do not possessed high internal motivation towards healthy eating habit. They were also found failed to set their objectives towards achieving healthy eating habit. It was alarming since it is common for any individual to have high self-determination motivation in order to achieve their goals, which in this case, achieving a healthy eating habit. They do not require any external factors, such as other people in order to achieve their goals. They themselves should determine their objectives, and later try to achieve those objectives. This study suggests an *r* correlation coefficient of .114. Since the *r* correlation coefficient was significant ($p<.05$), it indicates that there was a significant positive relationship between self-determination motivation and healthy eating habit. The size of *r* correlation coefficient ($r=.114$) indicates a weak relationship between those variables.

Keywords: Self-determination, motivation, obese students, eating behaviour

INTRODUCTION

The problem of obesity in Malaysia is ranked among the highest in ASEAN countries, which is at the sixth place in Asia-Pacific region. Based on the findings of previous studies conducted by the Institute of Public Health (2008), it was reported that Malaysians suffer from excess weight and obesity. In the Federal Territory of Kuala Lumpur, it is found that children showed the prevalence of overweight in excess of the number of occurrences by 5.4%. These data clearly showed that the level of obesity among Malaysians is indeed worrying. As demonstrated, obesity is considered as the risk factor for diseases such as coronary heart disease, diabetes,

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hypertension, cancer, and others. Accordingly, the Ministry of Education (MOE) has already taken initial steps to address this problem by incorporating contents about healthy eating in Living Skills (KH), Home Economics (ERT), and Health and Physical Education (PJK). The aim was to give exposure to students towards healthy eating habit at early age.

Essentially, an individual's health depends on the physical, biological, social, and behavioural factors. Individual's behaviour is influenced by personality. Moreover, other factors such as family members, community, environment, culture, geography, and other physical environments were also considered influeantial. Knowledge, attitudes, and skills play important roles in an adaptation of a specific behaviour, including behaviours that are related to health. Certainly, there are many factors that can cause obesity condition. According to Harbans Lal (2007), on of the causes of obesity and overweight were energy imbalance between the calories consumed and calories used. The findings from previous study carried out by Michelle Cardel (2012) showed that parental restrictions, forced by parents to eat, and the status of school are some of the environmental factors that could cause obesity among children.

In addition to the above factors, motivation is also seen as a determinant of success for an individual to overcome obesity. According to Deci and Ryan (1985), an individual's choice is often influenced by Self determination theory (SDT). The concept of intrinsic behaviour refers to a situation where an individual performs a behaviour because he/she can feel and enjoy such behaviour, whereas extrinsic behaviour refers to the actions taken to get a reward or to avoid punishment. A previous study by Amanda (2009) found that individuals with high internal or intrinsic motivation have been proven to be successful in reducing or losing weight. Webber, Tate, Ward and Bowling (2010) noted that individuals with high internal motivation have been proven to reduce or lose weight and maintain it as compared to individuals with lack of motivation. This situation clearly shows that motivation is absolutely necessary to achieve any objective. Therefore, based on the problems drawn from previous studies, this study aimed to investigate the relationship between factors of self-determination motivation and eating behaviour of obese students. This study is important as a first step to reduce the increment of incidence and death rates among people with chronic illnesses.

Specific objectives of this study are as follows:

1. To identify the level of self-determination motivation among obese students.
2. To identify the level of eating behaviour among obese students.
3. To identify the relationship between the level of self-determination motivation and eating behaviour among obese students.

LITERATURE REVIEW

Self-Determination Motivation

Motivation is a dynamic internal process that generates internal power of individuals to make choices. Hanna, Joop, and John (2014) stated that an individual's behaviour is influenced by motivation. Motivation is divide into two, namely internal motivation, of which refers to a behaviour that is performed due to a pleasure felt by individuals, and external motivation, of which refers to a behaviour that is performed in order to get reward or to avoid punishment. The Self-determination Theory emphasizes that an individual's choices are often influenced by various factors from external drivers and internal energy, depending on requirements and needs.

Internal or intrinsic motivation are actually giving much more profound effects on an individual to achieve a goal, as compared to external or extrinsic motivation. A previous study Georgiadis, Biddle and Stavrou (2006) found that participants with high motivation of self-determination, particularly internal motivation had successfully lose weight at the end of a weight loss program. While Timo, Jarmo, and Yngvar (2008) suggested that, through a research related to concept of self-determination motivation with intensity of physical activities in Physical Education found that, students with higher level of self-determination motivation demonstrated positive and high-intensity heart rate as compared to students who were lacking in self-determination motivation. In addition, they also found that students with high self-determination motivation were likely to involve more in physical activities.

A previous study related to self-determination motivation, eating behaviour, BMI, and the habit of eating certain foods that was carried out by Sook, Clara, Andrew and Caroline (2012), of which involves 2,500 women in New Zealand found that women with low BMI had moderate level of motivation. Furthermore, the respondents also found adopting healthy eating behaviour by consuming more vegetables, fruits, and cereals, as well as low-fat food. The findings were similar to a study carried out by Teixeira, Patrick and Mata (2011) that states, motivation plays an important role in maintaining a healthy diet. This statement was in line with the statement presented by Ryan and Deci (2008), in which self-determination motivation provides guidelines and principles

of motivations for an individual to explore experiences and events, as well as to make changes and adjustments in order to achieve their goals, behaviours, and relationships.

Eating Behaviour among Obese Students

According to Abang Ismail (2014), behaviour is defined as acts portrayed by humans that are influenced by culture, attitude, emotion, value, authority, good relationship, flattery, duress, and genetic. Action and conversation of an individual are also considered as behaviour. Therefore, all observable, measurable, and assessable actions, consciously or unconsciously are considered as behaviour (Jacobson, 2005). According to Santos, Gonzalez, Smalley, & Cataldo, (2011), human behaviour could be influenced by culture, attitude, emotion, value, ethics, authority, good relatinship, flattery, duress, and genetic. In the context of this study, healthy eating habit (behaviour) refers to all actions, attitudes, activities, and belief of an individual towards practicing healthy food consumption, based on the aspects of culture, lifestyle, and emotion.

Change of behaviour towards healthy eating habit and lifestyle of an individual are recognised as causes of the increment of overweight phenomenon among high income population in the city area. On daily basis, they were not only relying on basic food consumption, but other supplementary intakes in order to accommodate the needs of additional nutrients for their bodies. Millions of Americans took vitamins and other supplementary minerals every day (Omandi, Walingo, Mbagoya, & Othuon, 2010). However, most of them agreed that if an individual practices healthy eating habit, there is no need for additional supplementary foods. Ideally, additional mineral and vitamin supplements will not be able to replace the necessary fats and fibres that are lacking in unhealthy foods.

In America, healthy eating habit among teenagers was positively observed. A study by Gail, Mark, Girard, & Metzl (2005) found that most of the teenagers in America were acting freely towards their behaviour of daily food intake and feel confident towards foods that they took. There were two factors observed in the study, of which the freedom to decide for themselves in all aspects of life, and the buying power towards food, snacks, and beverages. Gail, Mark, Girard, & Metzl (2005) also found that, fast foods were popular within the social surroundings. Fast foods became so popular and a norm among teenagers, especially the females. Moreover, a study carried out by Mahshid (2000) on 532 students at Shawnee Middle School di Lima, Ohio found that, only 15% of the respondents were practicing intake of vegetables and fruits in their diet. This indicates that teenagers were not having adequate intakes of vegetable and fruit in their diet.

METHODOLOGY

A descriptive quantitative study was conducted in some selected secondary schools located in the Federal Territory of Kuala Lumpur. This location was chosen because based on the report issued by The Third National and Morbidity Survey 2006 (NHMS III) (2008), in which the Federal Territory of Kuala Lumpur has the highest percentage of children and adolescents aged under 18 years old who are overweight and obese compared to other states. A total of 400 respondents consisting of form four and form five students with BMI of 25.00 and above represented the samples in this study, which were selected randomly.

Self-determination motivation was measured by using the questionnaires developed by Mullan, Markland and Ingledew (1997). Questionnaire forms that were distributed consisted of 18 items with three constructs of motivation. A five-point Likert scale with the scales of ‘Not true for me’ (1) to the ‘Very true for me’ (5) were used. Meanwhile, for the eating behaviour variables, these variables were adapted for the purpose of this study. A total of 24 items that comprised the statements about behaviours related to healthy food intake and eating behaviour from the aspects of culture, lifestyle, and emotional were measured. While the level of behaviour towards healthy eating habit among obese students were measure using questionnaire which adapted from the *Child Eating Behavior Qestionnaire* (CEBQ) instrument, developed by Santos, Gonzalez, Smalley, dan Cataldo (2011).

RESEARCH FINDINGS

The Level of Self-determination Motivation among Obese Students

The instrument used was intended to measure the level of internal motivation (intrinsic) and external motivation (extrinsic) of the respondents towards healthy eating habit. Healthy eating habits that were measured are, for instance avoiding eating snacks, regular and systematic intake of food, and intake of balanced diet. The questionnaire was developed based on the Behavioral Regulation in Eating Questionnaire (BREQ) items by Mullan, Markland and Ingledew (1997). In order to make the questionnaire feasible for this study, the researcher has acquired a permission from David Markland (appendix 3), especially on the 18 questions on motivation, and later categorized them into two main constructs. A five point Likert scale was employed in order to measure the

items of motivation. Scale 5 represents the 'Very true for me' (VTFM), scale 4 represents 'True for me' (TFM), scale 3 represents 'Somewhat true for me' (STFM), scale 1 represents 'Close to not true for me' (CTNTFM) and scale 1 represents 'Not true for me' (NTFM). All items that represent each sub-scale in the questionnaire are shown in the Table 1 below.

TABLE 1
Items for Self-Determination Motivation Sub-Scale

Self-motivation	Number of item	Total of item
Internal Motivation	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	12 items
External Motivation	13, 14, 15, 16, 17, 18	6 items

Descriptive analysis was employed in order to determine the mean and standard deviation of self-determination motivation. In total, 18 items were taken into consideration to measure the self-determination motivation variable. Self-motivation was measured based on two main constructs, of which internal motivation and external motivation. Items related to motivation were measured based on the perceptions of the respondents. They were required to rate their perceptions based on the five point Likert scale, of which, 1 = "Very not true for me"; 2 = "Not true for me"; 3 = "Somewhat true for me"; 4 = "True for me"; and 5 = "Very true for me". Item 1 to 6 measure the internal motivation elements, item 7 to 12 measure the aspects of external motivation, and item 13 to 18 measure the aspects of interjected motivation. Overall mean score for self-determination motivation variable was 3.12 and the standard deviation was .59. In order to classify the level of self-determination motivation of the respondents, self-determination motivation mean score was classified into three main levels, of which, mean score in between 1.00 to 2.33 is considered as low, mean score in between 2.34 to 3.66 is considered moderate, and mean score in between 3.67 to 5.00 is considered as high. Data related to the level of self-determination motivation is shown in the Table 2 below.

TABLE 2
Distribution of Mean and Standard Deviation According to Levels of Self-Determination Motivation

Aspect	n	%	M	SD
Level of self-determination motivation			3.12	.59
Low	27	6.8		
Moderate	304	76.0		
High	69	17.3		

According to the Table 2, the overall mean score for self-determination motivation was 3.12 with a standard deviation of .59. This indicates that, majority of the respondents 304 (76.0%) possessed moderate level of self-determination motivation. Respondents that possessed high level of self-determination motivation were around 17.3% (69 respondents), and only around 6.8% (27 respondents) possessed low level of self-determination motivation. The results indicate that, overweight students and students with obesity possessed moderate internal and external motivation towards healthy eating habit. They do not possessed high internal motivation towards healthy eating habit. They were also found failed to set their objectives towards achieving healthy eating habit. It was alarming since it is common for any individual to have high self-determination motivation in order to achieve their goals, which in this case, achieving a healthy eating habit. They do not require any external factors, such as other people in order to achieve their goals. They themselves should determine their objectives, and later try to achieve those objectives.

As for the items of self-determination motivation, 18 items were analysed in order to determine the level of internal motivation and external motivation of the overweight and obese students towards healthy eating habit. Based on the descriptive analysis, there were three items that scored the highest for internal motivation items, of which item 3 (*I value the goodness of healthy eating*) (M=3.92, SD=1.06), item 4 (*It is important for me to always eating healthy food*) (M=3.82, SD=1.07), and item 6 (*I feel that it is important to always try to eat healthy food systematically*) (M=3.89, SD=1.10). The analysis also showed that there were nine items that scored moderately for internal motivation items, of which item 1 (*I eat healthy foods because I am enjoying them*) (M=3.53, SP=1.16), item 2 (*I am happy whenever I am eating healthy food*) (M=3.59, SP=1.10), item 5 (*I find that healthy food is fun*) (M=3.59, SP=1.07), item 7 (*I feel fun and satisfied whenever I am having healthy food*) (M=3.41, SP=1.09), item 8 (*I feel guilty whenever I am eating snacks*) (M=2.87, SP=1.23), item 9 (*I feel ashamed whenever I am eating snacks*) (M=2.42, SP=1.23), item 10 (*I feel guilty whenever I am not eating healthy food*) (M=2.89, SP=1.32), item 11 (*It is pressuring whenever I did not get healthy food systematically*) (M=2.78, SP=1.23), and item 12 (*I feel unconformable if I am not eating healthy food*) (M=2.91, SP=1.22).
As for the descriptive analysis of external motivation items, there were six items that are related to individuals which encouraged respondents to practice healthy eating habit. Table 3 shows the descriptive analysis for external motivation item. According to the Table 3, item analysis shows a moderate level, of which between

2.45 with a standard deviation of 1.34 to 3.24 with a standard deviation of 1.21. This indicates that friends and family members could encourage students to practice healthy eating habit. In order to do so, they are required to be role models in practicing healthy eating habit.

TABLE 3
Mean and Standard Deviation for External Motivation Items

Item No.	Statement	M	SD
13	I eat healthy food because other people told me to do so.	3.05	1.22
14	I eat healhty food because my friends told me to do so.	2.89	1.24
15	I eat healthy food because my family told me to do so.	3.24	1.21
16	I eat healthy food in order to please others.	2.46	1.25
17	I was pressured by my friends towards eating healthy food.	2.45	1.34
18	I was pressured by my family towards eating healthy food.	2.68	1.34

Eating Behavior among Obese Students

Behaviour of obese students was measured using a 22-item questionnaire, of which 15 items were negative statements. Respondents were asked to rate each statement according to the five point Likert scale. Score 1 refers to 'Never' and score 5 refers to 'So often'. The survey towards healthy eating habit among obese student was based on two main constructs. The first construct measures food intake, and the second construct measures healthy eating habit based on the aspects of culture, lifestyle, and emotion. In order to determine the level of healthy eating habit among students, the overall mean score was categorised into three categories. Table 4 shows the distribution of respondents, mean, and standard deviation of students' eating behaviour.

TABLE 4
Distribution of respondents, mean, and standard deviation according to level of eating behaviour among obese students

Aspect	n	%	M	SD
Level of healthy eating habit among students			3.22	.41
Low	8	2.0		
Moderate	338	84.5		
High	54	13.5		

The results showed that healthy eating habit was moderately observed among respondents. Majority of the respondents, 338 (84.5%) were at moderate level of healthy eating habit, 54 (13.5%) were at high level of healthy eating habit, and 8 (2.0%) were at low level of healthy eating habit. In order to gain more information from the data, a descriptive analysis was carried out to determine mean and standard deviation of each item. Negative items in the questionnaire were 'recode' during the calculation of overall mean score of healthy eating habit. Table 5 shows the means and standards deviations of obese students' eating behaviour items.

TABLE 5
Means and Standards Deviations of Obese Students' Eating Behaviour Items

Item No.	Statement	M	SD
1	I drink low fat milk	3.21	1.29
2	I eat chicken in small sizes	3.12	1.10
3	I am aware of the amount of fat that I consumed	2.62	1.22
4	I eat biscuits, sweets or ice cream after dinner	3.58	1.22
5	I eat take vegetables at least three times everyday	3.32	1.15
6	I eat fruits	3.78	1.10
7	I am always having extra rice during meal time	3.09	1.14
8	I choose to have fried vegetables	3.01	1.04
9	I skip lunch	3.16	1.24
10	I take heavy meal during recess	3.16	1.10
11	I eat breakfast	3.43	1.28
12	I replaced lunch with snacks	3.44	1.28
13	My family celebrates something with a feast	2.93	1.11
14	I am eating while I am watching television	2.78	1.09
15	I spent all my pocket money on food at school	3.55	1.11
16	I am eating a lot when I am sad	3.66	1.32

17	I choose low fat cooking approaches such as steam, grill, boil, and simmer	3.21	1.09
18	I am eating whenever I an anxious	3.66	1.23
19	I am eating more than usual whenever I am not having anything else to work on	3.44	1.25
20	I am having sweet drinks after every lunch and dinner	3.22	1.20
21	I am eating a lot whenever I am feeling happy	2.57	1.25
21	I am having snacks while studying	3.25	1.30

The Relationship between the Level of Self-determination Motivation and Eating Behaviour among Obese Students

The strength of relationship between the variables was determined based on Cohen (1988). Table 6 shows the relationship between self-determination motivation and eating behaviour among obese students. The study found that, the *r* correlation coefficient was .114. Since the value was significant at $p<.05$, this indicates that there was a significant positive relationship between self-determination motivation and eating behaviour, but the strength was small. This gives the impression that, respondents did possess motivation towards practising eating behaviour in their daily lives. However, due to several obstacles or constrains, they were unable to practise the behaviour. For instance, lack of food choices at school's canteen forced them to neglect the amount of calories within the food.

TABLE 6
Relationship between Self-Determination Motivation and Eating Behavior

Variable	**Eating behaviour**	
	Pearson (*r)*	*p*
Self-motivation	.114	.023

The findings of this study clearly showed that there was a significant positive but weak correlation between self-determination motivation and eating behaviour. This situation also clearly showed that there is better students' behaviour to eat healthy food as the self-determination motivation for the respondents increased.

DISCUSSIONS

The findings of this study clearly showed that overall, the level of self-determination motivation for the respondents was moderate. The respondents' internal self-determination motivation and external self-determination motivation were also at a moderate level. The moderate level also suggested that the respondents were motivated to adopt healthy eating behaviour. It is based on a number of items proposed, in which more than 30% of the respondents answered 'Very true for me'. For example, 'I enjoy when eating healthy food', 'I appreciate the benefits of eating healthy food', 'It is important for me to eat healthy food regularly', and 'I feel that it is important to try to eat healthy food regularly'.

These findings appeared to be consistent with the findings of the previous studies conducted by Amanda (2009), it was found that the motivation external regulation among the respondents was at a low level. These differences are likely to occur due to the differences in demographic factors such as age, education level, area of residence, and others.

The findings of this study clearly showed that the quality of motivation plays an important role in influencing individuals to maintain a healthy diet. The self-determination motivation for overweight students can be increased from time to time so that they can lead a healthy lifestyle and thus can control their weight. This fact is able to support the Self-efficacy Theory, which emphasizes that an individual's belief in the ability of himself/herself can be regarded as an important benchmark that can determine the success of an objective. Without high belief in self-capability, then this situation will affect students' motivation to adopt a healthy lifestyle.

In terms of the relationship between the level of self-determination motivation and healthy eating behaviour, the findings of this study clearly showed that there was a significant positive relationship among obese students. Based on the interpretation of the correlation coefficient, it was found that the strength of the relationship shown is small. This means the score of healthy eating behaviour among the obese students will increase when self-determination motivation increases. This low correlation can be increased if the respondents' self-determination motivation increases. In this case, the researcher found that external motivation in particular, can provide high influence or contribution to the respondents to adopt healthy eating behaviour. The students will eat anything

that is provided by their families regardless of whether the food is cooked by their mother or purchased. At this stage, the students spend much of their time in school, then they will buy and eat any food sold at the canteen.

Therefore, both parents in particular, need to have knowledge about the adverse or side effects of being overweight or obese. Both parents and families need to give more support to obese children. In addition, school administrators must also provide support to obese students by doing regular periodic monitoring of the food quality provided by the canteen besides organizing various forms of programs or healthy lifestyle campaigns involving all people at the school. This action will increase the self-determination motivation of obese students and can indirectly provide awareness to the public about the effects of obesity to public health.

CONCLUSIONS

It can be concluded that motivation is an important factor in determining the success of any matter. Internal motivation gives more positive effects to behaviour change. The success of behaviour change is achieved more easily with the presence of encouragement factors of external motivation and individuals in the surrounding. In the context of this study, the researcher found that overweight or obese students are in need of motivation to encourage them to adopt healthy eating behaviour in order to maintain healthy body and thereby reduce weight. Therefore, individuals such as families, friends, teachers, and local communities should play roles in adopting and promoting healthy eating behaviour.

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