

## Short Communication

# Body satisfaction, emotional intelligence, and the development of disturbed eating: a survey of Taiwanese students

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**Purpose:** This study explored the relationship between adolescents' emotional intelligence and the tendency to develop an eating disorder. **Methods:** Senior high school students in Taiwan were recruited for the study. A 3-part anonymous questionnaire measured demographic information, body weight satisfaction, and expectation of body weight. Students also completed the Adolescent Emotional Intelligence Scale and the Eating Disorders Attitude-26 Test (EAT-26). Height and weight were also measured. **Results:** The mean of EAT-26 score was  $8.66 \pm 7.36$ , and 8.6% students were at high risk to develop eating disorders. Gender, body weight, body dissatisfaction and the expected body shape were significantly related to disturbed eating attitudes and behaviours. Scores of EAT-26 were positively correlated with emotional perception, emotional expression, and emotional application. **Conclusions:** Disturbed eating behaviours exist among adolescents in Taiwan, and these behaviours may be related to emotional intelligence. However further studies with larger samples are needed.

**Key Words:** body satisfaction, emotional intelligence, disturbed eating, EAT-26, senior high school student

## INTRODUCTION

The spectrum of eating disorders includes anorexia nervosa, bulimia nervosa, and other specific pathological eating behaviours. In Western countries, abnormal eating attitudes and behaviours are common among young women, as well as a smaller percentage of young men, and a "slim body" is desirable.<sup>1-3</sup> The results of many recent studies indicate that the incidence of disturbed eating attitudes is significantly increasing,<sup>4</sup> and adolescents are considered to be at a higher than normal risk of developing an eating disorder.<sup>5</sup> This trend is also reflected in Asian countries. For example, Chisuwa et al reported that during the past 20 years the incidence of disordered eating behaviours has increased significantly in Japan.<sup>6</sup> For example, the percentage of cases of anorexia nervosa in the general population increased from 0.025% to 0.2%, and the percentage of cases of bulimia nervosa increased even more, from 1.9% to 2.9%.<sup>6</sup> A similar phenomenon has also been found in Taiwan. The results of two studies revealed disturbed eating attitudes and behaviours in 17.1% and 10.4% of female senior and junior high school students, respectively, based on Eating Attitudes Test-26 (EAT-26) scores  $\geq 20$ .<sup>7,8</sup>

There is no single, simple cause for an eating disorder; instead, the causes are numerous and complex. Physiologically, metabolism and utilization of body fat may be affected by heredity, hormonal imbalances, and even viral infections.<sup>9-11</sup> Psychologically, low self-esteem, depression, emotional stress, a sense of failure, perfectionism, and obsessive thoughts, such as excessive concern about weight, are examples of underlying causes for an eating

disorder. In addition, popular media and culture have a powerful influence on adolescents, often setting physical standards that rarely fit with reality.<sup>9</sup> Therefore, an inability to control negative emotions or one's social environment seems to correlate with pathological eating behaviour.

The concept of emotional intelligence was first proposed by Mayer et al in 1990,<sup>12</sup> and in 1995 Goleman's book, emotional intelligence, caused worldwide concern.<sup>13</sup> Emotional intelligence means that an individual "can accurately judge the mood, and apply emotion and emotional knowledge to further promote the ability of individual ideas".<sup>13</sup> Akerjordet & Severinsson's research indicated that enhanced emotional intelligence could produce a more positive attitude and thus improve interpersonal relationships. This then helped the individual achieve higher positive values and greater social adaptability.<sup>14</sup> Moreover, research showed a significant correlation between emotional intelligence and many psychological elements. For instance, life satisfaction and happiness were positively correlated, while depression, loneliness and stress were negatively associated.<sup>15</sup> An individual

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with a higher emotional intelligence level was more adaptable to social pressures and environmental changes than was an individual with a lower emotional intelligence level.<sup>13</sup>

A study by Kucharska et al showed that patients with anorexia nervosa had a poorer-than-normal ability to identify negative emotions through others' facial expressions or speech,<sup>16</sup> and that they could easily conceal their negative emotions and body dissatisfaction.<sup>17</sup> In a study of 90 adults 21 to 62 years of age, Zysberg et al found that those with higher emotional intelligence levels were not as likely to develop binge eating as a result of negative emotions.<sup>9</sup> In addition, as Pettit et al pointed out, undergraduates who had a better understanding of and greater ability to regulate their emotions were less likely to develop binge eating.<sup>18</sup> However, the results of another study revealed no correlation between emotional intelligence and disturbed eating behaviors.<sup>19</sup>

Currently, there has been little research into the relationship between emotional intelligence and disturbed eating in Taiwan and other Asian countries, and results have been inconsistent. Furthermore, despite the fact that emotional intelligence develops and matures during adolescence, no studies of emotional intelligence and disturbed eating behaviours have been done among this age group.

Therefore, we designed a study to explore the relationship between adolescents' emotional intelligence and tendency to develop an eating disorder among a group of senior high school students in Taiwan.

## METHODS

### *Participants and study design*

Our study recruited a group of Grade one and two senior high school students from Taichung City, Taiwan. According to statistics provided by Taichung Municipal Bureau of Education, the total number of grade 1 and 2 students in 2011 was 10805. The number of samples was calculated by social survey software and the recovery rate showed expected samples of 1200 students. The sampling ratio was about 11.1%. Stratified random sampling method was used in dividing 14 Taichung city high schools into three zones according administrative division, which are 5 in North District, 5 in Western District and 4 in South District. One school was randomly selected from each district while three classes of grade 1 and 2 students (6 classes in one school) were selected to take part in this survey. In the sampling process, the number of students selected from the school in South District was lesser, therefore two more schools in this district were selected to reach the number of samples estimated. This study surveyed 5 schools with 30 classes. The study protocol was approved by the Institutional Review Board of Chung Shan Medical University (CSMUH No: CS11205, Taichung City, Taiwan).

All data were collected using an anonymous questionnaire. The questionnaires were completed by students in their classrooms under the standardized direction of well-trained research assistants. To protect the participants' privacy, students were weighed and their height recorded in a private area after they completed the questionnaires. All research assistants were trained in conducting the

survey, answering questions, and on height and weight measurement. Written informed consent was obtained from students and their parents before they participated in the survey. All participation was voluntary, and confidentiality was ensured and protected by not including names or student numbers in the survey.

We initially sent out 1261 questionnaires, and 1028 valid questionnaires were returned (recovery rate: 81.5%).

### *Instruments and data collection*

The questionnaire consisted of three parts, which recorded: (1) demographic information, body weight satisfaction, and expectation of body weight; (2) Adolescent Emotional Intelligence Scale; and (3) Eating Attitude Test-26 (EAT-26).

Body mass index (BMI) was computed from height (metres) and weight (kilograms) measurements in kg/m<sup>2</sup>. Participants were classified into 4 groups: underweight (BMI≤15th percentile), normal weight (15th<BMI≤85th percentile), overweight (85th<BMI≤95th percentile), and obese (BMI>95th percentile), according to the gender- and age-specific BMI reference performed in the study by Chen et al.<sup>20</sup> In 2003, the Taiwan Department of Health announced that this standard would be the standard indicator of obesity among Taiwanese children and adolescents.

Questions about the degree of body satisfaction and desired body weight were presented in a narrative form, and students were asked to select the appropriate response. For example, the question "Are you satisfied with your body size?" presented 3 possible responses: "Dissatisfied", "Acceptable", and "Satisfied". Another question was "What do you want your weight to be?" The student then selected one of the following choices: "Maintain the current weight", "Want to be heavier", or "Want to be thinner".

We also used a compilation of the "Adolescent Emotional Intelligence Scale",<sup>21</sup> which is based on the definition of emotional intelligence developed by Salovey & Mayer and Mayer & Salovey,<sup>12,22</sup> and the emotional competence scale proposed by Saarni.<sup>23</sup> Jiang defined emotional intelligence as "the awareness and ability to reason about emotions, and of emotions to enhance thinking, action and emotion growth". The scale includes 60 questions with 4 subscales that measure "Emotional awareness", "Emotional expression", "Emotional adjustment", and "Emotional utilization". "Emotion awareness" is divided into self-emotion awareness and others emotion awareness; "Emotion expression" is divided into expressing personal feelings and emotion in response to others; "Emotion regulation" is divided into emotion control and emotion adjustment while "Emotion utilization" is divided into divert attention, enhance thinking, positive incentives and introspection. The test was scored with a 4-point Likert-type scale ("very fit" = 4 points, "fit" = 3 points, "does not fit" = 2 points, and "extremely does not fit" = 1 point). A higher score indicated a higher level of emotional intelligence, while lower scores indicated a lower level of emotional intelligence. Possible total scores ranged from 60 to 240. The Emotional Intelligence Scale is suitable for use among Taiwanese adolescents and has been shown to be highly reliable and valid.<sup>24-27</sup>

The EAT-26 assessed whether the subject had a tendency toward disturbed eating attitudes and behaviors.<sup>28</sup> The EAT-26 is an abbreviated version of the 40-item Eating Attitudes Test (EAT-40) and has a high correlation rate with it ( $r=0.98$ ).<sup>29</sup> Items on the questionnaire are rated on a 6-point Likert type scale, with answers ranging from 1 (always) to 6 (never). Possible total scores range from 0 to 78. EAT-26 scores  $\geq 20$  are frequently associated with abnormal eating attitudes and behaviors.<sup>28</sup> In nonclinical populations, the EAT-26 has been more appropriately viewed as a measure of abnormal attitudes toward food and eating rather than as a tool to diagnose an eating disorder.<sup>30</sup> Investigations from different cultures have shown greater variability in the frequency of high EAT-26 scorers ( $\geq 20$  on the EAT-26) than in the prevalence of clinical eating disorders.<sup>31</sup> The Chinese version of the EAT-26 is suitable for use among Taiwanese adolescents and also has been shown to be highly reliable and valid, with a cut-off point of 20.<sup>32</sup> In this study, all participants who scored  $\geq 20$  on the EAT-26 questionnaire were defined as being EAT-positive (EAT+) while all others were EAT-negative (EAT-). The EAT-26 was found to have good internal consistency (Cronbach's  $\alpha=0.79$ ).

#### Data analysis

The Statistical Package for the Social Sciences (SPSS, version 12.01, Chicago, IL, 2004) was used for data compilation and statistical analysis. A  $p$ -value  $<0.05$  indicated statistical significance. To maintain the internal consistency reliability of the questionnaire, Cronbach's  $\alpha$ -value was used to evaluate the adolescents' Emotional Intelligence Scale scores and the results from the Chinese version of the EAT-26. Jiang carried out a survey on investigation of 839 high school students and showed that the scale of Cronbach  $\alpha=0.91$ , and the four subscales of the Cronbach  $\alpha$  values were 0.76, 0.78, 0.80 and 0.87.<sup>21</sup> In our study ( $n=85$ ), the full scale of Cronbach  $\alpha$  values was 0.95, and the 4 subscales of the Cronbach  $\alpha$  values were 0.86, 0.86, 0.75 and 0.92, respectively.

Our study used the chi-square test and Pearson product-moment correlation for statistical analysis. In order to have higher statistical power with effective 14 sample size, subjects with partial missing values in the question-

nnaire remained in the analysis if the portion being analyzed was completed. Therefore, the numbers of participants ( $n$ ) were not the same.

#### RESULTS

A total of 1028 students participated in this study, and the proportion of boys to girls was 1.00:1.45, respectively. The students were from 14 to 18 years old, and the average age was  $16.1\pm 0.7$  years. The students' average height was  $165\pm 8.2$  cm, while their average weight was  $56.6\pm 11.7$  kg. According to Table 1, about 55% of the students had body sizes in the normal range, and 45% of the students had abnormal body sizes. The percentage of girls with normal body size was 59.2%; this was significantly higher than the percentage among the boys, 49.2% ( $p<0.001$ ). Significantly more boys than girls were overweight or obese ( $p<0.001$ ).

As shown in Table 1, 43.9% of students reported they were in the acceptable range with their current body size, while 43.3% students were dissatisfied with their body size. Only 12.8% of students reported being satisfied with their body size. Most boys (48.4%) accepted their body size, but the majority of girls (50.6%) were dissatisfied with their body size. The chi-square analysis showed significant differences in the distribution of body satisfaction between boys and girls ( $p<0.001$ ).

An evaluation of the percentage of students' expectations about their bodies showed that 21.6% expected to maintain their current weight; 13.9% wanted to be heavier; and 63.9% wanted to be thinner (Table 1). When the effect of gender on expectations of body condition was analyzed, it was found that 44.6% of boys wanted to be thinner, and 77.9% of girls wished to be thinner. The chi-square test showed significant differences in boys' and girls' desired body sizes ( $p<0.001$ ).

The mean EAT-26 score was  $8.66\pm 7.36$ . The prevalence rate of students with disturbed eating attitudes and behaviours was 8.6%. The ratio of girls with a tendency to develop an eating disorder was higher than that of the boys (Table 2). The tendency to develop disturbed eating attitudes and behaviours between the differences in body size had showed significant differences. The tendency towards disturbed eating up to 15.2% for the overweight

**Table 1.** Comparison of different gender in students' actual body size, body satisfaction, expectation on body size

Items	Boys	Girls	Total
<b>Body size (n=986)<sup>***</sup></b>			
Underweight	86 (21.3)	142 (24.4)	228 (23.1)
Normal	201 (49.9)	345 (59.2)	546 (55.4)
Overweight	50 (12.4)	60 (10.3)	110 (11.2)
Obese	66 (16.4)	36 (6.2)	102 (10.3)
<b>Body satisfaction (n=1024)<sup>***</sup></b>			
Satisfied	79 (18.9)	52 (8.6)	131 (12.8)
Acceptable	202 (48.4)	248 (40.9)	450 (43.9)
Dissatisfied	136 (32.6)	307 (50.6)	443 (43.3)
<b>Expected body size (n=1021)<sup>***</sup></b>			
Maintain current weight	115 (27.7)	106 (17.5)	221 (21.6)
Want to be heavier	115 (27.7)	28 (4.6)	143 (13.9)
Want to be thinner	185 (44.6)	472 (77.9)	657 (63.9)

The number in the table indicates the number of participants, and the number in parentheses represents percentage.

Chi-square test was used to compare the differences between males and females in body size, body satisfaction, expected body shape.

A  $p$  value  $<0.05$  indicated statistical significance. \*\*\*  $p<0.001$ .

students, and this was significantly higher than other body sizes of students ( $p<0.01$ ). Significant differences were also found in the comparison ratios of different body size satisfaction and expectations of body size among students with a tendency to eating disorders ( $p<0.001$ ) (Table 2).

An analysis of the relationship between the students' emotional intelligence scores and their EAT-26 scores showed a significant positive correlation ( $p<0.001$ ; Table 3). We also analyzed the relationship between the 4 subscales of the emotional intelligence test and the EAT-26 scores. The scores for emotional awareness, emotional expression, and emotional utilization were significantly and positively correlated with the EAT-26 scores ( $p<0.01$ ;  $p<0.001$ ;  $p<0.001$ ). This was an indication that the students' emotional awareness, emotional expression, and emotional utilization had a significant correlation with eating disorder tendency. The "emotional regulation" score and the EAT-26 score had a negative correlation, but this was not statistically significant.

## DISCUSSION

Most of the female high school students' weights were

within the normal range, and the rate was higher than that reported among the male study participants. Most of the boys were satisfied with their body size, but most of the girls were dissatisfied with their body size. This result was similar to that reported by Irish Lawler & Nixon,<sup>33</sup> Taiwan Wang,<sup>34</sup> and Chou.<sup>35</sup> This dissatisfaction may be a reflection of greater family concern about a daughter's weight.<sup>36</sup> The greater sensitivity about body size among girls may date back to their youth; this also makes it easier to discuss the topic of body size with girls than with boys. The influence of their peers and internalization of ideal body size are also more profound among girls than among boys and can produce pressure to have a desired body shape, along with poor body satisfaction.<sup>33,37,38</sup> Many studies in Taiwan and other countries have pointed out that poor body satisfaction may lead to development of an eating disorder, as well as to depression, sadness and low self-esteem.<sup>39,42</sup>

For the exception of body weight, the ratio of girls who wanted to be thinner was higher than boys (Table 1). Teenagers are under a lot of pressure, and female adolescents seem to face issues with their body image to an

**Table 2.** The status of disturbed eating attitudes and behaviours across independent variables

	EAT (+) 84 (8.6)	EAT (-) 890 (91.4)	Chi-square statistic
Gender			7.66**
Boys	22 (5.6)	371 (94.4)	
Girls	62 (10.7)	519 (89.3)	
Grades			0.724
Grade 1	44 (9.4)	423 (90.6)	
Grade 2	40 (7.9)	467 (92.1)	
Age (y)			4.18
14-15	15 (7.5)	184 (92.5)	
16	49 (10.2)	432 (89.8)	
17-18	16 (6.0)	251 (94.0)	
Actual body size			13.4**
Underweight	8 (3.8)	205 (96.2)	
Normal	51 (9.7)	474 (90.3)	
Overweight	15 (15.2)	84 (84.8)	
Obese	6 (6.2)	91 (93.8)	
Body satisfaction			39.5***
Satisfied	3 (2.4)	361 (84.9)	
Acceptable	17 (4.1)	402 (95.9)	
Dissatisfied	64 (15.1)	123 (97.6)	
Expectation on body size			30.2***
Maintain current body weight	6 (2.8)	207 (97.2)	
Want to be fatter	1 (0.7)	133 (99.3)	
Want to be thinner	76 (12.3)	544 (87.7)	

The number in the table indicates the number of participants, and the number in parentheses represents percentage.

Chi-square analysis was used to compare the differences between independent variables of participants with and without disturbed eating attitudes. Participants had a score on the Eating Attitudes Test-26 (EAT-26) above the cut-off score (20), which showed EAT (+); otherwise, it showed EAT (-).

A  $p$  value  $<0.05$  indicated statistical significance. \*\*  $p<0.01$ ; \*\*\*  $p<0.001$ .

**Table 3.** The relationship between Emotional Intelligence Scale and EAT-26

Items	EAT-26 score
Score of emotional intelligence scale***	0.120 (0.000)
Emotional intelligence scale - score of emotional awareness**	0.105 (0.001)
Emotional intelligence scale - score of emotional expression***	0.147 (0.000)
Emotional intelligence scale - score of emotional regulation***	-0.39 (0.221)
Emotional intelligence scale - score of emotional utilization***	0.120 (0.000)

Expressed by Pearson product-moment correlation coefficient: r ( $p$  value)

A  $p$  value  $<0.05$  indicated statistical significance. \*\*  $p<0.01$ ; \*\*\*  $p<0.001$ .

even greater degree than their male peers.<sup>43,44</sup> This trend may be a reflection of social pressure, because most individuals believe that a slim body represents ideal feminine beauty, and may judge lower-weight females as more attractive.<sup>45,46</sup> The concept of a continuing need to be slimmer may become entrenched in a female's memory. Even though most high school students are at the end of puberty, they are mentally immature, as is their social judgment. Therefore whether students who followed the society trend in pursuit of slender body and built up improper body image might lead to psychological problems, requires more longitudinal studies to conclude the inference.

In our study, the mean EAT-26 score was 8.66, and 8.6% of students had a tendency toward disordered eating. Female students scored an average score of 9.78, and the percentage of those with disordered eating behaviour was 10.7%, lower than the rates reported by Chang and Ku (17.1% and 17.7%, respectively).<sup>7,47</sup> While the boys' mean score on the EAT-26 was 7.00, 5.6% had a tendency toward disordered eating behaviour. When these results are compared to those of Chang,<sup>7</sup> the percentage tended to decrease in high school students who had recently developed a tendency to disordered eating. A 20-year study from the US reported that the prevalence rate of binge eating disorder tended to decrease with time.<sup>48</sup> Currently, in Taiwan, there is less data about the prevalence of high school students with a tendency to disordered eating, and a consistent tracking survey will be needed to explore this decrease of prevalence rate.

Our study showed that the rate of girls with disturbed eating attitudes and behaviours was significantly higher than that among boys. This result was similar to those of many other studies.<sup>6,49-51</sup> Moreover, Taiwanese studies of elementary, junior high school and university students also showed that females had a greater tendency toward developing disordered eating.<sup>8,52-54</sup> Some of the reasons for this tendency were that females wanted to lose or control their weight by dieting, and had higher degrees of concern about weight in adolescence, along with low self-esteem, dysphoria, and increased efforts to obtain a slender body, all of which may increase the tendency to develop disordered eating.<sup>55</sup> Therefore, females are at high risk of developing disordered eating behaviour. Thus, gender could be one factor in the development of an eating disorder.

In our study, grade and age were not the factors causing abnormal eating attitudes and behaviours. It may due to the fact that the age range between students was small and their cognitive development was not very different. There are many studies which have indicated that age is not a major factor causing disturbed eating in adolescent stage.<sup>7,56-57</sup> In addition, a study showed that 14-17 years-old teenagers are the peak population who suffer from abnormal eating behaviors.<sup>58</sup> Therefore, there may exist disturbed attitudes and behaviours in certain stages, however the factor of age among adolescents from a same stage doesn't appear to have much affect much on it.

Our study showed the ratio of eating disorder tendency was significantly different across different body sizes, and the ratio of EAT (+) in overweight students was the highest. In previous adolescent and adult studies, Alves et

al found that participants with disturbed eating (based on an EAT-26 score  $\geq 21$ ) tended to have larger body sizes.<sup>59</sup> Marano et al reported that there was a significant positive correlation between participants' BMI and the EAT-26 score.<sup>60</sup> However, studies of adolescents from Taiwan and Korea reported no significant associations between elevated EAT-26 scores and actual body size.<sup>34,42</sup> In our research, the proportion of obese and overweight students with abnormal eating attitudes and behaviours (21.4%) was higher than of those among underweight and normal-weight adolescents (13.5%). In fact, eating disorder and obesity are part of a range of weight-related problems, and they are usually observed as opposite pathologies but actually they share many similarities. Many cross-sectional studies showed that disturbed eating can occur simultaneously in the same individuals.<sup>61</sup> An excess of body fat has been associated with a later increased risk of developing an eating disorder in both children and adults.<sup>61-64</sup> The phenomenon also could be found in adolescents according to our result.

In our study, body satisfaction and expectation of one's body shape and size were the most important factors affecting eating disorder tendency. Disordered eating tended to be more common among the group that was dissatisfied with their body size. For those who wanted to be thinner (12.3%), the tendency to disturbed eating was higher than among those who wanted to maintain their current weight (2.8%) and those wanted to be heavier (0.7%). This pattern may be due to the fact that popular media excessively disseminate the concept of "slim is beautiful," which may influence students' cognition of their body size.<sup>65</sup> Peer pressure during adolescence can cause a teenager who is already dissatisfied with his or her body to turn to unhealthy weight loss, for example, through extreme dieting.<sup>66,67</sup> A study showed that individuals who dissatisfied with body size, were more likely to use dieting and to develop binge-eating behavior.<sup>67</sup> Our findings were similar to those of many other studies.<sup>7,8,68,69</sup>

Our study also showed that the emotional intelligence score was positively related to the EAT-26 score. Thus, individuals with greater emotional intelligence would have a greater tendency to developing an eating disorder. However, in studies by Zysberg et al and Pettit et al, individuals with better emotional intelligence performance did not have the typical symptoms of abnormal eating attitudes and behaviors.<sup>9,18</sup> Besides this, the subscale: emotional awareness, emotional expression and emotional utilization are positively related to disturbed eating in our study.

After analyzing our data (Table 3), we infer that individuals with the greater emotional awareness may become more sensitive to and react more strongly than usual to emotions. In the current social climate of "slim is beautiful," those who have greater emotional awareness may feel a greater than normal desire to have a perfect body. However, when this standard differs greatly from reality, such individuals may turn to drastic means to become slimmer. Thus, such individuals may be more susceptible to an eating disorder. Uher et al indicated that when individuals with anorexia and bulimia nervosa view disgusting pictures, they have more intense fear and feelings of

disgust compared to normal individuals.<sup>70</sup> Another study pointed out that when a nonclinical patient with abnormal eating attitudes was provoked by fear and hatred, the individual had increased fear and hatred.<sup>71</sup> Therefore, our study considers that emotional awareness has a correlation with eating disorder tendency.

Geller et al pointed out that females with anorexia nervosa would have better-than-normal ability to express emotion.<sup>17</sup> When these women were in conflict with others, they considered the feelings of others first and lowered their self-demand to maintain a close relationship with others. Geller et al's study results may partially help explain our study results. Most of the high school students' emotional expressions tended to be implicit, but it might have been due to a difference in ability of responding to others' emotions. Those students who had the ability to respond to the emotions of others might be very careful about other emotions. Thus, self-belittling occurred and elevated the risk of developing eating disorders. Therefore, we consider emotional expression to be correlated with a tendency to develop an eating disorder. However, many factors can interfere with the relationship between eating disorder tendency and emotional awareness and expression. Because of this, as the logistic regression increases, the results had no significant predictive power. At present, the relevance of this portion of the study is slight, and more studies are needed.

Individuals with good emotional utilization could turn emotion into motivation and guide their future behaviour. We concluded that when weight-related emotion emerged, individuals with a greater ability to utilize emotion could be motivated to achieve the goal of having an ideal body shape and weight. Robert et al pointed out that emotion could lead an individual to achieve his or her goal of weight loss by adopting dieting and suppressing normal physiological function.<sup>72</sup> Therefore, we consider emotional utilization to be correlated with eating disorder tendency.

Due to limitations of manpower and budget, we collected data only from participants in Taichung, Taiwan, who agreed to participate in this study, so the results may not be representative of all Taiwanese female and male senior high school students. We suggest that future studies should expand the scope of investigation in order to get more relevant data. Also, we utilized self-reported measurements, which may generate concern about under reporting or underestimation of eating disorder symptoms. Moreover, whether in Taiwan or other countries, there still is no consensus about the theory of emotional intelligence and the tools used to measure it. There are still many questions about of use of general emotional intelligence assessment tools, which leads to difficulties in measurement. Future researchers will streamline the assessment tools to be more effective, which will lead to more accurate and meaningful results.

### **Conclusions**

The results of our study have confirmed the relationship between the levels of emotional intelligence and disturbed eating attitudes and behaviours. When a teacher and/or parents discover that a child is displaying abnormal eating behaviours, they should investigate the child's emotions

and help the child develop his or her emotional intelligence.

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### **AUTHOR DISCLOSURES**

There is no conflict of interest in this study

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## Short Communication

# Body satisfaction, emotional intelligence, and the development of disturbed eating: a survey of Taiwanese students

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## 體型滿意度、情商及病態飲食行為傾向：臺灣學生調查

**目的：**本研究旨在探討青少年的情商與病態飲食行為傾向的相關性。**方法：**以臺灣的高中生為研究對象，以匿名自填式問卷為研究工具，內容包括：人口學資訊、體型滿意度、期待體重、青少年情商量表及病態飲食態度測試(EAT-26)，並測量身高體重。**結果：**病態飲食態度測試(EAT-26)的平均分為 $8.66 \pm 7.36$ ，8.6%的學生為病態飲食行為傾向高危人群( $EAT-26 \geq 20$ )。學生的性別、體重、體型滿意度及期望體型與病態飲食態度和行為有顯著相關性。EAT-26 的分數與情緒察覺、情緒表達及情緒應用顯著正相關。**結論：**臺灣青少年確實存在病態飲食行為，且這些行為可能和情商有關，然而此相關議題需要有更大樣本數的研究來證實。

**關鍵詞：**體型滿意度、情商、病態飲食行為、EAT-26、高中生