THE ASSOCIATION BETWEEN EMOTIONAL INTELLIGENCE, BODY MASS INDEX AND EATING BEHAVIORS AMONG COLLEGE STUDENTS

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ABSTRACT OF THESIS

THE ASSOCIATION BETWEEN EMOTIONAL INTELLIGENCE, BODY MASS INDEX AND EATING BEHAVIORS AMONG COLLEGE STUDENTS

Available research has shown a relationship between emotional intelligence (EI) and health behaviors. However, the link between EI and eating behaviors has not been well explained. Thus, the purpose of this study was to investigate the correlations among EI, eating behaviors, as measured by the Dutch Eating Behavior Questionnaire (DEBQ), and body mass index (BMI) in college students. One hundred and eighty four students (118 (64%) female, 66 (36%) male, average BMI = 23.8kg/m²) were recruited to complete an online survey. The survey consisted of basic demographic questions, academic information with grade point average (GPA), ACT and SAT scores, a 19-item Self-Rated EI Scale, an 18-item Consumer EI Scale (CEIS) and the 33-item DEBQ. BMI was computed using self-report data. Results showed that the overall SREIS and the understanding emotions subscale were positively correlated with BMI. Both the SREIS and CEIS managing emotions subscales were correlated with eating behavior. GPA was correlated with BMI and both EI measures. Gender differences were found for both EI measures. In conclusion, the results indicate that certain aspects of EI may be related to eating behavior. To resolve the current obesity epidemic, emotional intelligence should be addressed in developing effective interventions.

KEY WORDS: emotional intelligence, body mass index, eating behaviors, college students, emotions

Feai-Voon Wong
July 12, 2011
THE ASSOCIATION BETWEEN EMOTIONAL INTELLIGENCE, BODY MASS INDEX
AND EATING BEHAVIORS AMONG COLLEGE STUDENTS

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THESIS

Feai-Voon Wong

The Graduate School
University of Kentucky
2011
THE ASSOCIATION BETWEEN EMOTIONAL INTELLIGENCE, BODY MASS INDEX
AND EATING BEHAVIORS AMONG COLLEGE STUDENTS

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THESIS

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A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Sciences
College of Agriculture
at the University of Kentucky

By
Feai-Voon Wong

Lexington, KY

Director: Dr. Kelly Webber, RD, LD, Assistant Professor

Lexington, Kentucky

2011

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Chapter 1: Introduction

For the past few decades, health and weight have become emerging foci in the United States due to the rising rate of obesity and chronic diseases related to obesity. According to PubMed Health, obesity is a term to describe body weight that is much greater than what is healthy, having a much higher amount of body fat than is considered as healthy. Obesity is now considered a medical condition. The Centers for Disease Control and Prevention has defined the American society as ‘obesogenic’ which implies that the environment fosters undesirable lifestyle and behaviors with increased food intake, non-healthy foods and physical inactivity. In order to resolve this undesirable yet persistent issue, there has been much research into the causes, risk factors and consequences of obesity, as well as the interventions and policies to promote healthy eating and physical activity across the country.

Many studies have tried to determine the relationship between emotions and eating as eating has been commonly recognized as a way to deal with stress and emotions (Meyer et al., 2010; Cserjési et al., 2009; Li et al., 2009; Ozier et al., 2008). Emotions exert a powerful influence on food choices and eating behaviors, and vice versa: eating behaviors can have a powerful effect on emotions (Levitan and Davis 2010). Levitan et al., (2010) explained that the emotional relationship with food at an early stage can result in long-term consequences, most alarmingly obesity. The study stated that negative mental outcomes have been linked with obesity which markedly decreases one’s quality of life as well as life expectancy. Furthermore, the study pointed out the shortcoming of the preventions and treatments of obesity where the role of eating behavior on weight management throughout the human
lifespan has been neglected. Amy et al., (2007) further confirmed the concept that emotions and emotional problems are presumed to be the result of stress and play a role in affecting how much food one ingests. The study even suggested that healthcare professionals, especially food and nutrition experts, should measure individuals’ use of food to cope with stress and emotions to provide a comprehensive treatment plan for clients (Amy, Olivia et al., 2007).

Emotions and eating have become linked in the expression, ‘emotional eating’. Emotional eating in general describes food consumption in response to emotions and feelings, in contrast to eating in response to true physiological hunger. This eating behavior generated by emotions has become a great concern and focus in the healthcare industry, especially to the field of nutrition and dietetics. By identifying the determinants of food choice and consumption, experts can develop effective interventions. As a starting place for intervention development, the questions arise, “To what extent do emotions play a role in daily eating behaviors?” and “Do emotions outweigh wisdom regarding nutrition knowledge and information?”

In order to resolve the current obesity epidemic, it is very important for healthcare professionals, especially the nutrition experts, to first realize how emotions affect eating behaviors. A thorough comprehension of individual’s emotional capabilities and how much nutrition knowledge they possess, nutrition experts will enable to personalize effective nutrition interventions. Based on the initial assessment and judgment, nutrition experts will have to decide either to provide nutrition education to inform clients on the deficits of the food and
nutrition related knowledge, or to provide nutrition counseling to address coping mechanisms involving their emotions. With wiser food consumption and increased physical activity, it is possible to reduce and prevent obesity and chronic diseases to promote healthier behaviors.

The purpose of this study is to investigate whether emotional intelligence is related to eating behaviors and body mass index among a sample of college students. This study will also compare students who have taken nutrition classes to those who have not taken nutrition classes in order to investigate whether nutrition knowledge and information makes an impact on eating habits.
Chapter 2: Literature Review

Emotional Intelligence (EI)

Emotional intelligence has emerged as a concept in the twentieth century and has been widely used in recent years to promote personal and social development (Mayer et al., 2008). In fact, the terms ‘emotional intelligence’, ‘emotional ability’, and ‘cognitive intelligence’ are used interchangeably. There are many different definitions of EI represented as follows:

- “it involves 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” (Salovey and Mayer 1990).

- “is the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth” (Mayer, Salovey et al., 2001).

- “is the ability carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thought” (Mayer, Roberts et al., 2008).

In this paper, the term emotional intelligence draws elements from all of the definitions listed above, but primarily from the second definition. Emotional intelligence measures how accurately individuals perceive and identify personal emotions and emotions of others. It also encompasses the ability to interpret emotions and verbal or non-verbal language and the emotional signals conveyed. Finally, EI measures the ability to manage and utilize the emotional information to regulate, reason, and monitor one’s thinking and action.

Emotional intelligence is a set of four distinct yet related branches of abilities. These abilities are as follows and described in Figure 1:
1) Emotional perception measures one’s ability to be pay attention to emotional signals in facial expressions, tone of voice, and artistic expressions, then perceive, appraise, accurately decode and interpret them (Mayer et al., 2001; Kidwell et al., 2008). For example, one will be provided with a picture and asked to identify the best answer to what the picture portrays.

2) Emotional facilitation is the ability to access, generate and employ this emotion information to enhance thought for decision making, reasoning, and problem solving (Mayer et al., 2001; Kidwell et al., 2008). For example, it provides problem solving questions and asked individuals what emotions present, and how they interact and support the reasoning.

3) Emotional understanding is the ability to label, analyze complex emotions and to form emotional knowledge in order to reason with them at an effective understandable level (Mayer et al., 2001; Kidwell et al., 2008). For example, it provides a situational question and assesses how the emotions transition from one to another.

4) Emotional management is the ability to regulate emotions to promote a desired outcome by remaining open to understanding the implications of social acts on emotion in the self or in other at important times, and close to it at other times (Mayer et al., 2001; Kidwell et al., 2008). For example, a task-oriented question is provided and asks individuals to determine the effectiveness and evaluate their emotions regulation in the setting.

Figure 1 below further illustrates the abilities in relation to intelligence and personality (Mayer et al., 2001).
FIGURE 1 OVERVIEW OF THE FOUR-BRANCH MODEL OF EI, WITH A FOCUS ON ITS RELATION TO INTELLIGENCE AND PERSONALITY

<table>
<thead>
<tr>
<th>Branch</th>
<th>Description of Measure</th>
<th>Relation to Intelligence and Personality</th>
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<tr>
<td>4 Managing emotion</td>
<td>Ability to manage emotions and emotional relationships for personal and interpersonal growth</td>
<td>Interface with personality and personal goals</td>
</tr>
<tr>
<td>3 Understanding emotions</td>
<td>Ability to comprehend emotional information about relationships, transitions from one emotion to another, linguistic information about emotions</td>
<td>Central locus of abstract processing and reasoning about emotions and emotional information</td>
</tr>
<tr>
<td>2 Facilitating thought</td>
<td>Ability to harness emotional information and directionality to enhance thinking</td>
<td>Calibrates and adjusts thinking so that cognitive tasks make use of emotional information</td>
</tr>
<tr>
<td>1 Perceiving emotion</td>
<td>Ability to identify emotions in faces, pictures</td>
<td>Inputs information to intelligence</td>
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These abilities are such a part of everyone’s life that they cannot be detached from daily living. There are three distinct measuring tools of emotional intelligence that assess the abilities that were discussed above, which are the specific-ability approach, integrative model, and the mixed model.

The specific-ability approach measure examines relatively discrete mental abilities that process emotional information with an ability-based scale (Mayer, Roberts et al., 2008). This EI approach measures and emphasizes one or more of the emotional abilities that are illustrated in Figure 2 above. Specific-ability measures can be task-oriented or self-reported. Task-oriented measure can represent an individual’s performance using the specific emotional abilities. The self-reported measures are filtered through based on one’s self-concept and impression of
emotional abilities or skills. As a result, it is reported that task-oriented ability measure will have a higher validity and reliability compared to self-reported ability measure. Many specific-ability measures are self-reported inventories such as Self-Report EI Test (Schutte, Malouff et al., 1998).

Conversely, the integrative model measure describes overarching frameworks of mental abilities that combine skills from multiple EI areas (Mayer, Roberts et al., 2008; Sung, Lee et al., 2009). This theoretical approach to EI focuses on how multiple relevant abilities operate as an integrated group as it combines several specific abilities to obtain an overall impression of one’s EI (Mayer, Roberts et al., 2008). The most common test used for this approach is the Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT Version 2.0; Mayer, Salovey, & Caruso, 2002a).

Finally, the mixed model of the emotional intelligence measure has three classes of constructs: perceived emotional and other abilities, competencies, and personality traits, which often are non-cognitive aspects (Brackett, Rivers et al., 2006; Whitman, Van Rooy et al., 2008). This model with its variety of non-EI qualities and traits appears to fall largely outside the boundaries of the EI concept (Mayer, Roberts et al., 2008). Emotion Quotient Inventory (Bar-On, 1997) is one of the common mixed model measures.

In order to choose relevant and valid measures, there are a few considerations, such as the purpose of the study, costs, and administration method that control whether the tests can be administered online. This study utilized the self-reported specific-ability measure, which is the Self-Rated EI Scale, as well as the
integrative model measure, which is the Consumer EI Scale (CEIS), to access participants’ emotional abilities. These measures were chosen because CEIS is a performance-based and a task-oriented measure with pictures, facial expressions, and situational problems that an individual requires to perceive, interpret, understand, manage, and apply some knowledge and skills to choose the best and most appropriate answers based on their intelligence with emotions. Thus, the investigator chose a self-reported ability measure with descriptive statements that allow individuals to rate themselves based on how they perceive their own abilities in dealing with emotions. One of the objectives of the study was to make a comparison between the self-reported and performance-based measures to access whether there is a significant difference between how well people think they access, manage, and deal with their emotions in their daily life and their actual reactions, decisions, and problem-solving abilities using their emotional intelligence.

Many research studies have been conducted to determine and validate the relationship of emotional intelligence to health behaviors. Studies consistently have shown higher emotional intelligence was significantly associated with better health (Austin, Saklofske et al., 2005; Schutte, Malouff et al., 2007; Martins, Ramalho et al., 2010). Emotional intelligence is found to have associations with life satisfaction, personality, and health (Austin, Saklofske et al., 2005; Saklofske, Austin et al., 2007). A study conducted to assess the association of EI to occupational stress and health in nurses indicated that those with high scores in clarity and emotional repair report less stress, whereas those with high scores in attention to emotions experience greater levels of stress (Augusto Landa, López-Zafra et al., 2008). On the
other hand, research conducted in Taiwan found that university students who attained the recommended physical activity level have better EI score and composite subscale scores for interpersonal, intrapersonal, stress management, general mood, and adaptability (Li, Lu et al., 2009). The study’s results indicated that not only physical activity, mental health, general health and strength are associated with EI but these indicators may be able to predict one’s cognitive intelligence (Li, Lu et al., 2009). This strengthens the belief of this study that emotional intelligence affects health behaviors in various aspects. Focusing on how emotional intelligence influences an individual’s eating lifestyle, which is the objective of this study, is further discussed below.

_Eating Behaviors_

Diet undeniably has a direct impact on health. It protects individuals against the development of chronic diseases and manages or treats illnesses that are diagnosed (Ogden 2010). The general recommendation for healthy eating requires a diet that is balanced and with variety that includes fruits and vegetables, complex carbohydrates and low-fat food choices (Ogden 2010). Other eating behaviors that are associated with a healthy diet and body weight include eating at regular mealtimes, eating breakfast, and eating meals with the family (Martyn Nemeth, Penckofer et al., 2009).

Ellyn Satter, a registered dietitian who is a feeding and eating expert has developed a concise and thorough definition of normal eating as follows:

"Normal eating is going to the table hungry and eating until you are satisfied. It is being able to choose food you like and eat it and truly get enough of it-not
Just stop eating because you think you should. Normal eating is mostly three meals a day, or four or five, or it can be choosing to munch along the way. Normal eating is trusting your body to make up for your mistakes in eating. Normal eating takes up some of your time and attention, but keeps its place as only one important area of your life. In short, normal eating is flexible. It varies in response to your hunger, your schedule, your proximity to food and your feelings.” (Satter, 2011).

Referring to the definition above, the key to normal eating is to trust our body to sense hunger to initiate eating and feel satiation to stop eating. Additionally, normal eating requires time and attention. However, living in a fast-paced and productive society, many people eat on the go. Furthermore, skilled with multi-tasking ability, people nowadays do multiple tasks when they are eating such as reading, working using electronics such as computers, or talking on the cell phone. In fact, it is evident that people’s eating lifestyle is getting far away from optimum and normal.

Take a moment and think, how often do we consider these questions: “Am I hungry?”, “Do I feel full?”, “Am I eating normally and healthily?”, “Why do I need to eat normally?”, “What foods are considered as proper and nutritious that I need to consume daily or weekly?”, “How do I know how much food is considered as adequate and enough?”, and “Where should I seek resources, help and guidance if I want to adopt a normal eating and healthy lifestyle?”. These questions may be pondered or discussed in lunch break rooms with colleagues or in the kitchen during meal preparations with family members. This is because health and eating are probably not the greatest concerns of most people in the United States, especially with the advancement of medical and pharmaceutical technology. This is a big concern to food and nutrition experts as well as to the healthcare industry. If
people are unconcerned about themselves, can awareness of the seriousness of the issue make them take action?

As a result, in order to promote healthy and normal eating, it is important to first understand how eating behavior is motivated and influenced cognitively. The purpose of this study was to assess how food behaviors and emotional abilities relate. To better understand one’s eating patterns, an individual can schedule an appointment to meet with a dietitian or complete eating behavior assessments accessible online. Assessment of eating behavior is important in predicting the risk of eating disorders and body weight-related problems (Sung et al., 2010). There are many eating behaviors assessment used in various research studies. The following section lists the relevant assessment tools:

- Eating Behavior Inventory developed to assess behaviors associated with weight loss and weight management (O’Neil, Currey et al., 1979).

- Eating Attitude Tests EAT-26 measures tendency and symptoms of developing eating disorders (Garner and Garfinkel 1979).

- Three-factor eating questionnaire that was developed to measure eating behavior with three categories: dietary restraint, disinhibition and hunger (Stunkard and Messick 1985).

- Dutch Emotional Behavior Questionnaire developed by Van Strien et al in 1986 measures eating behaviors with three domains: external eating, emotional eating, and restraint eating (Van Strien, Frijters et al., 1986)

- Intuitive Eating Scale was developed to identify eating into three central features: (a) unconditional permission to eat when hungry and what food is desired, (b) eating for physical rather than emotional reasons, and (c) reliance on internal hunger and satiety (Hawks, Merrill et al., 2004).
The Dutch Emotional Behavior Questionnaire has been reported as one of the most frequently used eating behavior measures that show higher internal consistency and more stable factor structure across sexes and weight categories (Sung, Lee et al., 2009). It categorizes eating behaviors into three domains: emotional eating, restraint eating, and external eating. Sung et al., (2009) explained that emotional eating is one's tendency to overeat when negative mood states, such as anxiety, depression, or loneliness are present. Restrained eating behavior is one's inclination to restrict food intake consciously, either to prevent weight gain or to promote weight loss, by controlling both energy intake and types of food consumption. External eating behavior is the tendency to overeat in relation to external stimuli, such as palatable foods (Sung, Lee et al., 2009). Emotional eaters eat to reduce stress (Macht 2008). Restrained eaters possess dieting-related behaviors while external eaters have strong desire to eat in response to external cues such as smell of food or sight (Evers, Marijn Stok et al., 2010). External eaters are stimulated by other factors that motivate them to eat.

**Eating Behaviors and Emotional Intelligence**

Eating behavior has been the topic of much research however, the study on the underlying relationship between cognitive abilities and eating behavior is still limited, which is the reason why this study was conducted. Martyn-Nemeth et al., (2009) proposed that unhealthy eating habits are one of the contributing factors to the etiology of overweight and obesity. Grodner et al., (2004) stated that eating behavior is a significant predictor of one’s nutritional status through its influence on body weight. Nutritional status is defined as the state of a person’s health in terms of
the nutrients in his or her diet to meet metabolic needs (Mosby’s Medical Dictionary, 2009) and body mass index is one of the common indicators used to determine one’s nutritional status in research studies. This study strongly supports that healthy nutritional status reflects physical, intellectual, and emotional health (Grodner, Long et al., 2004; Currie 2009). Intellectual abilities are introduced and developed in the young starting from kindergarten. With institutions such as colleges and universities, there are years of nurturing enhancing one’s intellectual intelligence. On the other hand, there are hospitals, health departments, and fitness centers that are convenient and accessible to improve physical wellbeing. However, the same cannot be said for emotional health.

Levitan et al., (2010) highlighted the two most common phenomena in the current obesity epidemic, which were stress-related emotional eating as well as overeating as a form of addiction. The study attested high caloric and highly palatable foods have the strongest influence in easing negative mood states. These foods also have the strongest effect on human brain systems mediating addictive behaviors (Levitan et al., 2010). Barthomeuf et al., (2008) study on obesity and emotion stated that emotional feelings related to the cognitive appraisal of food products. The results indicated that the impact of emotions on food intake is greater in obese individuals than others as they experience more negative emotions towards palatable foods as compared to individuals who are normal or overweight weight. (Barthomeuf, Droit-Volet et al., 2009). Ozier et al., (2008) found that overweight individuals have substantially greater eating ratings, which indicates a greater urge to eat, in response to negative emotions and negative situations than
do normal weight individuals. Higher caloric intake was shown to be associated with emotional eating and binge eating where it predicted that there is a lack of appropriate coping mechanisms to daily stressors that leads to overeating (Ozier, Kendrick et al., 2008). Moreover, the study stated that when eating is in response to emotions, it could be a predictor for long term change (Ozier, Kendrick et al., 2008). As a result, Cserjesi et al., (2009) supported that emotion facilitation should be integrated in healthcare treatments as executive cognitive abilities such as lack of control, depression, and sustained attention are linked to obesity (Cserjési, Luminet et al., 2009). Displaying emotion is perceived as a sign of weakness among women who are concerned about eating, weight, and shape that leads to emotion suppression where it strengthens the concept that negative attitudes towards emotional suppression are associated with higher levels of psychopathology (Meyer, Leung et al., 2010). Thus, it is evident that when an adult is obese, which reflects an unhealthy nutrition status, this can be associated with stress-induced eating, decreased level of social support, and poor coping skills (Martyn Nemeth, Penckofer et al., 2009).

Eating has been recognized as a coping mechanism for alleviating and dealing with stress and emotions (Ozier, Kendrick et al., 2008). Studies have shown that overweight and obese individuals experience low self-esteem more often when compared to normal weight individuals. These overweight and obese individuals experience stressful situations worrying about their body weight and boy appearance. Increased stress has shown to be associated with high fatty food consumption, decreased fruit and vegetable intake, and decreased breakfast
consumption among adolescents (Cartwright, Wardle et al., 2003). Stress induces the secretion of glucocorticoids that increases food consumption, which increases food intake (Dallman 2010). With the pleasurable feeling, it will reinforce eating habit. Stress-induced eating can commonly be observed among dietary restraint eaters who try to monitor their food intake to maintain normal body weight, external eaters whose food consumption is initiated by the presence of palatable foods, and the emotional eaters who eat to reduce emotional discomfort. Thus, Moon et al., (2009) claimed that low levels of attention to emotion are related to high levels of emotional eating as attention to emotion may play a causal role in influencing emotional eating (Moon and Berenbaum 2009).
Chapter 3: Methodology

Research Purpose

The purpose of this research was to investigate whether emotional intelligence has a direct impact on college students' body mass index and eating behaviors.

Research Questions

#1 Is there a correlation between emotional intelligence scores and body mass index in college students?

#2 Is there a correlation between emotional intelligence and eating behaviors in college students?

#3 Do nutrition major students maintain a normal body mass index as compared to students from other majors?

#4 Do nutrition major students have different eating behaviors than students from other majors as measured by the DEBQ?

This study adds to the body of knowledge of food and nutrition by exploring the relationships among emotional intelligence, body mass index, and eating behaviors in college students. This study also seeks to identify whether college major makes a difference in college students’ body mass index and eating behaviors.

Research Hypotheses

#1 There is a correlation between emotional intelligence and body mass index in college students.

#2 There is a correlation between emotional intelligence and eating behaviors in college students.

#3 Nutrition majors student will tend to either maintain a normal body mass index or be underweight.
#4 Nutrition major students will tend to be restraint eaters compared to students from other majors.

Methodology

The qualitative research study was designed to identify whether emotional intelligence has an impact on college students’ body mass index and eating behaviors. The survey was made available online to UK students from December 2011 through April 2011. The survey included the followings:

- Basic demographic questions with self-reported height and weight, and academic information such as grade point average, ACT and SAT scores,
- Emotional intelligence measures which are the Self-Rated Emotional Intelligence Scale (Brackett et al., 2006), and Consumer Emotional Intelligence Scale (Kidwell, Hardesty, & Childers, 2008), and
- Eating behaviors, which are measured with the Dutch Eating Behavior Questionnaire (Van Strien, Frijters, Bergers, & Defares, 1986).

The survey (see Appendix A) was granted approval from the University of Kentucky (UK) Office of Research Integrity prior to recruiting. An application was submitted for Institutional Review Board (IRB) approval in October 2010. After revisions, the project earned approval in December 2010 and the online survey was opened for recruitment after obtaining IRB approval. As a result of the limited number of participants, the survey was modified and resubmitted to the IRB for approval in March 2011 to eliminate all the exclusions of only females and under the School of Human Environmental Science and to recruit more participants. The revisions were approved and the survey was posted until April 2011.
Population and Sample Selection

The population of the study was college students at the University of Kentucky. There were not any exclusions for age, sex, major, racial or ethnic group, or disability.

Research Design

The study was administered via Survey Monkey to the participants. Participation was voluntary. The design of the survey questionnaires used measures that were validated and published, and the responses were based on a five-point Likert-type scale. The recruitment emails were sent to the directors of the schools and included the purpose of the study, time needed to complete the questionnaire, as well as the link to the survey.
Data Collection

Survey Monkey®, an online survey tool was used to collect the data of the study. Surveys that were completed partially were eliminated.

Measurements

The survey used three measures as follows:

- Self-Rated Emotional Intelligence Scale is the 18-item self-assessing ability-based EI tests that shows strong association with indices of well-being (Brackett, Rivers et al., 2006).

- Consumer Emotional Intelligence Survey is a 19-item assessment which measures a person’s ability to recognize the meanings of emotional patterns that underlie decision making, and to reason and solve problems on the basis of these abilities (Kidwell, Hardesty et al., 2008).

- Dutch Eating Behavior Questionnaire is a 33-item validated measure accessing three eating behavior domains: emotional eating, restraint eating, and external eating where higher scores indicate a greater tendency to exhibit the subscale behavior (Sung, Lee et al., 2009).

Data Analysis

The Statistical Packages for Social Science (SPSS; 16.0 version, English) was used to manage, analyze, and interpret the data. Data were analyzed into four categories: demographics, ability-based EI (SREIS), integrative model EI (CEIS), and eating behavior (DEBQ).
Chapter 4: Results

Demographics

The initial sample consisted of 208 participants. The final sample consisted of 184 participants who completed the entire survey. Of those who completed the entire survey 64% (n = 118) were female and 36% (n = 66) male. The majority of the participants, 94%, were between 18–25 years old, and the remaining 6% were 26 years old and above. Of those who completed the survey, 4% freshman, 32% sophomores, 31% juniors, 22% seniors and 12% graduate students. Survey respondents were asked to identify their major course of study which 40% were business majors, 29% in human environmental sciences, and the remaining respondents were from various other majors.

Body mass index (BMI) was calculated from the participants’ self-reported height and weight. BMI is calculated by weight (in pounds) divided by height (in inches squared), multiplied by 703. Respondents fell into four categories: underweight (BMI<18.5 kg/m²), normal weight (18.5<BMI<24.9 kg/m²), overweight (25<BMI<29.9 kg/m²), and obese (BMI>30 kg/m²). The majority of the participants (64%) were of normal weight, 27% were considered overweight, 6% were obese, and the remaining 3% were underweight. The average body mass index of the group was 23.8 kg/m², which is categorized as normal range. Participants were asked how they perceived their weight; 73% of the participants perceived themselves as normal weight, 23.5% perceived themselves as overweight, 0.5% perceived themselves as obese, and 3% perceived themselves as underweight.

Table 1 below illustrates the basic demographics of the population.
TABLE 1 DEMOGRAPHICS OF THE POPULATION

<table>
<thead>
<tr>
<th>Sample Characteristics (n=184)</th>
<th>Number (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>118</td>
<td>64%</td>
</tr>
<tr>
<td>Male</td>
<td>66</td>
<td>36%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25 years old</td>
<td>172</td>
<td>93.5%</td>
</tr>
<tr>
<td>25-30 years old</td>
<td>6</td>
<td>3%</td>
</tr>
<tr>
<td>30-35 years old</td>
<td>1</td>
<td>0.5%</td>
</tr>
<tr>
<td>36-40 years old</td>
<td>5</td>
<td>3%</td>
</tr>
<tr>
<td>40 and above</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Classification in School</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>7</td>
<td>4%</td>
</tr>
<tr>
<td>Sophomore</td>
<td>58</td>
<td>31%</td>
</tr>
<tr>
<td>Junior</td>
<td>57</td>
<td>31%</td>
</tr>
<tr>
<td>Senior</td>
<td>40</td>
<td>22%</td>
</tr>
<tr>
<td>Graduate</td>
<td>22</td>
<td>12%</td>
</tr>
<tr>
<td><strong>Body Mass Index</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight</td>
<td>5</td>
<td>3%</td>
</tr>
<tr>
<td>Normal Weight</td>
<td>118</td>
<td>64%</td>
</tr>
<tr>
<td>Overweight</td>
<td>50</td>
<td>27%</td>
</tr>
<tr>
<td>Obese</td>
<td>11</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Average Body Mass Index (BMI)</strong></td>
<td>Sample Average</td>
<td>23.8kg/m^2</td>
</tr>
<tr>
<td><strong>Self-Perception of BMI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight</td>
<td>6</td>
<td>3%</td>
</tr>
<tr>
<td>Normal Weight</td>
<td>134</td>
<td>73%</td>
</tr>
<tr>
<td>Overweight</td>
<td>43</td>
<td>23.5%</td>
</tr>
<tr>
<td>Obese</td>
<td>1</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

*Academic Attainment*

Forty-three percent of the participants had taken at least a nutrition class either at the university or in the community. Among the participants, the majority (40%) was in the business majors with 18% dietetics and nutrition majors. Participants reported grade point average (GPA) and standardized test scores, ACT and SAT. The GPA average was 3.33 on a 4.0 scale. The average score on the SAT was reported to be 1050 and the average ACT score was 34.
Table 2 below illustrates the academic attainment of the population of the study including nutrition class taken, major, GPA, and SAT and ACT score.

**TABLE 2 ACADEMIC ATTAINMENT (2A), NUTRITION CLASS TAKEN AND MAJOR (2B) OF THE POPULATION**

**TABLE 2A ACADEMIC ATTAINMENT OF THE POPULATION**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std Dev</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>33.96</td>
<td>96.9</td>
<td>147</td>
</tr>
<tr>
<td>SAT</td>
<td>1051.3</td>
<td>573.87</td>
<td>51</td>
</tr>
<tr>
<td>GPA</td>
<td>3.33</td>
<td>0.46</td>
<td>184</td>
</tr>
</tbody>
</table>

**TABLE 2B NUTRITION CLASS TAKEN AND MAJOR OF THE POPULATION**

<table>
<thead>
<tr>
<th>Taken Class</th>
<th>any Nutrition</th>
<th>Number (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td>105</td>
<td>57%</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>79</td>
<td>43%</td>
</tr>
<tr>
<td>Major</td>
<td>Dietetics &amp; Nutrition</td>
<td>33</td>
<td>17.9%</td>
</tr>
<tr>
<td></td>
<td>Family Sciences</td>
<td>8</td>
<td>4.3%</td>
</tr>
<tr>
<td></td>
<td>Merchandise, Apparel &amp; Textile</td>
<td>6</td>
<td>3.3%</td>
</tr>
<tr>
<td></td>
<td>Hospitality, Management &amp; Tourism</td>
<td>6</td>
<td>3.3%</td>
</tr>
<tr>
<td></td>
<td>Business</td>
<td>74</td>
<td>40.2%</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>57</td>
<td>31%</td>
</tr>
</tbody>
</table>
Emotional Intelligence Measure

Specific-Ability EI-SREIS

The Self-Rated Emotional Intelligence Survey (SREIS) measures one’s emotional abilities based on one’s understanding of self. The results (Table 3) show that there was no significance difference in the overall SREIS score among females and males (p = 0.18). Females scored higher than males on the use of emotion subscale only (p = 0.003). There were no differences between the genders on any other subscale of the SREIS.

Table 3 Means and Standard Deviations of the Specific-Ability EI Measure-SREIS Among Female and Male

<table>
<thead>
<tr>
<th></th>
<th>p</th>
<th>Female (n = 118)</th>
<th>Male (n = 66)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>SREIS_Perceiving</td>
<td>0.11</td>
<td>15.12</td>
<td>2.44</td>
</tr>
<tr>
<td>SREIS_Use of emotion</td>
<td>0.00**</td>
<td>9.98</td>
<td>1.15</td>
</tr>
<tr>
<td>SREIS_Understanding</td>
<td>0.48</td>
<td>13.55</td>
<td>2.84</td>
</tr>
<tr>
<td>SREIS_Manage self-emotion</td>
<td>0.34</td>
<td>14.16</td>
<td>2.77</td>
</tr>
<tr>
<td>SREIS_Social Management</td>
<td>0.14</td>
<td>14.8</td>
<td>2.64</td>
</tr>
<tr>
<td>SREIS_Overall</td>
<td>0.18</td>
<td>67.61</td>
<td>8.12</td>
</tr>
</tbody>
</table>

*p<0.05   **p<0.01

Integrative-model EI-CEIS

On the integrative model of emotional intelligence measure-CEIS, it is a task-oriented measure that assesses the four branches of one’s EI capabilities. Illustrated in Table 4, males (M = 47.70, SD = 7.25) scored higher overall compared to females (M = 44.94, SD = 5.86) with a significant p-value less than 0.01. Males scored higher on facilitating (p = 0.06) and managing subscales (p < 0.01) and females were higher on understanding subscale (p = 0.05).
TABLE 4 MEANS AND STANDARD DEVIATIONS OF THE INTEGRATIVE MODEL EI MEASURE-CEIS AMONG FEMALE AND MALE

<table>
<thead>
<tr>
<th></th>
<th>Female (n = 118)</th>
<th>Male (n = 66)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>p</td>
<td>M</td>
</tr>
<tr>
<td>CEIS_Perceiving</td>
<td>0.78</td>
<td>12.32</td>
</tr>
<tr>
<td>CEIS_Facilitating</td>
<td>0.06</td>
<td>10.47</td>
</tr>
<tr>
<td>CEIS_Understanding</td>
<td>0.05*</td>
<td>15.56</td>
</tr>
<tr>
<td>CEIS_Managing</td>
<td>0.00**</td>
<td>6.58</td>
</tr>
<tr>
<td>CEIS_Overall</td>
<td>0.00**</td>
<td>44.94</td>
</tr>
</tbody>
</table>

*p<0.05    **p<0.01

Body Mass Index (BMI) and Eating Behaviors

Females had a slightly lower BMI (M = 23.16, SD = 3.81) compared to males (M = 24.95, SD = 3.64) with a p-value less than 0.01. For eating behaviors, females scored higher (M = 97.86, SD = 17.93) compared to males (M = 89.92, SD = 20.23) on the overall (p < 0.01) as well as on the restraint eating subscale (p < 0.01). Gender differences showed a strong correlation with BMI, restraint eating, and overall DEBQ.

TABLE 5 MEANS AND STANDARD DEVIATIONS OF BODY MASS INDEX AND EATING BEHAVIORS-DEBQ AMONG MALES AND FEMALES

<table>
<thead>
<tr>
<th></th>
<th>P</th>
<th>Female (n=118)</th>
<th>Male (n=66)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>BMI</td>
<td>0.00**</td>
<td>23.16</td>
<td>3.81</td>
</tr>
<tr>
<td>DEBQ_Restraint</td>
<td>0.00**</td>
<td>29.95</td>
<td>7.62</td>
</tr>
<tr>
<td>DEBQ_Emotion</td>
<td>0.10</td>
<td>35.15</td>
<td>11.05</td>
</tr>
<tr>
<td>DEBQ_External</td>
<td>0.84</td>
<td>32.76</td>
<td>5.6</td>
</tr>
<tr>
<td>DEBQ_Overall</td>
<td>0.01**</td>
<td>97.86</td>
<td>17.93</td>
</tr>
</tbody>
</table>

*p<0.05    **p<0.01
Correlation between Specific-Ability Emotional Intelligence-SREIS, Body Mass Index and Eating Behaviors

Table 6 shows that the specific-ability emotional intelligence understanding (SREIS_R) subscale was positively correlated with body mass index (r = 0.22, p < 0.01). The specific-ability emotional intelligence use of emotion (SREIS_U) subscale of the specific ability EI (SREIS) measure was positively correlated with restraint eating (r = 0.20, p = 0.01). The managing self-emotion (SREIS_M1) subscale was negatively correlated with emotional eating (r = -0.21, p = 0.01) as well as eating behaviors in general (r = -0.18, p = 0.02).

**TABLE 6 CORRELATIONS BETWEEN SPECIFIC-ABILITY EI MEASURE-SREIS, BODY MASS INDEX AND EATING BEHAVIORS-DEBQ**

<table>
<thead>
<tr>
<th></th>
<th>BMI</th>
<th>DEBQ_Overall</th>
<th>DEBQ_External</th>
<th>DEBQ_Restraint</th>
<th>DEBQ_Emotional</th>
</tr>
</thead>
<tbody>
<tr>
<td>SREIS_P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation p-value</td>
<td>0.01</td>
<td>-0.039</td>
<td>0.09</td>
<td>-0.02</td>
<td>-0.10</td>
</tr>
<tr>
<td>SREIS_U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation p-value</td>
<td>0.03</td>
<td>0.10</td>
<td>0.05</td>
<td>0.20</td>
<td>0.01</td>
</tr>
<tr>
<td>SREIS_R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation p-value</td>
<td>0.22</td>
<td>0.09</td>
<td>-0.03</td>
<td>0.08</td>
<td>0.10</td>
</tr>
<tr>
<td>SREIS_M1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation p-value</td>
<td>0.13</td>
<td>-0.18</td>
<td>-0.03</td>
<td>-0.11</td>
<td>-0.21</td>
</tr>
<tr>
<td>SREIS_M2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation p-value</td>
<td>0.08</td>
<td>-0.01</td>
<td>-0.06</td>
<td>0.07</td>
<td>-0.03</td>
</tr>
<tr>
<td>SREIS _Overall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation p-value</td>
<td>0.16</td>
<td>-0.02</td>
<td>-0.01</td>
<td>0.05</td>
<td>-0.07</td>
</tr>
</tbody>
</table>

P = perceiving, U = use of emotion, R = understanding, M1 = managing self-emotion, M2 = social management
*p<0.05  **p<0.01
Correlation between Integrative Model Emotional Intelligence-CEIS, Body Mass Index and Eating Behaviors

As shown in Table 7 the integrative-model emotional intelligence CEIS measure understanding (CEIS_R) subscale of the integrative model EI (CEIS) was negatively correlated with emotional eating (r =-0.15, p = 0.04). The managing self-emotion (CEIS_M1) subscale was positively correlated with emotional eating (r =0.16, p =0.03).

<table>
<thead>
<tr>
<th></th>
<th>BMI</th>
<th>DEBQ_Overall</th>
<th>DEBQ_External</th>
<th>DEBQ_Restraint</th>
<th>DEBQ_Emusional</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CEIS_P</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-0.09</td>
<td>0.06</td>
<td>-0.05</td>
<td>0.02</td>
<td>0.10</td>
</tr>
<tr>
<td>p-value</td>
<td>0.24</td>
<td>0.44</td>
<td>0.54</td>
<td>0.77</td>
<td>0.17</td>
</tr>
<tr>
<td><strong>CEIS_F</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-0.01</td>
<td>0.07</td>
<td>0.00</td>
<td>0.01</td>
<td>0.10</td>
</tr>
<tr>
<td>p-value</td>
<td>0.92</td>
<td>0.35</td>
<td>0.97</td>
<td>0.86</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>CEIS_U</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.02</td>
<td>-0.10</td>
<td>-0.07</td>
<td>0.03</td>
<td>-0.15</td>
</tr>
<tr>
<td>p-value</td>
<td>0.80</td>
<td>0.18</td>
<td>0.37</td>
<td>0.68</td>
<td>0.04*</td>
</tr>
<tr>
<td><strong>CEIS_M</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.13</td>
<td>0.08</td>
<td>-0.08</td>
<td>0.03</td>
<td>0.16</td>
</tr>
<tr>
<td>p-value</td>
<td>0.08</td>
<td>0.26</td>
<td>0.28</td>
<td>0.67</td>
<td>0.03*</td>
</tr>
<tr>
<td><strong>CEIS_Overall</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.04</td>
<td>0.07</td>
<td>-0.09</td>
<td>0.04</td>
<td>0.12</td>
</tr>
<tr>
<td>p-value</td>
<td>0.63</td>
<td>0.36</td>
<td>0.25</td>
<td>0.55</td>
<td>0.09</td>
</tr>
</tbody>
</table>

P = perceiving, F = facilitating, U = understanding, M = managing
*p<0.05        **p<0.01
Correlation between Academic Attainment, BMI and Eating Behaviors-DEBQ

The ACT scores showed negative correlation with *external* eating behavior (r = -.32, p = .02) while GPA showed significant negative correlation with BMI (r = -.19, p = .01) illustrated in Table 8.

**TABLE 8 CORRELATIONS BETWEEN ACADEMIC ATTAINMENT (SAT, ACT AND GPA), BODY MASS INDEX, AND EATING BEHAVIORS-DEBQ**

<table>
<thead>
<tr>
<th></th>
<th>BMI</th>
<th>DEBQ_Overall</th>
<th>DEBQ_External</th>
<th>DEBQ_Restraint</th>
<th>DEBQ_Emotional</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson</td>
<td>-0.09</td>
<td>-0.11</td>
<td>-0.32</td>
<td>0.16</td>
<td>-0.11</td>
</tr>
<tr>
<td>p-value</td>
<td>0.52</td>
<td>0.44</td>
<td>0.02*</td>
<td>0.28</td>
<td>0.46</td>
</tr>
<tr>
<td>SAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson</td>
<td>0.01</td>
<td>-0.07</td>
<td>0.05</td>
<td>-0.12</td>
<td>-0.06</td>
</tr>
<tr>
<td>p-value</td>
<td>0.89</td>
<td>0.37</td>
<td>0.55</td>
<td>0.15</td>
<td>0.44</td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson</td>
<td>-0.19</td>
<td>0.07</td>
<td>0.04</td>
<td>0.1</td>
<td>0.03</td>
</tr>
<tr>
<td>p-value</td>
<td>0.01**</td>
<td>0.33</td>
<td>0.57</td>
<td>0.16</td>
<td>0.73</td>
</tr>
</tbody>
</table>

*p<0.05  **p<0.01

Correlation between Academic Attainment and Emotional Intelligence

Table 9A shows that ACT score was negatively associated with specific ability EI (SREIS) *use of emotion* subscale (r = -.18, p = 0.03). Grade point average was positively associated with specific-ability EI (SREIS) *understanding* subscale (r = .15, p =.04) and *managing self-emotion* subscale (r = .15, p = .05). Grade point average was negatively associated with integrative model (CEIS) *managing* subscale (r=-.21, p=.00) shown in Table 9B.
Table 9A and 9B below illustrate correlation of academic attainment (ACT, SAT and GPA) with EI measures-Specific-Ability Measure-SREIS (9a) and Integrative Model-CEIS (9B)

### TABLE 9A CORRELATIONS BETWEEN ACADEMIC ATTAINMENT AND THE SPECIFIC-ABILITY EI MEASURE-SREIS

<table>
<thead>
<tr>
<th></th>
<th>SREIS_P</th>
<th>SREIS_U</th>
<th>SREIS_R</th>
<th>SREIS_M1</th>
<th>SREIS_M2</th>
<th>SREIS_Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>Pearson Correlation</td>
<td>0.05</td>
<td>-.18</td>
<td>-0.09</td>
<td>0.06</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
<td>0.56</td>
<td>0.03*</td>
<td>0.27</td>
<td>0.48</td>
<td>0.53</td>
</tr>
<tr>
<td>SAT</td>
<td>Pearson Correlation</td>
<td>0.10</td>
<td>0.09</td>
<td>0.26</td>
<td>0.06</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
<td>0.48</td>
<td>0.54</td>
<td>0.07</td>
<td>0.70</td>
<td>0.97</td>
</tr>
<tr>
<td>GPA</td>
<td>Pearson Correlation</td>
<td>-.01</td>
<td>0.03</td>
<td>.15</td>
<td>.15</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
<td>0.91</td>
<td>0.68</td>
<td>0.04*</td>
<td>0.05*</td>
<td>0.99</td>
</tr>
</tbody>
</table>

*P = perceiving, U = use of emotion, R = understanding, M1 = managing self-emotion, M2 = social management  
*p<0.05  **p<0.01

### TABLE 9A CORRELATIONS BETWEEN ACADEMIC ATTAINMENT AND THE INTEGRATIVE MODEL EI MEASURE-CEIS

<table>
<thead>
<tr>
<th></th>
<th>CEIS_P</th>
<th>CEIS_F</th>
<th>CEIS_U</th>
<th>CEIS_M</th>
<th>CEIS_Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>Pearson Correlation</td>
<td>0.07</td>
<td>-0.07</td>
<td>-0.01</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
<td>0.38</td>
<td>0.38</td>
<td>0.87</td>
<td>0.56</td>
</tr>
<tr>
<td>SAT</td>
<td>Pearson Correlation</td>
<td>0.15</td>
<td>0.02</td>
<td>-0.20</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
<td>0.30</td>
<td>0.90</td>
<td>0.17</td>
<td>0.93</td>
</tr>
<tr>
<td>GPA</td>
<td>Pearson Correlation</td>
<td>-0.05</td>
<td>0.01</td>
<td>0.13</td>
<td>-0.21</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
<td>0.54</td>
<td>0.95</td>
<td>0.08</td>
<td>0.00**</td>
</tr>
</tbody>
</table>

*p<0.05  **p<0.01
Table 10 shows that participants who took a nutrition class were not significantly different from those who did not take a nutrition class in regard to BMI, emotional intelligence, or eating behaviors.

Participants who majored in dietetics and nutrition did not show a lower average body mass index compared to other majors ($M = 23.35, SD = 4.29, p = 0.56$). Eating behaviors between participants who majored in dietetics and nutrition and those who majored in other areas did not show any significant difference. Participants from different majors had different scores on the EI scales. For the SREIS measure, participants who majored in family science showed the highest EI score ($M = 77.25, SD = 9.41$), followed by dietetics and nutrition major students ($M = 68.88, SD = 6.51$). Merchandising, apparel and textile major participants had the lowest specific-ability EI score ($M = 64.00, SD = 6.29$). On the other hand, for the CEIS measure, the business majors showed the highest EI score ($M = 47.81, SD = 6.93$), followed by the hospitality, management and tourism majors ($M = 45.17, SD = 4.07$). Family science major participants scored highest in specific-ability SREIS ($M = 77.25, SD = 9.41$) among all the majors but they also scored lowest for the integrative EI-CEIS ($M = 44.00, SD = 5.55$). See Table 10.
TABLE 10 MEANS, STANDARD DEVIATIONS, AND CORRELATIONS BETWEEN ACADEMIC ATTAINMENT (NUTRITION CLASS TAKEN AND MAJOR), BODY MASS INDEX, EMOTIONAL INTELLIGENCE (SREIS AND CEIS), AND EATING BEHAVIORS-DEBQ

<table>
<thead>
<tr>
<th>Variables</th>
<th>BMI</th>
<th>SREIS</th>
<th>CEIS</th>
<th>DEBQ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td><strong>Nutrition Class</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>23.93</td>
<td>4.05</td>
<td>67.32</td>
<td>7.20</td>
</tr>
<tr>
<td>No</td>
<td>23.70</td>
<td>3.68</td>
<td>66.80</td>
<td>8.42</td>
</tr>
<tr>
<td><strong>Major</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dietetics &amp; Nutrition Sciences</td>
<td>23.35</td>
<td>4.29</td>
<td>68.88</td>
<td>6.51</td>
</tr>
<tr>
<td>Family Sciences</td>
<td>22.89</td>
<td>3.58</td>
<td>77.25</td>
<td>9.41</td>
</tr>
<tr>
<td>Merchandise, Apparel &amp; Textile</td>
<td>21.56</td>
<td>2.61</td>
<td>64.00</td>
<td>6.29</td>
</tr>
<tr>
<td>Hospitality, Management &amp; Tourism</td>
<td>23.15</td>
<td>3.79</td>
<td>65.17</td>
<td>8.18</td>
</tr>
<tr>
<td>Business</td>
<td>24.08</td>
<td>3.88</td>
<td>65.95</td>
<td>7.44</td>
</tr>
<tr>
<td>Others</td>
<td>24.13</td>
<td>3.67</td>
<td>66.42</td>
<td>8.19</td>
</tr>
<tr>
<td>Total</td>
<td>23.80</td>
<td>3.84</td>
<td>67.02</td>
<td>7.90</td>
</tr>
</tbody>
</table>

*p<0.05  **p<0.01

Table 11A illustrates the eating behaviors from different majors. For most majors, family sciences, merchandise, apparel and textile, as well as business majors, about half students were emotional eaters (50% or more) and many were external eaters. However, the majority of the dietetics and nutrition students were either external eaters (39.4%) or emotional eaters (33.3%). As for hospitality, management, and tourism college students, 33.3% (n = 2) adopted a combination behavior of restraint and external eating. An ANOVA (Table 11B) did not indicate any significant differences between types of eating behaviors and majors.

30
### TABLE 11A FREQUENCIES OF EATING BEHAVIORS FOR DIFFERENT MAJORS

<table>
<thead>
<tr>
<th>Major</th>
<th>DEBQ Res</th>
<th>DEBQ Emo</th>
<th>DEBQ Ext</th>
<th>DEBQ Res &amp; Emo</th>
<th>DEBQ Emo &amp; Ext</th>
<th>DEBQ ALL 3</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietetics &amp; Nutrition</td>
<td>7</td>
<td>21.2</td>
<td>11</td>
<td>33.3</td>
<td>13</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Family Sciences</td>
<td>1</td>
<td>12.5</td>
<td>4</td>
<td>50</td>
<td>3</td>
<td>37.5</td>
<td>-</td>
</tr>
<tr>
<td>Merchandise, Apparel &amp; Textile</td>
<td>1</td>
<td>16.7</td>
<td>3</td>
<td>50</td>
<td>1</td>
<td>16.7</td>
<td>1</td>
</tr>
<tr>
<td>Hospitality, Management &amp; Tourism</td>
<td>1</td>
<td>16.7</td>
<td>1</td>
<td>16.7</td>
<td>1</td>
<td>16.7</td>
<td>2</td>
</tr>
<tr>
<td>Business</td>
<td>4</td>
<td>5.4</td>
<td>39</td>
<td>52.7</td>
<td>26</td>
<td>35.1</td>
<td>2</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>10.5</td>
<td>29</td>
<td>50.9</td>
<td>18</td>
<td>31.6</td>
<td>1</td>
</tr>
</tbody>
</table>

Res = restraint eating, Emo = emotional eating, Ext = external eating, All 3 = restraint, emotional and external eating

### TABLE 11B CORRELATION BETWEEN EATING BEHAVIORS AND MAJORS

<table>
<thead>
<tr>
<th>Variable</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEBQ_Restraint</td>
<td>0.06</td>
</tr>
<tr>
<td>DEBQ_Emotional</td>
<td>0.38</td>
</tr>
<tr>
<td>DEBQ_External</td>
<td>0.36</td>
</tr>
<tr>
<td>DEBQ_Overall</td>
<td>0.46</td>
</tr>
</tbody>
</table>

* *p<0.05  **p<0.01
Correlation between the Self-Rated Emotional Intelligence Scale and the Consumer Emotional Intelligence Scale

Even though both the SREIS and CEIS emotional intelligence measures assess the same emotional abilities: *perceiving, facilitating, understanding,* and *managing,* it was found that there was no correlation between the subscales SREIS *perceiving* and CEIS *perceiving,* even though they measure similar ability regarding how individuals identify and assess emotions of self and others as illustrated in Table 12. The results also showed no correlations between the two EI measures for *facilitating,* *understanding,* and *managing emotion* subscales.

However, inter-correlations were found. CEIS *perceiving* subscale however, showed negative correlation with SREIS *use of emotion* (p < 0.01) and *understanding* (p = 0.04) subscales. CEIS *facilitating* subscale was found positively correlated to SREIS *understanding* subscale (p = 0.02). As for CEIS *managing* subscale, it was found negatively correlated to SREIS *perceiving* (p = 0.01), *managing self-emotion* (p = 0.04) and SREIS overall (p = 0.03).
<table>
<thead>
<tr>
<th></th>
<th>SREIS_P</th>
<th>SREIS_U</th>
<th>SREIS_R</th>
<th>SREIS_M 1</th>
<th>SREIS_M 2</th>
<th>SREIS_Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CEIS_P</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-0.09</td>
<td>-.21</td>
<td>-.150*</td>
<td>0.05</td>
<td>-0.05</td>
<td>-0.11</td>
</tr>
<tr>
<td>p-value</td>
<td>0.22</td>
<td>0.00*</td>
<td>0.04*</td>
<td>0.47</td>
<td>0.53</td>
<td>0.12</td>
</tr>
<tr>
<td><strong>CEIS_F</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.06</td>
<td>0.07</td>
<td>.170*</td>
<td>-0.06</td>
<td>0.08</td>
<td>0.10</td>
</tr>
<tr>
<td>p-value</td>
<td>0.39</td>
<td>0.32</td>
<td>0.02*</td>
<td>0.46</td>
<td>0.30</td>
<td>0.17</td>
</tr>
<tr>
<td><strong>CEIS_U</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.04</td>
<td>-0.01</td>
<td>-0.03</td>
<td>0.05</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>p-value</td>
<td>0.63</td>
<td>0.88</td>
<td>0.67</td>
<td>0.53</td>
<td>0.97</td>
<td>0.86</td>
</tr>
<tr>
<td><strong>CEIS_M</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-.21</td>
<td>-.13</td>
<td>0.01</td>
<td>-.19</td>
<td>-.11</td>
<td>-.16</td>
</tr>
<tr>
<td>p-value</td>
<td>0.01**</td>
<td>0.07</td>
<td>0.92</td>
<td>0.04*</td>
<td>0.15</td>
<td>0.03*</td>
</tr>
<tr>
<td><strong>CEIS_Overall</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-0.10</td>
<td>-.13</td>
<td>0.02</td>
<td>-.07</td>
<td>-0.04</td>
<td>-0.08</td>
</tr>
<tr>
<td>p-value</td>
<td>0.18</td>
<td>0.09</td>
<td>0.80</td>
<td>0.35</td>
<td>0.64</td>
<td>0.30</td>
</tr>
</tbody>
</table>

*p<0.05  **p<0.01
Chapter 5: Discussion

The purpose of this study was to investigate whether emotional intelligence (EI) was related to college students’ body mass index (BMI) and eating behaviors. This is the first study to utilize two different EI measures concurrently to assess correlations with BMI and eating behaviors. The two EI measures were the specific-ability EI model, which was measured with the Self-Rated EI Scale (SREIS) and the integrative model, which was measured with the Consumer EI Scale (CEIS). Both of the EI measures assessed the same four dimensions of abilities: emotional perceiving, emotional facilitating, emotional understanding, and emotional management. However, there was no significant inter-correlation found with each particular subscale among the two measures as illustrated in Table 12. For example, the SREIS perceiving subscale did not correlate with the CEIS perceiving subscale even though they are supposed to measure how an individual identifies emotions of self or others and interprets them. It applies to the other three subscales of facilitating, understanding, and managing.

The available research has generally stated that women score higher than men on EI. There are several justifications for this difference found between the gender, from superior emotional and interpersonal skills to differential brain responses to emotional stimuli (Hystad et al., 2010). The results of this study reported that male participants overall scored higher on the CEIS than the female participants. The SREIS may be perceived as a subjective measurement, as it measures what people think they know about their emotional competencies (Blair et al., 2008). As for the CEIS measure, it is a task-oriented measure to assess how
individuals adapt from the more general aspects of emotional abilities and apply these abilities to their reasoning and problem-solving capabilities. Thus, the results of the study may be explained by stating that females may have a good impression of their own emotional skills and management as reflected by the SREIS test; however, in reality, females’ emotional adaptation may not be as good as males when they are tested with the performance-based test-CEIS. Moreover, as different measures were used with various research studies and with different target populations, this may be a factor that contributed to the varying results. Also, the female population of the study (64%) approximately doubled the male population (36%), and this inequality may have led to this outcome. Furthermore, female college students reported a higher understanding emotion score than males in the CEIS measure, as compared to the other subscales. This may imply that female college students have lower emotional management and coping skills, while male college students may have a difficult time labeling their own or others’ emotions and sensibly rationalizing emotional transitions.

BMI did not show any significant correlation with either EI measure. Plausible explanations are: (a) different subscales have different correlations with BMI, resulting in neutral correlation between BMI and the overall EI measures, and (b) EI surveys are very subjective depending on many aspects of participants’ situations such as their moods and whether they were time-constrained. Even though the SREIS overall did not show any correlation with BMI, the understanding emotion subscale showed a strong positive correlation with BMI. This indicates that the higher one’s ability to understand emotion, the higher the body mass index or
vice versa as the causal effect was not determined in this study. Investigators would assume a negative correlation between the understanding emotion subscale and BMI as when one’s ability in trying to comprehend their emotion improves, BMI will tend to remain within normal range. However, the result can be described as even though individuals have the ability to analyze emotions, it does not mean they can manage this emotional knowledge to enhance their behaviors, for example eating patterns as reflected by their BMI. When BMI is within normal limits, they may have sound ability to understand self and others’ emotions. It is suggested for future research to investigate these relationships to determine whether increased BMI is the cause to increased understanding emotion ability or the other way around due to the fact that the causality was not determined in this study.

Emotional eating was negatively associated with the understanding emotion subscale in the CEIS measure. It can be explained by (a) if one can identify emotions of self and others, analyze and reason with these emotional problems, one’s food consumption will tend not be driven by their feelings or (b) when one’s food consumption is influenced by their emotions, it may indicate one has low or limited ability to facilitate their thoughts with emotions and cope with the emotions.

Additionally, emotional eating was found to be negatively associated with the SREIS managing self-emotion subscale and positively associated with the CEIS managing subscale. The possible explanation for this finding is the SREIS separates the managing subscales into managing self-emotion and social management. As for the CEIS managing subscale both the self and social factors and incorporated into one. For the resultant negative correlation with SREIS managing self-emotion, two
explanations are possible: (a) if one thinks that they are capable of working with their emotions and dealing with them effectively, they will not be an emotional eater or (b) when one is an emotional eater; their eating can be driven by emotions that lead to lower managing self-emotion abilities. As for the positive relationship between CEIS managing subscale, it indicates two possibilities, (a) the better one's ability to manage and regulate their emotions to achieve a desirable outcome, there is a higher possibility for an individual to become an emotional eater or (b) when a person is an emotional eater, they tend to have better management and coping skills related to their emotions. Since the causality was not determined, investigators would assume the second explanation to be more rational.

On the other hand, restraint eating was found to be positively correlated with SREIS use of emotion subscale. This may be because one weighs emotions against one another and allows their emotion to direct their attention, for example wanting to maintain a society’s expectation of an attractive body shape or body weight. Emotions will marshal in the service of goal that lead and motivate one to become a restraint eater suppressing their physiological mechanisms such as hunger in order to achieve their weight loss goal (Roberts, Zeidner et al., 2001).

One interesting note is that grade point average (GPA) was negatively associated with BMI. With unknown causality, there may be two possible explanations (a) the higher the academic success of a college student, the better they maintain body mass index or, (b) college students who maintain a normal body weight assuming they adopt a healthy lifestyle are able to have better academic performance with minimal physiological distractions. GPA was found positively
associated with SREIS understanding and managing self-emotion subscales as well as CEIS managing subscale. This can be reasoned (a) if college students know how to relax after a stressful event like a final exam or know how to alleviate the stress and emotion of others, which is what the managing emotion subscale measures (Roberts, Zeidner et al., 2001), it may help them to perform better academically or (b) if students already maintain good grades which assumed they apply what they have learned, academic intelligence may slowly develop their abilities cognitive abilities where they are able perform one or more of the following abilities: to perceive emotions more accurately, use the emotional information perceived to facilitate thoughts in reasoning or problem solving, understand how emotions affect self or in others and find ways to manage and cope with them.

The study had reported that nutrition major students did not show a lower average body mass index compared to students from other majors, which led to the rejection of the Hypothesis #3. The reason may be the variability population of the participants was not evenly distributed as majority of the participants (40%) were business major students and only 18% were nutrition majors. The study predicted nutrition major students would tend to be restraint eaters due to the underlying pressure as future food and nutrition experts to maintain an acceptable appearance and body weight. However, the results led to rejection the hypothesis as the majority of the nutrition major students are either external or emotional eaters just like students from other majors. There is a possibility that students might already be emotional eaters, and that they take nutrition majors hoping to learn more about eating and healthier lifestyle.
One of the demographic variables, gender was found to be strongly associated with BMI, CEIS and DEBQ. This finding confirms that females and males have different emotional strengths that may affect their eating behaviors. In fact, females receive greater social pressure than the males in society to maintain an attractive body image. Thus, it is very important to educate the public to identify and recognize self-perceived body appearance and weight to the actual body mass index to allow them to realize their food consumption patterns or their food choices need to be modified in order to enhance longevity. In fact, enhancing emotional abilities may assist individuals to recognize their physical health more positively and effectively.

Implication and Future Research

The most consistent finding of the study was the EI subscales, managing emotion and understanding emotion from both EI measures show significant correlations with BMI, eating behaviors as well as GPA. This suggests that these two abilities hold stronger accountability in health behaviors compared to the other abilities, which are perceiving emotion and facilitating emotion. This provided a relatively pertinent amount of information that was not determined in previous research. The result suggested that BMI had a correlation with emotion as well as intelligence distinctively. However, the significance and causality need be substantiated in future research with a larger sample size and with an even distribution of students from different fields of study.
Moreover, the findings of the study proposed that providing nutrition knowledge and information may not be sufficient to enhance healthier eating patterns as compared to improving individuals’ emotional abilities to allow individuals to better understand and manage their emotions. These emotional domains are advanced abilities that allow individuals to process and reason about emotions of self or others, which then can be interfaced with their personality and personal goals to better their lifestyle and behaviors (Figure 1, p 6). This study strongly suggests that emotional abilities hold an important role in influencing health behaviors as well as academic attainment. This further suggests that college curriculum especially in the healthcare fields of study such as dietetics and nutrition should include courses on cognitive intelligence or emotional abilities to assist nutrition experts to grasp the concept and able to apply them personally as well as to their clients.

However, it is very important to allow individuals to differentiate between their self-impression of their emotional abilities and their actual cognitive skills through a self-reported and a task-oriented emotional intelligence measures. Upon acknowledging the dissimilarities, experts can identify the gap and fill in accordingly to enhance individuals’ personal and overall wellbeing. By understanding this concept, healthcare professionals especially nutrition experts can comprehend the lack or weakness of the specific abilities in order to better personalize behavioral interventions to cope with the rising rate of obesity of the nation.

The study found that emotional intelligence correlated with body mass index and eating behaviors. However, further research needs to be conducted to assess
those correlations as the current findings only show correlations and the causality is unknown. It is important to focus on the emotional subscales instead of EI as a whole as the subscales assess different emotional abilities of individuals. Moreover, using two different constructs of EI measures, the study yields different information. It is suggested that research should incorporate the three types of EI measures, specific-ability, integrative model, as well as the mixed model EI to compare how each EI measure differs from the other and what type of information can be concluded using these three different measures.

In order to strengthen the findings and conceptualize college students’ eating behavior in correlation to emotional intelligence in future research, the investigator would suggest focusing on college students who are junior, senior or at graduate level. As these categories of students have bypassed the first two years of college and are assumed to conceptualize the atmosphere of studying at a college setting, they have established intellectual maturity or may be emotional stable. With these classifications of students, they possess adequate amount of knowledge and understanding in their field of study that can enhance the dependability of the target population and the consistency of the research methodology.

Bias and Limitation

The relatively small sample size with uneven distribution of majors of the current study might have contributed to the lack of significant relationship between emotional intelligence, body mass index, and eating behaviors. A study covering a larger sample size might yield significant results. Since the study is an online survey,
participants self-reported their height and weight, as well as their emotional intelligence and eating behaviors. Body mass index is computed using participants' self-reported height and weight. Studies have proved the reliability and validity of self-reported height and weight however, actual and perceived body size each contributes to underreporting body weight and, overweight status had been reported as predictor of reporting error in height (Elgar, Roberts et al., 2005; Akhtar-Danesh, Dehghan et al., 2008). Heavier female college students strongly underestimate their weight and that exclusive reliance on self-reports of weight and height can lead to erroneous prevalence estimates of overweight among female college students (Larsen, Ouwens et al., 2008). Furthermore, self-reported abilities and traits greatly rely on the understanding of oneself. Thus, if one's concept of self is not accurate, the EI measures cannot serve as an accurate measure for their ability or trait, which in this study is one's emotional intelligence or eating behaviors. Therefore, the results of the will only reflect one's self-concept instead of their actual ability or trait (Mayer et al., 2000).

Though the Dutch Eating Behavior Questionnaire is a validated and reliable measure, it only categorizes individuals into three eating behaviors: emotional eating, external eating, and restraint eating. This measure has a pre-assumption that every individual has a tendency to adopt at least one of those eating behaviors. However, in the eating behaviors analyses, some participants scored very low for all the three behaviors which may indicate they were neither an emotional eater, external eater, nor a restraint eater yet they needed to be categorized into one based
on the highest score. This measure did not recognize regular or normal eating as one of eating behaviors.

Conclusion

In summary, BMI was correlated with one emotional intelligence (EI) measure, SREIS overall and the understanding emotion subscale in the entire population that supported Hypothesis #1 that stated that emotional intelligence is correlated with body mass index in college students. As for eating behaviors, the study reported that emotional eating subscale was negatively correlated with SREIS managing self-emotion subscale and CEIS understanding emotion subscale. Emotional eating was also positively correlated with CEIS managing emotion subscale. As for restraint eating, it was positively associated with SREIS use of emotion subscale. These findings supported Hypothesis #2 where emotional intelligence is correlated with eating behaviors in college students. However, Hypotheses #3 and #4 were rejected as there was no correlation found that attest that nutrition major students maintain a normal body mass index or adopt different eating behaviors than students from other majors. As for Hypothesis #5, the results of the study reported that there was no correlation between the subscales that measure the same ability for both SREIS and CEIS measures however, there were inter-correlations between subscales that measure different abilities between SREIS and CEIS measures. Grade point average (GPA) was found to be negatively associated with BMI and positively associated with SREIS understanding and managing self-emotion subscales, and negatively associated with CEIS managing
emotions subscale. These results may indicate that, these two measures of EI appear to be measuring different emotional abilities and care should be taken in the future for researchers when selecting an EI measure.

Emotional intelligence is an emerging area of focus that has been shown to affect one’s lifestyle in different aspects. The prevalence of obesity has become an alarming concern to the United States. It is vital for healthcare professionals to recognize this fact and understand the underlying relationship and how emotional abilities affect one’s health behaviors as it may contribute to the prevalence of obesity and eating-related chronic disease development. The findings of the study confirm that emotional abilities, especially understanding emotion and managing emotion were not only correlated with body mass index and eating behaviors, they are also correlated with academic attainment. Therefore, it is suggested that emotional intelligence and cognitive abilities should be introduced and taught at an early stage at a school setting to allow students to grasp how their emotions can have an impact on their personal behaviors and how emotions can affect oneself and others in a social setting. Enhancing these emotional abilities may assist individuals to adopt a positive attitude and healthier lifestyle as emotions can never be detached from everyone’s life.

Furthermore, healthcare professionals should be exposed to these knowledge and skills to enhance their professionalism in the practice. Working in such a stressful environment, emotions exists more intensely than any other settings. Acknowledge these existing emotions and mastering these emotional abilities can minimize healthcare professionals’ personal emotions fluctuation to be
more objective and unbiased in their practice to provide excellent care and services to their clients. Moreover, these emotional capabilities of healthcare professionals can be diffused to the surrounding to enhance effective inter-disciplinary relationship and communication. These abstract and invisible emotions and feelings can implicitly affect individuals from inside out that may promote a healthier well-being as a whole if the emotional intelligence skills are controlled well. In summary, more research need to be conducted in the field of emotional intelligence and eating lifestyle to strengthen the findings and provide sound and reliable evidence in order to foster a nation that is physically and mentally strong, emotionally healthy and economically and politically stable.
Appendix A IRB Approval

EXEMPTION CERTIFICATION

MEMO: Fei Voon Wong, Nutrition & Food Science 206D Funkhouser Bldg. PI phone = (859) 335-5536

FROM: Institutional Review Board c/o Office of Research Integrity

SUBJECT: Exemption Certification for Protocol No. 10-0769-X4B

DATE: December 15, 2010

On December 13, 2010, it was determined that your project entitled, Emotional Intelligence and Intelligence Quotient: Which Determines Female College Students' Body Weight and Eating Patterns, meets federal criteria to qualify as an exempt study.

Because the study has been certified as exempt, you will not be required to complete continuation or final review reports. However, it is your responsibility to notify the IRB prior to making any changes to the study. Please note that changes made to an exempt protocol may disqualify it from exempt status and may require an expedited or full review.

The Office of Research Integrity will hold your exemption application for six years. Before the end of the sixth year, you will be notified that your file will be closed and the application destroyed. If your project is still ongoing, you will need to contact the Office of Research Integrity upon receipt of that letter and follow the instructions for completing a new exemption application. It is, therefore, important that you keep your address current with the Office of Research Integrity.

For information describing investigator responsibilities after obtaining IRB approval, download and read the document "PI Guidance to Responsibilities, Qualifications, Records and Documentation of Human Subjects Research" from the Office of Research Integrity's Guidance and Policy Documents web page [http://www.research.uky.edu/human-guidance-policy]. Additional information regarding IRB review, federal regulations, and institutional policies may be found through ORIs' web site [http://www.research.uky.edu]. If you have questions, need additional information, or would like a paper copy of the above mentioned document, contact the Office of Research Integrity at (859) 257-9428.
Appendix B Survey

Fellow Wildcats:

Eating has always been associated with one’s emotion. It is well-proven that unhealthy eating habits will lead to the development of chronic diseases such as obesity, Type 2 diabetes and heart diseases. Provided with substantial nutrition knowledge, why are some healthcare professionals such as dietitians, nurses and physicians obese? This indirectly indicates that emotion plays a major role in one’s eating patterns. Thus, this research, “Emotional Intelligence and Intelligence Quotient: Which determines female college students’ body weight and eating patterns” will investigate the correlations between one’s emotion, IQ, eating patterns and body weight.

Although you will not get personal benefit from taking part in this research study, your responses may help us understand more about the correlation between emotional intelligence and intelligence quotient in affecting individuals’ eating patterns and body weight.

We hope to receive completed questionnaires from about 100 participants, so your answers are important to us. Of course, you have a choice about whether or not to complete the survey/questionnaire, but if you do participate, you are free to skip any questions or discontinue at any time.

The survey/questionnaire will take about 20-30 minutes to complete and is absolutely anonymous.

The person in charge of this study is Feai-Voon Wong of University of Kentucky Department of Nutrition and Food Science. She is being guided in this research by Dr Kelly Webber.

If you have questions about the study, please feel free to ask; my contact information is given below. If you have complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the University of Kentucky Office of Research Integrity at 859-257-9428 or toll-free at 1-866-400-9428.

Thank you in advance for your assistance with this important project.

Sincerely,

Feai-Voon Wong
Department of Nutrition and Food Science
University of Kentucky
PHONE: 859-333-5536
E-MAIL: fwong2@uky.edu
Demographics

Sex
  o Female
  o Male

Age
  o 18 and below
  o 19-25
  o 26-29
  o 30-35
  o 36-40
  o Above 40

Classification
  o Freshman
  o Sophomore
  o Junior
  o Senior
  o Graduate

Height ___ feet ___ inches

Weight ___ lbs or ___ kg

Do you perceive yourself as
  o Underweight
  o Normal weight
  o Overweight
  o Obese

SAT/ACT Score ___/___

GPA ________________

Have you taken any nutrition class at the University of Kentucky?
  o Yes
  o No

Have you taken any nutrition class outside of University of Kentucky?
  o Yes
  o No

Major ________________
Brackett’s Emotional Intelligence (self-reported ability EI test)

1. Very Inaccurate
2. Moderately Inaccurate
3. Neither nor
4. Moderately accurate
5. Very accurate

1. By looking at people’s facial expressions, I recognize the emotions they are experiencing.
2. I am a rational person and I rarely, if ever, consult my feelings to make a decision.
3. I have a rich vocabulary to describe my emotions.
4. I have problems dealing with my feelings of anger.
5. When someone I know is in a bad mood, I can help the person calm down and feel better quickly.
6. I am aware of the nonverbal messages other people send.
7. When making decisions, I listen to my feelings to see if the decision feels right.
8. I could easily write a lot of synonyms for emotion words like happiness or sadness.
9. I can handle stressful situations without getting too nervous.
10. I know the strategies to make or improve other people’s moods.
11. I can tell when a person is lying to me by looking at his or her facial expression.
12. I am a rational person and don’t like to rely on my feelings to make a decision.
13. I have the vocabulary to describe how most emotions progress from simple to complex feelings.
14. I am able to handle most upsetting problems.
15. I am not very good at helping others to feel better when they are feeling down or angry.
16. My quick impressions of what people are feeling are usually wrong.
17. My “feelings” vocabulary is probably better than most other persons’ “feelings” vocabulary.
18. I know how to keep calm in difficult or stressful situations.
19. I am the type of person to whom others go when they need help with a difficult situation.
Consumer Emotional Intelligence Scale (Performance-based ability EI test)

1) “Indicate the amount of sadness expressed by the product in this picture.”
   a) Not at all present  
   b) Slightly present  
   c) Moderately present 
   d) Quite present  
   e) Extremely present

2) “Indicate the amount of excitement expressed by the product in this picture.”
   a) Not at all present  
   b) Slightly present  
   c) Moderately present 
   d) Quite present  
   e) Extremely present

3) “Indicate the amount of relaxation expressed by the product in this picture.”
   a) Not at all present  
   b) Slightly present  
   c) Moderately present 
   d) Quite present  
   e) Extremely present

4) “Indicate the amount of guilt expressed by the product in this picture.”
   a) Not at all present  
   b) Slightly present  
   c) Moderately present 
   d) Quite present  
   e) Extremely present

5) “Indicate the amount of surprise expressed by the product in this picture.”
   a) Not at all present  
   b) Slightly present  
   c) Moderately present 
   d) Quite present  
   e) Extremely present

How useful might it be to feel certain emotions in the following situation?
6) How useful might it be to feel **tension** when interacting with an aggressive/pushy salesperson when making a purchase?

<table>
<thead>
<tr>
<th>Useless</th>
<th>Quite useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

7) How useful might it be to feel **hostility** when interacting with an aggressive/pushy salesperson at an auto dealership?

<table>
<thead>
<tr>
<th>Useless</th>
<th>Quite useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

8) How useful might it be to feel **joy** when consuming unhealthy food when maintaining a healthy diet?

<table>
<thead>
<tr>
<th>Useless</th>
<th>Quite useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

9) How useful might it be to feel **frustration** when purchasing something expensive and interacting with an incompetent salesperson?

<table>
<thead>
<tr>
<th>Useless</th>
<th>Quite useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

10) Joe felt anxious and became stressed when he thought about having to negotiate a price with a car dealer when buying a new car. When the dealer became pushy and began aggressively negotiating the price, Joe then felt 

- a) Self-conscious
- b) Depressed
- c) Ashamed
- d) Overwhelmed
- e) Happy

11) John was in a hurry to eat lunch before an afternoon meeting. When John stopped at a fast food restaurant, he was happy to see that there were healthy food choices on the menu. After reading the nutritional information he was even more pleased about the choice he made, he felt 

- a) Depressed
- b) Content
- c) Unsure
- d) Fatigued
- e) Active

12) A young woman went into a grocery store happy and left the store feeling sad. What happened in between?

- a) she noticed an elderly lady passing out free samples of food
- b) she went to buy her favorite product and it wasn’t there
- c) she was buying products that made her feel uncomfortable taking to the cashier
- d) she realized she had a lot of things to do in the afternoon
- e) she was treated rudely by the cashier

13) A young man was returning expensive clothes. He felt embarrassed and then he felt angry. What happened in between?

- a) he realized that he should not have bought the clothes in the first place
- b) he saw an old friend in the store who was in a hurry and couldn’t talk
- c) he decided that he couldn’t afford the clothes after all
- d) he was encountered by a salesperson who was suspicious of his intentions
- e) he realized that he lost one of the items he wanted to return
14) A man watched a TV commercial. He felt sad and then he felt guilty. What happened in between?
   a) the commercial was offensive and made him not want to watch anymore
   b) the commercial was inspiring and made him think about an old relationship
   c) the commercial was thoughtful and made him think about losing touch with an old friend
   d) the commercial was strange and made him think about his years growing up
   e) the commercial was interesting and made him think about an new career path

15) Debbie just came back from a day of clothes shopping. She was feeling peaceful and content. How well
    would the following behavior preserve Debbie’s emotions?

   Behavior: *She decides it is best to ignore the feeling since it wouldn’t last.*

   Very Ineffective  1....2....3....4....5  Very Effective

16) John went to his favorite clothing store where he saw a shirt that he wanted to buy last week. He felt
    stressed and frustrated because the shirt that he wanted was no longer there. How well would the following
    behavior help John reduce his frustration?

   Behavior: *He should discontinue future shopping at that store.*

   Very Ineffective  1....2....3....4....5  Very Effective

17) Becky and Steve want to buy a new car. They will share the car and both have specific preferences in the
    type of car to be purchased. They have a good relationship but are stubborn about the car that they each want.
    How effective would Becky be in maintaining a good relationship with Steve if she performed the following
    behavior?

   Behavior: *She should be sarcastic so that Steve will back down and they buy the car she really wants.*

   Very Ineffective  1....2....3....4....5  Very Effective

18) Sarah has a job in which she interacts with many of her clients. These clients are very important to her and
    her company since they represent large accounts. She has a great relationship with her clients, although today,
    one of her clients is very rude and made an offensive comment to her. How effective would Sarah be in
    maintaining a good relationship with this client if performing the following behavior?

   Behavior: *She should become rude and offensive back to the client.*

   Very Ineffective  1....2....3....4....5  Very Effective
Dutch Eating Behavior Questionnaire

1. If you have put on weight, do you eat less than you usually do?
2. Do you try to eat less at meal times than you would like to eat?
3. How often do you refuse food or drink offered because you are concerned about your weight?
4. Do you watch exactly what you eat?
5. Do you deliberately eat foods that are slimming?
6. When you have eaten too much, do you eat less than usual the following day?
7. Do you deliberately eat less in order not to become heavier?
8. How often do you try not to eat between meals because you are watching your weight?
9. How often in the evenings do you try not to eat because you are watching your weight?
10. Do you take into account your weight with what you eat?
11. Do you have the desire to eat when you are irritated?
12. Do you have the desire to eat when you have nothing to do?
13. Do you have the desire to eat when you are depressed or discouraged?
14. Do you have a desire to eat when you are feeling lonely?
15. Do you have a desire to eat when somebody lets you down?
16. Do you have a desire to eat when you are cross?
17. Do you have a desire to eat when you are expecting something unpleasant to happen?
18. Do you get the desire to eat when you are anxious, worried or tense?
19. Do you have a desire to eat when things are going against you or when things have gone wrong?
20. Do you have a desire to eat when you are frightened?
21. Do you have the desire to eat when you are disappointed?
22. Do you have a desire to eat when you are bored or restless?
23. Do you have a desire to eat when you are emotionally upset?
24. If food tastes good to you, do you eat more than usual?
25. If food smells and looks good to you, do you eat more than usual?
26. If you see or smell something delicious, do you have the desire to eat it?
27. If you have something delicious to eat, do you eat it straight away?
28. If you walk past the baker, do you have the desire to buy something delicious?
29. If you walk past a snack bar or a cafe, do you have the desire to buy something delicious?
30. If you see others eating, do you also have the desire to eat?
31. Can you resist eating delicious foods?
32. Do you eat more than usual when you see others eating?
33. When your mother or father is preparing a meal, are you inclined to eat something?
Appendix C Statistical Analysis of Survey Results

Graph 1 Distribution of the specific ability emotional intelligence (Self-Rated Emotional Intelligence Scale measure).
Graph 1a Distribution of the specific ability *perceiving* emotional intelligence.
Graph 1b Distribution of the specific ability *use of emotion* emotional intelligence.

Mean = 9.78  
Std. Dev. = 1.244  
N = 184
Graph 1c Distribution of the specific ability *understanding* emotional intelligence.

Mean = 13.43
Std. Dev. = 2.98
N = 184
Graph 1d Distribution of the specific ability *managing self emotion* emotional intelligence.

Mean = 14.30  
Std. Dev. = 2.635  
N = 164
Graph 1e: Distribution of the specific ability *social management* emotional intelligence.

- **Mean**: 14.59
- **Std. Dev.**: 2.505
- **N**: 184
Graph 1f: Distribution of the *overall* specific ability emotional intelligence.

- **Mean**: 67.02
- **Std. Dev.**: 7.904
- **N**: 184
Graph 2 Distribution of the integrative model emotional intelligence (Consumer Emotional Intelligence Scale measure).
Graph 2a Distribution of the integrative model *perceiving* emotional intelligence subscale.
Graph 2b Distribution of the integrative model *facilitating* emotional intelligence subscale.

**CEIS_Facilitating**

- Mean = 10.83
- Std. Dev. = 3.434
- N = 184
Graph 2c Distribution of the integrative model understanding emotional intelligence subscale.

Mean = 15.30
Std. Dev. = 2.455
N = 184
Graph 2d Distribution of the integrative model *managing* emotional intelligence subscale.

Graph 2e Distribution of the *overall* integrative model emotional intelligence.
Graph 3 Distribution of the Eating Behaviors (Dutch Eating Behavior Questionnaire measure).
Graph 3a Distribution of the Restrained Eating.

Histogram

Mean = 28.08
Std. Dev. = 8.039
N = 184
Graph 3b Distribution of the *External* Eating.

![Histogram](image)

- **Mean**: 32.83
- **Std. Dev.**: 5.824
- **N**: 184
Graph 3c Distribution of the *Emotional* Eating.

Histogram

Mean = 34.11
Std. Dev. = 11.509
N = 184
Graph 3d Distribution of the *overall* eating behaviors.
References


Vita

Feai-Voon Wong

Date and Place of Birth:

December 2, 1986

Kuala Lumpur, Malaysia

Education:

• Bachelor of Science in Dietetics (Coordinated Program)
  University of Kentucky, August 2009

Professional Positions:

• Dietetic Internship Program Assistant, University of Kentucky, Department of Nutrition and Food Science 2010-2011

• Teaching Assistant, University of Kentucky, Department of Nutrition and Food Science 2009 - 2010