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The Impact Of Dietary And Exercise Habits On College Students' Life Satisfaction

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THE IMPACT OF DIETARY AND EXERCISE HABITS ON COLLEGE STUDENTS' LIFE SATISFACTION

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ABSTRACT

A majority of college students do not maintain healthy lifestyle practices. Few college students achieve recommendations for adequate nutrition and instead typically consume diets high in fat, sodium, and sugar and low in fruits and vegetables. In addition, few college students meet current physical activity recommendations, and 40-50% do not exercise at all. Life satisfaction is associated with low levels of stress, academic achievement, goal progression, and personal growth initiative, all of which contribute to success in college as well as the transition from college into the working world. Exercise, fruit and vegetable intake, and avoidance of fat intake are all associated with increased life satisfaction. The purpose of this study was to assess the dietary intake and exercise frequency of a college-aged population as those variables related to students' perceived life satisfaction. An online questionnaire was completed by 574 undergraduate students attending the University of Mississippi and 664 undergraduate students attending the University of Illinois at Urbana-Champaign (N=1,238). Overall, significant associations were found between life satisfaction and fruit intake, whole grain intake, low fat intake, vigorous exercise, moderate exercise, total exercise, physical activity, and BMI in all participants. Logistic regression determined that fruit intake, vigorous exercise, and physical activity positively influence life satisfaction, while fiber intake and BMI negatively influence life satisfaction. Higher levels of satisfaction were reported by individuals who consumed fruit, vegetables, whole grains, and low fat foods on a daily basis as well as individuals who engaged in vigorous exercise, moderate exercise, and physical activity. Further studies are needed to more fully determine the contributing factors of life satisfaction in college students.

TABLE OF CONTENTS

ABSTRACT ii

LIST OF TABLES v

INTRODUCTION 1

Diet 1

Exercise 4

Life Satisfaction 5

Hypotheses 7

Limitations 8

REVIEW OF LITERATURE 9

METHODOLOGY 18

Participants 18

Measures 18

Procedures 21

Data Analysis 23

RESULTS 25

All Participants 25

University of Mississippi 37

University of Illinois 39

DISCUSSION 43

REFERENCES 56

APPENDIX.....69

VITA.....84

LIST OF TABLES

1. Life satisfaction with sex and housing.....27
2. Life satisfaction with year in school and BMI.....27
3. Dichotomous diet and exercise.....29
4. Diet and exercise with sex and housing.....31
5. Diet and exercise with year in school and BMI.....32
6. Dietary intake and exercise with life satisfaction.....36
7. Differences in life satisfaction and BMI.....42

CHAPTER I

INTRODUCTION

College is a significant time of transition to independent living (Brunt, Rhee, & Zhong, 2008) involving a variety of changes in social and physical environments with subsequent cognitive and behavioral adaptations, all of which may impact students' dietary and exercise habits (Butler, Black, Blue, & Greteback, 2004). Young adults attending college gain increased control over their lifestyles (Dinger, 1999), and this newfound freedom along with peer pressure contribute greatly to unhealthy lifestyle choices which have the potential to negatively affect their health and well-being (van Niekerk & Barnard, 2011). Furthermore, dietary and exercise habits established during college years often carry into adulthood (U.S. Department of Health and Human Services [USDHHS], 2000), therefore lifestyle choices made during this time will likely influence subsequent health status (van Niekerk & Barnard, 2011). Evidence from the 1995 College Health Risk Behavior Survey indicates that lack of proper nutrition and adequate amounts of exercise among college students, both of which tend to contribute to significant weight gain, will likely predispose them to future health problems (Douglas et al., 1997). It is therefore crucial that college students establish and maintain appropriate dietary and exercise habits in order to lower their risk for current and future health complications.

DIET

Poor eating and exercise habits are a prevalent trend across the nation, particularly in college-aged populations (Huang et al., 2003; Patterson, Hames, & Poplin, 1994). The most

common pattern of health behaviors in U.S. adults involves a lack of adherence to exercise, dietary fat, fruit, and vegetable recommendations (Berrigan, Dodd, Troiano, Krebs-Smith, & Barbash, 2003). There is ample evidence linking diets that are high in total and saturated fat, cholesterol, and overall caloric intake and low in fiber to cardiovascular diseases (Kritchevsky, 1998), certain types of cancers (Lichtenstein, Kennedy, Barrier, & Danford, 1998), diabetes (Pick, Hawrysh, Gee, & Toth, 1996), and atherosclerosis (USDHHS, 1990). Despite the continuing push for improved dietary habits, the three leading causes of death among U.S. adults (coronary heart disease, some types of cancers, and stroke), are all related to poor dietary choices (Suter, 2000).

According to the American Heart Association (AHA), consuming adequate amounts of essential nutrients, coupled with balancing energy intake and energy expenditure, is essential to maintain health and to prevent or delay the development of cardiovascular disease, stroke, hypertension, and obesity (Appel et al., 2005; Gillman et al., 1995; Knekt et al., 1994; Rimm et al., 1996). In addition, excessive food intake, especially foods high in saturated fat, sugar, and salt, should be avoided. The AHA recommends including a variety of fruits, vegetables, cereals and grains, low fat or nonfat dairy products, fish, legumes and nuts, poultry, and lean meats in order to achieve an overall healthy eating pattern (AHA, 2006). Dietary patterns characterized by high intake of fruits and vegetables (five or more servings per day), especially those that are dark green, deep orange, or yellow, are associated with a lower risk of developing heart disease, stroke, and hypertension (Krauss, Eckel, Howard et al., 2000). More specifically, fruits and vegetables are high in nutrients and fiber and relatively low in calories, so substituting these foods in one's diet contributes to a reduced energy intake and may assist in weight control (McCrory et al., 1999; Rolls, Bell, & Thorwart, 1999). In addition, dietary patterns high in grain

products, which provide complex carbohydrates, vitamins, minerals, and fiber, have been associated with decreased risk of cardiovascular disease (U.S. Department of Agriculture & USDHHS, 2010). The AHA states that whole grains as well as nutrient-fortified and enriched starches should be major sources of calories in the diet. Soluble fibers modestly reduce total and low-density lipoprotein (LDL) cholesterol levels beyond those achieved by a diet low in saturated fat and cholesterol, and dietary fiber may promote satiety by slowing gastric emptying and thus helping to control caloric intake and body weight (Anderson, Smith, & Gustafson, 1994). Good sources of fiber include grains, vegetables, fruits, legumes, and nuts (Van Horn, 1997).

Lack of proper nutrition and an increasingly sedentary lifestyle has also produced a dramatic rise in overweight and obese individuals (USDHHS, 2000). Over two-thirds of Americans are currently overweight or obese (Flegal, Carroll, Ogden, & Curtin, 2010). As a result of poor lifestyle habits, these individuals are at increased risk for a wide range of chronic diseases, including coronary heart disease, stroke, hypertension, dyslipidemia, diabetes, gallbladder disease, osteoarthritis, some types of cancer (National Institute of Diabetes and Digestive and Kidney Diseases, 2000; Pi-Sunyer, 1993), hypercholesterolemia (Field et al., 2001), and other metabolic disorders (Rosamond et al., 2008).

A majority of college students do not maintain healthy lifestyle practices (Anding, Suminski, & Boss, 2001), and eating habits tend to worsen during college years (Grace, 1997). Few college students achieve the recommendations for adequate nutrition which are designed to reduce the risk of chronic disease and instead typically consume diets high in fat, sodium, and sugar and low in fruits and vegetables (Huang et al., 2003; Shive & Morris, 2006), fiber, calcium, iron, and vitamin A (Huang, Song, Schemmel, & Hoerr, 1994). The lack of healthy diets in

college students could be attributed to frequent meal skipping (Sax, 1997), inadequate variety of foods (Schuette, Song, & Hoerr, 1996), frequent consumption of fast foods (Task Force on National Health Objectives in Higher Education, 1991), lack of awareness and understanding of the food recommendations and guidelines (Cotugna & Vickery, 1994), and decreased self-efficacy in making healthful food choices (Cusatis & Shannon, 1996). College students' current lifestyle behaviors place them at risk for developing chronic disease and serious health problems (Centers for Disease Control [CDC], 1997; Huang et al., 2003).

EXERCISE

Engaging in regular physical activity and exercise has been proven time and again to be associated with reduced risk of all of the above listed illnesses as well as osteoporosis, anxiety, and depression (Kesaniemi et al., 2001), improved cardiorespiratory fitness, body weight, high-density lipoprotein (HDL) cholesterol levels, and fasting insulin level (Cornelissen & Fargard, 2005). Regular exercise has also been shown to improve mood, level of functioning, energy level, and other measures of quality of life (Martin, Church, Thompson, Earnest, & Blair, 2009). Despite the evident reduced risk for premature mortality that exercise provides, it remains that approximately 61% of U.S. adults refrain from any physical activity and are below the recommended level for health benefits (AHA, 2005).

Both the American College of Sports Medicine (ACSM) and the AHA recommend that all healthy adults aged 18-65 years obtain a minimum of 30 minutes of moderate-intensity aerobic physical activity (activity that noticeably accelerates heart rate) on five days each week or a minimum of 20 minutes of vigorous-intensity aerobic activity (activity that causes rapid breathing and substantially increases heart rate) on three days each week. In addition, in order to promote and maintain good health and physical independence, the ACSM and AHA state that

adults will benefit from performing activities that maintain or increase muscular strength and endurance on at least two nonconsecutive days each week using major muscle groups. Participation in aerobic and muscle-strengthening activities beyond the minimum recommended amounts will further reduce risk for premature chronic health conditions and mortality related to physical inactivity (Haskell et al., 2007).

Over half of all college students report insufficient physical activity levels based on current recommendations. Only around 56% of college students participate in 1 to 4 days of moderate-intensity activity during the week, and less than one third meet ACSM recommendations for vigorous-intensity activity on a weekly basis (American College Health Association [ACHA], 2012). In addition, around 40-50% of college students do not exercise at all (Shankar, Dilworth, & Cone, 2004). This lack of exercise among college students continues to exacerbate the issue of obesity on college campuses, as it has been reported that approximately 34% of U.S. college students are overweight or obese (ACHA, 2012). Furthermore, the greatest increases in overweight and obesity have been observed in adults between 18 and 29 years of age (Mokdad et al., 2003), indicating that college-aged populations are at significant risk for dramatic and inappropriate weight gain (Racette, Deusinger, Strube, Highstein, & Deusinger, 2005) and consequently the numerous health risks associated with overweight and obesity. Despite these statistics, it remains that data specific to college students are scarce (Huang et al., 2003), and little research in the past thirty years has focused on college students' physical activity (Buckworth & Nigg, 2004; USDHHS, 2000).

LIFE SATISFACTION

Life satisfaction is a cognitive evaluation of one's circumstances (Diener, Emmons, Larsen, & Griffin, 1985) and has been defined as "a global assessment of a person's quality of

life dependent on the values and criteria deemed important by the individual" (Shin & Johnson, 1978, p. 478). In other words, one's judgments of satisfaction are based on a comparison or standard which each individual sets for him or herself and is not externally imposed (Diener et al., 1985). Therefore, if one's circumstances are relatively similar to one's own set of standards, a higher level of satisfaction is perceived (Coffman & Gilligan, 2002). Life satisfaction is one of three components of subjective well-being, to which is also referred as one's happiness, and is well established as a pivotal index of psychological health (Diener, 1984). The remaining components, positive affect and negative affect, refer to the emotional aspects and responses of subjective well-being that comprise life satisfaction (Diener et al., 1985). Research has shown, however, that positive and negative affect are independent of life satisfaction (Balatsky & Diener, 1993). Research has found positive relationships between life satisfaction and health, physical activity, socio-economic status (Palmore & Luikart, 1972), and social support (Coffman & Gilligan, 2002). In addition, life satisfaction has been shown to predict other important health-related outcomes, including inverse mortality rates among both healthy and diseased individuals (Chida & Steptoe, 2008) as well as suicide instances in men and women (Koivumaa-Honkanen et al., 2001).

Student satisfaction, a domain in overall life satisfaction, is defined as "a pleasurable emotional state resulting from a person's enactment of the role of being a student" (Bean & Bradley, 1986, p. 398) and is a significant predictor of college persistence. Because student satisfaction is encompassed within the domain of overall life satisfaction, life satisfaction is therefore assumed to be an indicator of college persistence (Coffman & Gilligan, 2002), which supports additional conclusions that college students with greater life satisfaction exhibit higher levels of academic success (Rode et al., 2005). Furthermore, life satisfaction appears to

encourage positive development in the future and is associated with personal growth initiative. Personal growth initiative is a fundamental aspect of the transition from college to the working world (Stevic & Ward, 2008), indicating that students' life satisfaction in college can significantly affect the success of their future endeavors.

It has been documented that lack of exercise is associated with stress and negative mood states such as depression and anxiety (Biddle & Mutrie, 2001). College students more often than not experience an excessive and unnecessary amount of stress, which can have negative academic, emotional, or health outcomes (Beck, Hacket, Srivastava, McKim, & Rockwell, 1997). Exercise, however, reduces stress and offers various physiological and psychological health benefits (Frederick & Ryan, 1993), all of which lead to greater life satisfaction (Huang, Lee, & Chang, 2007). In addition, regular fruit intake and avoidance of fat intake are associated with greater life satisfaction (Grant, Wardle, & Steptoe, 2009).

The purpose of this study was to assess dietary intake, specifically fruit, vegetables, whole grains, fat, and fiber intake and exercise frequency in a college-aged population as these variables related to students' perceived life satisfaction. The significance of this study is the further insight it will provide on an understudied population at risk for numerous health consequences based on typical dietary and exercise habits, all of which fall below current recommendations.

HYPOTHESES

H_{o1}: There will be no significant association between dietary fruit intake and life satisfaction.

H_{o2}: There will be no significant association between dietary vegetable intake and life satisfaction.

H_{o3}: There will be no significant association between dietary whole grain intake and life satisfaction.

H_{o4}: There will be no significant association between dietary fat intake and life satisfaction.

H_{o5}: There will be no significant association between dietary fiber intake and life satisfaction.

H_{o6}: There will be no significant association between exercise frequency and life satisfaction.

H_{o7}: There will be no significance difference in life satisfaction between the University of Mississippi and the University of Illinois.

H_{o8}: There will be no significant difference in BMI between the University of Mississippi and the University of Illinois.

LIMITATIONS

The primary limitation of this study is the reliance on self-reported data for dietary habits, exercise frequency, life satisfaction, and height and body weight for BMI purposes. Although there is room for error and discrepancy, this method of reporting has been shown to be reasonably accurate as used in previous studies (Goodman, Hinden, & Khandelwal, 2000).

CHAPTER II

REVIEW OF THE LITERATURE

The following literature review will focus on current lifestyle practices in college students, the importance of subjective well-being and life satisfaction in college students, and the link between exercise, dietary habits, and life satisfaction.

It has been well documented that the majority of college students do not engage in adequate dietary practices recommended to reduce the risk of chronic disease and instead consume diets high in fat, sodium, and sugar and low in fruits and vegetables (Anding, Suminski, & Boss, 2001; Brunt et al., 2008; Grace, 1997; Patterson et al., 1994). Eating five to nine daily servings of fruits or vegetables significantly reduces the risk of diet-related diseases, such as heart disease, cancer, and stroke, in addition to reducing the risk of some lung cancers, gastrointestinal problems, obesity, and diabetes (Van Duyn & Pivonka, 2000). Research has consistently shown that the greatest increases in weight occur in individuals between the ages 18 and 29 years (Mokdad et al., 2003), which is supported by the fact that over half of college students do not meet current recommendations for physical activity (ACHA, 2012). Regular, vigorous physical activity is positively associated with many beneficial health factors, including weight control, decreased risk of heart disease (Paffenbarger, Hyde, Wing, & Hsieh, 1986), and lower incidence of illness (Bray & Born, 2004) and is also related to psychological well-being, which is established through low levels of depression (Crews & Landers, 1987), anxiety, and stress (Frederick & Ryan, 1993) as well as improved self-esteem (Trujillo, 1983).

These findings are of concern not only because of the increased risk of many chronic diseases posed by maintaining unhealthy lifestyle practices, but also because dietary and exercise habits tend to worsen in college (Anding et al., 2001; Grace, 1997), and research has shown a long-term impact of health behaviors formed during the college years (Paffenbarger et al., 1986). Gordon-Larsen, Adai, Nelson, and Popkin (2004) showed that the incidence and continuance of obesity increases significantly from adolescence to adulthood and that those who develop obesity as adolescents rarely lower their body mass index out of the obese range. Furthermore, college is a significant time of transition to independent living and freedom for many students, which inadvertently exposes them to a variety of food choices and often results in poor eating and exercise habits (Grace, 1997) followed by unnecessary weight gain. Dietary and exercise habits established in college often carry into adulthood and influence subsequent health status (van Niekerk & Barnard, 2011), hence college years are both an opportune and critical time to establish appropriate eating and exercise habits. Fortunately, college students are at a time and place in their lives where their behavior is conducive to change (Silliman, Rodas-Fortier, & Neyman, 2004).

Silliman et al. (2004) assessed dietary and exercise habits and perceived barriers to following a healthy lifestyle in a population of 471 college students. As reported, 31% percent of the sample had a BMI greater than 25 kg/m^2, indicating a high prevalence of overweight and obese college-aged individuals. Over half of participants reported eating fruit and vegetables less than once per day, which is consistent with many previous findings concerning the nutritional habits of college students (Anding et al., 2001; Brunt et al., 2008; Grace, 1997; Patterson et al., 1994). Dinger (1999) sought to determine physical activity and dietary intake behaviors among college students living in residence halls and fraternity or sorority housing.

Overall, participants in this study failed to meet current recommendations in the categories of moderate and vigorous physical activity, muscular strength and/or endurance activities, and fruit and vegetable consumption.

Anding et al. (2001) assessed levels of compliance with dietary and exercise guidelines by surveying the diet, exercise, and general health habits of college females. As reported, only around one third of participants exercised regularly, and 25% of participants were identified as overweight. In addition, all participants failed to consume recommended amounts of bread and grains, fruits, vegetables, and dairy products, and over half of participants exceeded recommended levels of saturated fat and sodium in their diet. These results were consistent with the authors' hypothesis that college women practice diet and health behaviors which contradict dietary and exercise guidelines. It is clear that many college students put themselves at risk for health consequences whether it is due to lack of knowledge or other factors that result in poor lifestyle choices.

Increased BMI is a prominent issue among college students. Brunt et al. (2008) examined dietary and lifestyle practices in college students (N = 731) across all BMI categories in order to assess students' weight status in relation to their BMI and dietary intake. As reported, the mean BMI was 23.9 ± 4.5 kg/m^2, ranging from 16.5 to 44.4 kg/m^2. Approximately 27% of the surveyed students were overweight, and 8% were obese. In addition, those who lived off campus were more likely to be overweight or obese, and the authors believe this may be a result of access to a wider variety of food compared to those living on campus or increased consumption of fast food due to time or financial constraints. Overall, students with higher BMIs reported a higher intake of meats, which likely contributed a large amount of saturated fats, and students with lower BMIs reported a higher consumption of vegetables.

Research has shown that the greatest increase in overweight and obesity occurs between 18 and 29 years of age (Mokdad et al., 2003), indicating that college students are at an especially high risk for weight gain, primarily as a result of inappropriate eating and exercise habits. Furthermore, it has been found that participation in vigorous aerobic activity as well as strengthening activities declines progressively between the ages of 12 and 21 years (Caspersen, Pereira, & Curran, 2000). Racette et al. (2005) assessed weight, exercise, and dietary patterns of college students during their freshman and sophomore years. Overall, there was a significant weight gain in 70% of the students. Only about half of the participants in this study engaged in regular exercise, and 30% did not exercise at all. In addition, fruit and vegetable consumption was inversely correlated with both high fat fast food and fried food intake, all highlighting the inactivity and unhealthy dietary behaviors that are typical in many college students.

Racette, Deusinger, Strube, Highstein, & Deusinger (2008) further expanded upon their previous research and assessed weight changes, exercise, and diet behaviors among college students from the beginning of their freshman year until the end of their senior year. As freshmen, 15% of participants were overweight or obese, and this prevalence increased to 23% by the end of senior year, which seems to be in accordance with the 29% and 25% of freshmen and seniors (respectively) who did not exercise regularly. Coupling this increase in weight gain was a lack of adequate dietary habits. Fifty percent of students as freshmen consumed fried and fast foods at least twice a week, and 71% of students both as freshmen and seniors did not consume the recommended daily amounts of fruits and vegetables.

Lowry et al. (2000) examined associations of physical activity and food choice with weight management goals and practices in college students based on a sample from the 1995 National College Health Risk Behavior Survey. According to self-reported data, 35% of

students were overweight or obese, slightly over one third of students participated in regular vigorous exercise (similar to the findings of Anding et al., as mentioned previously), only 26% of students ate more than five servings of fruits and/or vegetables per day, and 78% of participants ate at least two servings per day of high fat foods.

College requires a significant amount of adjustment to social, academic, and environmental stressors for many students. Previous research has indicated that a significant predictor of college persistence is student satisfaction, defined as "a pleasurable emotional state resulting from a person's enactment of the role of being a student" (Bean & Bradley, 1986, p. 398). Overall life satisfaction, defined by Shin and Johnson (1978, p. 478) as "a global assessment of a person's quality of life according to his chosen criteria," is a subjective judgment of satisfaction based on a self-imposed standard of one's circumstances and includes the domain of student satisfaction. Because student satisfaction is encompassed within the domain of overall life satisfaction, life satisfaction is therefore assumed to be an indicator of college persistence (Coffman & Gilligan, 2002).

There is also growing evidence that life satisfaction impacts academic performance in college students. Rode et al. (2005) explored the relationships between various measures of student satisfaction and academic performance. Students with high life satisfaction seemed to show greater resiliency and less fragility in the face of academic challenges, and conversely, students' low levels of life satisfaction seemed to derail their focus and deteriorate their performance in the classroom. Although cognitive ability most strongly predicted students' performance measures, students who were satisfied with their life overall generally exhibited higher performance than those with lower levels of life satisfaction.

Life satisfaction is a prime component of subjective well-being, also referred to as one's happiness (Diener, 1984). Research has shown that increased life satisfaction and happiness may be related to goal progression (Emmons, 1986), which can be an important factor in college persistence and success. Furthermore, life satisfaction is negatively related to perceived stress, indicating that stress in college students will lead to lower levels of life satisfaction and thus decreased college persistence. Coffman and Gilligan (2002) investigated the relationships between social support, perceived stress, self-efficacy, and life satisfaction among first-year college students. As predicted, lower levels of perceived stress were correlated with higher ratings of life satisfaction, and, vice versa, students who reported higher levels of stress also reported lower life satisfaction. Similar findings were reported by Weinstein and Laverghetta (2009) in a study to determine the relationship between life satisfaction and stress in college students. The authors reported that scores on the satisfaction with life scale (Diener et al., 1985) were significantly negatively correlated with scores on the college student stress scale (Feldt, 2008), suggesting that overall life satisfaction is adversely influenced by college stress.

Research suggests that social support, specifically level of family support, number of close friends, and involvement in a strong romantic relationship, are positively correlated with and are strong predictors of life satisfaction (Diener & Fujita, 1995). Social support may also have a remedial effect on perceived stress by providing stability, predictability, and positive affect, thereby enhancing overall well-being (Cohen & Wills, 1985). Solberg & Villarreal (1997) found that social support and self-efficacy (the belief in one's own capabilities) were negatively related to psychological distress. Additionally, social support minimized the negative effect of stress, and high self-efficacy tended to buffer the experience of stress. Demakis and McAdams (1994) determined that social support has a direct beneficial effect on life satisfaction

of first-year college students. Students who are more satisfied with their networks of social support tend to report higher levels of life satisfaction. Thus, higher levels of perceived social support and self-efficacy perceptions and consequently lower levels of perceived stress may enhance life satisfaction (Coffman & Gilligan, 2002). Self-control, also termed learned resourcefulness (Lightsey, Maxwell, Nash, Rarey, & McKinney, 2011), has been linked to more effective coping ability and lower stress (Gintner, West, & Zarski, 1989), both of which are prime contributors to positive states of well-being and ultimately higher life satisfaction.

Stevic and Ward (2008) examined the mediating role of life satisfaction between positive recognition and levels of personal growth initiative among college students. A lack of personal growth during college years causes students to leave college without a clear sense of how to take charge of their lives, and thus personal growth initiative plays an important role during the transition from college to the working world. This study found that perceived life satisfaction appears to play an essential role in the process of changing and developing a meaningful life in college students. In essence, positive emotions appear to build life satisfaction and expand an individual's personal growth initiative, which results in a successful transition from college to the working world. In addition, Fredrickson and Joiner (2002) theorize that people build positive psychological resilience over time to enhance their overall functioning in life, further emphasizing that positive emotions successfully influence optimal functioning in the future.

Recent evidence indicates that life satisfaction predicts other important health-related outcomes. Chida and Steptoe (2008) revealed in a meta-analysis that life satisfaction and other positive traits inversely predict mortality among persons both healthy and with disease. In addition, positive states of well-being may be associated with favorable biological responses, including low cortisol levels, faster cardiovascular stress recovery, reduced inflammation, and

resilience to infection (Cohen, Alper, Doyle, Treanor, & Turner, 2006). Furthermore, positive states may be accompanied by healthy lifestyles and prudent health behaviors that reduce long-term risk of disease development (Grant et al., 2009). Research has also shown that people who are dissatisfied with life are more likely to commit suicide compared to their more satisfied counterparts. Reduced life satisfaction, therefore, may have significant effects on reduction of positive mental health, life expectancy, and increased risk of suicide (Lightsey et al., 2011).

Research has confirmed that exercise improves a wide range of health aspects, including psychological health and relief of depression and anxiety (Frederick & Ryan, 1993). Huang et al. (2007) concluded that higher levels of exercise participation are associated with greater reported physical and psychological benefits, both of which lead to a more satisfying life, and that people who exercise are more likely to experience a greater level of satisfaction and positive self-perception. Schnohr, Kristensen, Prescott, and Scharling (2005) examined associations between physical activity, life satisfaction, and stress and found that increased physical activity was positively correlated with lower levels of stress and lower life dissatisfaction as well as increased life satisfaction with increased intensity of physical activity. In addition, Pettay (2008) explored the relationship between a variety of health behaviors and life satisfaction in college students and found that individuals who reported a greater frequency of physical activity displayed higher life satisfaction than less active individuals. Nguyen-Michel, Unger, Hamilton, and Spruijt-Metz (2006) found that higher levels of physical activity led to lower perceived stress and hassles in college students.

Research supporting the relationship between fruit and vegetable intake and life satisfaction is very limited. Pettay (2008) found significant correlations between fruit and vegetable consumption and life satisfaction, specifically students who indicated more frequent

consumption of fruits and vegetables also reported higher levels of life satisfaction. Grant et al. (2009) assessed the relationship between life satisfaction and health behaviors among young adults and found an overall positive association between life satisfaction and fruit intake as well as a significant association between life satisfaction and fat avoidance. Grant et al. (2009) also found that more satisfied individuals reported more frequent exercise, confirming the authors' hypothesis that life satisfaction is positively associated with prudent health behaviors.

Despite the overwhelming evidence of the benefits of adequate nutrition and exercise, very few adults meet the recommended guidelines for either. Poor lifestyle habits established during college years often carry into adulthood, opening the door for the risk of many chronic diseases and poor mental health. College is a significant time of transition for young adults and presents a variety of social, academic, and environmental stressors to which students are forced to adapt. Life satisfaction is associated with low levels of stress, academic achievement, goal progression, and personal growth initiative, all of which contribute to success in college as well as the transition from college into the working world. Conversely, reduced life satisfaction is associated with many negative health consequences, including mortality, increased risk of disease, and a reduction in mental health (i.e., depression, stress, and anxiety). Exercise, fruit and vegetable intake, and avoidance of fat have strong associations with life satisfaction. It is therefore imperative that adequate eating and exercise habits are established during college years, which will thus ensure optimal mental and physical health in college and adult years as well as contribute to the success of future endeavors.

CHAPTER III

METHODOLOGY

Participants

Potential participants included 4,000 undergraduate students attending the University of Mississippi and 4,000 undergraduate students attending the University of Illinois at Urbana-Champaign between the ages of 18 and 24 years (N = 8,000). Responses from students under the age of 18 years and over the age of 24 years were discarded prior to data analysis. The University of Mississippi and the University of Illinois were chosen because they are in culturally different regions of the country. In order to ensure no more than a 5% margin of error, at least 400 responses from each university were needed (Patten, 1998, pg. 79). According to the National Survey of Student Engagement (NSSE), responses rates across various institutions have been as low as 14% (NSSE, 2003); therefore, the number of potential participants at each university (4,000) was chosen in order to ensure adequate data based on the risk of a response rate lower than 14%. One thousand (1,000) students from each freshmen, sophomore, junior, and senior classes were randomly selected at each university. All participants at both universities were administered an online questionnaire.

Measures

A three-part, 12-item online questionnaire was used to assess dietary habits, exercise frequency, and life satisfaction of all participants. Prior to this project, a pilot study using the designed questionnaire was conducted on 49 undergraduate students at the University of

Mississippi (IRB #13x-203) through Qualtrics. The resulting Cronbach's alpha of .834 indicated that this questionnaire was reliable. The dietary portion of the questionnaire asked participants how often in a typical week they consume fruit (fresh, frozen, canned), vegetables (fresh, frozen, canned), whole grain bread, pasta, cereal, or brown rice, high fat foods (fried foods, beef, pork, cakes, cookies, ice cream), low fat foods (milk, yogurt, cheese, lean meats), and whether or not they make a deliberate effort to consume fiber. The items on fruit, high fat foods, and fiber have been used in previous research by Grant et al. (2009). The items on vegetables, whole grains, and low fat foods were designed by the investigator and are supported by previous research (Pettay, 2008). In order to measure significance of responses, each item was coded into a binary variable [0 as the unhealthy option(s) and 1 as the healthy option], which is similar to a protocol used by Grant et al. (2009). The items assessing fruit, vegetable, whole grain, and fat intake had five answer choices ranging from "Never" to "Daily." The item regarding fiber consumption had the answer choices "Yes" and "No." Healthy and unhealthy options for all dietary-related items were determined by recommendations from the American Heart Association (Krauss et al., 2000). The healthy option for fruit, vegetable, whole grain, and low fat consumption was "Daily;" the healthy options for consumption of foods high in fat were "2-3 times a week," "Once a week," "Less than once a week," and "Never;" and the healthy option for deliberate consumption of fiber was "Yes."

The exercise portion of the questionnaire asked participants to determine their weekly level of physical activity according to vigorous-intensity activity, moderate-intensity activity, and daily physical activity. All three exercise-based items were used by Pettay (2008) and taken from the 2006 Youth Risk Behavior Surveillance System (YRBSS). Healthy options for all exercise-related items were determined by recommendations from the American College of

Sports Medicine (Haskell et al., 2007). The healthy option for vigorous-intensity activity was a response of 3 or more days per week; the healthy option for moderate-intensity activity was a response of 5 or more days per week; and the healthy option for daily physical activity was a response of 5 or more days per week. The ACSM also supports a combination of vigorous- and moderate-intensity activity during the week in order to meet physical activity recommendations (2 moderate-intensity exercise periods = 1 vigorous-intensity exercise period). For example, someone could exercise vigorously on two days during the week and exercise moderately on two days during the same week (Haskell, 2007). Therefore, students who did not meet individual vigorous- and moderate-intensity activity recommendations but met physical activity recommendations with a combination of the two were also coded as healthy. Students who met recommendations for vigorous-intensity activity, moderate-intensity activity, or a combination of both were coded as healthy in a separate category designating total exercise participation.

The final portion of the questionnaire measured life satisfaction using three of five questions from the Satisfaction With Life Scale (SWLS; Diener et al., 1985). The SWLS has shown strong internal reliability with a test-retest correlation coefficient of .82 and coefficient alpha of .87. In addition, the three life satisfaction items used in this questionnaire display the strongest item-total correlations (Diener et al., 1985). A pilot study using a Pearson-product correlation and Cronbach's alpha ($\alpha = 0.81$) determined that these three items represent a valid and reliable measure of life satisfaction (Pettay, 2008). Each question taken from the SWLS had a seven-point scaling system; participants responded to each question using the numbers 1 to 7, which dictated answer choices ranging from "Very dissatisfied" to "Extremely satisfied." Life satisfaction was calculated by summing the numerical responses from all three questions. Because each question was ranked using a scale of 1 to 7, the possible scores for overall life

satisfaction ranged from 3 to 21. The original 5-item SWLS has a range of scores between 5 and 35 and interprets scores using six intervals with a neutral point of 20. Scores between 5 and 9 represent "extremely dissatisfied;" scores between 10 and 14 represent "dissatisfied;" scores between 15 and 19 represent "slightly dissatisfied;" the neutral point in the scale, 20, represents "neither satisfied nor dissatisfied;" scores between 21 and 25 represent "slightly satisfied;" scores between 26 and 30 represent "satisfied;" and scores between 31 and 35 represent "extremely satisfied" (Pavot & Diener, 1993). For the purposes of the 3-item version of the SWLS used in this study, the neutral point within the possible range of scores was 12, which represented "neither satisfied nor dissatisfied." Scores between 3 and 5 represented "extremely dissatisfied;" scores between 6 and 8 represented "dissatisfied;" scores between 9 and 11 represented "slightly dissatisfied;" scores between 13 and 15 represented "slightly satisfied;" scores between 16 and 18 represented "satisfied;" and scores between 19 and 21 represented "extremely satisfied." This modified scoring system was necessary to account for the decreased range of scores using the 3-item measure.

Demographic information was collected at the end of the questionnaire and included sex, age, year in school, height and weight for BMI purposes, and housing arrangement.

Procedures

A sample of 4,000 undergraduate students attending the University of Mississippi and 4,000 undergraduate students attending the University of Illinois at Urbana-Champaign (8,000 students in total) were contacted through email. Prior to the study, the Registrar's office at the University of Mississippi was contacted requesting access to a random computer-generated selection of student emails. The Registrar's office stated that it would be able to contact students directly through email on behalf of the investigator according to the investigator's specifications.

The University of Mississippi IRB approval was obtained before the Registrar contacted students. Also prior to the study, the University of Illinois IRB was contacted in regards to distribution of the online questionnaire amongst the student body. A member of the University of Illinois IRB informed the investigator that this research would be exempt from Illinois IRB approval and that student recruitment through email would be facilitated by the Division of Management Information (DMI). The DMI at the University of Illinois was then contacted requesting a random computer-generated selection of student emails through its Data Retrieval Services, which involve creating targeted mailing lists as well as random stratified samples of students or employees. These services are frequently utilized for email communication and survey research projects among students, faculty, and staff at the University of Illinois and are open to University members (students and employees) as well as outside entities. The DMI affirmed that it would be able to prepare a sample of randomly selected students according to the investigator's specifications and contact students on behalf of the investigator (one initial email and one follow up email). Before the DMI proceeded with generating the requested list of student emails, this research project was approved by the University of Illinois Dean of Students, which required submission of the University of Mississippi IRB application and a Student Affairs Research Approval Form to the Office of the Dean of Students electronically. The investigator was contacted by the Office of the Dean of Students upon approval of research.

All participants at both universities received an email from said entities briefly explaining the purpose of the research and requesting their participation in the study. The email also included a link to the online questionnaire. Students were instructed in the email that they had one week to complete the questionnaire. By accessing and completing the questionnaire, students gave their consent to participate in the study. Students who chose to complete the

questionnaire were directed to it by clicking on the link provided in the email. The questionnaire was administered online through Qualtrics. Participants selected their preferred choice for each question and completed demographic information at the end of the questionnaire. Responses from all participants were received electronically through Qualtrics and sorted accordingly for data analyses.

Data Analysis

Data analyses were conducted using SPSS version 20. Univariate statistics were used to report frequencies and percentages at each university for fruit, vegetable, whole grain, fat, and fiber intake, exercise frequency, age, sex, year in school, BMI, and housing (independent variables). Life satisfaction of students at each university was calculated using a separate scoring system as discussed previously, and all seven scoring ranges ("very dissatisfied," "dissatisfied," etc.) were collapsed into three categories for the purposes of frequency distributions. Responses scored as "very dissatisfied," "dissatisfied," and "slightly dissatisfied" were classified as "dissatisfied" and coded as -1; responses scored as "neither satisfied nor dissatisfied" were classified as "neutral" and coded as 0; and responses scored as "slightly satisfied," "satisfied," and "extremely satisfied" were classified as "satisfied" and coded as 1. Chi-square tests were conducted to report associations between all independent variables and life satisfaction (dependent variable). Age was not included in this analysis because it was used primarily for the purpose of ensuring that responses came from participants in the investigator's desired age range (18 to 24 years). Associations between the variables sex, year in school, BMI (separated into four categories: below 18.5 kg/m^2, 18.5 to 24.9 kg/m^2, 25.0 to 29.9 kg/m^2, and above 30.0 kg/m^2), and housing with fruit, vegetable, whole grain, fat, and fiber intake were also investigated. Exercise frequency was evaluated for associations with sex, year in school, BMI,

and housing. Logistic regression was then performed to further investigate the association between the independent variables and life satisfaction. For this test, life satisfaction (dependent variable) was collapsed into two categories: satisfied, coded as 1, and dissatisfied, coded as 0. Responses scored as "very dissatisfied," "dissatisfied," "slightly dissatisfied," and "neither satisfied nor dissatisfied" were classified as dissatisfied, and responses scored as "slightly satisfied," "satisfied," and "extremely satisfied" were classified as satisfied. Finally, independent T-tests were conducted to evaluate differences in life satisfaction and BMI between the University of Mississippi and the University of Illinois.

CHAPTER IV

RESULTS

The results of this study are presented in three sections. The first will report statistical analyses conducted on all participants. The second section will report statistical analyses conducted on students attending the University of Mississippi; the third section will report statistical analyses conducted on students attending the University of Illinois. Frequencies of demographic, dietary-, and exercise-related items (independent variables), associations between life satisfaction (dependent variable) and all independent variables, associations between life satisfaction and all demographic variables, associations between all independent variables and all demographic variables, and logistic regression analysis will be reported in all three sections. Finally, differences in life satisfaction between the two universities as determined by an independent t-test will be reported at the end of the third section.

All Participants

An online questionnaire was distributed through email to 4,000 students attending the University of Mississippi and 4,000 students attending the University of Illinois (N = 8,000). A total of 1,238 responses were received collectively from both schools for a response rate of 15.48%. Of the 1,238 participants, 477 (38.5%) were males and 761 (61.5%) were females. The mean age of the participants was 19.9 years (*SD* = 1.48 years), and the largest portion of respondents (27.2%) were aged 19 years. The majority of participants were underclassmen, accounting for 58.2% of all responses; 32.5% of respondents were freshmen. The lowest portion

of respondents were seniors (17.4%). The most frequent housing arrangement of participants was a dormitory (40.5%), followed by an off-campus apartment (24.0%). The least common housing arrangements were living with parents and owning a home (3.2% and 2.3%, respectively), followed by a residential college and a fraternity or sorority (5.1% and 7.2%, respectively). The mean BMI for all participants was 23.34 kg/m^2 with a standard deviation of 4.25 kg/m^2 and a range of 36.17 kg/m^2. The majority of participants (67.4%) were in a healthy weight range (BMI of 18.5 kg/m^2 to 24.9 kg/m^2), and 26.8% of participants were overweight or obese (BMI $\geq$ 25.0 kg/m^2 or BMI $\geq$ 30 kg/m^2, respectively). A significantly larger portion of males than females were overweight (26.8% and 16.7%, respectively); a small disparity was observed in obese males and females (7.3% and 5.5%, respectively). The highest frequencies of both overweight and obesity occurred in seniors (24.2% and 10.7%, respectively); the lowest frequencies occurred in sophomores (15.7% and 3.8%, respectively). In addition, the highest rate of overweight participants were those living in a residential college (31.7%), followed by similar frequencies of those living in an off-campus apartment (25.3%) and those living with parents (24.1%). The highest percentage of obesity occurred in those who own a home (17.2%), followed by those who live with parents (12.5%). The lowest rates of obese participants were those living in a fraternity or sorority (2.2%), followed by almost identical frequencies of those living in an on-campus apartment and those living in a dorm (5.5% and 5.6%, respectively).

Overall, 75.9% of participants indicated they were satisfied with their lives, which included a range of those who scored as "slightly satisfied," "satisfied," and "extremely satisfied." The highest reported level of satisfaction among all participants was "satisfied" (40.8%). Frequencies and associations between life satisfaction with year in school, BMI, sex, and housing are shown in Tables 1 and 2. Life satisfaction was significantly associated with

Table 1 Associations between life satisfaction with sex and housing among universities

Life satisfaction	Sex n(%)			Housing n(%)							
	Male	Female	χ^2	Dorm	Residential College	Greek	On-campus Apt	Off-campus Apt	Parents	Own a home	χ^2
All Participants											
Satisfied	360(75.5)	579(76.1)	2.635	373(74.3)	46(73.0)	73(82.0)	165(75.7)	226(76.1)	31(77.5)	25(86.2)	9.076
Neutral	17(3.6)	40(5.3)		22(4.4)	3(4.8)	1(1.1)	13(6.0)	15(5.1)	3(7.5)	0(0.0)	
Dissatisfied	100(21.0)	142(18.7)		107(21.3)	14(22.2)	15(16.9)	40(18.3)	56(18.9)	6(15.0)	4(13.8)	
U of Mississippi											
Satisfied	151(76.6)	281(74.5)	2.757	142(74.7)	46(73.0)	22(71.0)	14(60.9)	165(77.5)	22(75.9)	21(84.0)	9.121
Neutral	5(2.5)	21(5.6)		8(4.2)	3(4.8)	1(3.2)	1(4.3)	10(4.7)	3(10.3)	0(0.0)	
Dissatisfied	41(20.8)	75(19.9)		40(21.1)	14(22.2)	8(25.8)	8(34.8)	38(17.8)	4(13.8)	4(16.0)	
U of Illinois											
Satisfied	209(74.6)	298(77.6)	1.458	231(74.0)	*n/a*	51(87.9)	151(77.4)	61(72.6)	9(81.8)	4(100.0)	10.594
Neutral	12(4.3)	19(4.9)		14(4.5)	*n/a*	0(0.0)	12(6.2)	5(6.0)	0(0.0)	0(0.0)	
Dissatisfied	59(21.1)	67(17.4)		67(21.5)	*n/a*	7(12.1)	32(16.4)	18(21.4)	2(18.2)	0(0.0)	

Table 2 Associations between life satisfaction with year in school and BMI among universities

Life satisfaction	Year in School n(%)					BMI (kg/m^2) n(%)				
	Freshman	Sophomore	Junior	Senior	χ^2	< 18.5	18.5-24.9	25.0-29.9	≥ 30.0	χ^2
All Participants										
Satisfied	297(73.9)	248(78.0)	232(76.6)	162(75.3)	3.441	50(70.4)	672(80.5)	181(71.0)	36(46.8)	55.754**
Neutral	17(4.2)	13(4.1)	17(5.6)	10(4.7)		7(9.9)	27(3.2)	17(6.7)	6(7.8)	
Dissatisfied	88(21.9)	57(17.9)	54(17.8)	43(20.0)		14(19.7)	136(16.3)	57(22.4)	35(45.5)	
U of Mississippi										
Satisfied	138(75.0)	108(73.5)	116(77.9)	70(74.5)	.965	23(71.9)	296(81.5)	94(71.2)	19(40.4)	44.751**
Neutral	8(4.3)	7(4.8)	6(4.0)	5(5.3)		4(12.5)	10(2.8)	7(5.3)	5(10.6)	
Dissatisfied	38(20.7)	32(21.8)	27(18.1)	19(20.2)		5(15.6)	57(15.7)	31(23.5)	23(48.9)	
U of Illinois										
Satisfied	159(72.9)	140(81.9)	116(75.3)	92(76.0)	7.489	27(69.2)	376(79.7)	87(70.7)	17(56.7)	17.036**
Neutral	9(4.1)	6(3.5)	11(7.1)	5(4.1)		3(7.7)	17(3.6)	10(8.1)	1(3.3)	
Dissatisfied	50(22.9)	25(14.6)	27(17.5)	24(19.8)		9(23.1)	79(16.7)	26(21.1)	12(40.0)	

**indicates *p* value of ≤ .005

BMI ($p < 0.001$), but no significant association with the three remaining demographic variables emerged. Similar frequencies of males and females reported satisfaction (75.5% and 76.1%, respectively), but a higher portion of males were dissatisfied (21.0% compared to 18.7% of females). The highest frequency of satisfaction occurred in sophomores (78.0%), while the lowest frequency occurred in freshmen (73.9%). Freshmen also reported the greatest percentage of dissatisfaction (21.9%), followed by seniors (20.0%). The frequencies of dissatisfied participants living in a residential college (22.2%) or dormitory (21.3%) were higher than any other housing arrangements. Participants who own a home reported the highest frequency of satisfaction (86.2%), followed by those living in a fraternity or sorority (82.0%). Similar frequencies of satisfaction were present among individuals living in an on- or off-campus apartment (75.7% and 76.1%, respectively), and the lowest frequencies of satisfaction occurred in those housed in a residential college or a dormitory (73.0% and 74.3%, respectively). The majority of participants with a healthy BMI were satisfied (80.5%), and the lowest frequency of satisfaction as well as the highest frequency of dissatisfaction occurred in obese participants (46.8% and 45.5%, respectively).

Frequencies for dietary intake and exercise frequency among all participants are reported in Table 3. Overall, the majority of participants do not maintain appropriate dietary habits, with less than half consuming fruit (38.4%), vegetables (48.7%), whole grains (35.9%), and low fat foods (46.4%) on a daily basis and nearly half consuming high fat foods on a daily basis (42.1%). Under half of participants made a deliberate effort to eat fiber (45.6%). Over half of participants (57.4%) indicated that they engage in vigorous-intensity activity for 20 minutes on three or more days of the week, but less than one-third (31.0%) indicated that they are involved in 30 minutes of moderate-intensity activity on five or more days of the week. A large portion of participants

Table 3 Dichotomous frequencies of diet and exercise

	All Participants n(%)	*University of Mississippi n(%)*	*University of Illinois n(%)*
Fruit intake			
Daily	475(38.4)	182(31.7)	293(44.1)
< Daily	763(61.6)	392(68.3)	371(55.9)
Vegetable intake			
Daily	603(48.7)	249(43.4)	354(53.3)
< Daily	635(51.3)	325(56.6)	310(46.7)
Whole grain intake			
Daily	445(35.9)	201(35.0)	244(36.7)
< Daily	793(64.1)	373(65.0)	420(63.3)
High fat intake			
Daily	521(42.1)	224(39.0)	297(44.7)
≤ 2-3 times a week	717(57.9)	350(61.0)	367(55.3)
Low fat intake			
Daily	575(46.4)	224(39.0)	420(63.3)
< Daily	663(53.6)	350(61.0)	244(36.7)
Fiber intake			
Yes	565(45.6)	278(48.4)	287(43.2)
No	673(54.4)	296(51.6)	377(56.8)
Vigorous exercise			
≥ 3 days/week	710(57.4)	323(56.3)	387(58.3)
< 3 days/week	528(42.6)	251(43.7)	277(41.7)
Moderate exercise			
≥ 5 days/week	384(31.0)	170(29.6)	214(32.2)
< 5 days/week	854(69.0)	404(70.4)	450(67.8)
Total exercise			
≥ ACSM	872(70.4)	395(68.8)	477(71.8)
≤ ACSM	366(29.6)	179(31.2)	187(29.8)
Physical activity			
≥ 5 days/week	1011(81.7)	463(80.7)	548(82.5)
< 5 days/week	227(18.3)	111(19.3)	116(17.5)

(70.4%) engage in either vigorous-intensity activity, moderate-intensity activity, or an appropriate combination of the two according to ACSM recommendations each week. An overwhelming majority of participants (81.7%) indicated that they are physically active for at least 30 minutes on five or more days of the week.

Associations between dietary and exercise behaviors with demographic variables are presented in Tables 4 and 5. Significance emerged among fruit intake and sex ($p = 0.016$), housing ($p = 0.026$), and year in school ($p = 0.006$). A higher percentage of females than males ate fruit on a daily basis (41.0% and 34.2%, respectively). The highest portion of participants who consumed fruit daily were housed in a residential college (46.0%), followed closely by those living in a fraternity or sorority (44.9%) and those living in an on-campus apartment (43.6%). The lowest reported intake of fruit on a daily basis occurred in those who own a home (27.6%), followed by those living in an on-campus apartment (31.0%). Sophomores reported substantially higher fruit intake (45.6%) than the three remaining classes.

Vegetable intake had significant associations with sex ($p = 0.013$) and housing ($p = 0.001$). A larger portion of females ate vegetables on a daily basis (51.2% compared to 42.5% of males). The highest percentage of participants who consumed vegetables on a daily basis were housed in a fraternity or sorority (56.2%), followed by those living in a dorm (53.8%). The lowest percentage of participants who consumed vegetables daily own a home (31.0%), followed by those living with parents (37.5%).

Whole grain intake was significantly associated with BMI ($p = 0.001$). The lowest percentage of participants who consumed whole grains on a daily basis were obese (23.4%), and the highest percentage of participants who consumed whole grains on a daily basis were of normal weight (39.8%).

Table 4 Associations between diet and exercise with sex and housing

	Sex n(%)			Housing n(%)							
All Participants	Male	Female	χ^2	Dorm	Residential College	Greek	On-campus Apt	Off-campus Apt	Parents	Own a home	χ^2
Fruit intake											
Daily	163(34.2)	312(41.0)	5.779*	197(39.2)	29(46.0)	40(44.9)	95(43.6)	92(31.0)	14(35.0)	8(27.6)	14.337*
< Daily	314(65.8)	449(59.0)		305(60.8)	34(54.0)	49(55.1)	123(56.4)	205(69.0)	26(65.0)	21(72.4)	
Vegetable intake											
Daily	211(44.2)	392(51.5)	6.214*	270(53.8)	32(50.8)	50(56.2)	108(49.5)	119(40.1)	15(37.5)	9(31.0)	21.851**
< Daily	266(55.8)	369(48.5)		232(46.2)	31(49.2)	39(43.8)	110(50.5)	178(59.9)	25(62.5)	20(69.0)	
Whole grain intake											
Daily	169(35.4)	276(36.3)	0.89	171(34.1)	20(31.7)	32(36.0)	89(40.8)	109(36.7)	13(32.5)	11(37.9)	3.839
< Daily	308(64.6)	485(63.7)		331(65.9)	43(68.3)	57(64.0)	129(59.2)	188(63.3)	27(67.5)	18(62.1)	
High fat intake											
Daily	249(52.2)	468(61.5)	10.398**	240(47.8)	27(42.9)	29(32.6)	79(36.2)	116(39.1)	20(50.0)	10(34.5)	15.949*
≤ 2-3 times a week	228(47.8)	293(38.5)		262(52.2)	36(57.1)	60(67.4)	139(63.8)	181(60.9)	20(50.0)	19(65.5)	
Low fat intake											
Daily	283(59.3)	425(55.8)	1.452	272(54.2)	34(54.0)	62(69.7)	143(65.6)	161(54.2)	19(47.5)	17(58.6)	16.705*
< Daily	194(40.7)	336(44.2)		230(45.8)	29(46.0)	27(30.3)	75(34.4)	136(45.8)	21(52.5)	12(41.4)	
Fiber intake											
Yes	198(41.5)	367(48.2)	5.332*	224(44.6)	26(41.3)	37(41.6)	108(49.5)	140(47.1)	18(45.0)	12(41.4)	3.113
No	279(58.5)	394(51.8)		278(55.4)	37(58.7)	52(58.4)	110(50.5)	157(52.9)	22(55.0)	17(58.6)	
Vigorous exercise											
≥ 3 days/week	290(60.8)	420(55.2)	3.768*	301(60.0)	35(55.6)	66(74.2)	118(54.1)	156(52.5)	18(45.0)	16(55.2)	18.062*
< 3 days/week	187(39.2)	341(44.8)		201(40.0)	28(44.4)	23(25.8)	100(45.9)	141(47.5)	22(55.5)	13(44.8)	
Moderate exercise											
≥ 5 days/week	163(34.2)	221(29.0)	3.608*	161(32.1)	22(34.9)	30(33.7)	70(32.1)	84(28.3)	9(22.5)	8(27.6)	3.686
< 5 days/week	314(65.8)	540(71.0)		341(67.9)	41(65.1)	59(66.3)	148(67.9)	213(71.7)	31(77.5)	21(72.4)	
Total exercise											
≥ ACSM	344(72.1)	528(69.4)	1.053	359(71.5)	45(71.4)	74(83.1)	152(69.7)	199(67.0)	25(62.5)	18(62.1)	11.133
≤ ACSM	133(27.9)	233(30.6)		143(28.5)	18(28.6)	15(16.9)	66(30.3)	98(33.0)	15(37.5)	11(37.9)	
Physical activity											
≥ 5 days/week	392(82.2)	619(81.3)	0.138	417(83.1)	58(92.1)	74(83.1)	181(83.0)	236(79.5)	29(72.5)	16(55.2)	22.410**
< 5 days/week	85(17.8)	142(18.7)		85(16.9)	5(7.9)	15(16.9)	37(17.0)	61(20.5)	11(27.5)	13(44.8)	

*indicates *p* value of ≤ .05; **indicates *p* value of ≤ .005

Table 5 Associations between diet and exercise with year in school and BMI

	Year in School n(%)					BMI (kg/m^2) n(%)				
All Participants	Freshman	Sophomore	Junior	Senior	χ^2	< 18.5	18.5-24.9	25.0-29.9	≥ 30.0	χ^2
Fruit intake										
Daily	154(38.3)	145(45.6)	109(36.0)	67(31.2)	12.484*	26(36.6)	336(40.2)	90(35.3)	23(29.9)	4.699
< Daily	248(61.7)	173(54.4)	194(64.0)	148(68.8)		45(63.4)	499(59.8)	165(64.7)	54(70.1)	
Vegetable intake										
Daily	201(50.0)	167(52.5)	137(45.2)	98(45.6)	4.436	35(49.3)	426(51.0)	109(42.7)	33(42.9)	6.477
< Daily	201(50.0)	151(47.5)	166(54.8)	117(54.4)		36(50.7)	409(49.0)	146(57.3)	44(57.1)	
Whole grain intake										
Daily	129(32.1)	123(38.7)	122(40.3)	71(33.0)	6.880	19(26.8)	332(39.8)	76(29.8)	18(23.4)	17.340**
< Daily	273(67.9)	195(61.3)	181(59.7)	144(67.0)		52(73.2)	503(60.2)	179(70.2)	59(76.6)	
High fat intake										
Daily	220(54.7)	179(56.3)	181(59.7)	137(63.7)	5.407	32(45.1)	350(41.9)	103(40.4)	36(46.8)	1.258
≤ 2-3 times a week	182(45.3)	139(43.7)	122(40.3)	78(36.3)		39(54.9)	485(58.1)	152(59.6)	41(53.2)	
Low fat intake										
Daily	205(51.0)	194(61.0)	185(61.1)	124(57.7)	10.063*	40(56.3)	495(59.3)	136(53.3)	37(48.1)	5.688
< Daily	197(49.0)	124(39.0)	118(38.9)	91(42.3)		31(43.7)	340(40.7)	119(46.7)	40(51.9)	
Fiber intake										
Yes	168(41.8)	143(45.0)	152(50.2)	102(47.4)	5.240	28(39.4)	382(45.7)	114(44.7)	41(53.2)	2.991
No	234(58.2)	175(55.0)	151(49.8)	113(52.6)		43(60.6)	453(54.3)	141(55.3)	36(46.8)	
Vigorous exercise										
≥ 3 days/week	235(58.5)	200(62.9)	164(54.1)	111(51.6)	8.362*	27(38.0)	497(59.5)	149(58.4)	37(48.1)	15.289**
< 3 days/week	167(41.5)	118(37.1)	139(45.9)	104(48.4)		44(62.0)	338(40.5)	106(41.6)	40(51.9)	
Moderate exercise										
≥ 5 days/week	128(31.8)	102(32.1)	97(32.0)	57(26.5)	2.474	10(14.1)	267(32.0)	84(32.9)	23(29.9)	10.361*
< 5 days/week	274(68.2)	216(67.9)	206(68.0)	158(73.5)		61(85.9)	568(68.0)	171(67.1)	54(70.1)	
Total exercise										
≥ ACSM	282(70.1)	238(74.8)	215(71.0)	137(63.7)	7.677*	37(51.2)	604(72.3)	183(71.8)	48(62.3)	15.535**
≤ ACSM	120(29.9)	80(25.2)	88(29.0)	78(36.3)		34(47.9)	231(27.7)	72(28.2)	29(37.7)	
Physical activity										
≥ 5 days/week	332(82.6)	271(85.2)	256(84.5)	152(70.7)	21.796*	52(73.2)	696(83.4)	208(81.6)	55(71.4)	10.345*
< 5 days/week	70(17.4)	47(14.8)	47(15.5)	63(29.3)		19(26.8)	139(16.6)	47(18.4)	22(28.6)	

*indicates *p* value of ≤ .05; **indicates *p* value of ≤ .005

High fat intake had significant associations with sex ($p = 0.001$) and housing ($p = 0.014$). A higher portion of females than males consumed foods high in fat on a daily basis (61.5% and 52.2%, respectively). Individuals who live with parents consumed the highest frequency of high fat foods on a daily basis (50.0%), followed by those living in a dorm (47.8%). The lowest frequency of high fat consumption on a daily basis occurred in those living in a fraternity or sorority (32.6%), followed by those who own a home and those living in an on-campus apartment (34.5% and 36.2%, respectively).

Significant associations were present with intake of low fat foods and housing ($p = 0.01$) and year in school ($p = 0.018$). The highest frequencies of low fat consumption on a daily basis were reported by individuals living in a fraternity or sorority (69.7%) and those living in an on-campus apartment (65.6%). Identical frequencies of daily low fat consumption occurred in participants living in a dorm and those living in an off-campus apartment (54.2%), followed immediately by those housed in a residential college (54.0%). Individuals living with parents consumed the lowest frequency of low fat foods on a daily basis (47.5%). Sophomores and juniors consumed almost identical frequencies of low fat foods on a daily basis (61.0% and 61.1%, respectively), while freshmen reported the lowest frequency of daily low fat consumption (51.0%).

Fiber intake was significantly associated with sex ($p = 0.021$). Although the majority of both males and females indicated that they do not make a deliberate effort to eat fiber, a lack of fiber intake was more pronounced among males (58.5% compared to 51.8% of females).

Vigorous exercise was the only independent variable to show significant associations with sex ($p = 0.052$), housing ($p = 0.006$), year in school ($p = 0.039$), and BMI ($p = 0.002$). A higher frequency of males than females exercised vigorously at least three days per week (60.8%

and 55.2%, respectively). Individuals living in a fraternity or sorority reported the highest frequency of vigorous exercise (74.2%). Similar frequencies of vigorous exercise were present in those living in a residential college (55.6%) and those who own a home (55.2%), followed by participants living in an on-campus apartment (54.1%). The lowest frequency of vigorous exercise occurred in those who live with parents (45.0%). Sophomores reported the highest frequency of vigorous exercise (62.9%), while the lowest frequency occurred in seniors (51.6%). Participants with a healthy BMI and participants who were overweight reported the highest and very similar frequencies of vigorous exercise (59.5% and 58.4%, respectively); the lowest frequency of vigorous exercise was seen in underweight individuals (BMI of < 18.5 kg/m^2; 38.0%), followed by those who were obese (48.1%).

Significant associations were observed between moderate exercise and sex ($p = 0.058$) and BMI ($p = 0.016$). Overall, a low frequency of participants exercised moderately at least five days per week, with a higher percentage of males (34.2%) than females (29.0%). The lowest percentage of moderate exercise occurred in underweight participants (14.1%), while individuals in the three remaining BMI classes had similar frequencies of moderate exercise.

Total exercise was significantly associated with year in school ($p = 0.053$), and BMI ($p = 0.001$). Sophomores reported the highest frequency of total exercise participation (74.8%), while seniors reported the lowest frequency by a large margin (63.7%). Normal weight and overweight participants showed similar frequencies of total exercise (72.3% and 71.8%, respectively).

Physical activity was significantly associated with housing ($p = 0.001$), year in school ($p < 0.001$), and BMI ($p = 0.016$). The vast majority of participants engaged in physical activity at least five days per week, with the greatest frequencies observed in those living in a residential college (92.1%), followed by identical frequencies in participants housed in a dorm and a

fraternity or sorority (83.1%) and immediately after by those living in an on-campus apartment (83.0%). The lowest frequency of physical activity was seen in participants who own a home (55.2%). Sophomores reported the highest frequency of physical activity (85.2%), followed closely by juniors (84.5%), while the lowest frequency of physical activity occurred in seniors (70.7%).

Associations between dietary and exercise behaviors with life satisfaction are shown in Table 6. Significance emerged among life satisfaction and fruit ($p = 0.002$), whole grain ($p = 0.011$), and low fat intake ($p = 0.002$), along with vigorous- ($p < 0.001$) and moderate-intensity exercise ($p < 0.001$), total exercise ($p < 0.001$), and physical activity ($p < 0.001$), therefore those null hypotheses were rejected (H_{o1}, H_{o3}, H_{o4}, H_{o6}). The null hypotheses regarding vegetable, high fat, and fiber intake failed to be rejected, as those variables were not significantly associated with life satisfaction (H_{o2}, H_{o4}, H_{o5}). Higher frequencies of participants who consumed fruit (80.6%), vegetables (76.8%), whole grains (80.0%), and low fat foods (79.1%) on a daily basis were satisfied, and higher frequencies of participants who did not consume said food items on a daily basis were dissatisfied. Higher frequencies of participants who consumed high fat foods on a daily basis (76.8%) and those who did not make a deliberate effort to eat fiber (77.3%) were satisfied; conversely, higher frequencies of participants who consumed foods high in fat 2-3 times per week or less (20.2%) and those who made a deliberate effort to eat fiber (21.1%) were dissatisfied. Participants who exercised vigorously (81.5%) or moderately (83.6%) reported significantly higher frequencies of satisfaction than their less active counterparts, a trend which was similar in total exercise participation (79.5%). The largest disparity in satisfaction was observed in physical activity, as 79.0% of participants who engaged in physical activity on a weekly basis were satisfied compared to 61.7% of those who did not.

Table 6 Associations between dietary intake and exercise with life satisfaction among universities

	All Participants n(%)				*U of Mississippi n(%)*				*U of Illinois n(%)*			
Life Satisfaction	Satisfied	Neutral	Dissatisfied	χ^2	Satisfied	Neutral	Dissatisfied	χ^2	Satisfied	Neutral	Dissatisfied	χ^2
Fruit intake												
Daily	383(80.6)	19(4.0)	73(15.4)	9.822*	146(80.2)	8(4.4)	28(15.4)	3.951	237(80.9)	11(3.8)	45(15.4)	5.966*
< Daily	556(72.9)	38(5.0)	169(22.1)		286(73.0)	18(4.6)	88(22.4)		270(72.8)	20(5.4)	81(21.8)	
Vegetable intake												
Daily	463(76.8)	32(5.3)	108(17.9)	3.008	194(77.9)	15(6.0)	40(16.1)	6.317*	269(76.0)	17(4.8)	68(19.2)	0.064
< Daily	476(75.0)	25(3.9)	134(21.1)		238(73.2)	11(3.4)	76(23.4)		238(76.8)	14(4.5)	58(18.7)	
Whole grain intake												
Daily	356(80.0)	20(4.5)	69(15.5)	7.404*	161(80.1)	9(4.5)	31(15.4)	4.470	195(79.9)	11(4.5)	38(15.6)	3.015
< Daily	583(73.5)	37(4.7)	173(21.8)		271(72.7)	17(4.6)	85(22.8)		312(74.3)	20(4.8)	88(21.0)	
High fat intake												
Daily	400(76.8)	24(4.6)	97(18.6)	0.500	176(78.6)	11(4.9)	37(16.5)	3.129	224(75.4)	13(4.4)	60(20.2)	0.585
≤ 2-3 times a week	539(75.2)	33(4.6)	145(20.2)		256(73.1)	15(4.3)	79(22.6)		283(77.1)	18(4.9)	66(18.0)	
Low fat intake												
Daily	560(79.1)	25(3.5)	123(17.4)	10.438*	226(78.5)	8(2.8)	54(18.8)	5.317	334(79.5)	17(4.0)	69(16.4)	6.355*
< Daily	379(71.5)	32(6.0)	119(22.5)		206(72.0)	18(6.3)	62(21.7)		173(70.9)	14(5.7)	57(23.4)	
Fiber intake												
Yes	419(74.2)	27(4.8)	119(21.1)	1.679	203(73.0)	14(5.0)	61(21.9)	1.466	216(75.3)	13(4.5)	58(20.2)	0.505
No	520(77.3)	30(4.5)	123(18.3)		229(77.4)	12(4.1)	55(18.6)		291(77.2)	18(4.8)	68(18.0)	
Vigorous exercise												
≥ 3 days/week	579(81.5)	24(3.4)	107(15.1)	29.622*	255(78.9)	13(4.0)	55(17.0)	5.448	324(83.7)	11(2.8)	52(13.4)	28.219*
< 3 days/week	360(68.2)	33(6.2)	135(25.6)		177(70.5)	13(5.2)	61(24.3)		183(66.1)	20(7.2)	74(26.7)	
Moderate exercise												
≥ 5 days/week	321(83.6)	16(4.2)	47(12.2)	19.844*	138(81.2)	6(3.5)	26(15.3)	4.544	183(85.5)	10(4.7)	21(9.8)	17.440*
< 5 days/week	618(72.4)	41(4.8)	195(22.8)		294(72.8)	20(5.0)	90(22.3)		324(72.0)	21(4.7)	105(23.3)	
Total exercise												
≥ ACSM	693(79.5)	42(4.8)	137(15.7)	27.608**	304(77.0)	20(5.1)	71(18.0)	4.412	389(81.6)	22(4.6)	66(13.8)	29.576**
≤ ACSM	246(67.2)	15(4.1)	105(28.7)		128(71.5)	6(3.4)	45(25.1)		118(63.1)	9(4.8)	60(32.1)	
Physical activity												
≥ 5 days/week	799(79.0)	42(4.2)	170(16.8)	30.849*	367(79.3)	19(4.1)	77(16.6)	21.231*	432(78.8)	23(4.2)	93(17.0)	10.660*
< 5 days/week	140(61.7)	15(6.6)	72(31.7)		65(58.6)	7(6.3)	39(35.1)		75(64.7)	8(6.9)	33(28.4)	

*indicates *p* value of ≤ .05; **indicates *p* value of ≤ .005

Logistic regression determined that fruit intake, vigorous exercise, and physical activity positively influence life satisfaction of all participants, while fiber intake and BMI negatively influence life satisfaction. Vigorous exercise, physical activity, and BMI carried the most influence. The resulting equation is as follows:

LS = 0.302 + 0.33 (Fruit intake) – 0.296 (Fiber intake) + 0.488 (Vigorous exercise) +

0.596 (Physical activity) – 0.508 (BMI class)

University of Mississippi

A total of 703 students attending the University of Mississippi completed the online questionnaire for a response rate of 17.6%. However, 129 responses came from students ages 25 and over, so those responses were discarded, leaving 574 total responses for data analyses. The majority of participants attending the University of Mississippi were female, accounting for 65.7% of all responses. The mean age of participants was 20.08 years (*SD* = 1.54 years), and the largest portion of respondents (28.9%) were aged 19 years. The majority of participants were underclassmen, accounting for 57.7% of all responses; 32.1% of respondents were freshmen. Only 16.4% of respondents were seniors. The most frequent housing arrangement was an off-campus apartment (37.1%), followed by a dormitory (33.1%). The mean BMI for participants at the University of Mississippi was 23.84 kg/m^2 with a standard deviation of 4.73 kg/m^2 and a range of 34.77 kg/m^2. The majority of participants (63.2%) were in a healthy weight range, and 31.2% of participants were overweight or obese.

Overall, 75.3% of participants at the University of Mississippi indicated they were satisfied with their lives, which included a range of those who scored as "slightly satisfied," "satisfied," and "extremely satisfied." Frequencies and associations between life satisfaction with year in school, BMI, sex, and housing are shown in Tables 1 and 2. Life satisfaction was

significantly associated with BMI ($p < 0.001$), but no significant association with the three remaining demographic variables emerged. A higher percentage of males (76.6%) than females (74.5%) indicated that they were satisfied with their lives, but a slightly higher portion of males (20.8%) than females (19.9%) indicated that they were dissatisfied with their lives. The highest frequency of satisfaction occurred in those who own a home (84.0%), and the lowest frequency of satisfaction by a large margin was reported in those living in an on-campus apartment (60.9%). Similar frequencies of satisfaction were present in those housed in a dorm (74.7%) and those housed in a residential college (73.0%). Juniors reported the highest frequency of satisfaction (77.9%), while the remaining three classes had similar frequencies of satisfaction among them. The highest frequency of satisfaction was reported by individuals of a healthy weight (81.5%), and the lowest frequency of satisfaction occurred in obese individuals (40.4%).

Frequencies for dietary intake and exercise frequency among participants at the University of Mississippi are reported in Table 3. Overall, the majority of participants did not maintain appropriate dietary habits, with only around one third consuming fruits (31.7%), whole grains (35.0%), and low fat foods (39.0%) on a daily basis. Under half of participants made a deliberate effort to eat fiber (48.4%). Over half of participants (56.3%) indicated that they engage in vigorous-intensity activity for 20 minutes on three or more days of the week, but less than one third (29.6%) indicated that they are involved in 30 minutes of moderate-intensity activity on five or more days of the week. A large portion of participants (66.9%) met ACSM recommendations for either vigorous-intensity activity, moderate-intensity activity, or an appropriate combination of both each week. The vast majority of participants (80.7%) indicated that they are physically active for 30 minutes on five or more days of the week.

Associations between dietary and exercise behaviors with life satisfaction at the University of Mississippi are shown in Table 6. Significance emerged among life satisfaction and vegetable intake ($p = 0.042$) and physical activity ($p < 0.001$). Low fat intake ($p = 0.070$) and vigorous-intensity exercise ($p = 0.066$) were approaching significance. Higher frequencies of participants who consumed fruits (80.2%), vegetables (77.9%), whole grains (80.1%), and low fat foods (78.5%) on a daily basis were satisfied, and higher frequencies of participants who did not consume said food items on a daily basis were dissatisfied. Higher frequencies of participants who consumed high fat foods on a daily basis (78.6%) and participants who did not make a deliberate effort to eat fiber (77.4%) were satisfied, and higher frequencies of participants who consumed foods high in fat 2-3 times per week or less (22.6%) and made a deliberate effort to eat fiber (21.9%) were dissatisfied. Significantly higher frequencies of participants who exercised vigorously (78.9%) or moderately (81.2%) were satisfied. This trend was similar in total exercise participation (77.0%) and in participants who engaged in physical activity on a weekly basis (79.3%).

Logistic regression determined that only physical activity carries a positive influence on life satisfaction of students attending the University of Mississippi, while fiber intake and BMI negatively influence life satisfaction. For this equation, all variables below $p = 0.06$ were included. Physical activity and BMI held the most influence. The resulting equation is as follows:

LS = 0.677 – 0.422 (Fiber intake) + 0.894 (Physical activity) – 0.683 (BMI class)

University of Illinois

A total of 664 students attending the University of Illinois completed the online questionnaire for a response rate of 16.6%. The majority of participants were female, accounting

for 57.8% of all responses. The mean age of participants at the University of Illinois was 19.9 years (*SD* = 1.41 years), and the largest portion of respondents (25.8%) were aged 19 years. The majority of participants were underclassmen, accounting for 58.6% of all responses; 32.8% of respondents were freshmen. Once again, the lowest portion of respondents were seniors (18.2%). The mean BMI for participants was 22.9 kg/m^2 with a standard deviation of 4.73 kg/m^2 and a range of 32.40 kg/m^2. A large majority of participants (71.1%) were of a healthy weight, and only 23.0% of participants were overweight or obese. Almost half of participants were housed in a dormitory (47.0%), and just under one third lived in an off-campus apartment (29.4%).

Overall, 76.4% of participants at the University of Illinois indicated they were satisfied with their lives, which included a range of those who scored as "slightly satisfied," "satisfied," and "extremely satisfied." Frequencies and associations between life satisfaction with year in school, BMI, sex, and housing are shown in Tables 1 and 2. As with all participants and participants at the University of Mississippi, life satisfaction was significantly associated with BMI ($p < 0.001$), but no significant associations with the three remaining demographic variables emerged. A higher percentage of females (77.6%) than males (74.6%) indicated that they were satisfied with their lives, and a higher portion of males (21.1%) than females (17.4%) indicated that they were dissatisfied with their lives. The highest frequency of satisfaction occurred in those living in a fraternity or sorority (87.9%), followed by those living with parents (81.8%). Sophomores reported the highest frequency of satisfaction (81.9%), while the lowest frequency of satisfaction was seen in freshmen (72.9%). The highest frequency of satisfaction was reported by individuals with a healthy BMI (79.7%), and the lowest frequency of satisfaction occurred in obese individuals (56.7%). Overweight and underweight individuals showed similar frequencies of satisfaction (70.7% and 69.2%, respectively).

Frequencies for dietary intake and exercise frequency among participants at the University of Illinois are reported in Table 3. Overall, a majority of participants consumed vegetables (53.5%) and low fat foods (63.3%) on a daily basis but failed to consume adequate amounts of fruit (44.1%) and whole grains (36.7%). Over half of participants (55.3%) consumed fat 2-3 times per week or less, and less than half of participants made a deliberate effort to eat fiber (43.2%). A majority of participants (58.3%) indicated that they engage in vigorous-intensity activity for 20 minutes on three or more days of the week, and just under one third (32.2%) indicated that they are involved in 30 minutes of moderate-intensity activity on five or more days of the week. A large portion of participants (70.2%) engaged in either vigorous-intensity activity, moderate-intensity activity, or a combination of the two each week. The vast majority of participants (82.5%) indicated that they are physically active for 30 minutes on five or more days of the week.

Associations between dietary and exercise behaviors with life satisfaction at the University of Illinois are shown in Table 6. Significance emerged among life satisfaction and fruit intake ($p = 0.051$), low fat intake ($p = 0.042$), vigorous exercise ($p < 0.001$), moderate exercise ($p < 0.001$), total exercise ($p < 0.001$) and physical activity ($p = 0.005$). Higher frequencies of participants who consumed fruit (80.9%), whole grains (79.9%), and low fat foods (79.5%) on a daily basis as well as high fat foods 2-3 times per week or less (77.1%) were satisfied, and higher frequencies of participants who did not consume fruit, whole grains, and low fat foods on a daily basis but consumed high fat foods on a daily basis were dissatisfied. A slightly higher frequency of participants who did not consume vegetables on a daily basis (76.8%) were satisfied, and a greater frequency of participants who did not make a deliberate effort to eat fiber were satisfied (77.2%). A much higher portion of participants who exercised

vigorously (83.7%) or moderately (85.5%) were satisfied than their less active counterparts. This trend was similar in total exercise participation (81.6%) and in participants who engaged in physical activity on a weekly basis (78.8%).

Logistic regression determined that vigorous exercise and year in school positively influence life satisfaction of students attending the University of Illinois, while vegetable intake and BMI negatively influence life satisfaction. For this equation, all variables below $p = 0.07$ were included. Vigorous exercise carried the most significant influence. The resulting equation is as follows:

LS = 0.163 – 0.43 (Vegetable intake) + 0.689 (Vigorous exercise) + 0.289 (Year in school) – 0.378 (BMI class)

Differences among life satisfaction and BMI between the two universities are shown in Table 7. No significant difference in life satisfaction was observed between students attending the University of Mississippi and students attending the University of Illinois ($t = -0.015$, $p = 0.988$), so the null hypothesis failed to be rejected (H_{o7}). A significant difference in BMI emerged between students attending the two universities ($t = 3.804$, $p < 0.001$), thus the null hypothesis was rejected (H_{o8}). Students attending the University of Mississippi had a higher mean BMI (23.83 kg/m^2) and a larger standard deviation (4.73 kg/m^2) than students attending the University of Illinois (M = 22.91 kg/m^2; SD = 3.74 kg/m^2).

Table 7 Differences in life satisfaction and BMI among universities

	University			
	Mississippi	Illinois	*t*	*p*
Life satisfaction	5.1568	5.1581	-0.015	0.988
	(1.606)	(1.521)		
BMI (kg/m^2)	23.84	22.91	3.804	0.000
	(4.73)	(3.74)		

CHAPTER V

DISCUSSION

The purpose of this study was to assess dietary fruit, vegetable, whole grain, fat, and fiber intake and exercise frequency in a college-aged population as these variables related to students' perceived life satisfaction. The results of this study are consistent with previous findings regarding dietary intake, exercise frequency, and life satisfaction among college students (Anding et al., 2001; Brunt et al., 2008; Grace, 1997; Patterson et al., 1994; Grant et al., 2009; Huang et al., 2003; Huang et al., 2007; Pettay, 2008; Schnohr et al., 2005; Silliman et al., 2004; Shive & Morris, 2006).

The response rate (15.48%) in this study was particularly low, with the greatest percentage of respondents being freshmen. Although the investigator attempted to appeal to participants on a personal basis in the contact email, it is likely that the majority of students disregarded the email after discovering that it was neither school related nor mandatory. In addition, upperclassmen may have been less likely to complete the questionnaire because they are more accustomed to receiving various online questionnaires for research purposes. If questionnaires had been distributed to students directly by hand, the response rate likely would have been higher.

A significantly higher percentage of participants were female than male. Females tend to be more conscious of and concerned with health habits, particularly diet and exercise, so it is likely that females were more inclined to respond to the questionnaire both out of interest and

possibly for self-affirmation of their healthy lifestyle practices. This is also evidenced by the fact that higher frequencies of females consumed fruit, vegetables, and whole grains on a daily basis. Female participants also made a deliberate effort to consume fiber more frequently than males. Furthermore, a significantly larger portion of males than females were overweight. Females tend to be more concerned with physical appearance due to societal pressures as well as pressures resulting from self-comparisons to peers, which may contribute to discrepancies in dietary habits and, consequently, body weight. Despite these noted discrepancies in weight, males more frequently engaged in vigorous, moderate, and total exercise. Males seem to gather recreationally for sports or other activities more often than females, which may account for the differences in exercise frequencies. Females may also avoid fitness facilities due to intimidation or self-consciousness, especially if they are unfamiliar with equipment or machinery.

Reported frequencies of vigorous-intensity activity were unexpectedly high across all participants, while frequencies of moderate-intensity activity were consistent with previous findings (ACHA, 2012). Furthermore, many participants who were overweight and obese reported frequent vigorous exercise. It would appear that these discrepancies in vigorous exercise are due to overreporting or inaccurate perception of vigorous-intensity activity. Previous research indicates that overweight and obese individuals perceive exercise as more intense, even at a low or moderate level (Pender, Bar-Or, Wilk, & Mitchell, 2002). For an overweight or obese person, performing a given activity requires more physiological exertion than for someone of a normal or healthy weight. In addition, overweight individuals tend to overreport activity levels (McMurray et al., 2008); however, this is also the case with the general population (Duncan, Sydeman, Perri, Limacher, & Martin, 2001). Although vigorous-intensity activity was specifically defined in the online questionnaire, it is still possible that participants

misclassified bouts of moderate exercise as vigorous. Furthermore, reports of vigorous-intensity activity may have been atypical in this sample population due to the time frame of the study. The questionnaire was administered to students attending both universities immediately following their designated spring breaks (spaced one week apart), so it is possible that students were exercising more frequently in the few weeks leading up to that time.

Distinct differences in dietary intake and exercise frequency arose between the University of Mississippi and the University of Illinois. The southern region of the United States tends to consume diets centered on calorically dense foods containing fats and refined sugars and lacking lean meats or fresh fruits and vegetables, and it is therefore not surprising that students attending the University of Mississippi reported lower consumption of fruits, vegetables, whole grains, and low fat foods than students attending the University of Illinois. However, Illinois students reported more frequent consumption of high fat foods on a daily basis, an inconsistency which may be due to underreporting among students attending the University of Mississippi. If young adults are raised in a culture of fried and fattening foods, this is a lifestyle to which they are accustomed, and they may not realize the extent of their high fat intake. In addition, these individuals will be less likely to deviate from habits which are comfortable and familiar (Ekkekakis & Lind, 2006).

A further inconsistency in diet was observed in the substantially greater fiber intake reported by Mississippi students, a discrepancy which may, contrary to the possible underreporting of high fat intake, be a result of overreporting due to inaccurate perception of fibrous foods. Moreover, including examples of fiber-containing foods on the questionnaire may have alleviated such large discrepancies in reported intake among the two universities. Students attending the University of Illinois may also be more conscious of their dietary intake due to

greater awareness. Multiple dining halls on the Illinois campus display nutritional content of the food being served, which may influence food choices among students.

Mississippi students also reported less frequent exercise than students attending the University of Illinois. This observation was also not surprising, given that regular exercise (along with a balanced diet, as discussed previously) is not an integral part of Southern culture, particularly in Mississippi, as evidenced by the highest reported rates of cardiovascular disease and obesity in the country (CDC, 2011). Available facilities may also be a contributing factor to discrepancies in exercise frequencies between the two schools. The University of Illinois houses two extensive fitness centers, one of recent construction, on its campus, while the University of Mississippi has one longstanding facility with limited space and equipment. Illinois students therefore may be, in part, more likely to exercise due to more inviting and accessible facilities with greater amenities.

The postulation of culture is also supported by the lack of dietary- and exercise-based influence on life satisfaction of students attending the University of Mississippi, as fiber, physical activity, and BMI were the only variables determined to significantly influence their life satisfaction. Further supporting this observation is the fact that fewer Mississippi students who consumed high fat foods on a daily basis and did not meet ACSM recommendations for vigorous and moderate exercise were dissatisfied than students attending the University of Illinois with similar circumstances (Table 6). It is therefore assumed that these students are comfortable and satisfied with their current lifestyle despite engaging in less than optimal habits, potentially due to cultural conditioning or external factors which outweigh the positive effects of a proper diet and regular exercise. However, despite the apparent satisfaction of unhealthy Mississippi students, greater frequencies of overweight and obese individuals attending the University of

Mississippi were dissatisfied compared to overweight and obese individuals attending the University of Illinois.

Generally, dietary consumption and exercise frequency improved between freshmen and sophomores, as shown in Table 5. One possibility for this trend is that students have successfully adjusted to college after their freshman year and are able to more firmly take control of their lifestyles. It is also possible that students experience unnecessary weight gain during their freshman year due to poor dietary and exercise habits and consequently become more cognizant of those habits as sophomores. Conversely, deteriorated dietary consumption and a decrease in exercise frequency occur in juniors and seniors. The last two years of college can often be busier and more stressful when managing many upper-level courses in addition to preparing for the transition into the working world or continuing education following graduation, and as a result, one's health (i.e., dietary and exercise habits) may no longer take precedence above academic and outside priorities.

As reported in Table 4, individuals living with parents consumed diets with frequent intake of high fat foods and low intake of fruit, vegetables, and low fat foods. In addition, these individuals reported the lowest frequencies of vigorous and moderate exercise. Nevertheless, these participants were more satisfied than participants living on campus, save those housed in fraternities or sororities. This observation could stem from the fact that individuals who are raised in an environment that encourages certain dietary and exercise habits are less likely to deviate from those habits when they remain in that same environment. Perhaps if the participants who live with parents were housed on campus, they would not only have opportunities to explore a wider variety of food choices which may include healthier options than what they receive at home but also to spend time around others who engage in more healthful

eating and exercise patterns, which may influence their lifestyle choices. Individuals living on campus may also exercise more frequently than those who live with parents due to convenience or social support. Participants housed on campus are usually within a short range of university facilities, which often removes time constraints as well as the hassles of travel which may occur for those living off campus. Additionally, participants living in a dorm, residential college, fraternity or sorority, or an on-campus apartment are in close proximity to friends and peers and therefore may be more likely to exercise when accompanied by others.

Individuals housed in dormitories, residential colleges, fraternities or sororities, and on-campus apartments reported the most frequent consumption of fruit and vegetables on a daily basis. Participants living in a dorm also reported the second most frequent consumption of high fat foods on a daily basis. Although food selection varies, both campus dining halls, frequented primarily by students living in dorms, and dining arrangements in residential colleges and Greek housing commonly provide fruit and vegetables at every meal, whereas students living in an on-campus apartment or living off campus may not have as ready or convenient access to fruit and vegetables. In addition, campus dining halls tend to offer a buffet style with a variety of food, which may include a greater selection of foods high in fat.

Participants living in fraternities or sororities reported the highest rate of vigorous exercise by far. This is likely a result of frequent participation in organized club or intramural sports, which is common within the Greek system. Those living in a dorm, residential college, fraternity or sorority, or an on-campus apartment reported the highest frequencies of physical activity, which is logical considering those housing arrangements are located on campus, often within walking distance of campus buildings. Individuals who live in an off-campus apartment,

with parents, or who own a home typically require other means of transportation to reach campus due to greater distance, which may decrease opportunities for physical activity.

Frequencies of dietary intake and exercise varied among BMI classes, as shown in Table 4. It is reasonable to infer that frequent consumption of high fat foods in obese participants may contribute to their elevated BMI, but the fact that the majority of these individuals make a deliberate effort to consume fiber seems inconsistent with their overall eating patterns. Fiber consumption is often associated with satiety and seen as a weight loss tactic, which may explain why fiber intake is a priority for obese participants. Obese individuals also reported infrequent exercise. These individuals may be more reluctant to exercise due to the increased physiological strain resulting from excess body weight during activity, but it is also likely that obese participants graduated to their current state due to lack of exercise (coupled with poor dietary habits).

Inconsistent eating patterns also appeared within underweight participants. It seems that underweight participants may not feel inclined to fully moderate their diets, potentially due to their low BMIs. Furthermore, low frequencies of exercise in underweight participants may indicate that these individuals refrain from exercising because they feel no need for caloric expenditure or to alter their body composition given their already slender physique.

Fiber intake, despite its positive connotation to many aspects of health, was determined to negatively influence life satisfaction in all participants as well as students at both universities. Students attending the University of Mississippi, although more overweight, consuming lower frequencies of fruit, vegetables, whole grains, and low fat foods, and exercising less frequently than students attending the University of Illinois, seem unaffected by their poor dietary and exercise habits. The lack of influence of these variables on Mississippi students' life satisfaction

implies that students attending the University of Mississippi are comfortable and content despite their mediocre health habits. This observation seems attributable to southern culture. If young adults are brought up in an environment that does not stress appropriate dietary habits (focusing instead on foods high in fat and refined sugars and lacking fruits and vegetables), exercise practices, or weight control, and the majority of individuals around them engage in similar practices, that is a lifestyle to which they will become accustomed, as mentioned previously. In addition, southern culture as a whole seems to center around a more relaxed way of life. This dynamic, coupled with a warmer climate, may contribute to increased satisfaction of individuals living in the South despite unhealthy lifestyle practices.

Despite improved dietary habits and greater exercise frequency than students attending the University of Mississippi, life satisfaction in students attending the University of Illinois was negatively influenced by vegetable consumption. Little explanation is available for this unanticipated result.

Life satisfaction varied among housing arrangements. Participants who own a home were the most satisfied by a notable margin, which may be related to an increased sense of freedom and control one may experience from owning property. Participants living in fraternities or sororities reported the second highest levels of satisfaction by an equally large margin compared to other housing arrangements. The Greek system offers a strong and unique sense of community and brotherhood, a fact which not only distinguishes its organizations on campuses but may also contribute to increased satisfaction of those living in fraternities or sororities. However, Illinois students who live in fraternities or sororities reported much higher levels of satisfaction than did Mississippi students who live in Greek housing. The University of Illinois has a strong Greek system, as does the University of Mississippi, so the discrepancies in

satisfaction could result from the pressures of conformity placed upon residents of fraternities and sororities at the University of Mississippi. Students attending the University of Mississippi who identify with a Greek organization, regardless of their residence, tend to have similar styles of hair and dress. The expectation to maintain a certain physical appearance may detract from the experience of Greek membership as a whole. It is also possible that, despite these observations, the small percentage of participants who reported living in fraternities or sororities in this study were not necessarily representative of the entire Greek population at the University of Mississippi. This may also be the case with said participants attending the University of Illinois.

In addition, Illinois students living in on-campus apartments reported a much higher frequency of satisfaction than did Mississippi students living in on-campus apartments. On-campus apartments at the University of Illinois may have more convenient access to campus buildings or provide students with more amenities than on-campus apartments at the University of Mississippi, both of which may contribute to residents' increased satisfaction. Furthermore, a significantly larger number of Illinois students than Mississippi students reported living in on-campus apartments, while the opposite was reported in the case of off-campus apartments. The high prevalence of students housed in off-campus apartments at the University of Mississippi may be due to lack of on-campus housing availability.

Students living in residential colleges or dorms reported the lowest levels of satisfaction relative to other housing arrangements. Residential colleges were established to provide students with a more intimate community setting than traditional on-campus housing, so it was somewhat surprising that these participants did not exhibit greater levels of satisfaction given their altered environment. Dormitories tend to have a reputation as a less than preferable housing

arrangement due to limited freedoms, amenities, space, and privacy, all of which may contribute to lower levels of satisfaction among residents. Moreover, the majority of freshmen participants were housed in a dorm and also reported the lowest levels of satisfaction compared to sophomores, juniors, and seniors.

The frequency of satisfied obese participants was almost half that of normal weight participants. Furthermore, the frequency of dissatisfied obese participants was nearly three times that of normal weight participants (and twice that of overweight participants). These observations are supported by the fact that BMI was determined to have a negative influence on life satisfaction, which is logical considering that excess body weight is typically associated with low self-esteem, something that can be triggered by lack of confidence, low self-efficacy, or a variety of other factors often stemming from societal stigmas. However, obese participants attending the University of Illinois, although reporting much lower frequencies of satisfaction than their normal and even overweight counterparts, reported extensively higher levels of satisfaction compared with obese individuals attending the University of Mississippi, the reasons of which are unclear. Frequencies of satisfaction were similar among the three remaining weight classes at both universities.

Conclusion

The purpose of this study was to assess dietary intake and exercise frequency as those variables relate to college students' life satisfaction. The majority of college students were satisfied with their lives despite consuming inadequate fruit, vegetables, whole grains, low fat foods, and fiber and insufficient exercise. Significant associations were found between life satisfaction and fruit intake, whole grain intake, low fat intake, vigorous, moderate, and total exercise, physical activity, and BMI. Fruit intake, vigorous exercise, and physical activity were

found to positively influence life satisfaction in college students, while fiber intake and BMI held negative influence on life satisfaction.

Several limitations arose during this study. First, methods of participant selection as well as email distribution varied between the two universities. The investigator utilized the University of Mississippi registrar for distribution of the online questionnaire to students through email, but the means of random selection was unclear and additional methods of both participant selection and email distribution to students at the University of Mississippi should have been investigated prior to the study. Conversely, the University of Illinois DMI is an entity which specializes in building random samples for research or other purposes, and it is therefore assumed that this division of the University possesses a sophisticated electronic system for doing so. Furthermore, participants at the University of Illinois received a follow up email regarding the online questionnaire while participants at the University of Mississippi did not, which consequently increased the response rate in Illinois participants.

In addition, selected participants were not necessarily representative samples of student populations at each university. This would include appropriate male to female ratios as well as proportional selections of students in each freshman, sophomore, junior, and senior classes, criteria which the investigator should have specified to the designated entities prior to email distribution in order to obtain a potentially more accurate depiction of each university's student population. However, one would argue that, based on previous studies, college students across the nation tend to engage in similar dietary and exercise habits, so stratified random samples may not have significantly affected the results of this study.

Finally, a screening question for age at the beginning of the online questionnaire would have been prudent in order to eliminate responses from participants outside the investigator's

desired age range of 18 to 24 years. This would have avoided receiving 129 unusable responses from individuals attending the University of Mississippi ages 25 and older.

The results of this study indicate that, although no direct causation can be established, dietary intake and exercise behaviors may contribute to college students' overall well-being. In particular, students who consume better overall diets and exercise more frequently seem to have higher levels of life satisfaction. These results are not surprising, considering that diets incorporating nutrient-dense foods and regular exercise generally produce positive physical and mental states. College students are notorious for poor dietary and exercise habits, but little is known about the impact and potential consequences of those habits on their well-being as well as how those consequences may affect their well-being in the future. Therefore, it is critical and necessary that health educators and university systems take special care to extensively promote proper diet and encourage exercise and physical activity among college students. In addition, the health benefits of a balanced diet and regular exercise should be actively advertised among the student body. Food offerings on campus may also influence dietary choices among college students, so individuals may be more inclined to make better selections if healthier options are more readily available than fast, fried, or sugary foods. Similarly, formation of recreational groups on campus catering to inexperienced exercisers may encourage students who would normally avoid exercise, either due to intimidation of facilities or lack of motivation, to be more active. Overall, education and awareness are key to the establishment of positive health behaviors in college students.

Additional studies focusing on dietary and exercise habits of college students and the impact of those health behaviors are needed. College is a significant transition period to independence for young adults involving a variety of changes in social, physical, and academic

environments, and college students are thus at a time in their lives when formation of appropriate health behaviors is crucial. It may also be beneficial to examine the influence of academic status, family life, or even mental health, in conjunction with eating and exercise habits, on college students' life satisfaction, as there are many internal and external factors which may contribute to whether or not a student is satisfied with his or her life.

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APPENDIX

APPENDIX A: RESEARCH QUESTIONNAIRE

In a typical week, how often do you eat fruit (fresh, frozen, canned)?

- Never
- Less than once a week
- Once a week
- 2-3 times a week
- Daily

In a typical week, how often do you eat vegetables (fresh, frozen, canned)?

- Never
- Less than once a week
- Once a week
- 2-3 times a week
- Daily

In a typical week, how often do you eat whole grain bread, whole grain pasta, whole grain cereal, or brown rice?

- Never
- Less than once a week
- Once a week
- 2-3 times a week
- Daily

In a typical week, how often do you eat foods high in fat (fried foods, beef, pork, chips, cakes, cookies, ice cream)?

- Never
- Less than once a week
- Once a week
- 2-3 times a week
- Daily

In a typical week, how often do you eat foods low in fat (milk, eggs, yogurt, cheese, lean meats)?

- Never
- Less than once a week
- Once a week
- 2-3 times a week
- Daily

Do you make a deliberate effort to eat fiber (any amount or frequency)?

- Yes
- No

How many days in a typical week do you exercise or participate in an activity for at least 20 minutes that makes you sweat or breathe hard (such as jogging, running, basketball, fast cycling, cross country skiing, soccer, swimming laps, tennis, or similar aerobic activities)?

- None
- 1
- 2
- 3
- 4
- 5
- 6
- 7

How many days in a typical week do you exercise or participate in an activity for at least 30 minutes that moderately increases your sweating and breathing rate (such as fast walking, bicycling, skating, or similar aerobic activities)?

- None
- 1
- 2
- 3
- 4
- 5
- 6
- 7

How many days in a typical week are you physically active (walking or bicycling to class, walking around the grocery store, walking to and from your car, etc.) for at least 30 minutes per day?

- None
- 1
- 2
- 3
- 4
- 5
- 6
- 7

In most ways, my life is close to my ideal.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither agree nor disagree
- Slightly agree
- Agree
- Strongly agree

The conditions of my life are excellent.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither agree nor disagree
- Slightly agree
- Agree
- Strongly agree

I am satisfied with my life.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither agree nor disagree
- Slightly agree
- Agree
- Strongly agree

Sex:

- Male
- Female

Age:

- <18
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25+

Year in school:

- Freshman
- Sophomore
- Junior
- Senior

Height: ☐ feet ☐ inches

Weight: ☐ lbs

Housing:

- Dorm
- Fraternity/Sorority
- On-campus Apartment
- Off-campus Apartment
- Live with Parents
- Own a Home

APPENDIX B: UNIVERSITY OF MISSISSIPPI IRB APPROVAL FOR PILOT STUDY

THE UNIVERSITY OF MISSISSIPPI **MEGAN MARSH <mlmarsh@go.olemiss.edu>**

IRB Approval of Protocol 13x-203

1 message

Ole Miss IRB <irb@olemiss.edu> Fri, Feb 22, 2013 at 2:50 PM

To: Megan Marsh <mlmarsh@go.olemiss.edu>, mabass1@olemiss.edu, jhallam@olemiss.edu

Ms. Marsh:

This is to inform you that your application to conduct research with human participants, "**The Impact of Dietary and Exercise Habits on College Students' Life Satisfaction**" (Protocol #13x-203), has been approved as Exempt under 45 CFR 46.101(b)(#2).

Please remember that all of The University of Mississippi's human participant research activities, regardless of whether the research is subject to federal regulations, must be guided by the ethical principles in The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research.

It is especially important for you to keep these points in mind:

- You must protect the rights and welfare of human research participants.

- Any changes to your approved protocol must be reviewed and approved before initiating those changes.

- You must report promptly to the IRB any injuries or other unanticipated problems involving risks to participants or others.

If you have any questions, please feel free to contact the IRB at irb@olemiss.edu.

Thank you,

Jennifer Caldwell, Ph.D., CPIA
Research Compliance Specialist, Research Integrity and Compliance
Office of Research and Sponsored Programs
The University of Mississippi
100 Barr Hall, P.O. Box 907, University, MS 38677
Tel.: (662) 915-5006 Fax: (662)915-7577
irb@olemiss.edu | www.olemiss.edu

REMINDER: YOU CANNOT HAVE CONTACT WITH RESEARCH SUBJECTS UNTIL YOU RECEIVE THE FORMAL IRB PROTOCOL APPROVAL LETTER OR EMAIL

APPENDIX C: UNIVERSITY OF MISSISSIPPI IRB APPROVAL FOR RESEARCH STUDY

THE UNIVERSITY OF MISSISSIPPI **MEGAN MARSH <mlmarsh@go.olemiss.edu>**

IRB Approval of 13x-211

1 message

Ole Miss IRB <irb@olemiss.edu> Fri, Mar 8, 2013 at 3:20 PM

To: Megan Marsh <mlmarsh@go.olemiss.edu>, MARTHA ANN BASS <mabass1@olemiss.edu>, jhallam@olemiss.edu

Ms. Marsh:

This is to inform you that your application to conduct research with human participants, "The Impact of Eating and Exercise Habits on College Students' Life Satisfaction" (Protocol #13x-211), has been approved as Exempt under 45 CFR 46.101(b)(#2).

Please remember that all of The University of Mississippi's human participant research activities, regardless of whether the research is subject to federal regulations, must be guided by the ethical principles in The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research.

It is especially important for you to keep these points in mind:

- You must protect the rights and welfare of human research participants.

- Any changes to your approved protocol must be reviewed and approved before initiating those changes.

- You must report promptly to the IRB any injuries or other unanticipated problems involving risks to participants or others.

If you have any questions, please feel free to contact the IRB at irb@olemiss.edu.

Thank you,

Jennifer Caldwell, Ph.D., CPIA
Research Compliance Specialist, Research Integrity and Compliance
Office of Research and Sponsored Programs
The University of Mississippi
100 Barr Hall, P.O. Box 907, University, MS 38677
Tel.: (662) 915-5006 Fax: (662)915-7577
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REMINDER: YOU CANNOT HAVE CONTACT WITH RESEARCH SUBJECTS UNTIL YOU RECEIVE THE FORMAL IRB PROTOCOL APPROVAL LETTER OR EMAIL

APPENDIX D: UNIVERSITY OF ILLINOIS STUDENT AFFAIRS RESEARCH APPROVAL

ILLINOIS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Student Affairs Research Approval Form

In an effort to reduce survey fatigue the Office of the Dean of Students requires that all research on University of Illinois students to be registered with our office. Please complete this form and attach all documentation. **Today's Date: 3/8/2013**

1. **Principal Investigator:** Megan L Marsh **Email:** mlmarsh@go.olemiss.edu

   Unit/Institution: Department of Health, Exercise Science, and Recreation Management, University of Mississippi **Phone:** 847-754-7639 (cell)

   Address: 215 Turner, 642 All-American Drive, University MS 38677

2. **TITLE OF RESEARCH (appropriately descriptive of target population)**
   The Impact of Eating and Exercise Habits on College Students' Life Satisfaction Among Upper and Lower Classmen at the University of Mississippi and the University of Illinois at Urbana-Champaign

   Expected dates of study administration Late January through March of 2013

3. **Have you prepared an Institutional Research Board request?** No
   If yes, PLEASE ATTACH A COPY OF THE IRB FORMS – See the following website for more information: http://www.irb.illinois.edu/ ***You may skip questions 4-6 if you attach completed IRB forms. Also, please send copy of the approval or exempt letter once it is available.***

4. **Will data be used ONLY for internal purposes by your department or unit?** Yes

   If yes, please attach a copy of your email from IRB documenting this. If no, please seek IRB approval.

5. **COST**

   a. **To Student (e.g., time; inconvenience; monies/fees, etc.)**
   10 to 15 minutes of total time to read the investigatory email and complete the online survey.

   b. **To Principal Investigator (e.g., what/who are your support/funding sources?)**
   Funding will come from the Department of Health, Recreation, and Exercise Science at the University of Mississippi.

   c. **To Unit/Department (e.g., space; professional/secretarial staff time; supplies; and other resources used initial and ongoing)**
   This project will require 1000 randomly selected student emails for use on a one-time basis through the Division of Management Information at the University of Illinois.

d. **To Student Affairs (e.g., what funding and/or personnel costs at this level? How will this reflect on the perceived mission, reputation, or strategic plan goals of Student Affairs?)**
This research will not require any funding from Student Affairs nor will it negatively reflect upon anything related to Student Affairs.

6. **BENEFITS**

a. **To Students (e.g., how does this research assist students in achieving their educational objectives, remove barriers to education, promote retention, enhance development, etc.?)**
This survey will force students to critically analyze their dietary and exercise habits, both of which have significant impact on their daily lives and health status.

b. **To Principal Investigator (How will the research be utilized? e.g., meet degree or course requirements, publish results, use within researchers unit, etc.)**
This research will be utilized for the purpose of a master's thesis project.

c. **To Unit/Department/Student or Academic Affairs (e.g., enhance the quality of service or program delivery; create more cost effective modes of services/program delivery, meet Strategic Plan goals, or to expand the body of professional knowledge and expertise.)**
This research will expand upon the limited body of knowledge regarding the impact of college students' eating and exercise habits on their life satisfaction, which is a critical factor related to their success in college as well as the transition from college into the working world.

7. **WHO HAS BEEN CONSULTED ABOUT THIS PROJECT?**
I have been in contact with the following University of Illinois employees requesting administrative information in regards to conducting my research at the U of I:
Ms. Lea Ann Carson, leannc@illinois.edu; Amy L. Edwards, aledward@illinois.edu

APPROVALS:

Principal Investigator (PI) — Date: 3/6/13

Additional Researcher(s) (optional) — Date:

Additional Researcher(s) (optional) — Date:

Principal Investigator's Supervisor (Required if PI is a student) — Date: 3/6/13

Chair, Student Affairs Research Committee, Dean of Students, & Associate Vice Chancellor, Kenneth Ballou — Date: 3/13/13

VITA

MEGAN L MARSH

519 Division Street Barrington, IL 60010 (847) 754-7639 mlmarsh@olemiss.edu

EDUCATION

M.S., Exercise Science, University of Mississippi, May 2013
Thesis: The Impact of Dietary and Exercise Habits on College Students' Life Satisfaction

B.S., Dietetics, University of Illinois at Urbana-Champaign, May 2011

EXPERIENCE

Graduate Instructor, University of Mississippi, August 2011 – May 2013
Courses: Personal and Community Health