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A Pilot Study Examining The Impact Of A Brief Health Education Intervention On Food Choices And Exercise In A Hispanic College Student Sample

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A PILOT STUDY EXAMINING THE IMPACT OF A BRIEF HEALTH EDUCATION INTERVENTION ON FOOD CHOICES AND EXERCISE IN A HISPANIC COLLEGE STUDENT SAMPLE

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Dedication

This dissertation is dedicated to those who have supported my achievement of higher education. First, my parents, who instilled in me the value of an education and made me feel like pursuing one could be more than just a dream. Second, my husband, whose support, encouragement, and sacrifice over the past eleven years has been immense and is appreciated more than words can express. Third, my mentor, whose guidance throughout all these years means so much to me and has shaped me into the person that I am today. Last but never least, my son Lucian. Your warmth, joy, intelligence and curiosity touch me and inspire me every day. You motivated me to complete my work and not give up even in the face of many obstacles. This is for you.

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Abstract

It has been suggested that intervention efforts should focus on prevention of weight gain and the adoption of healthy eating and physical activity behaviors. There is a dearth of literature as to what theoretically-based interventions would be most amenable and efficacious in a Hispanic college student sample. This study assessed the impact of a pilot intervention based on components derived from Self-Determination Theory (SDT) and the Transtheoretical Model (TTM) that focused on increasing healthy eating and physical activity in Hispanic college students. Measures in the study included demographics, theoretical constructs from SDT and the TTM, eating behavior, and a food and physical activity diary. Participants (N=267) were randomized to either the Fit U intervention group or the self-monitoring only group. Both groups received training on completing food and exercise diaries, while the Fit U group also received a brief health education and motivation based intervention. Both groups returned to check-in after one week and provided follow-up data after two weeks. Inferential analyses used hierarchical regression models to predict total calorie intake, fruit and vegetable intake, eating behavior, physical activity, and perceived competence for diet and exercise. Logistic regression models were used to examine changes in motivation to engage in a healthy diet and physical activity at follow-up. Findings suggest those in the Fit U condition reported lower calorie intake ($\beta = .143$, $p = .023$), improvement in healthy eating behaviors ($\beta = -.157$, $p < .001$), increased perceived competence for diet ($\beta = -.145$, $p = .007$) and exercise ($\beta = -.167$, $p = .003$) at follow-up, and progression through the stages of change for exercise ($OR = .297$, $p = .003$). These findings suggest the feasibility and relative efficacy of the Fit U intervention and warrant further investigation on a larger scale.

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Introduction

In the United States, 32.2% of men and 35.5% of women are obese, and an even greater number, 72.3% of men and 64.1% of women, are overweight (Flegal, Carroll, Ogden, & Curtin, 2010). Obesity, which is defined as a body mass index (BMI) of 30 or greater (Centers for Disease Control and Prevention [CDC], 2010) is associated with many diseases, such as coronary heart disease, Type 2 diabetes, certain cancers, hypertension, stroke, osteoarthritis, and high cholesterol (Weight Control Information Network, 2007). Overweight status, which is defined as a BMI between 25 and 29.9 (CDC, 2010), is associated with health risks similar to that of obesity (Weight Control Information Network, 2007). Even moderate weight excess can increase the risk of premature death or developing diseases associated with obesity (Surgeon General, 2007).

Clinical guidelines recommend weight loss for overweight individuals who meet the following criteria: a body mass index of 25 or greater, a high waist circumference (i.e., greater than 35 inches in women and 40 inches in men), and at least two risk factors such as physical inactivity, smoking, and personal or family history of high cholesterol, hypertension, or diabetes (Weight Control Information Network, 2007). Those who are overweight and do not meet the above criteria are advised to prevent further weight gain or to attempt moderate weight loss, as a loss of a mere 5 to 15% of body weight can reduce the risk of developing diseases associated with obesity, particularly heart disease (Surgeon General, 2007).

It has been suggested that, rather than focusing on weight loss as an outcome, attention should be paid to changes in behaviors that are associated with weight management in order to prevent further weight gain. For instance, low intensity exercise, such as walking, in order to burn an additional hundred calories a day, or merely eating a hundred calories fewer a day, may

be sufficient to stave off weight gain (Hill, Wyatt, Reed, & Peters, 2003). Current guidelines for dietary intake suggest that for adults aged 18-30, one and a half to two cup servings of fruit and two and a half to three cup servings of vegetables a day is ideal (United States Department of Agriculture [USDA], 2011). For physical activity, current guidelines recommend at least 150 minutes per week of moderate intensity aerobic activity and at least two days a week of strength training for adults aged 18-64 (World Health Organization [WHO], 2011). Thus, interventions focused on healthy eating and increasing physical activity warrant consideration and assessment.

OBESITY AND OVERWEIGHT IN HISPANICS

The rates of obesity and overweight in Mexican-American populations in the U. S. are significantly higher than the national average, with 35.9% of men and 45.1% of women being obese, and 80% of men and 76.9% of women being overweight (Flegal et al., 2010). Even though obesity and overweight in Hispanic populations are clearly important to address, research is limited as to what types of interventions are appropriate for this group. In terms of increasing healthy eating behaviors and physical activity, there is a dearth of literature as to what type of intervention would be amenable to this particular population. It has been observed that Hispanics are less likely to report seeking evidence-based treatment for weight loss (Tsai et al., 2009), which suggests that this population would benefit from interventions that are culturally-sensitive in order to engage participants.

Some studies suggest that taking cultural constructs into consideration when developing an intervention prioritizing the population of interest may be beneficial in promoting behavior change (Cousins et al., 1992; Diaz, Mainous, & Pope, 2007; Domel, Alford, Cattlet, Rodriguez, & Gench, 1992; Suris, del Carmen Trapp, DiClemente, & Cousins, 1998). However, few studies

have quantitatively measured cultural constructs or assessed their impact on weight and weight control (Diaz et al., 2007). Moreover, other cultural constructs that may be useful to incorporate into interventions to increase healthy eating and physical activity are not as well-defined in the literature. One approach that has been well-received is incorporating healthier versions of familiar foods into diet plans in order to encourage the adoption of improved dietary behavior (Foreyt, Ramirez, & Cousins, 1991).

There is also a dearth of literature with regard to what theoretically-based components should be incorporated into healthy eating and physical activity interventions for Hispanic populations. In previous weight loss studies, the interventions were loosely based on theoretical models (Cousins et al., 1992; Domel et al., 1992; Foreyt et al., 1991), and only one used empirically based measures to assess the relationship between overweight/obese status and theory, more specifically the Transtheoretical Model (Suris et al., 1998). Another study assessing correlates of overweight and obesity in a Hispanic community sample assessed constructs from multiple theoretical models (Blow, Torres, & Cooper, manuscript submitted for publication). However, the efficacy of incorporating those constructs into an intervention in which the aim is to increase healthy eating behaviors and physical activity levels has not yet been assessed, particularly in normal-weight individuals.

COLLEGE STUDENTS

College is an important time of transition for many young adults. Young adults entering college are experiencing a greater amount of independence, especially with regard to making decisions about health-related behaviors, such as diet and exercise. These transitions can often lead to weight gain for many students. Indeed, studies have identified freshman (Anderson,

Shapiro & Lundgren, 2003; Lloyd-Richardson, Bailey, Fava, & Wing, 2009) and sophomore years (Lloyd-Richardson et al., 2009) not only as critical periods for weight gain, but also as ideal times in which to implement weight gain prevention efforts.

One study that assessed 106 colleges nationwide found that nearly 32% of women and men had a BMI that would place them in an overweight or obese category (American College Health Association, 2009). The same study found that only 8.5% of college students reported eating five or more servings of fruits and vegetables daily and just over 45% of students reported exercising at least three times in the past week. Findings are similar with regard to weight status in one study conducted at the University of Texas at El Paso (UTEP), a Hispanic Serving Institution (Hu, Taylor, Blow, & Cooper, 2011). However, Hu and colleagues observed even lower rates of consuming five or more servings of fruits or vegetables daily (2%), but higher rates of exercise in comparison to the national average (63%). Studies have shown that the more fruits and vegetables one consumes, the more health benefits one derives (Hung et al., 2004). For instance, individuals who consume more than five fruits and vegetables daily have a 20% lower risk of stroke (He, Nowson, & MacGregor, 2006) and coronary heart disease (He, Nowson, Lucas, & MacGregor, 2007). While the findings with regard to exercise in the UTEP population are promising, it is still important to encourage even more students to adopt and maintain regular physical activity. One recent review has observed the multitude of benefits of engaging in regular exercise, not only in terms of controlling weight, but also in the prevention of chronic diseases associated with obesity and overweight, such as high blood pressure, heart disease, and diabetes (Warburton, Nicol, & Bredin, 2006).

Yet another concern with regard to college students, particularly females, is the use of unhealthy behaviors to control or maintain weight. One study assessing weight control practices

in Hispanic and white female college students found high rates of reported skipping meals and fasting (76%) as well as binging (46%), and non-negligible rates of engaging in extreme forms of dieting (17%; Shamaley-Kornatz, Smith, & Tomaka, 2007). This suggests the need for interventions with an educational component that focuses on making healthier food choices as a means of controlling weight while discouraging the adoption of potentially maladaptive weight control behaviors.

Taken together, these findings warrant assessing the efficacy of interventions for college students that are designed to encourage the adoption and maintenance of a healthy diet and regular physical activity regimen.

THEORETICAL MODELS

There were two theoretical models of interest in the current study: Self-Determination Theory (SDT; Ryan & Deci, 2000) and the Transtheoretical Model (TTM; Prochaska & Velicer, 1997).

SDT is a motivation-based model, which purports that successful behavior change occurs when one moves from being amotivated to being externally motivated, and finally to being internally motivated. SDT includes three constructs: autonomy, competence, and relatedness. Autonomy refers to the belief of control over circumstances and the decisions one makes. Competence refers to the belief in one's ability to make changes (self-efficacy), and relatedness refers to the belief of being connected to others in one's endeavors and that those efforts are supported by others. SDT posits that interventions which increase autonomy, competence, and relatedness are ideal in order to elicit internally motivated behavior change (Ryan & Deci, 2000).

Many studies have used SDT-based weight loss, physical activity, and dietary behavior interventions with promising results. Studies that assessed weight loss as an outcome variable have found that SDT-based interventions yielded significant weight loss generally (Teixeira et al., 2006; Williams, Grow, Freedman, Ryan, & Deci, 1996), and relative to control groups (Mata et al., 2009; Silva et al., 2010). It has also been observed that SDT-based interventions can increase autonomous self-regulation, intrinsic motivation, and perceived competence for exercise, and level of physical activity relative to general non-theory based interventions (Mata et al., 2009; Silva et al., 2010). The aforementioned studies, however, have not focused on Hispanics. One study conducted that assessed multiple theoretical models and their relation to weight in an overweight and obese Hispanic community sample found that the SDT constructs related to weight were perceived competence for diet and exercise, such that lower weight was associated with greater perceived competence for diet and exercise (Blow et al., manuscript submitted for publication). It seems plausible that perceived competence can be increased when one not only considers potential barriers to the implementation and maintenance of a healthy diet and exercise intervention, but also strategies to overcome those barriers. Thus in the current study it seemed appropriate to assess the efficacy of including intervention components designed to increase perceived competence, particularly for diet given the low level of fruit and vegetable consumption in this particular college student population (Hu et al., 2011).

TTM is a motivation-based model that seeks to increase readiness to change a behavior using five stages of change: precontemplation, contemplation, preparation, action, and maintenance. In the precontemplation stage one is currently not thinking about behavior change and may not even feel that the particular behavior is an issue (i.e. weight is not affecting health or that no benefit would be gained from weight loss or weight gain prevention). In the

contemplation stage, one may recognize the need to engage in behavior change, and is thinking of change but has not yet committed to taking action. One in the preparation stage is planning behavior change with the intention of changing his or her behavior within the next month. Individuals in the action stage are currently engaged in behavior change, while those in the maintenance stage are continuing behavior change with the intention of preventing relapse into former, maladaptive behaviors. It is thought that identifying an individual's stage of change is beneficial in determining how to intervene (Prochaska & Velicer, 1997).

TTM has been studied extensively and has been found to be an appropriate model to use to determine readiness to change across multiple health behaviors (Laforge, Velicer, Richmond, & Owen, 1999). Studies have found that an individual's stage of change is related to motivational readiness to change in terms of increasing physical activity and improving nutrition (Robinson et al., 2008). Stage of change can also be matched to certain behaviors, such as intensity of exercise (Sarkin, Johnson, Prochaska, & Prochaska, 2001) as well as weight reduction (Prochaska, Norcross, Fowler, Follick, & Abrams, 1992).

TTM has also been successfully applied in overweight populations of Mexican-American women with regard to their progress in a weight-loss treatment program (Suris, et al., 1998). In an overweight and obese Hispanic community sample, it was found that higher weight was associated with greater endorsement of the positive aspects of weight loss, as well as being in the contemplation stage for exercise (Blow et al., manuscript submitted for publication). This suggests a readiness to take steps to implement changes to diet and exercise behavior that could potentially result in weight loss or prevention of weight gain. Further, in a population of UTEP students, it was found that 36.9% reported being in precontemplation, contemplation, or preparation stages for exercise, while 98.2% reported being in the aforementioned stages for fruit

and vegetable intake (Hu et al., 2011). This finding suggests that enhancing motivation to engage in maintaining a healthy diet and exercise program by highlighting the benefits of each behavior while minimizing the negative aspects is a viable avenue for an intervention within this population.

INTERVENTIONS

Numerous interventions in college students and young adult populations have focused on weight loss and preventing weight gain. These interventions include: self-monitoring (Levitsky, Garay, Nausbaum, Neighbors, & DellaValle, 2006), daily weighing (Gokee LaRose, Tate, Gorin, & Wing, 2010), making small or large changes to energy balance (Gokee LaRose et al., 2010), nutrition (Matvienko, Lewis, & Schafer, 2001), healthy lifestyle courses and seminars (Hivert, Langlois, Berard, Cuerrier, & Carpentier, 2007), and online interventions (Gow, Trace, & Mazzeo, 2010). However, many studies utilized weight or prevention of weight gain as the primary outcome variable (Gokee La Rose et al., 2010; Gow et al., 2010; Levitsky et al., 2006) and did not assess changes in weight-related behaviors. Moreover, other previous studies' samples were derived from special populations, in particular females (Levitsky et al., 2006; Matvienko et al., 2001) and primarily overweight and obese populations (Gokee La Rose et al., 2010).

There are few current studies using college student samples that observe the effects of self-monitoring diet and exercise behavior on weight and weight-related behaviors. However, other studies conducted with non-student populations have observed similar trends. Self-monitoring of diet (Burke et al., 2012; Yon, Johnson, Harvey-Berino, Casey Gold, & Howard, 2007) and exercise has been found to be efficacious for sustained weight loss (Helsel, Jakicic, &

Otto, 2007). Though it has been posited that modalities such as electronic formats (i.e. Personal Digital Assistants) are more convenient and therefore more amenable to adherence, it has been found that the modality used to self-monitor is not as important as the actual act of self-monitoring (Burke et al., 2012; Yon et al., 2007). Moreover, the level of detail used in self-monitoring is not as important as the level of adherence to self-monitoring (Helsel et al., 2007). However, the use of self-monitoring with feedback has been found to improve weight loss over self-monitoring alone, and can even enhance adherence to self-monitoring (Burke et al. 2012). As previously stated, these studies were conducted with older, primarily female, and non-Hispanic populations, with weight loss being the primary outcome of interest. Whether similar findings would be observed in Hispanic college students with regard to weight related behaviors warrants further investigation.

One study of particular interest assessed movement through the stages of change in the TTM model in an intervention targeting multiple behaviors related to weight and weight management (Johnson et al., 2008). The intervention provided computer-generated reports to participants that were tailored on various TTM constructs (i.e. stage of change, decisional balance, self-efficacy, and process of change). Significant effects were observed for healthy eating, exercise, and fruit and vegetable intake. However, the sample consisted of overweight and obese adults (mean age 45.37), and only 7% of the sample were of self-reported Hispanic ethnicity.

In terms of intervention modality, many studies have assessed the efficacy of using the internet in order to deliver interventions (Chambliss et al., 2011; Krukowski, Harvey-Berino, Ashikaga, Thomas, & Micco, 2008; Morgan, Lubans, Collins, Warren, & Callister, 2009). While many studies have observed promising results using online interventions, findings from one

study suggests that the inability to highly tailor behavioral feedback via computerized programs may have resulted in a lack of significant difference between treatment conditions (Chambliss et al., 2011). Moreover, one study assessing preferences for various intervention efforts in college students observed that the majority of students indicated a preference for interventions offered on campus as opposed to online or other physical locations (Gokee LaRose, Gorin, Clarke, & Wing, 2011). This suggests that an intervention offered on campus would be a viable and well-received format for college students in the current study.

AIMS AND HYPOTHESES

Given the prevalence of overweight and obesity in college students in the border region, as well as the profoundly low rates of fruit and vegetable intake, the aims of current study were to assess the efficacy of a healthy eating and physical activity intervention (Fit U) for college students that focused on: 1) providing tailored feedback with regard to body composition and total energy expenditure 2) increasing fruit and vegetable intake, healthy eating behavior, and physical activity, and 3) increasing motivation and competence to engage in a healthy diet and physical activity. Hypotheses were that the Fit U intervention group would demonstrate significant changes in primary outcomes (i.e. total calorie intake, fruit and vegetable intake, eating behavior, and physical activity) and secondary outcomes (i.e. motivation and competence to engage in a healthy diet and physical activity) in comparison to a self-monitoring only group. As the current study is a pilot study with a short follow-up period, weight loss was not assessed as a primary outcome. Rather exploratory analyses for changes in weight and waist circumference were conducted. However, assessing changes in behaviors that are critically associated with weight loss, such as changes in fruit and vegetable intake, eating behavior,

physical activity, motivation and competence will inform future larger scale interventions prioritizing Hispanic college students.

Methods

Participants

A power analysis for mulitple linear regression, as outlined in Cohen, Cohen, West, and Aiken (2003), was conducted to obtain the neccessary sample size. For Step 1, 15% of the variabillity was assumed for the control variables and an additional 2.5% variability was assumed in Step 2 for condition. Power set to .95 with one predictor results in a necessary sample size of 262 participants total to detect a significant effect in the current study. Students (N = 267) were recruited from university psychology courses. Eighty-eight percent of those recruited at baseline were retained at follow-up, resulting in a complete sample size of 235 (See Table 1). Participants were female with an average age of 20.7 years (SD = 4.42). Self-reported fruit and vegetable intake at baseline was 2.16 (SD = 1.37) daily servings. Self-reported cardiovascular exercise per week at baseline was 255.78 (SD = 265.39) minutes. The average BMI for males was 25.69 (SD = 5.07) and 25.01 (SD = 14.38). The average waist circumference was 35.08 inches (SD = 5.52) for males and 31.87 inches (SD = 4.46) for females (see Table 2).

Measures

Measures were counterbalanced within the survey packet in order to eliminate bias that may result from the order in which the measures appear. There were six different orders of survey packets such that the demographic measure always appeared first and the groupings of theoretical measures were maintained yet counterbalanced across theory. The following paper and pencil measures were completed by participants:

A brief screening form (see Appendix A) was used in order to determine eligibility to participate in the proposed study. Inclusion criteria were being aged 18 or older and being of

Hispanic ethnicity. Exclusion criteria were being pregnant or nursing and currently participating in a formal diet and/or exercise program.

Typical demographic information was obtained, such as age, sex, and ethnicity (see Appendix B). In addition, information regarding risks associated with obesity and overweight were gathered, such as smoking status, physical activity level, and family or personal history of Type 2 diabetes, high blood pressure, heart disease, and high cholesterol. The reliability for all measures was assessed using coefficient alpha.

The Perceived Competence Scale for Diet (PCS D; Deci & Ryan, 1985; see Appendix C) is a 4-item measure that assesses confidence in one's ability to maintain a healthy diet. Scores are derived by taking an average of the four items, and higher scores indicate greater perceived competence for diet. The psychometric properties of this measure have previously been established (Deci & Ryan, 1985). Internal reliability for the PCS D was .93.

The Perceived Competence Scale Exercise (PCS E; Deci & Ryan, 1985; see Appendix D) is similar in scoring, number of items, and interpretation to the PCS D, but the scale instead assesses confidence in one's ability to maintain a regular exercise program. The psychometric properties of this measure have previously been established (Deci & Ryan, 1985). Internal reliability for the PCS E was .92.

The Exercise Stage of Change: Short Form (ESC; Marcus, Selby, Niaura, & Rossi, 1992; see Appendix E) is a single item measure which asks whether the participants is currently engaged in or plans to engage in regular exercise. The answer the participant chooses determines whether s/he is in the precontemplation, contemplation, preparation, action, or maintenance stage of change (Marcus et al., 1992).

The Stage of Change (5 A Day) uses two items for fruit and vegetable consumption (See Appendix F): the first item assesses the number of fruit and vegetable servings consumed per day (Vallis et al., 2003). The second item evaluates stage of change, in which a response of fewer than five servings is assigned to precontemplation, contemplation, or preparation. Responses of five or more servings are assigned to action or maintenance (Vallis et al., 2003).

The Weight Decisional Balance (WDB; O'Connell & Velicer, 1988; see Appendix G) form is a 20-item measure that assesses the weight the participant places on the pros of losing weight versus the cons of losing weight. The cons are contained in the odd-numbered questions, and the pros are contained in the even-numbered questions; each type of response is summed to create pros and cons scores. Higher scores indicate greater weight placed on the pros or cons of losing weight. The pros and cons scales have demonstrated high internal consistency ($\alpha = .91$ and $\alpha = .84$ respectively; Prochaska et al., 1994). Internal reliabilities of the pros and cons scales in this study were .92 and .83, respectively.

The Eating Behavior Inventory (EBI; O'Neil et al., 1979; see Appendix H) is a 26-item measure which assesses weight loss and weight management behaviors. Items are summed in order to obtain a total score. Higher scores are indicative of positive behaviors conducive to weight loss. This measure has demonstrated adequate psychometric properties in the original validation study (O'Neil et al., 1979). A review of the subsequent use of the measure in various studies has demonstrated it to be a valid tool to measure changes in weight-management related behaviors (O'Neil & Rieder, 2005). The internal reliability for the EBI was .67.

Participants were asked to record their food intake and physical activity in a food and activity log (see Appendix I). Participants were instructed to record the brand (if applicable), a brief description, and serving size of each food that comprises their meals for a given day. In

addition, physical activity was recorded as well as how many minutes the activity was performed. Total calorie intake was derived from participants' food and activity log by using the CalorieKing.com (CalorieKing Wellness Solutions, 2013) website in order to calculate the calorie and nutritional content of food items. This particular food database derives nutritional content from a variety of trusted sources (e.g., Department of Agriculture), and data are checked by dieticians prior to inclusion in the database. Fruit and vegetable intake was calculated using serving sizes reported in food and activity logs. Exercise was calculated as the total number of minutes recorded in food and activity logs.

In addition to the paper and pencil measures, participants had their height, weight, body composition, and waist circumference measured. Height, weight, and body composition were measured simultaneously using a body composition analyzer (Tanita Body Composition Analyzer - Model TBF-215). The analyzer measures BMI, body fat percentage, fat mass, fat free mass, and basal metabolic rate (BMR) by passing imperceptible electrical impulses through the feet. If the participant was over the age of 20 the body composition analyzer also provided ideal ranges for each measurement. Participants were asked to remove their shoes and socks for measurements. Waist circumference was measured by asking the participant to place a finger on his/her belly button over his/her clothing and the researcher used this as a guide to place a soft tape measure over his/her waist. In order to take the most accurate measurement, the researcher held the tape loosely enough so as not to create any indentation in the skin, but tight enough so that the tape did not sag.

Daily calorie needs, or total energy expenditure (TDEE) were calculated for participants using the Harris-Benedict Equation. This equation is commonly used to estimate BMR based on the height, weight, sex, and age of the individual and then multiplies the derived value by an

activity factor to obtain and individual's TDEE (Harris & Benedict, 1919). In order to obtain the most accurate estimate of participants' TDEE, researchers used the BMR from the body composition analyzer's output and multiplied it by the activity factor (see Appendix J).

PROCEDURE

University Institutional Review Board approval was obtained prior to implementation. Students enrolled in psychology courses signed up for appointments through a secure online database maintained for research studies. Though eligibility criteria were posted in the online database, researchers also assessed eligibility in person at the scheduled appointment time. Individuals were eligible to participate in the study if they met the following criteria: 1) were aged 18 or older and 2) self-report Hispanic ethnicity. Individuals were ineligible if they met the following criteria: 1) were currently pregnant or nursing and 2) were currently participating in a formal diet and/or exercise program. Those who were ineligible at the time of the scheduled appointment were informed as such, thanked for their time, and issued partial course credit. Eligible participants completed the informed consent process. All participants completed baseline assessments which, in addition to demographics, included measures that assess components related to risk factors, Self-Determination Theory, the Transtheoretical Model, and eating and exercise behaviors.

After completing baseline assessments, participants were randomized into the self-monitoring or the Fit U group using an online random number generator. The randomization process was included in the informed consent. A printed randomization log with participant number and assigned group was maintained by researchers.

Post B.A. level and psychology doctoral students were trained and supervised by a clinical psychologist and the principal investigator of the study to provide the manualized intervention. For additional information on interventionists, please see Table 3. Interventionists were trained and received feedback via role plays. Additionally, supervision was conducted regularly and as needed. Each interventionist followed the worksheets which included details of each component. Interventionists completed manual worksheets using participants' responses in order to ensure uniformity of the intervention procedure. Interventionists provided both conditions to participants.

Self-monitoring group

Participants in the self-monitoring group had their body composition and waist circumference measured. Measurements were taken following survey completion so as not to affect participant survey responses. Researchers informed participants that they would be able to see their body composition results at the completion of the study and that any questions they may have about the output will be answered at that time.

Participants were then given instruction in completing a food and activity log. Instruction included the participant receiving information about accurately recording a serving of various foods (i.e. "a serving of meat is about the size and thickness of a deck of playing cards") as well as the manner in which the food was prepared (i.e. breaded and fried, or grilled). Participants were asked to record their food and physical activity intake for a period of two weeks.

Participants completed two weekly check-in sessions in which food and activity logs were turned in. At the second check-in session, participants completed post-test assessments which included components related to Self-Determination Theory, the Transtheoretical Model,

and eating and exercise behaviors. Participants also had their body composition and waist circumference measured at follow-up. All assessments were completed in-person.

After survey materials and measurements were completed, participants were debriefed. As part of the debriefing process, participants were informed about the purpose of the study. The confidentiality of their survey responses and information was reassured. Participants in the self-monitoring group were also shown their body composition results at that time and the output was explained to them by researchers. Any questions that might have arisen during their participation were answered by researchers.

Fit U intervention

After baseline assessments and body composition measures were completed, those randomized to the Fit U group were provided with a body composition feedback form (see Appendix K). The interventionist explained each component of the feedback to the participant and answered any questions regarding the output.

The interventionist then assessed the participant's motivation to eat a healthy diet using the participant's baseline survey responses as a guide. A decisional balance exercise was introduced to the participant in order to outline the positive and negative aspects of maintaining a healthy diet (see Appendix L). The participant was asked to generate four lists: 1) things s/he likes about *not* maintaining a healthy diet; 2) things s/he dislikes about maintaining a healthy diet; 3) things s/he dislikes about *not* maintaining a healthy diet; and 4) things s/he likes about maintaining a healthy diet. Interventionists helped participants consider components of the discussion that contributed to the scale being tipped in favor of maintaining a healthy diet. For instance, eliciting specific reasons why one might like to maintain a healthy diet, such as listing

the multitude of benefits one can derive (e.g. better health, helps control weight, possibly being able to eat more food because of the low-calorie content of most healthy foods) can help lengthen one side of the handout such that there are more positives than negatives of maintaining a healthy diet.

The interventionist then moved on to considering barriers to healthy eating. The interventionist used components of the decisional balance exercise to help the participant generate a list of barriers to maintaining a healthy diet (see Appendix M). In addition, the interventionist elicited even more barriers to maintaining a healthy diet that may not have been mentioned during the decisional balance exercise. The interventionist then elicited strategies that can be used to overcome barriers.

As part of the strategies to overcome any barriers to maintaining a healthy diet, the interventionist elicited from the participant what s/he believes it means to "eat healthy" and assisted in debunking any ideas that food should be boring or bland in order to be considered healthy. By using foods that the participant enjoys, this activity utilized culturally-relevant food items, as has been found to be efficacious in previous interventions (Foreyt et al., 1991). As an exercise, favorite food items that are typically viewed as unhealthy were deconstructed and reconstructed into a healthier version of that food. The participant was encouraged to make a list of different ways that various foods can be made healthier with a few small changes, such as utilizing low-calorie and nutritionally dense condiments, such as salsa, in place of high fat options like cheese or sour cream.

The interventionist then assessed the participant's motivation to exercise regularly using the participant's baseline survey responses as a guide. A decisional balance exercise was introduced to the participant in order to outline the positive and negative aspects of exercising

regularly (see Appendix N). The participant was asked to generate four lists: 1) things s/he likes about *not* exercising regularly; 2) things s/he dislikes about exercising regularly; 3) things s/he dislikes about *not* exercising regularly; and 4) things s/he likes about exercising regularly. Interventionists helped participants to consider components of the discussion that contribute to the scale being tipped in favor of exercising regularly. For instance, eliciting specific reasons why one might like to exercise on a regular basis, such as listing the multitude of benefits one can derive (e.g. better health, helps control weight, increased energy levels, stress relief) can help lengthen one side of the handout such that there are more positives than negatives of exercising regularly.

The interventionist then moved on to considering barriers to exercising regularly. The interventionist used components of the decisional balance exercise to help the participant generate a list of barriers to regular exercise (see Appendix O). In addition, the interventionist elicited even more barriers that may not have been mentioned during the decisional balance exercise. The interventionist then elicited strategies that can be used to overcome barriers.

As part of the strategies to overcome any barriers to exercising regularly, the interventionist elicited from the participant what s/he believes it means to "exercise" and assisted in debunking any ideas that an exercise needs to be intense or difficult in order for one to derive benefits. By eliciting activities that the participant enjoys, the interventionist assisted the participant in developing a tailored exercise program or set of physical activities that the participant may be more likely to engage in on a regular basis.

At the end of the session, the interventionist elicited from participants goals for diet and exercise for the upcoming week (i.e. have an additional serving of vegetables a day and exercise three times in the next week). Participants in the intervention group were also given handouts

with additional tips for maintaining a healthy diet and exercise regimen at the end of the session (see Appendix P).

Handouts and materials for the intervention were adapted from a group training manual developed by Cooper and Burke (2003).

Participants were then given instruction in completing food and activity logs. Instructions included the participant receiving information about accurately recording a serving of various foods (i.e. "a serving of meat is about the size and thickness of a deck of playing cards") as well as the manner in which the food was prepared (i.e. breaded and fried or grilled). Participants were asked to record their food and physical activity intake for a period of two weeks.

Fit U participants completed two weekly check-in sessions in which food and activity logs were turned in. The interventionist assessed goal attainment at the first check-in session. New goals or the continuation of current goals were outlined for the upcoming week, depending on each participant's progress. At the second check-in session, participants completed post-test assessments which included components related to Self-Determination Theory, the Transtheoretical Model, and eating and exercise behaviors. Participants also had their body composition and waist circumference measured at follow-up. All assessments were completed in-person.

After survey materials and measurements were completed, participants were debriefed. As part of the debriefing process, participants were informed about the purpose of the study. The confidentiality of their survey responses and information was reassured and any questions that might have arisen during their participation were answered by researchers.

Participants in both groups received the following incentives: a two hour credit for the completion of baseline assessments, a one hour credit for each week a food and activity log is

completed (up to two hour credits), and a one hour credit for completing follow-up assessments for a total of up to five possible credit hours. In order to maximize retention rates, participants were contacted in order to remind them of their check-in and follow-up appointments and were contacted three times if they miss a check-in or follow-up appointment to reduce attrition.

Results

All baseline missing data were imputed prior to analyses using the hot deck imputation method (Roth, 1994). In hot deck imputation, missing values are assigned using "donors" from the same dataset that match variables determined by the researcher. Typically, the variables that are chosen should meet the following criteria: 1) They should contain little or no missing data, 2) should be non-continuous variables, and 3) should be related to the variables being imputed but not of proximal interest to the researcher (Myers, 2011). The variables used to match participants for imputation in the current study were sex, student classification, and annual income. Responses from participants who had complete data and who matched the participant with missing values on the aforementioned variables were used to impute missing values in order to obtain a complete dataset (Myers, 2011). Hot deck imputation is recommended for datasets that contain 20% or less missing data. Missing data analyses for the current dataset found that .29% of the values were missing. A few limitations to hot deck imputation should be noted. Cases that are unique in the dataset such that matches cannot be found across the specified variables can be problematic and result in an incompletely imputed dataset. Such instances can occur in small datasets or when the chosen sorting variables are numerous or continuous (Myers, 2011). In addition, this method of imputing data may produce biased estimates of correlations and regression coefficients (Schafer & Graham, 2002).

PARTICIPANT CHARACTERISTICS

Participant characteristics for all participants were assessed using descriptive statistics (see Table 2). Observed daily calorie intake at follow-up was 1735.60 (*SD* = 530.46). Observed daily fruit and vegetable intake at follow-up was .84 cup (*SD* = .85) and observed cardiovascular

exercise was 195.20 (*SD* = 253.89) minutes weekly. Descriptive statistics were also used to assess weight-related risk factors (e.g., smoking status, familial history; see Table 2). The majority of participants reported experimenting with smoking, but did not smoke on a regular basis. Rates of personal history with diseases associated with obesity and overweight were low. However, 43.8% reported a family history of Type 2 diabetes, and 56.9% reported a family history of high blood pressure.

Baseline Differences by Condition

Descriptive statistics were used to assess participant characteristics by condition (See Table 4). A logistic regression model was constructed to assess baseline differences between those in the Fit U condition and those in the self-monitoring condition. Independent variables included demographics (i.e. age, sex, BMI, waist circumference, self-reported days of strength training and minutes per week of cardiovascular activity) and scores on the ESC, 5 A Day, WDB pros and cons, PCS D, PCS E, and the EBI scales. No significant differences were observed between the two conditions.

Baseline Differences by Attrition

A logistic regression model was constructed to assess baseline differences between those who completed the study and those who did not. Independent variables included demographics (i.e. age, sex, BMI, waist circumference, self-reported days of strength training and minutes per week of cardiovascular activity) and scores on the ESC, 5 A Day, WDB pros and cons, PCS D, PCS E, and the EBI scales. The overall model was marginally significant, $\chi 2$ (14) = 23.64, p =

.051, Nagelkerke R^2 = .17. Those who completed the study were more likely to report engaging in more minutes of cardiovascular exercise per week at baseline (*OR* = 1.01, *p* = .004).

Four hierarchical multiple linear regression models were constructed to assess differences between groups across four primary outcome variables of interest: total calorie intake, fruit and vegetable intake, exercise, and healthy eating behaviors at the two week follow-up. The independent variables were entered in a stepwise fashion in each equation, in which in Step 1 control variables were entered (i.e., age, sex, and BMI). As an additional control variable, interventionist was dummy-coded and also entered into the first step, using Interventionist A as the reference group. In Step 2 group condition was entered (i.e. self-monitoring or Fit U). For the analyses, the Fit U condition was coded as a "1," and the self-monitoring group was coded as a "2". Multicollinearity was assessed among variables within each model to determine appropriateness for inclusion; multicollinearity (i.e., VIF < 5) was not observed in any model.

CALORIE INTAKE

Total calorie intake was derived from participants' food and activity log. Researchers used the CalorieKing.com (CalorieKing Wellness Solutions, 2013) website in order to calculate the calorie and nutritional content of food items. The first step of the overall model was significant accounting for 13.5% of the variance in total calorie intake. Of the predictors entered into the first step, only sex was statistically significant (β = -.355, *p* < .001) such that females reported lesser caloric intake. In Step 2, the overall model was significant, accounting for 15.5% of the variance in total calorie intake. Sex (β = -.367, *p* < .001) and group condition (β = .143, *p* = .023) were significant predictors of total calorie intake. Incremental variance in this step was

also significant, uniquely contributing an additional 2.0% of the variability in total calorie intake such that Fit U participants reported lesser caloric intake (See Table 5).

Fruit and Vegetable Intake

Fruit and vegetable intake was calculated using serving sizes reported in food and exercise logs. It should be noted that hierarchical multiple linear regression was used to model this dependent variable, even though it is a count variable. However, because participants reported non-integer values (i.e., half cup servings that would render a .5 serving in coding), more appropriate models could not be utilized. Using hierarchical regressions for count data may result in issues such as biased and inconsistent regression coefficients as well as biased individual predictors and overall prediction of the model (Cohen et al., 2003), so caution should be exercised when interpreting outcomes. The overall models for Steps 1 and 2 were not significant.

Physical Activity

Exercise was calculated as the total number of minutes recorded in food and exercise logs. The overall models for Steps 1 and 2 were not significant.

Eating Behaviors

Eating behaviors at the two week follow-up were derived from the EBI. Scores on the EBI at baseline were included in the Step 1 in this model as an additional control variable. Step 1 of the overall model was significant, accounting for 55.5% of the variance in EBI scores at follow-up. EBI scores at baseline was the only significant predictor in this step ($\beta = .706$, $p <$

.001). Step 2 of the overall model was significant, accounting for 56.3% of the variance in EBI scores at follow-up. Sex (β = .105, p = .023), EBI scores at baseline (β = .709, p < .001), and group condition (β = -.157, p < .001), were significant predictors of EBI scores at follow-up such that Fit U participants reported higher EBI scores at follow-up. Incremental variance in this step was also significant, accounting for an additional 2.5% of the variability in EBI scores at follow-up (See Table 6).

PERCEIVED COMPETENCE FOR DIET

Changes in perceived competence for diet at the two-week follow-up were assessed using the PCS D. For these secondary analyses, the independent variables entered in Step 1 as control variables were age, sex, BMI, interventionist, baseline scores from the PCS D and baseline scores on the pros and cons scales of the WDB. In Step 2 group condition was entered (i.e. self-monitoring or Fit U), in Step 3 the pros and cons of losing weight at follow-up were entered (assessed using the WDB), and in Step 4 the interaction of the pros and cons of losing weight at follow-up by group condition were entered. Step 1 in the overall model was significant, accounting for 38.2% of the variance in perceived competence for diet. Higher PCS D scores at baseline (β = .523, p < .001), WDB pros at baseline (β = .189, p = .004), and Interventionist D (β = .114, p = .049) were associated with increased perceived competence at follow-up. In Step 2 the overall model was significant, accounting for 39.9% of the variance in perceived competence for diet at follow-up. Significant predictors of increased perceived competence were higher PCS D scores at baseline (β = .546, p < .001), WDB pros at baseline (β = .177, p = .007), and the Fit U condition (β = -.347, p = .013). Incremental variance in this step was also significant, accounting for an additional 1.7% of the variability in perceived competence for diet at follow-

up. In Step 3, the overall model was significant, accounting for 45.6% of the variability in weight. Significant predictors of increased perceived competence were higher PCS D baseline scores (β = .565, p < .001), higher WDB cons at baseline (β = .234, p = .006), the Fit U condition (β = -.145, p = .007), and lower WDB cons at follow-up (β = -.364, p < .001). The incremental variance in this step was also significant, accounting for an additional 5.7% of the variance in perceived competence at follow-up. Step 4 of the overall model was significant, but the incremental variance was not (see Table 7).

PERCEIVED COMPETENCE FOR EXERCISE

Changes in perceived competence for exercise were assessed using the PCS E at follow-up. For these secondary analyses, the independent variables entered in Step 1 as control variables were age, sex, BMI, interventionist, baseline scores from the PCS E and baseline scores on the pros and cons scales of the WDB. In Step 2 group condition was entered (i.e. self-monitoring or Fit U), in Step 3 the pros and cons of losing weight at follow-up were entered (assessed using the WDB), and in Step 4 the interaction of the pros and cons of losing weight at follow-up by group condition were entered. Step 1 of the overall model was significant, accounting for 34.8% of the variability in perceived competence for exercise at follow-up. Only PCS E baseline scores was a significant predictor (β = .566, p < .001) in this step. Step 2 of the overall model was significant, accounting for 37.5% of the variance in perceived competence for exercise. Significant predictors of increased perceived competence for exercise at follow-up were PCS E baseline scores (β = .589, p < .001) and being in the Fit U condition (β = -.171, p = .002). Incremental variance in this step was also significant, accounting for an additional 2.7% of the variance in perceived competence for exercise at follow-up. In Step 3, the overall model was significant,

accounting for 42% of the variance in perceived competence for exercise at follow-up. Increased perceived competence at follow-up was significantly associated with PCS E baseline scores (β = .613, $p < .001$), higher WDB cons scores at baseline (β = .301, $p = .001$), being in the Fit U condition (β = -.167, $p = .003$), higher WDB pros scores at follow-up (β = .250, $p = .006$), and lower WDB cons scores at follow-up (β = -.285, $p = .001$). Incremental variance in this step was also significant, accounting for an additional 4.5% of the variance in perceived competence for exercise at follow-up. Step 4 of the overall model was significant, but the incremental variance was not (see Table 8).

Logistic regression analyses were employed to assess changes in motivation for fruit and vegetable intake and exercise. For the purpose of these analyses, change was conceptualized as "forward movement" or "no forward movement" between baseline and follow-up. The independent variables were entered in a stepwise fashion, in which in Step 1 control variables were entered (i.e., age, sex, BMI, interventionist, and baseline scores on the pros and cons scales of the WDB), in Step 2 group condition was entered (i.e. self-monitoring or Fit U), in Step 3 the pros and cons of losing weight at follow-up were entered (assessed using the WDB), and in Step 4 the interaction of the pros and cons of losing weight at follow-up by group condition were entered.

5 A Day Stage of Change Movement

Changes in motivation for increasing fruit and vegetable intake were assessed using the Stage of Change (5 A Day). All steps in the model were significant. In Step 1, $\chi 2$ (8) = 17.174, $p = .028$, Nagelkerke $R^2 = .117$, greater likelihood of forward movement to increase fruit and vegetable intake was associated with female sex ($OR = 2.731$, $p = .021$), lesser endorsement of

the pros of weight loss at baseline (*OR* = .949, *p* = .009), Interventionist C (*OR* = 2.725, *p* = .022), and Interventionist D (*OR* = 3.012, *p* = .025). In proceeding steps, no other additional variables emerged as significant (see Table 9).

EXERCISE STAGE OF CHANGE MOVEMENT

Changes in motivation for exercising regularly were assessed using the ESC. All steps in the model were significant with the exception of the first step. In Step 2, $\chi 2$ (6) = 19.232, *p* = .004, Nagelkerke R^2 = .060, increased likelihood of forward movement in motivation to exercise was associated with being in the intervention condition (*OR* = .231, *p* < .001). In Step 3, $\chi 2$ (8) = 26.134, *p* = .002, Nagelkerke R^2 = .246, increased likelihood of forward movement in motivation to exercise regularly was significantly associated with being in the intervention condition (*OR* = .292, *p* =.002) and greater endorsement of the pros of weight loss at follow-up (*OR* = 1.122, *p* =.019). Although the overall model in Step 4 was significant, $\chi 2$ (10) = 27.552, *p* = .002, Nagelkerke R^2 = .246, no variables within the model were significant (see Table 9).

Changes in motivation for exercising regularly were assessed using the ESC. All steps in the model were significant with the exception of the first step. In Step 2, $\chi 2$ (9) = 19.560, *p* = .021, Nagelkerke R^2 = .181, increased likelihood of forward movement in motivation to exercise was associated with being in the intervention condition (*OR* = .229, *p* < .001). In Step 3, $\chi 2$ (11) = 27.792, *p* = .003, Nagelkerke R^2 = .250, increased likelihood of forward movement in motivation to exercise regularly was significantly associated with being in the intervention condition (*OR* = .297, *p* =.003) and greater endorsement of the pros of weight loss at follow-up (*OR* = 1.135, *p* =.010). Although the overall model in Step 4 was significant, $\chi 2$ (13) = 28.769, *p* = .007, Nagelkerke R^2 = .258, no variables within the model were significant (see Table 10).

WEIGHT

As part of exploratory analyses, a hierarchical multiple linear regression model was constructed to assess differences between groups across weight at the two week follow-up. The independent variables were entered in a stepwise fashion in each equation, in which in Step 1 control variables were entered (i.e., age, sex, BMI, weight at baseline, and interventionist). In Step 2 group condition was entered (i.e. self-monitoring or Fit U). Steps 1 and 2 of the overall model were significant, with both steps accounting for 92.2% of the variability in weight at follow-up. In Step 1, lower weight at follow-up was significantly associated with female sex (β = -.064, p = .011), lower BMI (β = .211, p < .001), and lower weight at baseline (β = .741, p < .001). The addition of condition in Step 2 did not significantly increase incremental variance.

WAIST CIRCUMFERENCE

As part of exploratory analyses, a hierarchical multiple linear regression model was constructed to assess differences between groups across waist circumference at the two week follow-up. The independent variables were entered in a stepwise fashion in each equation, in which in Step 1 control variables were entered (i.e., age, sex, BMI, waist circumference at baseline, and interventionist). In Step 2 group condition was entered (i.e. self-monitoring or Fit U). Steps 1 and 2 of the overall model were significant, with both steps accounting for 94.5% of the variance in waist circumference at follow-up. In Step 1, lower waist circumference was significantly associated with female sex (β = -.036, p = .035), lower BMI (β = .174, p < .001), and lower waist circumference at baseline (β = .799, p < .001). The addition of condition in Step 2 did not significantly increase incremental variance.

Discussion

Calorie Intake

Lower calorie intake was associated with female sex. This is intuitive as females tend to have lower caloric requirements in comparison to males. Consistent with hypotheses, those in the Fit U condition reported a lower calorie intake in comparison to those in the self-monitoring group. Though neither group was instructed to keep track of or restrict calories, perhaps those in the Fit U condition were more mindful of either choosing lower calorie foods or reducing their overall calorie intake due to the feedback received regarding daily calorie needs. Also, it may be that participating in the healthy eating motivational enhancement exercises motivated those in the Fit U condition to make better choices with regard to food intake, such as reducing the amount of fast food consumed or practicing portion control that in turn led to an overall reduction in total calorie intake. These findings are a promising step towards improving healthy eating behavior in Hispanic college students, as previous findings suggest that even a small calorie deficit can be beneficial (Hill et al., 2003). In the future, interventions with longer follow-up periods may wish to incorporate feedback regarding daily calorie needs as well as elicit strategies that will reduce overall calorie intake and assess whether these changes are maintained over time and if they translate into significant, sustainable changes in weight and body composition.

Fruit and Vegetable Intake

Contrary to hypotheses, increased fruit and vegetable intake was not associated with being in the Fit U condition. Though baseline self-reported fruit and vegetable intake was approximately two servings a day, servings per day as derived from the food and exercise logs at

follow-up were abysmal for the entire sample regardless of condition. In line with suggestions from Hu and colleagues (2011) and the USDA (2010), researchers in the current study counted items such as salsas, agua frescas, and fruit and vegetable juices, as well as fruits and vegetables used as toppings, condiments, or ingredients towards total servings (i.e. fruit in yogurt parfaits, vegetables in sandwiches, and fruits or vegetables in smoothies). Even with this methodology, participants in the current study recorded an average of less than one cup serving of fruits and vegetables per day.

It should be noted that while the intervention focused on improving healthy eating, due to the highly tailored nature of the intervention, it may be that participants did not conceptualize healthy eating as increasing fruit and vegetable intake. Rather, participants' focus may have been on other aspects of healthy eating, such as reducing sweets, drinking more water, reducing fast food consumption, or making less calorie-laden choices when dining out. Still, given the benefits derived from consuming the recommended amounts of fruits and vegetables daily (He et al., 2006; He et al., 2007; Hung et al., 2004), it is imperative to refine the current intervention in order to improve fruit and vegetable intake in this group.

Given that feedback regarding daily calorie needs was efficacious in reducing overall calorie intake in the Fit U condition, perhaps a similar health education component that outlines recommended daily servings of fruits and vegetables should be incorporated into future iterations. One previous study found that awareness of recommended daily servings of fruits and vegetables was associated with a greater likelihood of consuming the recommended amount (Erinosho, Moser, Oh, Nebeling, & Yaroch, 2012). Moreover, efficacy may be further bolstered by eliciting strategies to incorporate more fruits and vegetables into participants' current diets.

For example, adding fruit to oatmeal or cereal at breakfast or vegetables to sandwiches at lunch can assist in achieving daily recommended amounts of fruits and vegetables.

PHYSICAL ACTIVITY

Contrary to hypotheses, increased physical activity was not associated with the Fit U condition. Minutes per week of exercise, both self-reported at baseline and as derived from the food and exercise logs at follow-up, were well-above the recommended amount for the entire sample (WHO, 2011). This is not surprising, given the high rates of exercise that Hu and colleagues (2011) observed in a similar sample. Also, due to current construction on campus, many students must take detours which extend their routes to classes, which may further contribute to the high rates of physical activity recorded in food and exercise logs. As such, there may be a ceiling effect with regard to the lack of efficacy of the physical activity component in the Fit U intervention. Indeed, analyses assessing differences between those who completed the study and those who did not indicate that those lost to follow-up reported fewer minutes of exercise per week at baseline, suggesting that those who remained in the study were exercising the most. Future iterations of the intervention should assess changes in those who report levels of physical activity below the recommended amount at baseline, as such analyses in the current sample may be under-powered to detect an effect. Future interventions prioritizing the current population should focus on maintaining current levels of physical activity and address any barriers that may be present in doing so. Another potential avenue may be to shift the focus of the intervention primarily on healthy eating, particularly increasing fruit and vegetable intake in future iterations with this population. The highly-tailored nature of the intervention lends itself well to both strategies.

EATING BEHAVIOR

Females were more likely to report improvement in healthy eating behaviors at follow-up. It may be that females are more amenable to making certain changes and subsequently endorsing certain items in the EBI in comparison to males, such as "If I'm served too much, I leave food on my plate" or "I eat foods that I believe will aid me in losing weight." While out of the scope of the current study, it may be interesting to assess sex differences in terms of which healthy eating strategies are endorsed and employed, not only in the EBI, but in the intervention itself.

Consistent with hypotheses, improvement in healthy eating behaviors was associated with the Fit U condition. Given that, as previously stated, the healthy eating component of the intervention did not specifically focus on increasing fruit and vegetable intake, but rather overall healthy eating strategies, it may be that the EBI was more sensitive to capturing such changes in the Fit U condition. These results bode well for the Fit U intervention and warrant further investigation in subsequent iterations. It is also promising that general healthy eating behavior change occurred, as one recent study found that improvement in one area increases the odds of improving in other areas (Johnson et al., 2013), though these effects were observed over longer follow-up periods. Perhaps changes in eating behavior may act as a catalyst to changes in fruit and vegetable intake and physical activity over time.

PERCEIVED COMPETENCE FOR DIET

Consistent with hypotheses, increased perceived competence for diet at follow-up was associated with the Fit U condition. This is also consistent with previous research that observed increased perceived competence, conceptualized as eating self-efficacy, in an SDT-based

intervention as compared to a health education intervention (Mata et al., 2009). It appears that discussing barriers to a healthy diet and eliciting strategies to overcome those barriers was efficacious in bolstering perceived competence for diet at follow-up. Additionally, this seems to have translated into actual behavior change, as noted by the significantly greater EBI scores in the Fit U condition. Though the PCS D focuses on a general healthy diet, this has further implications with regard to the aim of increasing fruit and vegetable intake. This suggests that while the addition of a health education component would be beneficial to boost fruit and vegetable intake, it is important to continue to incorporate theoretical components such as those posited by SDT. For instance specifically addressing barriers to fruit and vegetable intake and developing strategies to overcome them, as done in the Fit U condition with general healthy eating, may result not only in increased perceived competence but also actual behavior change for this particular behavior.

Increased perceived competence for diet at follow-up was also associated with endorsing more cons of losing weight at baseline and fewer cons of losing weight at follow-up. It may be that at baseline, reporting more cons of losing weight was associated with the belief that participants' did not have strategies at their disposal to engage in weight loss behaviors such as diet. Increases in the belief that one could improve diet at follow-up also appear to have reduced the number of negative aspects of weight loss endorsed. As the interactions between the WDB scales and group condition were not significant, this effect may be due to the self-monitoring component present in both conditions. Perhaps successfully keeping track of food intake bolstered the belief that a healthy diet could be maintained and in turn reduced the number of negative aspects of weight loss participants perceived. Future interventions may want to examine

this relationship further using a control group that does not engage in self-monitoring in order to assess if this indeed is the case.

Perceived Competence for Exercise

Consistent with hypotheses as well previous research with regard to SDT-based interventions (Mata et al., 2009), forward movement in perceived competence for exercise was associated with being in the Fit U condition. Similar to the findings for perceived competence for diet, it appears that discussing barriers to exercise and strategies to overcome them in the intervention was efficacious in boosting perceived competence for exercise. Also similar, increased perceived competence for exercise at follow-up was associated with endorsing more cons of losing weight at baseline and fewer cons of losing weight at follow-up. Increase perceived competence for exercise at follow-up was additionally associated with endorsing more pros to weight loss at follow-up. Increases in the belief that one could improve exercise behavior at follow-up also appear to have reduced the number of negative aspects of weight loss endorsed while increasing the positive aspects. Again, as the interactions between the WDB scales and group condition were not significant, this may be an effect of self-monitoring. Further investigation utilizing a control group that does not self-monitor is warranted.

It is interesting to note that participants in this study were minimally incentivized for their participation, namely course credit in which other study options were available. Furthermore, participants in both conditions were explicitly informed that earning study credits was contingent upon completing study materials, not upon changing behavior. In the Fit U condition specifically, participants were aware that they would be awarded credit regardless of whether their goals for healthy eating and physical activity were met at their check-in and follow-up

appointments. Yet, during a relatively short follow-up period of two weeks, perceived competence significantly increased in the Fit U condition. Though general motivation was assessed in the current study and not internal and external motivation as SDT posits (Ryan & Deci, 2000), it does appear that participants may have been internally motivated to increase perceived competence. This bodes well for the potential maintenance of any subsequent behavior change, as one study observed that financial (i.e. external) incentives appear to undermine internal motivation for behavior change and consequently the maintenance of behavior change over longer follow-up periods (Moller, Buscemi, McFadden, Hedeker, & Spring, 2012). Future iterations of the intervention should investigate motivation as it relates to SDT.

5 A Day Stage of Change Movement

Forward movement through the stages of change for increasing fruit and vegetable intake was associated with female sex and less endorsement of the pros of weight loss at baseline. There is a dearth of literature with regard to sex differences across stages of change, particularly with regard to fruit and vegetable intake. These findings could be due to the self-monitoring aspect of the study that was present in both conditions. It may be that for females and for those who endorsed fewer pros of weight loss at baseline, having to record the types of foods being consumed made them aware of their low fruit and vegetable intake and subsequently increased motivation to increase intake, though this did not translate to actual behavior in the current study. That it did not translate to actual behavior may have been due to the short follow-up period. Perhaps in future iterations, a longer follow-up period would show greater changes in fruit and vegetable consumption over time due to self-monitoring of food intake.

Contrary to hypotheses, movement through the stages of change for increasing fruit and vegetable intake was not associated with the Fit U condition. This finding is interesting given that the majority of the sample (41.1%) were in the contemplation stage for increasing fruit and vegetable intake at baseline. It appears that the intervention was not efficacious in moving individuals into the preparation or action stages. Previous research has suggested that level of severity may play a role in movement through the stage of change for diet in general, such that fewer unhealthy eating behaviors at baseline is associated with movement into the action and maintenance stages (Blissmer et al., 2010). As participants reported approximately two servings of fruits and vegetables a day at baseline and this appears to be an overestimation given observed fruit and vegetable intake as derived from the food and exercise diaries, their lack of engaging in the targeted behavior could be considered severe. Again, as the intervention focused on general healthy eating behavior and did not specifically target fruit and vegetable intake, perhaps participants did not feel they had sufficient ideas or strategies to assist in preparing to make changes to fruit and vegetable intake. This again suggests that the intervention should be refined in order to bolster its efficacy for enhancing motivation to increase fruit and vegetable intake.

Future iterations of this intervention should incorporate motivational enhancement exercises that focus specifically on increasing fruit and vegetable intake. For instance, in addition to weighing the pros and cons of engaging in a healthy diet in general, perhaps weighing the pros and cons of increasing fruit and vegetable intake in particular may also increase motivation to engage in the targeted behavior. Indeed, it has been found that movement through the stages of change for fruit and vegetable intake was associated with boosting the benefits and minimizing the drawbacks of increasing fruit and vegetable intake (Ma et al., 2002).

EXERCISE STAGE OF CHANGE MOVEMENT

Consistent with hypotheses, forward movement through the stages of change for exercise was associated with the Fit U condition. This is interesting given the high rates of exercise observed in this particular sample regardless of condition. It may be that while this sample is physically active, they may not be consistent in maintaining current exercise regimens, and the intervention enhanced motivation to engage in exercise more regularly. This may indeed be the case, as the majority of the sample (32.2%) reported being in the preparation stage of change for regular exercise at baseline. It appears that the Fit U intervention was efficacious in moving participants into the action stage. Many participants in the Fit U condition reported time constraints as a barrier to exercise. It may be that eliciting ways to make time for exercise given participants' current schedules bolstered the belief that they could indeed engage in physical activity on a regular basis, thereby enhancing their motivation to do so. Previous research focuses on increasing physical activity rather than engaging in physical activity on a consistent basis with regard to stage of change (Robinson et al., 2008). This relationship warrants further examination in subsequent iterations.

As previously stated, future iterations of the intervention should focus on enhancing motivation to maintain current levels of physical activity and do so on a consistent basis. Larger scale interventions with longer follow-up periods are needed to assess whether increased motivation for exercise is maintained over time and whether it translates to maintaining or increasing levels of physical activity, particularly for those who currently do not meet the recommended minutes of activity per week.

Forward movement through the stages of change for exercise was also associated with endorsing the pros of weight loss at follow-up. Previous research examined associations among

stage of change for exercise and the pros and cons of specifically engaging in exercise, not in general weight loss behaviors (Prochaska et al., 1994). It may be that increases in one's beliefs in the benefits of losing weight in turn enhances motivation to engage in behaviors that are related to losing weight, such as regular exercise. Also, as the benefits of regular exercise are similar to those of weight loss (i.e. feeling better about one's self, feeling more confident, etc.), it makes sense that participants would endorse both constructs comparably. Future studies should further examine this association and determine its utility in interventions that focus on weight and/or weight-related behaviors.

WEIGHT AND WAIST CIRCUMFERENCE

As expected, changes in weight and waist circumference were not associated with being in the Fit U condition. This is likely due to the short follow-up period, which does not allow for the meaningful assessment in weight and body composition. However, because the intervention appears to be efficacious in changing some weight-related behaviors, changes in weight and body composition may be observed in future studies with longer follow-up periods.

These findings have additional implications in terms of various delivery modalities that could be utilized. It has been previously noted that online interventions may lack the ability to highly tailor feedback and intervention components to the individual (Chambliss et al., 2011). However, a recent meta-analysis supports the efficacy of using computer-tailored interventions across multiple health behaviors, provided that the interventions are dynamically tailored to the individual as behavior changes throughout their participation, as indicated by changes in survey responses (Krebs, Prochaska, & Rossi, 2010). This suggests that the use of computer-tailored feedback may be beneficial in subsequent interventions, particularly for check-ins in which

additional feedback could be given to the participant based on progress with goals. Still, the support offered by an interventionist, as well as the ability for the interventionist to tailor suggestions and feedback based on more abstract situations that may not present themselves in survey responses (i.e. having an important exam to study for that inhibits the ability to exercise), should not be overlooked. As such, perhaps a combination of computer-tailored and personally-tailored feedback would be most favorable.

STRENGTHS AND LIMITATIONS

One limitation of the current study is the use of convenience sample of college students, which potentially limits generalizability to other populations of Hispanic college students. Also, because of the short follow-up time of this pilot study, weight loss or changes in body composition could not meaningfully be assessed as outcome variables. In addition, the use of self-report data may be an issue, as participants may over-estimate or under-estimate servings of various food or minutes of physical activity, yet this is not likely to differ based on group assignment. Strengths of the current study include assessing an underserved population, the inclusion of normal-weight individuals, minimal missing data and rates of attrition, and utilizing an intervention with theoretically-derived components that could inform the development of larger scale interventions in Hispanic college student populations.

CONCLUSIONS AND FUTURE DIRECTIONS

This study assessed the impact of a pilot intervention based on components derived from Self-Determination Theory (SDT) and the Transtheoretical Model (TTM) that focused on increasing healthy eating and physical activity in Hispanic college students. Average observed daily fruit

and vegetable intake was very low, suggesting the need for interventions that target this behavior specifically in addition to general healthy eating behavior. Consistent with findings in similar populations (Hu et al., 2011), observed weekly minutes of exercise were above that of recommended guidelines, which attenuates the ability to assess the efficacy of the intervention in those who do not meet recommended guidelines for physical activity. Though the Fit U intervention was not efficacious in increasing fruit and vegetable intake or levels of physical activity, findings suggest those in the Fit U condition reported lower calorie intake, improvement in healthy eating behaviors, increased perceived competence for diet and exercise at follow-up, and progression through the stages of change for exercise. These findings warrant further investigation on a larger scale with a greater follow-up length. The current study could also potentially inform future interventions with longer follow-up periods in which weight loss is an outcome of interest.

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Table 1: Flow of Participation

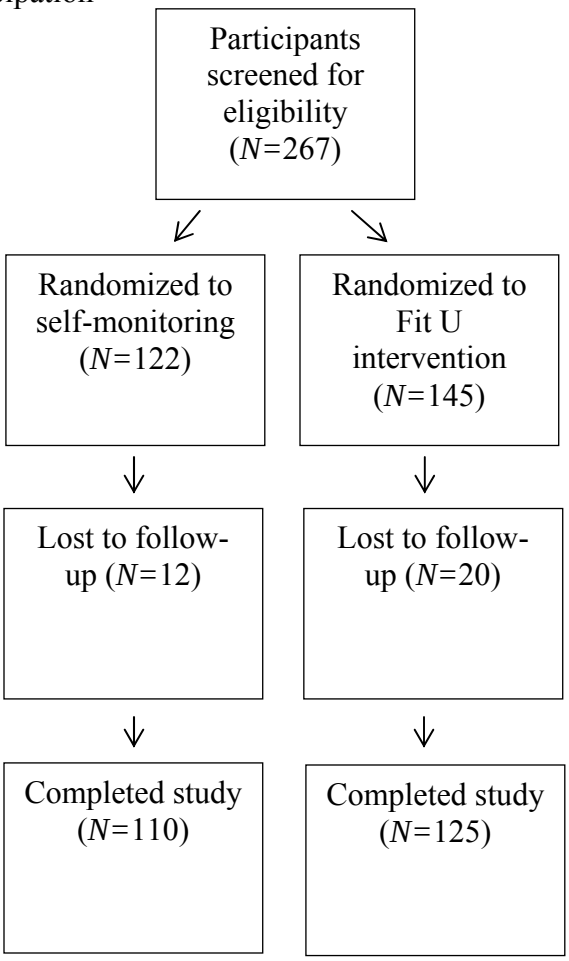

Table 2: Participant Characteristics

Characteristic ($N_{baseline}$ = 267; $N_{follow\text{-}up}$ = 235)	Mean	*SD*	Frequency (%)
Age	20.70	4.42	
Sex			
Female			68.2
Male			31.8
Classification			
Freshman			55.1
Sophomore			27.7
Junior			13.1
Senior			3.4
Graduate			.7
Weight			
Baseline			
Males	173.22	39.11	
Females	136.47	26.43	
Follow-up			
Males	171.33	40.67	
Females	137.64	29.48	
BMI			
Baseline			
Males	25.69	5.07	
Females	23.98	4.32	
Follow-up			
Males	25.49	5.25	
Females	24.11	4.41	
Waist circumference			
Baseline			
Males	35.08	5.52	
Females	31.87	4.46	
Follow-up			
Males	34.47	5.41	
Females	31.86	4.42	
Smoking status			
Daily 5 < 10			.4
Daily < 5			1.9
Weekly			3.8
Monthly			5.3
No longer smoke, in past smoked at least 1 per day			4.2
No longer smoke, in past smoked weekly			2.3
Experimented with cigarettes			42.4
Never smoked			39.7
Self-reported healthy eating and physical activity			
Strength training (days per week)	2.16	1.99	
Cardiovascular exercise (minutes per week)	255.78	265.39	
Daily fruit and vegetable intake (cup servings)	2.16	1.37	
Observed healthy eating and physical activity at follow-up			
Daily calorie intake	1735.60	530.46	
Cardiovascular exercise (minutes per week)	195.20	253.89	
Daily fruit and vegetable intake (cup servings)	.84	.85	
Type 2 diabetes history			
Personal			
Yes			0
Family			
Yes			43.8
Heart disease history			
Personal			
Yes			.4
Family			

Yes			18.7
High cholesterol history			
Personal			
Yes			2.2
Family			
Yes			39.3
High blood pressure history			
Personal			
Yes			1.9
Family			
Yes			56.9
SDT			
Baseline			
PCS D (range 1-7)	4.85	1.36	
PCS E (range 1-7)	5.58	1.23	
Follow-up			
PCS D (range 1-7)	4.89	1.26	
PCS E (range 1-7)	5.41	1.32	
TTM			
ESC Baseline			
Precontemplation			1.5
Contemplation			11.6
Preparation			32.2
Action			25.5
Maintenance			29.2
ESC Follow-up			
Precontemplation			1.3
Contemplation			13.7
Preparation			10.3
Action			47.9
Maintenance			26.9
5 A Day SoC Baseline			
Precontemplation			11.1
Contemplation			41.1
Preparation			40.0
Action			2.3
Maintenance			5.3
5 A Day SoC Follow-up			
Precontemplation			10.9
Contemplation			45.0
Preparation			44.0
Action			4.1
Maintenance			4.9
Baseline			
WDB Pros (range 10-50)	32.87	10.24	
WDB Cons (range 10-50)	25.63	7.65	
Follow-up			
WDB Pros (range 10-50)	33.49	11.55	
WDB Cons (range 10-50)	27.33	8.16	
Eating Behavior			
Baseline			
EBI (range 26-130)	72.18	9.78	
Follow-up			
EBI (range 26-130)	75.07	10.92	

Table 3: Interventionists' Characteristics

Interventionist	Education level	Clinical Experience
A	M.A.	10 years as a research assistant in a clinical health laboratory
B	B.A.	5 years as a research assistant in clinical health laboratories and facilities
C	B.S.	3 years as a research assistant in a clinical health laboratory
D	B.A.	5 years as a research assistant in a clinical health laboratory and experimental laboratories

Table 4: Participant Characteristics by Condition

Characteristic (*N*= 235)	Fit U Baseline		Self-Monitoring Basline		Fit U Follow-up		Self-Monitoring Follow-up	
	Mean (*SD*)	(%)	Mean (*SD*)	(%)	Mean (*SD*)	(%)	Mean (*SD*)	(%)
Daily Calorie Intake					1673.94 (498.27)		1807.03 (558.68)	
Fruit and Vegetable Servings					.87 (.61)		.67 (.61)	
Weekly Cardiovascular Exercise					204.58 (227.74)		184.62 (281.16)	
EBI (26-130)	72.03 (9.60)		72.37 (10.02)		76.37 (10.84)		73.60 (10.88)	
PCS D (1-7)	4.68 (1.37)		5.04 (1.33)		4.96 (1.22)		4.80 (1.31)	
PCS E (1-7)	5.42 (1.26)		5.76 (1.17)		5.53 (1.24)		5.26 (1.39)	
5 A Day SoC								
Precontemplation		9.6		12.2		6.8		9.8
Contemplation		38.6		41.8		33.7		34.4
Preparation		39.3		38.5		34.4		31.9
Action		2.7		1.6		3.4		4.9
Maintenance		5.5		4.9		5.5		4.1
ESC								
Precontemplation		0		3.3		0		2.7
Contemplation		11.7		11.5		6.5		21.8
Preparation		35.2		28.7		10.5		10.0
Action		29.7		20.5		62.1		31.8
Maintenance		23.4		36.1		21.0		33.6
WDB Pros (range 10-50)	33.34 (9.78)		32.31 (10.78)		35.45 (11.77)		31.25 (10.91)	
WDB Cons (range 10-50)	26.06 (7.56)		25.11 (7.76)		25.11 (7.76)		26.14 (8.61)	

Table 5: Hierarchical Regression Predicting Average Calorie Intake at Follow-up

Variable	B	SE B	β	
Step 1				
Age	-1.745	7.619	-.015	
Sex	-410.985	72.843	-.355**	
BMI	-10.082	7.417	-.089	
Interventionist B	43.858	87.531	.034	
Interventionist C	-83.064	87.747	-.064	
Interventionist D	-105.815	95.569	-.075	
R^2				.135**
Step 2				
Age	-2.363	7.553	-.020	
Sex	-425.571	72.454	-.367**	
BMI	-7.526	7.433	-.067	
Interventionist B	-96.328	86.778	-.068	
Interventionist C	37.018	87.006	.029	
Interventionist D	-75.275	94.781	-.058	
Condition	151.358	66.265	.143*	
ΔR^2				.020*

Note: Step 1 R^2 = .135**; Step 2 R^2 = .155*
* all values significant at the .05 level
**all values significant at the .001 level

Table 6: Hierarchical Regression Predicting Eating Behavior at Follow-up

Variable	B	SE B	β	
Step 1				
Age	.018	.112	.008	
Sex	2.171	1.107	.092	
BMI	.197	.109	.086	
EBI Baseline	.769	.051	.706**	
Interventionist B	-.619	1.289	-.024	
Interventionist C	-1.119	1.278	-.043	
Interventionist D	-.277	1.471	-.009	
R^2				.541**
Step 2				
Age	.031	.110	.013	
Sex	2.470	1.083	.105*	
BMI	.143	.107	.062	
EBI Baseline	.772	.050	.709**	
Interventionist B	-.507	1.257	-.021	
Interventionist C	-1.393	1.249	-.019	
Interventionist D	-.650	1.438	-.053	
Condition	-3.429	.965	-.157**	
ΔR^2				.024**

Note: Step 1 R^2 = .555**; Step 2 R^2 = .563**
* all values significant at the .05 level
**all values significant at the .001 level

Table 7: Hierarchical Regression Predicting Perceived Competence for Diet at Follow-up

Variable	B	SE B	β	
Step 1				
Age	.014	.016	.050	
Sex	-.152	.159	-.055	
BMI	-.005	.017	-.018	
PCS D Baseline	.489	.053	.523**	
WDB Pros Baseline	.023	.008	.189*	
WDB Cons Baseline	-.008	.009	-.052	
Interventionist B	.073	.180	.024	
Interventionist C	.259	.178	.086	
Interventionist D	.400	.202	.114*	
R^2				.382**
Step 2				
Age	.014	.015	.052	
Sex	-.103	.159	-.038	
BMI	-.009	.017	-.035	
PCS D Baseline	.511	.053	.546**	
WDB Pros Baseline	.021	.008	.177*	
WDB Cons Baseline	-.010	.009	-.063	
Interventionist B	.091	.178	.030	
Interventionist C	.231	.177	.076	
Interventionist D	.361	.200	.103	
Condition	-.347	.139	-.137*	
ΔR^2				.017*
Step 3				
Age	.015	.015	.054	
Sex	-.157	.152	-.057	
BMI	-.017	.016	-.063	
PCS D Baseline	.528	.052	.565**	
WDB Pros Baseline	.002	.012	.014	
WDB Cons Baseline	.038	.014	.234*	
Interventionist B	.092	.170	.030	
Interventionist C	.179	.171	.059	
Interventionist D	.368	.191	.105	
Condition	-.368	.135	-.145*	
WDB Pros Follow-up	.020	.010	.183*	
WDB Cons Follow-up	-.056	.012	-.364**	
ΔR^2				.057**
Step 4				
Age	.015	.015	.053	
Sex	-.151	.153	-.055	
BMI	-.016	.016	-.061	
PCS D Baseline	.526	.052	.563**	
WDB Pros Baseline	.000	.012	-.001	
WDB Cons Baseline	.039	.014	.238*	
Interventionist B	.087	.171	.028	
Interventionist C	.181	.171	.060	
Interventionist D	.369	.192	.105	
Condition	-.548	.555	-.217	
WDB Pros Follow-up	.011	.018	.100	
WDB Cons Follow-up	-.054	.027	-.350*	

WDB Pros Follow-up by Condition	.007	.012	.126	
WDB Cons Follow-up by Condition	-.002	.016	-.030	
ΔR^2				.001

Note: Step 1 R^2 = .382**; Step 2 R^2 = .399*; Step 3 R^2 = .456**; Step 4 R^2 = .457
* all values significant at the .05 level
**all values significant at the .001 level

Table 8: Hierarchical Regression Predicting Perceived Competence for Exercise at Follow-up

Variable	B	SE B	β	
Step 1				
Age	-.014	.017	-.050	
Sex	-.194	.173	-.068	
BMI	.017	.018	.060	
PCS E Baseline	.612	.061	.566**	
WDB Pros Baseline	.007	.008	.054	
WDB Cons Baseline	.013	.010	.078	
Interventionist B	-.088	.192	-.028	
Interventionist C	.209	.190	.066	
Interventionist D	.369	.217	.100	
R^2				.348**
Step 2				
Age	-.013	.016	-.046	
Sex	-.121	.171	-.042	
BMI	.011	.018	.039	
PCS E Baseline	.638	.060	.589**	
WDB Pros Baseline	.006	.008	.044	
WDB Cons Baseline	.010	.010	.060	
Interventionist B	-.071	.189	-.022	
Interventionist C	.180	.187	.057	
Interventionist D	.324	.214	.088	
Condition	-.453	.147	-.171*	
ΔR^2				.027*
Step 3				
Age	-.012	.016	-.041	
Sex	-.156	.166	-.054	
BMI	.005	.017	.017	
PCS E Baseline	.664	.059	.613**	
WDB Pros Baseline	-.021	.012	-.168	
WDB Cons Baseline	.051	.015	.301*	
Interventionist B	-.066	.183	-.020	
Interventionist C	.114	.182	.036	
Interventionist D	.342	.207	.093	
Condition	-.441	.145	-.167*	
WDB Pros Follow-up	.028	.010	.250*	
WDB Cons Follow-up	-.046	.013	-.285*	
ΔR^2				.045**
Step 4				
Age	-.012	.016	-.042	
Sex	-.153	.167	-.053	
BMI	.005	.017	.019	
PCS E Baseline	.659	.060	.609**	
WDB Pros Baseline	-.023	.013	-.181	
WDB Cons Baseline	.051	.015	.304*	
Interventionist B	-.070	.184	-.022	
Interventionist C	.116	.183	-.037	
Interventionist D	.341	.208	.093	
Condition	-.739	.601	-.279	
WDB Pros Follow-up	.019	.019	.167	
WDB Cons Follow-up	-.050	.029	-.311	

WDB Pros Follow-up by Condition	.007	.013	.122	
WDB Cons Follow-up by Condition	.002	.018	.028	
ΔR^2				.001

Note: Step 1 R^2 = .348**; Step 2 R^2 = .375*; Step 3 R^2 = .420**; Step 4 R^2 = .421
* all values significant at the .05 level
**all values significant at the .001 level

Table 9: Logistic Regression Predicting 5 A Day Stage of Change Movement

Variables	*B*	SE *B*	Odds Ratio	Confidence Interval (CI)	*p*
Step 1					
Age	.032	.035	1.033	.964 - 1.107	.360
Sex	1.005	.435	2.731	1.165 - 6.403	.021
BMI	.042	.043	1.043	.958 - 1.135	.333
WDB Pros Baseline	-.052	.020	.949	.913 - .987	.009
WDB Cons Baseline	.010	.024	.1.011	.964 - 1.059	.661
Interventionist B	.392	.449	1.479	.614 - 3.564	.383
Interventionist C	1.002	.438	2.725	1.155 - 6.427	.022
Interventionist D	1.103	.492	3.012	1.147 - 7.907	.025
Step 2					
Age	.032	.035	1.033	.963 - 1.107	.364
Sex	.993	.437	2.699	1.147 - 6.351	.023
BMI	.043	.044	1.044	.959 - 1.137	.318
WDB Pros Baseline	-.052	.020	.949	.913 - .987	.009
WDB Cons Baseline	.012	.024	1.012	.965 - 1.061	.627
Interventionist B	.390	.449	1.477	.613 - 3.559	.385
Interventionist C	1.014	.439	2.757	1.165 - 6.525	.021
Interventionist D	1.119	.495	3.061	1.160 - 8.076	.024
Condition	.123	.342	1.131	.579 - 2.209	.718
Step 3					
Age	.037	.036	1.307	.967 - 1.112	.304
Sex	1.047	.445	2.849	1.190 - 6.818	.019
BMI	.052	.045	1.054	.965 - 1.150	.245
WDB Pros Baseline	-.085	.030	.919	.866 - .974	.005
WDB Cons Baseline	-.026	.037	.975	.907 - 1.047	.482
Interventionist B	.396	.457	3.115	.607 - 3.638	.385
Interventionist C	.916	.452	1.486	1.031 - 6.060	.043
Interventionist D	1.136	.504	2.500	1.161 - 8.356	.024
Condition	.314	.356	1.369	.681 - 2.754	.378
WDB Pros Follow-up	.039	.024	1.040	.992 - 1.090	.106
WDB Cons Follow-up	.055	.033	1.057	.990 - 1.129	.097
Step 4					
Age	.036	.036	1.037	.967 - 1.112	.308
Sex	1.078	.450	2.938	1.216 - 7.099	.017
BMI	.055	.045	1.057	.967 - 1.155	.220
WDB Pros Baseline	-.093	.032	.911	.856 - .969	.003
WDB Cons Baseline	-.022	.037	.979	.910 - 1.052	.560
Interventionist B	.372	.458	1.451	.591 - 3.564	.417
Interventionist C	.927	.453	2.528	1.041 - 6.139	.041
Interventionist D	1.148	.505	3.153	1.171 - 8.490	.023
Condition	-.131	1.622	.877	.037 - 21.051	.935
WDB Pros Follow-up	.009	.044	1.009	.926 - 1.101	.833
WDB Cons Follow-up	.070	.077	1.073	.922 - 1.248	.363
WDB Pros Follow-up by Condition	.025	.032	1.026	.963 - 1.092	.427
WDB Cons Follow-up by Condition	-.013	.046	.987	.902 - 1.081	.781

Table 10: Logistic Regression Predicting Exercise Stage of Change Movement

Variables	*B*	SE *B*	Odds Ratio	Confidence Interval (CI)	*p*
Step 1					
Age	-.024	.035	.976	.911 - 1.046	.490
Sex	-.123	.466	.885	.355 - 2.207	.793
BMI	-.002	.045	.998	.913 - 1.090	.957
WDB Pros Baseline	.024	.021	1.024	.983 - 1.067	.251
WDB Cons Baseline	.006	.025	1.006	.959 - 1.056	.809
Interventionist B	-.195	.448	.823	.342 - 1.978	.663
Interventionist C	-.323	.478	.724	.284 - 1.847	.499
Interventionist D	.484	.559	1.622	.542 - 4.854	.387
Step 2					
Age	-.024	.037	.976	.907 - 1.049	.509
Sex	.093	.499	1.097	.413 - 2.919	.852
BMI	-.025	.049	.975	.885 - 1.074	.608
WDB Pros Baseline	.028	.022	1.028	.984 - 1.074	.216
WDB Cons Baseline	-.002	.026	.998	.948 - 1.051	.943
Interventionist B	-.253	.476	.776	.306 - 1.972	.595
Interventionist C	-.465	.513	.628	.230 - 1.717	.365
Interventionist D	.373	.594	1.453	.453 - 4.657	.530
Condition	-1.475	.389	.229	.107 - .490	.000
Step 3					
Age	-.019	.037	.981	.912 - 1.055	.605
Sex	-.037	.517	.964	.350 - 2.656	.943
BMI	-.036	.052	.964	.871 - 1.067	.482
WDB Pros Baseline	-.087	.049	.916	.832 - 1.009	.076
WDB Cons Baseline	.057	.045	1.059	.970 - 1.156	.203
Interventionist B	-.241	.490	.786	.301 - 2.054	.623
Interventionist C	-.636	.533	.529	.186 - 1.506	.233
Interventionist D	.443	.615	1.557	.467 - 5.195	.471
Condition	-1.215	.408	.297	.133 - .660	.003
WDB Pros Follow-up	.127	.050	1.135	1.030 - 1.251	.010
WDB Cons Follow-up	-.065	.042	.937	.864 - 1.017	.122
Step 4					
Age	-.019	.037	.981	.912 - 1.055	.612
Sex	-.011	.527	.989	.352 - 2.776	.983
BMI	-.033	.052	.968	.874 - 1.072	.529
WDB Pros Baseline	-.084	.049	.919	.834 - 1.013	.088
WDB Cons Baseline	.056	.045	1.057	.968 - 1.155	.218
Interventionist B	-.204	.493	.816	.311 - 2.143	.697
Interventionist C	-.601	.537	.548	.191 - 1.571	.263
Interventionist D	.459	.624	1.582	.465 - 5.378	.462
Condition	-2.847	1.998	.058	.001 - 2.914	.154
WDB Pros Follow-up	.106	.089	1.112	.934 - 1.324	.231
WDB Cons Follow-up	-.139	.090	.870	.730 - 1.038	.122
WDB Pros Follow-up by Condition	.009	.042	1.009	.929 - 1.096	.824
WDB Cons Follow-up by Condition	.047	.050	1.048	.951 - 1.156	.343

Appendix

Screening Questions Script

Hello, my name is ____ and I will be assisting you today. First, there are a few questions I need to ask you in order to determine whether you are eligible to participate in the current study. The eligibility criterion I'm going to ask you about was outlined online in the study description, but I need to ask you again just to be sure.

Some of the questions are personal in nature, but they are questions I ask all participants. You do not have to answer any questions that make you uncomfortable. However, unanswered questions will not allow me to determine your eligibility to participate, and therefore we will not be able to proceed any further. You will not be penalized for not answering a question. You will still receive a study participation credit for coming in today. May I proceed in asking you the eligibility questions?

To all participants: *How old are you?*

To all participants: *What is your ethnicity?*

If participant needs assistance/clarification, please refer to the following categories:

Please indicate the ethnic group(s) to which you belong:

____Mexican National ____Mexican American

____Other Hispanic/Latin ethnic group (please specify) _____

____Anglo ____African American

____Asian American ____Native American

____Other (please specify) _____

If participant is female: *Are you currently pregnant or nursing?*

To all participants: *Are you currently participating in a formal diet and/or exercise program?*

If the participant is under the age of 18, is not of Hispanic ethnicity, or answered "yes" to any of the remaining questions: *I'm sorry. You are not eligible to participate in the study at this time. You will still receive one study credit. We really appreciate your time. Thank you for coming in today.*

If the participant is over the age of 18 and answered "no" to *all* of the remaining questions: *It looks like you are eligible to participate in the study. I will go get the materials so that we can proceed.*

Appendix B

Participant # _____

Questionnaire

Today's Date: _____

How old are you? _____

Sex: _____ Male _____ Female

What is your current student classification?

_____Freshman
_____Sophomore
_____Junior
_____Senior
_____Graduate

I am

_____ Single (never married)
_____ Married
_____ Divorced
_____ Widow/Widower
_____ Separated
_____ Living with someone

Please indicate the ethnic group(s) to which you belong:

____Mexican National ____Mexican American

____Other Hispanic/Latin ethnic group (please specify) _____

What is your total annual household/family income from all sources? (Check one)

_____ Less than $15,000
_____ Between $15,000 and $30,000
_____ Between $30,000 and $50,000

_____ More than $50,000

_____ Don't know/Not sure

Have you ever received Mental Health Services? _____ Yes
_____ No
_____ Don't know/Not sure

If yes, what conditions were you treated for?

_____ Substance Abuse

_____ Depression

_____ Anxiety

_____ Post Traumatic Stress Disorder

_____ Schizophrenia

_____ Other (please describe) _____

What is your smoking status?

_____ I smoke daily and more than 10 cigarettes per day

_____ I smoke daily more than 5 cigarettes but less than 10 cigarettes per day

_____ I smoke daily but less than 5 cigarettes per day

_____ I smoke weekly but not every day

_____ I smoke monthly but not weekly

_____ I no longer smoke at all, but in the past smoked at least 1 cigarette per day;
If so, how many cigarettes per day? _____

_____ I no longer smoke at all, but in the past I smoked weekly but not daily

_____ I have smoked a cigarette or a few, just to try it

_____ I have never smoked before, not even a puff

Timeline Follow Back for Cardiovascular Exercise

IN THE CALENDAR BELOW, PLEASE FILL-IN THE PHYSICAL ACTIVITY AND TIME SPENT DOING THIS ACTIVITY DURING A **TYPICAL WEEK** IN THE **LAST 90 DAYS.**

First, think of *typical week* in the *last 90 days.* Try to remember as accurately as you can, what activity and how long you performed it in a week during that 3 month period.

For each day of the week in the calendar below, fill in the type of aerobic or cardiovascular exercise (i.e. walking, biking, jogging, swimming, classes like spinning or Zumba) in the upper box and the typical number of minutes you performed that activity that day in the lower box.

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Activity Performed							
Number of Minutes Spent Doing Activity							

How many days a week do you engage in some type(s) of strength training exercise?

_____ day(s) per week

How important is weight to you?

1---------2---------3---------4---------5---------6---------7---------8---------9---------10
Not at all Very
Important Important

How motivated are you to change your weight?

1---------2---------3---------4---------5---------6---------7---------8---------9---------10
Not at all Very
Motivated Motivated

How much effort do you think it would take to change your weight?

1---------2---------3---------4---------5---------6---------7---------8---------9---------10
Not a lot of A lot of
Effort Effort

How important is exercising regularly to you?

1---------2---------3---------4---------5---------6---------7---------8---------9---------10
Not at all Very
Important Important

How motivated are you to exercise regularly?

1---------2---------3---------4---------5---------6---------7---------8---------9---------10
Not at all Very
Motivated Motivated

How much effort do you think it would take to exercise regularly?

1---------2---------3---------4---------5---------6---------7---------8---------9---------10
Not a lot of A lot of

Effort Effort

How important is eating a healthy diet to you?

1---------2---------3---------4---------5---------6---------7---------8---------9---------10
Not at all Very
Important Important

How motivated are you to eat a healthy diet?

1---------2---------3---------4---------5---------6---------7---------8---------9---------10
Not at all Very
Motivated Motivated

How much effort do you think it would take to maintain a healthy diet?

1---------2---------3---------4---------5---------6---------7---------8---------9---------10
Not a lot of A lot of
Effort Effort

Is there a history of any of the following illnesses in your family? (Check all that apply)

_____ Type 2 diabetes
_____ Heart disease
_____ High blood pressure
_____ High cholesterol
_____ Stroke
_____ Sleep apnea or other breathing problems
_____ Arthritis
_____ Cancer
please list the type(s) _____

Do you have a history of any of the following illnesses? (Check all that apply)

_____ Type 2 diabetes
_____ Heart disease
_____ High blood pressure
_____ High cholesterol
_____ Stroke
_____ Sleep apnea or other breathing problems
_____ Arthritis
_____ Cancer
please list the type(s) _____

Please give an estimate of your current height and weight:

Height:_____ft _____in.

Weight:_____lbs.

1. How likely are you to participate in an online program to manage your weight?

1	2	3	4	5	6
Not at all likely					Very likely

2. How likely are you to participate in a program offered at a medical center to manage your weight?

1	2	3	4	5	6
Not at all likely					Very likely

3. How likely are you to participate in a program offered on campus to manage your weight?

1	2	3	4	5	6
Not at all likely					Very likely

4. How likely are you to participate in a program offered by phone or text message to manage your weight?

1	2	3	4	5	6
Not at all likely					Very likely

5. How likely are you to use self-help materials to manage your weight?

1	2	3	4	5	6
Not at all likely					Very likely

6. How likely are you to participate in a program offered in a group setting?

1	2	3	4	5	6
Not at all likely					Very likely

Appendix C
Perceived Competence (Maintaining a Healthy Diet)

Please indicate the extent to which each statement is true for you, assuming that you were intending either to permanently improve your diet now or to maintain a healthy diet.

Please circle a number from 1 to 7.

1. I feel confident in my ability to maintain a healthy diet.

1	2	3	4	5	6	7
not at all true			somewhat true			very true

2. I now feel capable of maintaining a healthy diet.

1	2	3	4	5	6	7
not at all true			somewhat true			very true

3. I am able to maintain a healthy diet permanently.

1	2	3	4	5	6	7
not at all true			somewhat true			very true

4. I am able to meet the challenge of maintaining a healthy diet.

1	2	3	4	5	6	7
not at all true			somewhat true			very true

Appendix D
Perceived Competence (Exercising Regularly)

Please indicate the extent to which each statement is true for you, assuming that you were intending either to begin now a permanent regimen of exercising regularly or to permanently maintain your regular exercise regimen.

Please circle a number from 1 to 7.

1. I feel confident in my ability to exercise regularly.

1----------2----------3----------4----------5----------6----------7
not at all true — somewhat true — very true

2. I now feel capable of exercising regularly.

1----------2----------3----------4----------5----------6----------7
not at all true — somewhat true — very true

3. I am able to exercise regularly over the long term.

1----------2----------3----------4----------5----------6----------7
not at all true — somewhat true — very true

4. I am able to meet the challenge of exercising regularly.

1----------2----------3----------4----------5----------6----------7
not at all true — somewhat true — very true

Appendix E
Exercise Stage of Change (Short Form)

Regular Exercise is any *planned* physical activity (e.g., brisk walking, aerobics, jogging, bicycling, swimming, rowing, etc.) performed to increase physical fitness. Such activity should be performed *3 to 5 times* per week for *20-60 minutes* per session. Exercise does not have to be painful to be effective but should be done at a level that increases your breathing rate and causes you to break a sweat.

Question:

Do you exercise regularly according to that definition?

- Yes, I have been for MORE than 6 months. _____
- Yes, I have been for LESS than 6 months. _____
- No, but I intend to in the next 30 days. _____
- No, but I intend to in the next 6 months. _____
- No, and I do NOT intend to in the next 6 months. _____

Appendix F
Stage of Change (5 a Day)

How many servings of fruits and vegetables do you usually eat each day?

_____

If you wrote 5 or more:

Have you been eating 5 or more servings of fruits and vegetables a day for more than 6 months?

_____ Less than six months
_____ More than six months

If you wrote 4 or less:

Do you intend to start eating 5 or more servings of fruits and vegetables a day in the next 6 months?

_____ No, and I do NOT intend to in the NEXT 6 MONTHS
_____ Yes, and I intend to in the NEXT 6 MONTHS
_____ Yes, and I intend to in the NEXT 30 DAYS

Appendix G
Weight Decisional Balance

Each statement represents a thought that might occur to a person who is deciding whether or not to lose weight. Please indicate how IMPORTANT each of these statements might be to you if you were considering a decision to lose weight. There are FIVE possible responses to each of the items that reflect your answer to the question "How important would this be to you?" Please circle the number that best describes how important each statement would be to you if you were deciding whether or not to lose weight.

1. The exercises needed for me to lose weight would be a drudgery.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

2. I would feel more optimistic if I lost weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

3. I would be less productive.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

4. I would feel sexier if I lost weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

5. In order to lose weight I would be forced to eat less appetizing foods.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

6. My self-respect would be greater if I lost weight.

1	2	3	4	5
Not	Slightly	Moderately	Very	Extremely

important	Important	important	important	important

7. My dieting could make meal planning more difficult for my family or housemates.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

8. My family would be proud of me if I lost weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

9. I would not be able to eat some of my favorite foods if I were trying to lose weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

10. I would be less self-conscious if I lost weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

11. Dieting would take the pleasure out of meals.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

12. Others would have more respect for me if I lost weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

13. I would have to cut down on some of my favorite activities if I try to lose weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

14. I could wear more attractive clothing if I lost weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

15. I would have to avoid some of my favorite places if I were trying to lose weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

16. My health would improve if I lost weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

17. Trying to lose weight could end up being expensive when everything is taken into account.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

18. I would feel more energetic if I lost weight.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

19. I would have to cut down on my favorite snacks while I was dieting.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

20. I would be able to accomplish more if I carried fewer pounds.

1	2	3	4	5
Not important	Slightly Important	Moderately important	Very important	Extremely important

Appendix H

Eating Behavior Inventory

The following are several statements which refer to your eating patterns. Read each carefully and decide how often that statement is true for you. Please answer each statement using the following answer key:

1. Never or hardly ever
2. Some of the time
3. About ½ of the time
4. Much of the time
5. Always or almost always

_____ 1. I carefully watch the quantity of food which I eat.

_____ 2. I eat foods that I believe will aid me in losing weight.

_____ 3. I keep one or two raw vegetables available for snacks.

_____ 4. I record the type and quantity of food which I eat.

_____ 5. I weigh myself daily.

_____ 6. I refuse food offered to me by others.

_____ 7. I eat quickly compared to most other people.

_____ 8. I consciously try to slow down my eating rate.

_____ 9. I eat at only one place in my home.

_____ 10. I use the same placemat and other utensils for each meal.

_____ 11. I eat and just can't seem to stop.

_____ 12. I eat in the middle of the night.

_____ 13. I snack after supper.

_____ 14. My emotions cause me to eat.

_____ 15. I buy ready to eat snack foods for myself.

_____ 16. I shop when I'm hungry.

_____ 17. I shop from a list.

_____ 18. I leave food on my plate.

_____ 19. I serve food family style.

_____ 20. I watch TV, read, work, or do other things while I eat.

_____ 21. If I'm served too much, I leave food on my plate.

_____ 22. Generally, while I'm at home, I leave the table as soon as I finish eating.

_____ 23. I keep a graph of my weight.

_____ 24. I eat when I'm not really hungry.

_____ 25. I store food in containers where it is not readily visible or in a closed cabinet.

_____ 26. I decide ahead of time what I will eat for meals and snacks.

To Be Completed by Staff

Measured Height _____feet _____inches

Measured Weight _____lbs

BMR _____

BMI _____

Body Fat % _____

Body Fat % Range _____

Fat Mass_____lbs

Fat Mass Range_____

Waist Circumference _____inches

Goals (Intervention only)_____
_____

Researcher Initials_____

Any language assistance required? List specific areas of trouble _____

Appendix I
Food and Activity Log

Week #:_____
Participant #: _____
Date:_____

Food			Food			Food			Activity		Activity	
Brand	Item	Serving Size	Brand	Item	Serving Size	Brand	Item	Serving Size	Name	Minutes	Name	Minutes

Appendix J

Harris Benedict Formula

To determine your total daily calorie needs, multiply your BMR by the appropriate activity factor, as follows:

If you are sedentary (little or no exercise) : Calorie-Calculation = BMR x 1.2
If you are lightly active (light exercise/sports 1-3 days/week) : Calorie-Calculation = BMR x 1.375
If you are moderately active (moderate exercise/sports 3-5 days/week) : Calorie-Calculation = BMR x 1.55
If you are very active (hard exercise/sports 6-7 days a week) : Calorie-Calculation = BMR x 1.725
If you are extra active (very hard exercise/sports & physical job or 2x training) : Calorie-Calculation = BMR x 1.9

Appendix K
Feedback Form

Height

- Your height is _____

Weight

- Your weight is _____

Body Mass Index (BMI)

- BMI is a ratio of your height to your weight.
    - Your BMI is _____

BMR: Basal Metabolic Rate

- Represents the total energy expended by the body to maintain normal functions at rest such as respiration and circulation. This is how much energy you would burn if you stayed in bed all day. The higher the number, the better.
    - Your BMR is _____

TDEE: Total Daily Energy Expenditure

- This is an estimate of the total energy expended by the body after accounting for normal daily activity. This is how much energy you require to maintain your body at your activity level.
    - Your TDEE is _____
- Knowing your estimated TDEE can be a useful with regard to weight loss and weight maintenance. Guidelines suggest the following:
    - To gain weight, consume calories above your TDEE.
    - To maintain weight, consume calories at or close to your TDEE.
    - To lose weight, consume calories below your TDEE.

Body Fat Percentage

- The percentage of total body weight that is fat.
    - Your Body Fat Percentage is _____
    - The range for a person of your height and gender is _____
    - *Note: If no range is recorded, it is either because the hours that you reported spent exercising placed you in an athletic category, for which there are no average ranges or you are under 20 years old.*

Fat Mass

- Total weight of fat mass in the body.
    - Your Fat Mass is _____
    - The average range for a person of your height and gender is _____
    - *Note: If no range is recorded, it is either because the hours that you reported spent exercising placed you in an athletic category, for which there are no average ranges or you are under 20 years old.*

Fat Free Mass

- Fat free mass is comprised of muscle, bone, tissue, water, and all other fat free mass in the body.
    - Your Fat Free mass is _____

Waist Circumference

- The area around your waist, right across your belly button, is your waist circumference. A higher waist circumference indicates that a person is storing more fat around their abdomen. If the number is 35 inches or above in women, or 40 inches or above in men, it can increase the risk of developing diseases associated with obesity and overweight, like

diabetes or high blood pressure.

- Your Waist Circumference is _____

Appendix L
Motivational Enhancement Worksheet

Motivators to Eat a Healthy Diet	**Motivators to Not Eat a Healthy Diet**
Benefits of Eating a Healthy Diet (Good Things)	Benefits of Not Eating a Healthy Diet (Good Things)
Costs of Not Eating a Healthy Diet (Bad Things)	Costs of Eating a Healthy Diet (Bad Things)

Appendix M

Barriers

Most of us are aware of the benefits of maintaining a healthy diet. It helps us lose or maintain our weight, it provides our bodies with essential nutrients, and we feel better overall. So if we know how much it could benefit us, why do we have trouble staying on track? Often, there are things that get in the way of our best intentions to choose healthy food. Sometimes we're tired and lack the energy or time to cook and sometimes it's hard to make good choices with other tempting food around. There are many barriers that can often stop us from making healthy food choices. What are some things that get in the way of maintaining a healthy diet?

_____

_____

_____

_____

_____

_____

What are some ways you can think of to overcome the barriers above?

_____

_____

_____

_____

_____

_____

Appendix N
Motivational Enhancement Worksheet

Motivators to Exercise	**Motivators to Not Exercise**
Benefits of Exercise (Good Things)	Benefits of Not Exercising (Good Things)
Costs of Not Exercising (Bad Things)	Costs of Exercising (Bad Things)

Appendix O

Barriers

Most of us are aware of the benefits of exercise. It helps us lose or maintain our weight, and it keeps our hearts healthy and our muscles strong. So if we know how much it could benefit us, why do we not do it more often? Often, there are things that get in the way of our best intentions to exercise. Sometimes we're tired or lack the energy and sometimes we just can't seem to find the time. There are many barriers that can often stop us from getting out and exercising.

What are some things that stop you from exercising?

_____

_____

_____

_____

_____

_____

What are some ways you can think of to overcome the barriers above?

_____

_____

_____

_____

_____

_____

Appendix P
Tips

Healthy Eating

- Don't make too many changes to your eating habits at once. The best way to maintain healthy changes is to start slow. Eat smaller portions of the foods you like, add a vegetable to each of your meals, or replace your usual snack with something healthy and nutritious, like fruit and yogurt.
- Try making healthier versions of your favorite foods. Use leaner cuts of meat, less oil when cooking, bake or grill food instead of frying it, and use spices, salsa, broth or herbs to add flavor instead of butter, salt, or cheese.
- No time to cook or eat at home? Fast food doesn't have to be unhealthy! Say no to value meals that come with unhealthy sides like fries and just order single items. Ask for mustard instead of mayo on sandwiches and burgers, skip the cheese when you can, and go for grilled instead of breaded and fried options.
- Don't let your eyes lead you as they are often bigger than your stomach. Start with smaller portion sizes when ordering food out or filling your plate at home. You might find that you are satisfied with less food than you think.
- It's all about checks and balances. If you want dessert after your dinner, plan it into your calories for the day and lighten up on breakfast or lunch, or forgo one of your snacks.
- Don't drink your calories. Replace sugary, calorie-laden coffee drinks with lighter alternatives, like regular coffee or a latte made with fat-free milk. Try diet versions of your favorite soda, or drink water instead. When drinking alcohol, be moderate with how much you're drinking and choose alternatives to your favorite drinks, like rum made with diet soda instead of regular soda.
- Remember to be mindful when it comes to your cravings. Before giving into a craving, stop and think why you might be craving a particular food. Might you be thirsty? Try drinking a glass of water and see if it helps. Might you just be hungry in general? Try having a healthy snack instead. Do you just want something sweet or crunchy? Try to find a healthy alternative that can fulfill that specific craving, like fruit or vegetables.
- If you give into a craving, it's not the end of the world! Keep practicing making healthy food choices, and get back on track with your next snack or meal.

Exercise

- Start slow. The best way to stick with exercise is to not try doing too much too soon. Otherwise you burn yourself out. Gradually add more time, intensity, reps, etc. as your fitness improves.
- Try to be more active in general. Park farther away from school or work, and walk the extra distance. Take the stairs instead of the elevator. Walk around while talking on the phone or taking a break from studying or work. Take your dog for a daily walk around the block. It all adds up!
- Don't give into an all-or-nothing attitude. If you don't feel like doing your usual workout, put on your exercise clothes and go for a walk, or go to the gym and use the treadmill. You might find the motivation to do a lot more. If not, at least you did something active.
- Focus on fitness goals instead of weight loss. Maybe you want to achieve a certain number of push-ups or run a certain number of miles. Achieving such short terms goals can help maintain your motivation for exercise.
- Choose activities you like. Don't like the idea of running on a treadmill at the gym? Try swimming, hiking outdoors with a friend, or join a fitness class with friends. If you enjoy an exercise, you are more likely to stick with it.
- Be prepared. Keep your gym bag stocked and in your car. Lay your exercise clothes out the night before so you're ready for your morning workout.
- Treat your exercise time like you would any other appointment. If you had a meeting with a professor, you wouldn't forget, cancel, or blow it off because you don't feel like going, would you?
- Don't be discouraged if you miss a couple of workouts. Making exercise part of your lifestyle will take practice and there are bound to be a few bumps in the road. Get back on track as soon as you can and focus on the activity you *are* doing.

Vita

Julie Blow earned her Bachelor of Science degree in Psychology at the University of Texas at El Paso in 2006. She entered the doctoral program in Psychology at the University of Texas at El Paso in 2007. While completing her doctoral degree she received her Master of Arts degree in Clinical Psychology in 2012.

While pursuing her degree, Dr. Blow worked as a Research Associate in the Prevention and Treatment in Clinical Health Laboratory in the Psychology Department. Dr. Blow has presented research findings at national conferences on topics of smoking, substance use, health behaviors, weight and weight-related behaviors. Dr. Blow's involvement in these projects has led to multiple first author and co-authored scholarly publications. She was also a co-investigator on numerous grants awarded to the Prevention and Treatment in Clinical Health Lab and was the principal investigator of a grant awarded to her by the Hispanic Health Disparities Research Center. Dr. Blow plans to continue her research on weight and weight-related behaviors.

Dr. Blow's dissertation, *A pilot study examining the impact of a brief health education intervention on food choices and exercise in a Hispanic college student sample,* was supervised by Dr. Theodore Cooper.

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