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EVALUATING THE COMPOUNDING EFFECTS OF WEIGHT LOSS AND WEIGHT GAIN IN CHOOSING TO EXERCISE

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By

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A Thesis
Submitted in Partial Fulfillment of the Requirements for the
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THESIS APPROVAL

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AN ABSTRACT OF THE THESIS OF

COURTNEY WILSON, for the Masters of Science degree in BEHAVIOR ANALYSIS AND REHABILITATION, presented on 11/3/2017, at Southern Illinois University Carbondale.

TITLE: EVALUATING THE COMPOUNDING EFFECTS OF WEIGHT LOSS AND WEIGHT GAIN IN CHOOSING TO EXERCISE

MAJOR PROFESSOR: Dr. Mark Dixon

The present study used healthy questionnaires to evaluate the compounding effects of weight loss and weight gain in choosing to exercise. The questionnaire was distributed to 31 participants via social media outlets. Demographic information was also recorded such as height, weight, ethnicity, and income. The height and weight recorded was used to correlate the BMI with the AUC values. This data did not show a strong correlation between body mass index with high or low AUC values, these values were evenly distributed between underweight, normal/average weight, and overweight participants. The questionnaires designed to assess how people view exercise and to determine if there is a pattern with sequencing delays with the calculated switch point and AUC. Statistical and visual analyses were conducted at the group and participant level. The switch points, were documented from each delay and was calculated to determine the compounding sequence that was preferred from each participant. The results from the study indicated that participants chose to exercise immediately within the first day, when the consequence was to lose weight. The results for the gain condition indicated that participants would gain weight instead of exercise, to a certain limit (100 days), when they chose to then engage in exercise behavior regularly. The conclusion of this study shows that the longer that the delay is, the less valued the outcome is. This is important when understanding the obesity epidemic within the United States.

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CHAPTER 1

INTRODUCTION

Obesity is an American Epidemic

Obesity impacts people in society economically, socially, personally and psychologically. More than 36% of the American population is obese (Ogden, Carroll, Kit, & Flegal, 2014). Obesity has numerous related health conditions that include but are not limited to certain types of cancer, stroke, congestive heart failure, type 2 diabetes, and heart disease (Ogden, Carroll, Kit, & Flegal, 2014). Obesity not only affects adults, but there has been a significant increase in obesity in adolescents since 2011(Purcell, 2015). The rate for obesity within kids as of 2014 is 1 in 6 kids which makes up 17% of the adolescent population in America (Purcell, 2015).

Some of the serious health concerns related to obesity are that colon cancer, prostate cancer and rectum cancer are of greater concern for obese men then men that are not obese. There is a greater concern for obese woman to develop numerous types of cancer such as uterus cancer, cervix cancer, or even breast cancer (National Institute of Health, 2015). The list of medical conditions for obese people is extensive and not limited. Breathing issues also occur such as, sleep apnea, asthma, and can contribute to issues within pregnant women (National Institute of Health, 2015). Obesity is the most prevalent factor in the development of new cases of diabetes in the United States (Yeo et al, 2013). It is projected that over 48 million U.S. citizens will have diabetes by 2050 (Yeo et al, 2013). Obesity does not only affect people with physical ailments, but with social and emotional issues as well. According to the National Institute of Health, excess weight also contributes to emotional suffering. Physical beauty and how people are viewed is highly valued in American society which in turn can lead to people with obesity having limited options in the job market, at school, and in social situations. Obesity has reached

epidemic proportions (Yeo et al, 2013). Prevention programs should be implemented nationally for people with overweight conditions as well as obesity and other health conditions that are associated with obesity (Kelly et al, 2008).

Along with physical repercussions, in 2008, the approximate medical cost of obesity in the United States was $147 billion. Obese people cost an overage of $1,429 a year more than an average weight person (Finkelstein, Trogdon, Cohen, & Dietz, 2009). Baum and Ford conducted a study evaluating wage effects of obesity. The effects of obesity are not limited to economics or chronic illnesses, but it also affects people socially and psychologically. In America, there is a strong prejudice against people with obesity starting at age 6 (Wadden & Stunkard, 1985). There are reports that some serious psychiatric illnesses are associated with obesity are depression, social anxiety, serious body image issues as well as severe emotional reactions to eating or dieting in general.

Additional effects that obesity have on people is the social and psychological effects. Obesity can affect how people feel about themselves as well as how they are treated. It can be toxic to one's lifestyle and have a severely negative impact (Myers, 2011). People that are obese know that a stereotype generally comes along with being obese. They feel that society looks at them as lazy or sloppy (Crandall, 1994). From a society stand point, people view obesity as lack of self-discipline or that of a choice. Society believes obese people use eating as a way to reduce anxiety or that it is a form of guilt or caused by a traumatic childhood event (Myers, 2011). Garden and Tuckerman conducted a study in 1994 where they altered people's appearance of their faces to make them appear wider on a monitor and viewers were suddenly more mean and more obnoxious. The numerous effects that obesity has socially were brought to light when a study monitored 370 obese women that were between the ages of 16-24 (Gortmaker et al, 1993).

Those same women were interviewed seven years later, two thirds of the women remained obese (Gortmaker et al, 1993). Other components that separated the obese woman from non-obese women was that the obese women had a lower chance of being married, made and average of $7,000 less annually in their careers. The women were compared to a control group of equally intelligent group of women that that were not considered obese (Gortmaker et al, 1993). Weight discrimination continues to be a very serious social factor for people with obesity. Regina Pingetore conducted a study in 1994 that consisted of videotaping mock job interviews where hired actors played a role as an average weight applicant or an overweight applicant. In the first condition, the actors wore makeup and prosthetics that made them appear to be thirty pounds heavier then they normally were (Pingetore, 1994). When the actors were in the overweight condition and used the same lines, intonations and gestures, they were scored as being unfit for the position(Pingetore, 1994).

Exercise as a Temporally Extended Solution

Obesity is a severe detriment to society and causes cardiovascular disease, congestive heart failure, diabetes, mental health issues, and even death (National Institute of Health, 2015). Obesity is a problem where the energy intake is a greater amount then the energy burned, causing it to be retained and convert to weight gain (Epstein, 1995). According to Grilos 1995 literature, exercise alone typically produces modest weight loss of approximately 1.36 pounds a week. The small weight loss from exercise can lead to multiple health benefits but it is unsatisfying to many obese people who desire a larger weight loss (Grilos, 1995). Physical activity is shown to improve weight loss maintenance in combination of balanced diets or very low-calorie diets (Epstein, Vilosky, Wing, & McCurley, 1994). Several studies conducted by Epstein and colleagues in 1994 showed that regular physical activity improves weight

management for more than 10 years after treatment of obese children. Although weight loss is important, exercise as a temporarily extended solution as well as sustained weight loss prolongs life and reduces the physical and financial cost of obesity (Yeo et al, 2013). A simple solution to lower the risks of people developing obesity is, consistent physical activity. Moderate continuous physical activity has been shown to protect the cardiovascular system.

According to the Howard Buchner, a recommendation for every adult in the United States is to engage in a minimum of 30 minutes of exercise or other physical activity, every day of the week (Buchner, 2005). The key to physical activity's effect on obesity prevention and treatment may be the long-term continuation of even modest activity levels (Wadden et al, 1997). It is suggested that adults that would like to improve their current health conditions or disease, should exceed the daily recommendation of 30 minutes. If adults do choose to exercise more than the suggested amount, it would continue to reduce the risk of other deadly diseases or conditions. The 30-minute exercise recommendation given by the CDC is meant to prevent chronic diseases, promote health, and help people maintain a healthy lifestyle.

Engaging in 30 minutes of exercise on a temporally extended basis can resolve majority of the health issues surrounding obesity. According to Bauman in 2014, there is evidence that suggests, physical activity in part with a healthy choice diet can decline the diabetes 2 risk by up to 60%. Healthy eating as well as exercise is also suggested to help mental health issues within the studied population (Bauman, 2004).

The number of calories burned is an important factor to weight loss and healthy lifestyle. According to Eve Guth, M.D., 3500 consumed calories is equal to one pound. Consistent physical activities such as walking even for 10 minutes a day can cause calories to be burned as long as it is a consistent basis. Exercise alone can reduce the mortality rate when it comes to

cardiovascular diseases and other diagnosis related to obesity. Walking a mile takes 20-25 minutes and burns about 100 calories; this small energy expenditure will not lead to rapid weight loss. However, walking one mile per day for a year should lead to a weight loss of about 11 pounds (Stefanik, 1993).

Behavioral Economics: Choice and Compounding Commodities

When understanding an individual's choices related to health behavior, economics is an area of study that can be utilized (Durako, 2014). Economics is the science of highly organized behavior (Simpson & Vuchinich, 2000). A social science such as this uses procedures that examine participant's responses to hypothetical future events as opposed to conducting operant procedures that are typically used (Critchfield & Kollins, 2001). Incorporating economics in behavior analysis has been including the use of dependent and independent variables, a different view of choice, new methods of analysis and measurement, and the alternative theories on how reinforcers influence behavior (Bickel, Green and Vuchinich, 1995).

History of behavior shows that people often behave paradoxically with the thought process of, they do things that later the wish they had not done, and they fail to do things that they wish they had done. (Simpson and Vuchinich, 2000).

As Simpson and Vuchinich point out, behaviors with negative health consequences often are tied to the tangible rewards of the "temporally circumscribed present" and its alternative reinforcers (i.e. "I don't want to exercise and miss that TV. program.") Interventions that focus relatively less attention on increasing 'health' and relatively more attention on increasing access to the immediately valuable, tangible, activities and rewards to which optimal health provides access potentially will provide the most powerful and lasting interventions. (Simpson &

Vuchinich, 2000). Furthermore, values toward health-related choice options are influenced by availability and delays (Simpson and Vuchinich, 2000).

Choice can be defined as allocating behavior to one alternate at the expense of another. Research suggests numerous meanings for choice. Choice is used in an everyday scenario and includes the act of choosing. It can also be defined as a covert process that must be followed before an overt action can occur (Martin et al, 2006). According to Martin et al, a subject can only make a choice if there is an available option to make one (Martin et al, 2006).

One component of this study is that exercise should be chosen for numerous reasons. Discounting and delaying reinforcers is what shows the compounding commodities within the study. Discounting of delayed reinforcers denotes the worth of a delayed reinforcer that is discounted or is not as reinforcing in comparison to the worth of a reinforcer that is obtained immediately (Bickel, & Marsch, 2001). Richard Herrnstein and William Baum have worked out many of the details of a law that states that relative rates of response to alternatives or options will match the relative rate of reinforcement. The overall view is that the allocation towards behaviors with health consequences is a choice between bigger later reinforcers and smaller quicker received reinforcers, and smaller sooner costs and larger later costs (Simpson and Vuchinich, 2000). The questionnaire that was administered presents the same proportional reward for all delays, yet the value of the reward increases as the commodity compounds. Durako's 2014 study shows the visual analysis of the proportional switch values show that the proportional value of the weight gain condition dropped from .3 at the lowest proportional day value to .1 at proportional day 1. This phenomenon occurred in the lose condition at a different level of 0.5 at the lowest proportional day value and 0.44 at proportional day 1.

Other past research has looked at discounting to understand the variables involved in influencing everyday health decisions. Variables studied have included monetary value, cost, effort or behavioral response, and timing of choices (Durako, 2014). Duarko conducted a study in 2014 that evaluating responding towards eating and the compounding commodity by first providing novel choice alternatives related to health. Durako's study evaluated responses from questionnaires that pertained to hypothetical food consumption paired with resulting loss, gaining, or no loss or gain of weight. Similarly, the current study pertains to the rewards and cost related to health. For an individual that is overweight, choosing to not exercise may be a tinier quicker reward that leads to a bigger not as quick, cost of weight gain. The choice of exercising to reduce weight will not be as immediate as choosing not to exercise, but long term decreases cardiovascular diseases as well as mortality rates that are related.

Factors that May Influence Choosing to Exercise

Reducing the risk of cardiovascular disease and increase overall health does not seem to be the only reinforcer chosen for people to partake in physical activity regularly. There are numerous social and demographic components that play a key role. Parent's that are obese and have less physical activity generally have children that are obese or will become obese with a minimum amount of physical activity. Parents that are obese put their children at an elevated risk of developing obesity themselves as the grow up into adulthood (Guthrie, Sanderson, Birch, and Plomin, 2001). From an early age children develop routines and sequential processes that will stay with them the rest of their life. Psychological disorders as well as issues such as self-esteem in relation to obesity is a large concern within the psychology field.

According to a study conducted by Grilo, Wilfley, Brownell, and Rodin, serious body displeasure is reported to occur at a higher rate with people that have been obese since childhood

versus people that have developed obesity as an adult. This statement shows that poor body image as well as being teased may be a risk factor for further maintaining an obese or unhealthy lifestyle. Thoughts on obesity vary throughout society and science. People associate the obese population with having serious mental and emotional issues. According to Shipmen & Plesset, dieting can cause even more significant mental and emotional issues within someone that is obese (Shipmen & Plesset 1963).

There are however, numerous limitations of allowing causation regarding issues would not allow them to exercise, certain medications that won't allow participants to gain or lose weight, etc., or to take part in the purpose of regular exercise. As much as it is helpful to decrease health complications, there is a genetic component that could cause exercise to not be as helpful for some obese people as it is others.

A solution for limitations that could occur are related within the choice paradigm. According to Chen and Risen from a study in 2010, people tend to evaluate their choice negatively when it is rejected and positively when they make the choice. This alone could cause the participant's desire to exercise even less desirable. Brehm conducted a study in 1956 that initiated a conversation and interpretation about choice and the attitude that goes along with it. Since the free- choice experiment, choice has been linked to creating cognitive dissonance. Rationalization is then reduced from the cognitive dissonance (Brehm, 1956). The choice paradigm measures the occurrence of spreading based on the chain of people's preferences that are influenced by their initial choice. The choice of exercising and either gaining, not gaining, or losing weight could cause an influence for the participants within this study.

In relation to choose and health behaviors, health behaviors, research has focused on targeting substance use and abuse and the implementation of delayed discounting tasks and data

analyses (Melanko and Larkin, 2013). Choices of substance users tend to be toward the more immediate reinforcers as opposed to the delayed (Bickel et al 1999). This is important for not only substance abuse but other health related behaviors.

Choice has been studied in relation to health behaviors such as healthy eating, reducing substance abuse, and reducing smoking. Smoking is an available choice alternative that is quantifiable for a health choice. William Haskell stated, currently the idea that exercise should be included as one component of a comprehensive program of health promotion has become generally accepted. Haskell goes on to discuss that this acceptance is due to the scientific evidence that moderate amounts of exercise contribute to improved health status and, despite the "fitness boom" of the past decade, that there is still a large segment of the adult population which is sedentary or which only exercises sporadically.

As previously stated, with consistent exercise the compounding components of obesity are less likely to have life changing events with people that are obese. There were new suggestions and guidelines in 1995 that advised adults to partake in a minimum of 30 minutes of moderate exercise a day every day of the week. This recommendation suggested that it decreases ailments that were associated with obesity. This being a work-site experience, it can be tailored to different demographics and needs (Blair et al, 2001). Since the exercise opportunity was worked into the daily routine, the data concludes that the work-site exercise program significantly increased the amount of physical activity that sustained longer then a three-month window. Using exercise as a form for reduction to obesity and disease has been proven to be the most successful treatment plan (Mattel, 2007).

Current Study

The current study is an extension off studies in understanding discounting and the variables in influencing decisions. Not many studies have been conducted in relation to health decisions but have included cost, effort, timing of choices, and monetary value. This study focuses on the evaluation of compounding effects of weight gain and weight loss in choosing to exercise. Two health questionnaires were administered that included hypothetical exercise choices paired with weight loss, gain, or no loss or gain of weight. The study is looking to expand literature in regards to delay discounting and compounding effects of health choices such as exercise such as evaluating discounting levels across conditions involving weight increase and decrease.

CHAPTER 2

METHODS

Participants

Thirty-one adults, both male and female completed two surveys in regard to delay discounting and health. These adults ranged from 21-58 years old. The yearly income ranged from $10,000 to $200,000 with the average income as $69,000. Majority of the participants were female and made up 81.8% of participants where the male participants made up the other 18%. The ethnicity/race percentages that comprised the participant population was 87.9% Caucasian, 3% biracial, 6.1% Hispanic or Latino, and 3% Asian. The body mass index was calculated by the information of height and weight that was given from the participants. The average BMI from all participants was calculated at 23.89 which is considered in the average or normal range (Steinberger, 2005). Broken down, there were 11 overweight or obese participants that made up 35% of the participant population. The BMI that is considered overweight is anything over 25 (Steinberger, 2005). The largest portion of the participants, which was 61%, were categorized into the normal or average range for BMI which is considered at 18.5-25. The remaining participants, 4%, were considered underweight which is any BMI under 18.5 (Steinberger, 2005).

The author recruited participants by emailing and also private messaging on social media outlets. Participants were aware that each of the two surveys would take between 10-15 minutes. If the participants then chose to partake in the surveys, a consent form, a demographics form and two discounting surveys were then sent to them (see materials subsection). The following methods were

approved by the Human Subjects Committee at Southern Illinois University. All participants consented to participate in the present study.

Materials

After permission was given, there were two discounting surveys that were provided to each participant. There was a statement given at the top of both surveys that read:

This survey will evaluate weight loss and gain as motivation to exercise. Please examine each of the choices below and select either option A or option B for every question. Assume that the intensity of all exercise options is the same, where only the length of the exercise session can vary. For example, a 50-minutes exercise session is twice as difficult as a 25-minute exercise session.

These statements provided participants with an option to choose to exercise or not exercise. The responses of class A were to "Not exercise for one day and gain (ascending amount of lbs.)." Response option B was to "Choose to exercise for 1 hour, 1 day and gain 0lbs."

In Survey 1, the questions were written in the following format:

Would you rather not exercise for 1 day and gain (ascending amount of lbs) (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B?

For the temporal procedure, the number of ounces to pounds gained (X) was presented in ascending order with the following values: 1, 5, 10, 25, 100, 300, and 600. The number value of pounds gained (Y) was presented in an ascending order and consisted of values between 0 and 60. To determine the Y value, X was multiplied by the values of: 0, 0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.08, 0.09, and 0.1.

The second survey displayed questions in the following format:

Would you rather exercise for 1-hour, 1 day and lose (X) lbs (A) or choose to not exercise for (Y) day and lose 0 lbs (B)? A or B?

The values for X and Y were the same used in the first survey. Both surveys were randomized. The option of alternatives were offered across participants to address possible sequencing behavior and evaluating the compounding effects of weight loss or weight gain in choosing to exercise.

Data Analyses

Statistical and visual analyses were conducted at the group and participant level. The switch point, defined as the last choice selected with an imposed consequence before the selection of choice with no imposed consequence, were documented from each delay(X). For example, it is the value between the last value where the participant chose to either exercise or gain a specific amount of weight. The value was determined by finding the difference between where the choices occurred (See figure 1 below).

The formula to determining the proportional value is as follows:

$$PV = \frac{sw + X}{2}$$

X represents the maximum amount of pounds that the participant could have chosen during each block of time. SW is the switch point.

In order to determine the Area under the Curve by Myerson, Green, & Warusawitharana, (2001) the proportional value was needed (See figure 2 below):

$$AUC = (X_2 - X_1) \times [(Y_1 + Y_2) \div 2]$$

In order to determine the level of discounting that the participants chose, the AUC was determined. Values X_1 and X_2 represented the successive delays and the proportional value that was in relation was represented by $Y_1$and Y_2. For survey 1, the larger the AUC values, the healthier the exercise choice was. The smaller the AUC values, the more "unhealthy" the choice was. For survey 2, the smaller the AUC values, the "healthier" the participant's choice was. The formula used was:

$$V=Ae-sD$$

The exponential discounting function was then fit for both groups data. A dependent samples t-test was conducted to determine if the group differences were significantly different. The higher AUC values would indicate that participants are more likely to exercise across delayed values.

CHAPTER 3

RESULTS

The results for figure one displays a scatter plot that shows the mean proportional switch values across proportional days. The mean proportional switch values were calculated at each block of 1, 5, 10, 25, 100, 300, and 600 days. Both the gain and loss conditions initially peaked but the lose condition immediately decreased after day 1 whereas, the gain condition continued to peak until day 100. The data showed that the greatest proportional switch value occurred at the 100-day delay in the loss condition at 0.2. Overall, the lowest proportional switch values occurred in the gain condition and the highest proportional switch values occurred in the lose condition. The significant peak that occurred at the 100-day delay shows that participants chose the option to gain rather than exercise until the 100 day, and then the participants opted to start exercising to not gain any more weight.

The gain component has shown to increase up to 100 days longer than loss which shows that the participants are tolerable to gain for only a certain amount of time but choose to engage in "healthy" living and exercise is the preferred choice after that. The visual analysis of the data shows that that the proportional value of the weight. According to the data both conditions similarly had the lowest proportional switch point at the 300-day delay with .01 and parallelly stayed consistent at .01 till the last condition of 600 days. Overall, most participants were more likely to choose to exercise when weight gain or loss is compounded.

In figure 2, the two-phase exponential decay curve function provided a strong fit for both conditions compared to the hyperbolic curve function. The R^2 values shows that the exponential decay consisted of .10 and .23. In figure 3, the comparison of the AUC values is shown. Based on the dependent samples t-test that was conducted, there were significant differences between

the losing weight condition and the gaining weight condition. The significant difference shows whether people are more likely to exercise to lose weight or are they exercising to not gain weight. According to the statistical analysis, the higher the AUC values, the more likely the participants are to exercise across the delay values. The results indicate that the participants are more willing to exercise immediately in the condition where the participants would like to lose weight. In the gain condition, results show that participants chose to gain weight for up to 100 days before they chose to exercise in order to prevent further weight gain.

CHAPTER 4

DISCUSSION

The current study required participants to partake in a health discounting questionnaire that displayed hypothetical sequential discounting scenarios. The responses consisted of losing weight, gaining weight, or not gaining or losing weight. The temporally compounding variables observed showed that the participants chose to gain weight for up to 100 days. This was indicated by a higher switch point within the AUC values. The data shows that the participants chose to immediately exercise when it came to losing weight but were tolerant of gaining weight until the 100 days, then chose to start exercising. This shows that the compounding variable to lose weight has a more immediate reinforcement then the exercise itself. These results were shown when analyzing the AUC scores for both the gain and loss conditions.

These findings indicate that to maintain a healthy lifestyle the participants will not exercise as a preventative measure to not gain weight, but will engage in exercise behavior as a reactive measure to lose weight, but only after it has been gained throughout a certain amount of time (100 days). Exercise as a temporarily extended solution as well as sustained weight loss prolongs life and reduces the physical effects that obesity can have (Yeo et al, 2013). The compounding variables that show to be most reinforcing to the participants is the lose condition that participants were willing to engage in after day 1. These findings are important as the behavioral economics and discounting toward cumulative outcomes with temporally compounding variables are significantly important when analyzing behavior in regard to health.

This study expands and emphasizes previous literature in regard to evaluating the effects of compounding effects of weight loss or weight gain. Previous studies have been conducted

using delay discounting and compounding variables with other subjects such as monetary delayed discounting tasks between obese and average weight individuals (Weller, Cook, Avsar & Cox, 2008). A very few amount of studies have been conducted using discounting in a compounding manner when it comes to a choice of gaining, losing, or neither losing or gaining. According to Simpson and Vuchinich, the value of long-term health rewards decreases and the value of competing alternatives increases may be occurring in the losing weight condition for certain individuals with the competing alternative being the gaining weight condition. A study conducted by Biskel in 2001 came to a similar conclusion that for regular daily smokers, the value of the money delay was more rapid than the value of the delayed cigarettes. Overall, cigarette smoking is characterized similarly to narcotic dependence or other forms of dependence with a very quick loss of value for the outcomes that are delayed or come later (Bickel, 2001).

Several studies have been conducted regarding exercise in general to reduce the effects of obesity. The patients that have lost weight as subjects in this study have been connected to cardiac improvements, diabetes, CV disease and other related health conditions (Swift et al, 2015). Results of the past studies show that when exercise is an available option, the participant would choose to take and overtime it would decrease body fat which would increase health conditions and productivity in the workplace, as long as the behavior was consistently engaged in (Blair et al, 2001).

Although the current study shows the compounding variable increasing immediately and then decreasing, it shows a large shift on preferences of the participants. Interestingly, the data shows that the participants have tolerance for weight gain up to 100 days then chose to exercise regularly as to not gain anymore. The other testing condition showed that participants were

willing to exercise immediately if the opportunity was to lose weight.

Evaluating obese participant's personal preferences, values, and temporal choices is pertinent to understanding their decision-making process and along with evaluating their choice. A recent study by Sze, Slaven, and Bickle that was conducted in 2017 discusses the purpose of knowing this information and decided that it will help define the difficulties of weight management (Sze, Slaven & Bickle, 2017). These studies show how important the motivation is and how the reinforcer relates to gain or loss within a certain amount of time and its compounding effect.

This study demonstrates the compounding effects of weight loss or weight gain in choosing to exercise. It shows that participants chose to exercise to lose weight immediately or not exercise and gain weight for up to 100 days before engaging in exercise behavior. There were two participants results that were excluded from the study. They were excluded from the study due to inconsistent answers in the questionnaire. Fatigue could cause inconsistent responses as there were two questionnaires given and both had 80 questions after the portion regarding demographics needed to be filled out. These answers would have skewed the data and not allowed for an accurate evaluation.

A future study that would be beneficial would be to conduct a similar study in regards to the compounding effects of weight gain and loss but to take into consideration their history with exercising as children as well as if the participants are considered underweight, average, or overweight, prior to the participants. This could provide further information on history of behavior and purpose of willingness to lose weight and if there is a need for it. Another component that could be added within the instructions could be that if the participant had

availability to exercise and given the proper conditions that they would have chosen to exercise instead of maybe either sleeping or spending time with their family. Another limitation to consider would be if there is a purpose that weight doesn't need to be lost for a specific reason (i.e. people with previous eating disorders are advised to not lose weight, or people that generally have a tough time keeping weight on).

Overall, the results of the current study show the compounding effects regarding weight loss and gain. This is important as further investigations could help provide ways to encourage society to be healthier and reduce obesity rates by advising a continuous amount of exercise. Exercising alone could reduce obesity rates and diseases and conditions that are associated with obesity.

TABLE

Table 1. Participant Demographic Information

		n	*%*
Age	*21-29*	*5*	*17.1*
	30-39	*20*	*65.3*
	40-49	*2*	*6.8*
	>50	*2*	*6.9*
Gender	*Female*	*27*	*81*
	Male	*6*	*18.2*
	<10,000	*0*	*0*
	10,000-19,000	*1*	*4*
	20,000-39,000	*6*	*19.2*
	39,000-59,000	*4*	*12.8*
	59,000-79,000	*7*	*22.4*
	>80,000	*13*	*41.6*
Body Mass Index (BMI)	*Underweight<18.5*	*1*	*4*
	Normal 18.5-24.9	*19*	*19*
	Overweight >25.5	*11*	*35*

FIGURES

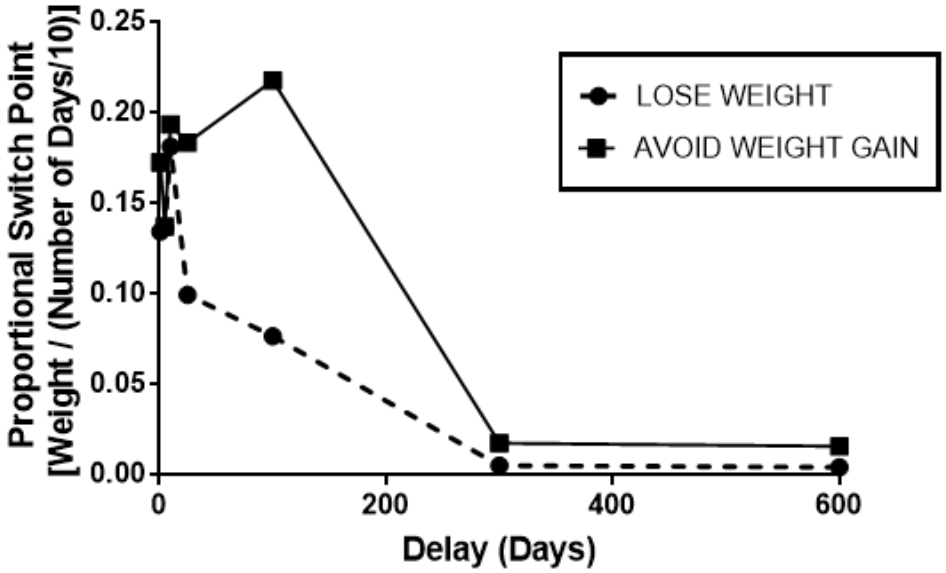

Figure 1: Comparing Mean Switch Points for Both Groups

A significant peak occurred with the 100-day delay to lose weight. Participants chose the option to gain weight rather than exercise. After the 100-day delay majority of the participants opted to exercise rather than to gain weight.

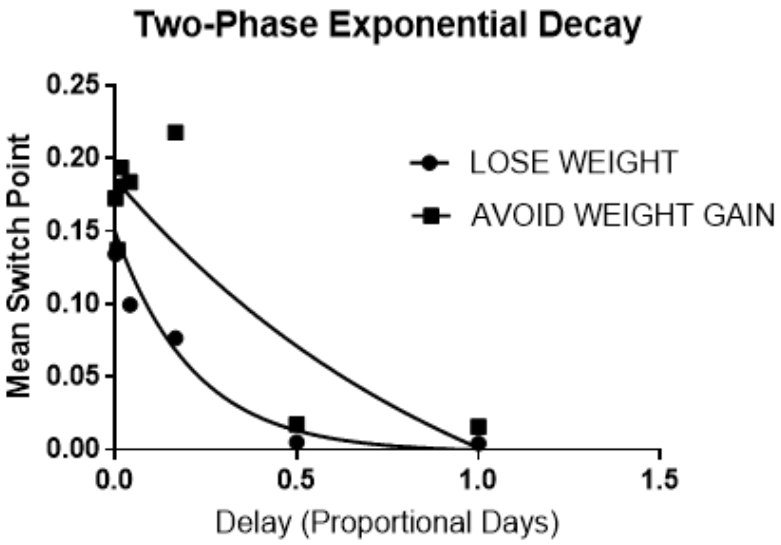

Figure 2. Providing Curve Fits for Both Groups

A Two-Phase Exponential Decay was used to provide curve fits for both group and represents the lose weight and avoid weight gain conditions.

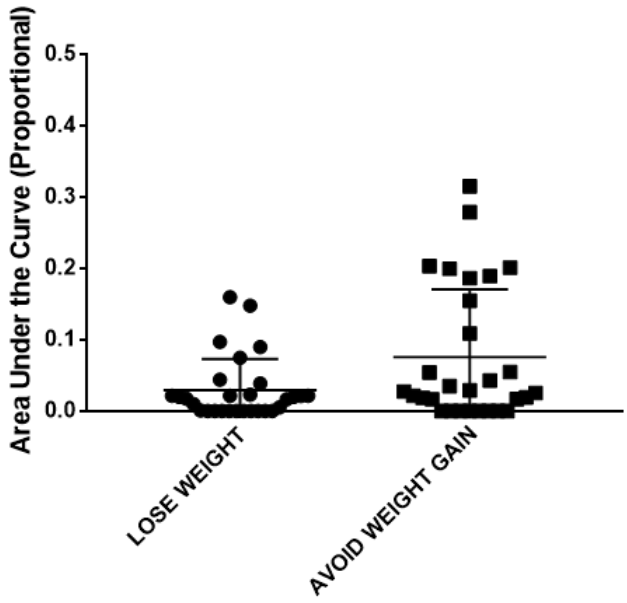

Figure 3. Comparison of AUC Values

Figure 3 shows the comparison of AUC values from participants. The results show that more participants chose to avoid weight gain later in the condition. Participants that chose to lose weight chose to engage in exercising immediately.

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APPENDICES

APPENDICES

Appendix A: HEALTH DISCOUNTING SURVEYS

This survey will evaluate weight loss and gain as motivation to exercise. Please examine each of the choices below and select either option A or option B for every question. Assume that the intensity of all exercise options is the same, where only the length of the exercise session can vary. For example, a 50-minute exercise session is twice as difficult as a 25-minute exercise session.

Survey 1

1. Would you rather not exercise for 1 day and gain 0 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B
2. Would you rather not exercise for 1 day and gain 0.01 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B
3. Would you rather not exercise for 1 day and gain 0.02 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B
4. Would you rather not exercise for 1 day and gain 0.03 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B
5. Would you rather not exercise for 1 day and gain 0.04 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B
6. Would you rather not exercise for 1 day and gain 0.05 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B
7. Would you rather not exercise for 1 day and gain 0.06 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B
8. Would you rather not exercise for 1 day and gain 0.07 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B
9. Would you rather not exercise for 1 day and gain 0.08 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B
10. Would you rather not exercise for 1 day and gain 0.09 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B
11. Would you rather not exercise for 1 day and gain 0.1 lbs (A) or choose to exercise for 1-hour, 1 day and gain 0 lbs (B)? A or B

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1. Would you rather not exercise for 5 days and gain 0 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B
2. Would you rather not exercise for 5 days and gain 0.05 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B

3. Would you rather not exercise for 5 days and gain 0.1 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B
4. Would you rather not exercise for 5 days and gain 0.15 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B
5. Would you rather not exercise for 5 days and gain 0.2 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B
6. Would you rather not exercise for 5 days and gain 0.25 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B
7. Would you rather not exercise for 5 days and gain 0.3 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B
8. Would you rather not exercise for 5 days and gain 0.35 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B
9. Would you rather not exercise for 5 days and gain 0.4 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B
10. Would you rather not exercise for 5 days and gain 0.45 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B
11. Would you rather not exercise for 5 days and gain 0.5 lbs (A) or choose to exercise for 1-hour, 5 days and gain 0 lbs (B)? A or B

---

1. Would you rather not exercise for 10 days and gain 0 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B
2. Would you rather not exercise for 10 days and gain 0.1 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B
3. Would you rather not exercise for 10 days and gain 0.2 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B
4. Would you rather not exercise for 10 days and gain 0.3 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B
5. Would you rather not exercise for 10 days and gain 0.4 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B
6. Would you rather not exercise for 10 days and gain 0.5 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B
7. Would you rather not exercise for 10 days and gain 0.6 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B
8. Would you rather not exercise for 10 days and gain 0.7 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B
9. Would you rather not exercise for 10 days and gain 0.8 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B

10. Would you rather not exercise for 10 days and gain 0.9 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B
11. Would you rather not exercise for 10 days and gain 1 lbs (A) or choose to exercise for 1-hour, 10 days and gain 0 lbs (B)? A or B

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1. Would you rather not exercise for 25 days and gain 0 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B
2. Would you rather not exercise for 25 days and gain 0.25 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B
3. Would you rather not exercise for 25 days and gain 0.5 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B
4. Would you rather not exercise for 25 days and gain 0.75 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B
5. Would you rather not exercise for 25 days and gain 1 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B
6. Would you rather not exercise for 25 days and gain 1.25 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B
7. Would you rather not exercise for 25 days and gain 1.5 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B
8. Would you rather not exercise for 25 days and gain 1.75 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B
9. Would you rather not exercise for 25 days and gain 2 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B
10. Would you rather not exercise for 25 days and gain 2.25 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B
11. Would you rather not exercise for 25 days and gain 2.5 lbs (A) or choose to exercise for 1-hour, 25 days and gain 0 lbs (B)? A or B

---

1. Would you rather not exercise for 100 days and gain 0 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B

2. Would you rather not exercise for 100 days and gain 1 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B

3. Would you rather not exercise for 100 days and gain 2 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B
4. Would you rather not exercise for 100 days and gain 3 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B
5. Would you rather not exercise for 100 days and gain 4 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B
6. Would you rather not exercise for 100 days and gain 5 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B
7. Would you rather not exercise for 100 days and gain 6 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B
8. Would you rather not exercise for 100 days and gain 7 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B
9. Would you rather not exercise for 100 days and gain 8 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B
10. Would you rather not exercise for 100 days and gain 9 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B
11. Would you rather not exercise for 100 days and gain 10 lbs (A) or choose to exercise for 1-hour, 100 days and gain 0 lbs (B)? A or B

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1. Would you rather not exercise for 300 days and gain 0 lbs (A) or choose to exercise for 1-hour, 300 days and gain 0 lbs (B)? A or B
2. Would you rather not exercise for 300 days and gain 3 lbs (A) or choose to exercise for 1-hour, 300 days and gain 0 lbs (B)? A or B
3. Would you rather not exercise for 300 days and gain 6 lbs (A) or choose to exercise for 1-hour, 300 days and gain 0 lbs (B)? A or B
4. Would you rather not exercise for 300 days and gain 9 lbs (A) or choose to exercise for 1-hour, 300 days and gain 0 lbs (B)? A or B
5. Would you rather not exercise for 300 days and gain 12 lbs (A) or choose to exercise for 1-hour, 300 days and gain 0 lbs (B)? A or B
6. Would you rather not exercise for 300 days and gain 15 lbs (A) or choose to exercise for 1-hour, 300 days and gain 0 lbs (B)? A or B
7. Would you rather not exercise for 300 days and gain 18 lbs (A) or choose to exercise for 1-
8. hour, 300 days and gain 0 lbs (B)? A or B

9. Would you rather not exercise for 300 days and gain 21 lbs (A) or choose to exercise for 1-hour, 300 days and gain 0 lbs (B)? A or B
10. Would you rather not exercise for 300 days and gain 24 lbs (A) or choose to exercise for 1-hour, 300 days and gain 0 lbs (B)? A or B
11. Would you rather not exercise for 300 days and gain 27 lbs (A) or choose to exercise for 1-hour, 300 days and gain 0 lbs (B)? A or B
12. Would you rather not exercise for 300 days and gain 30 lbs (A) or choose to exercise for 1-hour, 300 days and gain 0 lbs (B)? A or B

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1. Would you rather not exercise for 600 days and gain 0 lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B
2. Would you rather not exercise for 600 days and gain 6 lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B
3. Would you rather not exercise for 600 days and gain 12 lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B
4. Would you rather not exercise for 600 days and gain 18 lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B
5. Would you rather not exercise for 600 days and gain 24 lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B
6. Would you rather not exercise for 600 days and gain 30 lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B
7. Would you rather not exercise for 600 days and gain 36 lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B
8. Would you rather not exercise for 600 days and gain 42lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B
9. Would you rather not exercise for 600 days and gain 48 lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B
10. Would you rather not exercise for 600 days and gain 54 lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B
11. Would you rather not exercise for 600 days and gain 60 lbs (A) or choose to exercise for 1-hour, 600 days and gain 0 lbs (B)? A or B

Survey 2

1. Would you rather exercise for 1-hour, 1 day and lose 0 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B
2. Would you rather exercise for 1-hour, 1 day and lose 0.01 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B
3. Would you rather exercise for 1-hour, 1 day and lose 0.02 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B
4. Would you rather exercise for 1-hour, 1 day and lose 0.03 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B
5. Would you rather exercise for 1-hour, 1 day and lose 0.04 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B
6. Would you rather exercise for 1-hour, 1 day and lose 0.05 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B
7. Would you rather exercise for 1-hour, 1 day and lose 0.06 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B
8. Would you rather exercise for 1-hour, 1 day and lose 0.07 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B
9. Would you rather exercise for 1-hour, 1 day and lose 0.08 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B
10. Would you rather exercise for 1-hour, 1 day and lose 0.09 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B
11. Would you rather exercise for 1-hour, 1 day and lose 0.1 lbs (A) or choose to not exercise for 1 day and lose 0 lbs (B)? A or B

1. Would you rather exercise for 1-hour, 5 days and lose 0 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B
2. Would you rather exercise for 1-hour, 5 days and lose 0.05 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B
3. Would you rather exercise for 1-hour, 5 days and lose 0.1 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B
4. Would you rather exercise for 1-hour, 5 days and lose 0.15 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B
5. Would you rather exercise for 1-hour, 5 days and lose 0.2 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B
6. Would you rather exercise for 1-hour, 5 days and lose 0.25 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B

7. Would you rather exercise for 1-hour, 5 days and lose 0.3 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B

8. Would you rather exercise for 1-hour, 5 days and lose 0.35 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B
9. Would you rather exercise for 1-hour, 5 days and lose 0.4 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B
10. Would you rather exercise for 1-hour, 5 days and lose 0.45 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B
11. Would you rather exercise for 1-hour, 5 days and lose 0.5 lbs (A) or choose to not exercise for 5 days and lose 0 lbs (B)? A or B

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1. Would you rather exercise for 1-hour, 10 days and lose 0 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B
2. Would you rather exercise for 1-hour, 10 days and lose 0.1 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B
3. Would you rather exercise for 1-hour, 10 days and lose 0.2 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B
4. Would you rather exercise for 1-hour, 10 days and lose 0.3 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B
5. Would you rather exercise for 1-hour, 10 days and lose 0.4 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B
6. Would you rather exercise for 1-hour, 10 days and lose 0.5 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B
7. Would you rather exercise for 1-hour, 10 days and lose 0.6 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B
8. Would you rather exercise for 1-hour, 10 days and lose 0.7 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B
9. Would you rather exercise for 1-hour, 10 days and lose 0.8 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B
10. Would you rather exercise for 1-hour, 10 days and lose 0.9 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B
11. Would you rather exercise for 1-hour, 10 days and lose 1 lbs (A) or choose to not exercise for 10 days and lose 0 lbs (B)? A or B

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1. Would you rather exercise for 1-hour, 25 days and lose 0 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B

2. Would you rather exercise for 1-hour, 25 days and lose 0.25 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B
3. Would you rather exercise for 1-hour, 25 days and lose 0.5 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B
4. Would you rather exercise for 1-hour, 25 days and lose 0.75 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B
5. Would you rather exercise for 1-hour, 25 days and lose 1 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B
6. Would you rather exercise for 1-hour, 25 days and lose 1.25 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B
7. Would you rather exercise for 1-hour, 25 days and lose 1.5 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B
8. Would you rather exercise for 1-hour, 25 days and lose 1.75 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B
9. Would you rather exercise for 1-hour, 25 days and lose 2 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B
10. Would you rather exercise for 1-hour, 25 days and lose 2.25 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B
11. Would you rather exercise for 1-hour, 25 days and lose 2.5 lbs (A) or choose to not exercise for 25 days and lose 0 lbs (B)? A or B

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1. Would you rather exercise for 1-hour, 100 days and lose 0 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B
2. Would you rather exercise for 1-hour, 100 days and lose 1 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B
3. Would you rather exercise for 1-hour, 100 days and lose 2 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B
4. Would you rather exercise for 1-hour, 100 days and lose 3 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B
5. Would you rather exercise for 1-hour, 100 days and lose 4 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B
6. Would you rather exercise for 1-hour, 100 days and lose 5 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B
7. Would you rather exercise for 1-hour, 100 days and lose 6 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B
8. Would you rather exercise for 1-hour, 100 days and lose 7 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B

9. Would you rather exercise for 1-hour, 100 days and lose 8 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B
10. Would you rather exercise for 1-hour, 100 days and lose 9 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B
11. Would you rather exercise for 1-hour, 100 days and lose 10 lbs (A) or choose to not exercise for 100 days and lose 0 lbs (B)? A or B

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1. Would you rather exercise for 1-hour, 300 days and lose 0 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B
2. Would you rather exercise for 1-hour, 300 days and lose 3 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B
3. Would you rather exercise for 1-hour, 300 days and lose 6 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B
4. Would you rather exercise for 1-hour, 300 days and lose 9 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B
5. Would you rather exercise for 1-hour, 300 days and lose 12 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B
6. Would you rather exercise for 1-hour, 300 days and lose 15 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B
7. Would you rather exercise for 1-hour, 300 days and lose 18 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B
8. Would you rather exercise for 1-hour, 300 days and lose 21 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B
9. Would you rather exercise for 1-hour, 300 days and lose 24 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B
10. Would you rather exercise for 1-hour, 300 days and lose 27 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B
11. Would you rather exercise for 1-hour, 300 days and lose 30 lbs (A) or choose to not exercise for 300 days and lose 0 lbs (B)? A or B

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1. Would you rather exercise for 1-hour, 600 days and lose 0 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A or B
2. Would you rather exercise for 1-hour, 600 days and lose 6 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A or
3. Would you rather exercise for 1-hour, 600 days and lose 12 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A or B

4. Would you rather exercise for 1-hour, 600 days and lose 18 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A or B
5. Would you rather exercise for 1-hour, 600 days and lose 24 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A or B
6. Would you rather exercise for 1-hour, 600 days and lose 30 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A or B
7. Would you rather exercise for 1-hour, 600 days and lose 36 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A or B
8. Would you rather exercise for 1-hour, 600 days and lose 42 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A or B
9. Would you rather exercise for 1-hour, 600 days and lose 48 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A or B
10. Would you rather exercise for 1-hour, 600 days and lose 54 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A or B
11. Would you rather exercise for 1-hour, 600 days and lose 60 lbs (A) or choose to not exercise for 600 days and lose 0 lbs (B)? A

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Thesis Research Paper Title: Evaluating the Compounding Effects of Weight Loss and Weight Gain in Choosing to Exercise

Major Professor: Dr. Mark Dixon