12-1-2017

EVALUATING THE EFFECT OF CONTEXTUAL VARIABLES ON DISCOUNTING OF HEALTH RELATED BEHAVIORS

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by

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B.S., Western Illinois University, 2001

A Thesis
Submitted in Partial Fulfillment of the Requirements for the
Master of Science in Behavior Analysis and Therapy

Department of Rehabilitation
in the Graduate School
Southern Illinois University Carbondale
December 2017

THESIS APPROVAL

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for the Degree of

Masters of Science

in the field of Behavior Analysis and Therapy

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Approved November 10th, 2017

AN ABSTRACT OF THE THESIS OF

Jessica Hubrich, for the Master of Science degree in Behavior Analysis and Therapy, presented on 10/31/2017, at Southern Illinois University Carbondale

TITLE: EVALUATING THE EFFECT OF CONTEXTUAL VARIABLES ON DISCOUNTING OF HEALTH RELATED BEHAVIORS MAJOR PROFESSOR: Dr. Mark Dixon

The present study used a discounting task with differing contextual variables to examine how variables effect discounting between studies and future health related behaviors. Thirty nine participants completed two discounting questionnaires, each included hypothetical food choices paired with a weight loss or stable weight. Participants were instructed to complete each survey based on either their current weight or a gain of 75 pounds, and each survey included two identical hypothetical menu options. One menu incorporated low calorie foods, while the other incorporated moderately healthy foods, and participants were instructed to select the menu they preferred based on weight loss/no weight loss and hypothetical weight presented in instruction. Visual analysis of the results showed a difference in discounting across the conditions; participants appeared to be more impulsive at their current weight. At normal weight, visual analysis of the switch values show that the proportional value of the switch ranged from 1.0 at the lowest proportional delay level to .75 at proportional delay 1. In the hypothetical weight gain condition, this occurred at a level of .95 at the lowest proportional delay and .75 at delay 1. In a visual analysis of Area Under the Curve comparisons, participants' scores are higher in the 75 pound weight condition than the normal weight condition, and farther from 0 in the 75 pound weight condition.

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CHAPTER 1

INTRODUCTION

Food: An American Addiction

According to the World Health Organization (2015), the rate of obesity has more than doubled since 1980. More than 600 million people now have body mass indexes (BMI) that qualify them as obese. Estimates report that approximately 79% of US adults do not engage in sufficient daily exercise, and 91% do not eat sufficient daily vegetables (CDC, 2016; Moore & Thomson, 2015). Additionally, the food industry has become adept at exploiting the natural human desire for sugar and fat by increasing the "dose" in many of the products we purchase and eat on a daily basis (Davis, Patte, Curtis, & Reid, 2010).

An over-abundance of high-calorie snacks and meals, combined with the fact that items rich in fat and sugar tend to cost substantially less than fresh fruits and vegetables (Bray, 2008), means that a significant level of personal self-regulation is required for modern day Americans to avoid obesity and maintain a healthy body weight. Self-regulation was first studied on preschool children, using a simple delay-of-gratification procedure in 1972- one cookie now, or two cookies in several minutes (Mischel, Ebbestein & Zeiss, 1972). This seemingly simple study paved the way for several longitudinal studies, with the preschoolers that waited for the larger, delayed reward, doing better later in life. Most interestingly, there was an inverse correlation between those that waited and the use of crack cocaine later in life (Ayduk et al., 2000).

Cutler, Glaeser and Shapiro (2003), note a correlation between low level of self-regulation and high initial weight levels, as well as a higher likelihood of weight gain with improvements in food technology. They suggest that as reductions in the time cost of food preparation decreases due to technological change, the immediate consumption value of food has

increased in relation to the long-term health costs. Simply put, Americans are losing self-regulation as we become addicted to a fast food, cheap, easy, fat-laden diet.

This addiction is a costly one; the rise in obesity rates accounted for approximately 27 percent of the change in health care expenditures between 1987 and 2002 (Thorpe, Florence, Howard, & Joski, 2004). As of 2001, an estimated $117 billion of healthcare costs were attributable to obesity; these included direct and indirect costs, such as medical services and weight-loss drugs as well as lost wages due to missing work due to obesity-related illnesses and early retirement (USDHHS, 2001). By 2008, the cost in healthcare had risen to $147 billion annually, with individuals considered obese costing an additional $1,429 annually in comparison to those considered individuals with a normal or healthy BMI (Finkelstein, Trogdon, Cohen, & Dietz, 2009).

Finding a method to alter eating habits would have significant positive economic impacts, as well as the personal health gains. Impulsivity appears to weigh heavily on food choices; The National Center of Diabetes and Digestive and Kidney Diseases (2008) noted that over 200,000 Americans each year have bariatric surgery; this limits stomach size, which would appear to imply a lack of personal self-control. Although in March of 2010 the Patient Protection and Affordable Care Act was signed into law, requiring chain restaurants with 20 or more locations to display the amount of calories meals contain on the menus and the drive-through signs (Patient Protection and Affordable Care Act of 2010), Scharff (2009) shows that the caloric consumption of obese individuals is less responsive to this information than that of others.

Impulsivity/Behavioral Economics

Impulsivity has many definitions; one is a “predisposition towards rapid, unplanned reactions to internal or external stimuli with diminished regard to the negative consequences of

these reactions to the impulsive individual or to others" (Evenden, 1999; Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001; Potenza & de Wit, 2010). One component of impulsivity is choice impulsivity, also referred to as delay discounting and temporal discounting (Fineberg et al., 2014; Fineberg et al., 2010). Impulsivity is associated with a variety of risky behaviors, including binge eating (Davis et al., 2010).

With the cost of healthcare increasingly on the rise due to these risky personal choices, understanding and bridging the gap between "internal" and "external" factors in behavior and impulsiveness has become ever more vital. Behavioral economics has become the widely accepted method for bridging this gap of understanding; the term was first used in 1972 by Kagel and Winkel in reference to mathematical models used to predict behaviors of large populations. However, the early models were not very accurate at predicting behavior, often with no greater accuracy than chance (Stojek & MacKillop, 2017). 1977 (Kagel, Battalio, Winkler & Fisher) and 1978 (Hursh) began early work in the field of behavioral economics, applying the principles to a variety of health behaviors, such as food choice and food consumption.

While human behavior has been studied for many years, behavioral economics takes a different approach. It blends economics and psychology, as well as including neuroeconomics, cognitive neuroscience, and behavioral pharmacology (Bickel, Moody & Higgins, 2016). Economics has traditionally focused on formal theory and external events that influence an individual's behavior, such as supply and demand and the availability of alternative options, while psychology has traditionally focused on internal factors, such as cognition, emotion, and brain processes, as well as empirical questions. Behavioral economics combines these two fields to study internal decisions impacted by external controls (Hursh 2000; Madden, 2000).

As behavioral economics takes into account internal variables, it allows for impulsivity to be taken into account, and the measure of delayed reward discounting can be factored in. Delayed reward discounting refers to an individual's ability to delay gratification, using a smaller-sooner, larger-later approach (Stojek & MacKillop, 2017). In other words, how quickly does a reward lose its function as a value of time (Madden & Bickel, 2009). Discounting and impulsivity combine to effect decisions when, for example, an individual chooses to drop out of high school and pursue a minimum wage job, rather than pursuing higher education and working toward a higher paid career later (lower response cost now, vs larger-later). Other examples may include winning the lottery and choosing the smaller, immediate payoff over the larger, longer term payoff, choosing to spend money immediately on a low-cost, unreliable vehicle rather than saving for a better vehicle, or binge eating the entire carton of ice cream rather than having a bowl.

In a strictly economics based approach, economic demand law states consumption of a reinforcer will decrease as its price increases (Lea, 1978). This does not take into account the internal variables- such as impulsivity and delayed discounting. Behavioral economics refers to "consumption" as how much of a reinforcer an individual chooses and the "price" is the work required to access the reinforcer (Stojek & MacKillop, 2017).

Delayed discounting is used to measure individual differences in two areas, reward delay and reward magnitude. When the reward is presented with only one dimension, people choose largely the same; i.e., in choosing between larger-smaller, the majority of people choose larger. Likewise, when offered the same reward sooner-later, most people choose sooner. However, differences can be seen when the approach is changed to smaller-sooner, larger-later (MacKillop et al., 2011). Richards, Zhang, Mitchell, and Wit (1999) examined delayed discounting,

impulsiveness and the effects of alcohol, using 24 adults who were given either small amounts of ethanol alcohol or a placebo, and presented with a monetary discounting task (would you like $10 now or in X number of days, with X percentage of receiving it). Participants completed four total sessions, orientation, debriefing, and two experimental. They were told they were participating in a study on the effects of drugs and behavior, and told they would complete questionnaires, a preference task, be given either capsules or a beverage, and would earn varying amounts of money- which they would receive either after their sessions or later, depending on their choices. They were told to take no drugs or alcohol for 24 hours prior to, and 12 hours after the sessions, and urine tests were administered. Ethanol alcohol was administered in a small dose, calculated by body weight, and given in a tonic and lime flavored mix. Trials consisted of either probabilistic or delay, with monetary amounts from 0 to $10. They found alcohol had no effect on discounting, but did find an effect between impulsiveness and discounting.
Thamathoran Lange, Ramos, and Fields (2016) studied weight concerns and delay discounting using 60 adolescent females between ages 13-19. Height and weight measurements were taken and plotted using the 2000 Centers for Disease Control and Prevention National Center for Health Statistics and plotted on growth curves based on age and sex. Each participant then completed a computerized delay discounting questionnaire (DDQ; Madden, Petry, Badger, & Bickel, 1997; Richards et al., 1999), and an Eating Disorder Examination Questionnaire (EDE-Q; Fairburn, Cooper, & O'Connor, 2008). They found a correlation between discounting, higher BMI and increased impulsivity.

Temporal discounting is an area of research that focuses exclusively on the future (Frederick, Lowenstein, & O'Donoghue, 2002; Green & Myerson, 2004); it is often considered a measure of impulsivity, and refers to a decrease in the value of an outcome as the delay to its

availability increases (Green & Myerson, 2004). In temporal discounting, the degree of discounting decreases as the magnitude of the reward increases, and losses tend to be discounted less than gains.

Relative reinforcing value (RRV) describes how much behavior a stimulus will support (Bickel, Marsch, & Carroll, 2000); this allows a closer examination of individual differences in response rates to reinforcers. Epstein, Leddy, Temple and Faith (2007) have shown significant differences in individual RRV of food, leading to a wide range in choices of caloric consumption. Best et al. (2012) examined the interaction of RRV and delayed discounting following a weight loss program, and found high individual RRV of food alone did not impact weight loss maintenance; however, children that participated in the program with a high individual RRV of food and high delayed discounting of food had the poorest weight loss maintenance. Both RRV and delayed discounting are factors that impact weight loss and weight loss maintenance; RRV examines the desire for or value of food, while delayed discounting examines the individual value of the long-term benefit of the decisions regarding food choices. When examined together, these behavioral economic principles can present a clearer perspective of the individual choice making process involved in food decisions, and lead to better health related behavior outcomes.

Studies on Discounting and Obesity

Multiple studies have examined the relationship between discounting and BMI. A 2008 study of college students by Weller, Cook, Avsar, and Cox showed a greater discounting rate among those women with BMI in the obese range; however, Sweeney and Culcea (2017) note that temporal perspective can be changed, unlike temperament or conscientiousness. In the Hall and Fong (2003) intervention study in which participants were led to think about the benefits of

long-term exercise, they showed a significant increase in physical activity over a one month period. Daniel, Stanton and Epstein (2013a, 2013b) found that Episodic Future Thinking lowers delay discounting during decision making, while contributing to healthier decision making. Dassen, Jansen, Nederkoorn, and Houben. (2016) conducted a 2 (future vs past thinking) by 2 (food vs non-food related thoughts) between-subject design to compare EFT and past related imagery in reducing discounting and caloric intake. The content of EFT was either unrestricted, or food-related, and snacks were freely available; results found that EFT is further enhanced when dietary outcomes are tied to future behavioral events (such as dinner with friends or cooking an elaborate meal). The Sweeney and Culcea meta-analysis review (2017) of studies on temporal perspectives and health-related outcomes showed an association between temporal perspective and health-related outcomes, providing support for a future temporal perspective being tied to a healthier BMI, healthier eating, and increased exercise.

The Present Study

Multiple studies have looked at delayed discounting and the influence it has on health-related decisions. Past research has also begun to examine the effect that a future temporal perspective has on discounting and health related outcomes. Few studies have combined a future temporal perspective and discounting in conjunction with different contextual variables, such as motivating operations, as well as compound stimuli and outcomes. A compound stimulus is one in which two or more stimuli are presented simultaneously, and compound outcomes examine decisions made in the moment and over a length of time. This study used a temporal discounting task to look at delayed discounting across participants current weight and hypothetical weight gain of 75 pounds. Weight loss was evaluated across successively greater lengths of time, utilizing differing contextual variables as motivating operations, which were the current weight

or hypothetical weight gain of 75 pounds of participants. Each participant completed two surveys including hypothetical discounting questions, one based on the participant's current weight and preferences and the second based on a 75 weight increase. Questions were presented in the following format: “Would you rather choose to eat food A for X day(s) and lose Y lbs or choose to eat B food and lose 0 lbs?”, with Food A being a low calorie/low preferred food and Food B being a medium calorie/more preferred food. The value for X was number of days, and ranged from 1 to 600, and the Y value was pounds lost. Pounds lost ranged from 0.01 to 0.1 multiplied by X, and calculated accordingly. Each survey presented the same menu options; participants were directed to incorporate their own preferences as appropriate to the categories to make the choices. This study sought to expand on prior research on behavioral health outcomes and discounting by examining different contextual variables as motivating operations, such as the weight of the participants, and studying how the variables affected the current and future temporal discounting of the participants.

CHAPTER 2

METHOD

Participants

Demographics for participants are summarized in Table 1. 39 adults aged 26 to 64, with a mean age of 37, median and mode age of 34, agreed to complete this study; all methods used were approved by the Human Subjects Committee at Southern Illinois University. 31 participants were female and 8 were male; the mean weight of participants was 211.7 pounds, with a median weight of 213.5 pounds and a mode of 240. The author recruited participants via email, social media, or in person, asking all potential participants if they would be willing to complete a 15-30 survey in an online format via Google Forms Survey. For those that expressed interest in moving forward, the author answered all questions relating to the survey and the study and provided the Google Forms link to the survey. The survey link opened to a mandatory consent document; at the completion of the consent, subjects were required to click "Continue" in order to proceed through the survey; they also had the option to opt out at this time. Following consent, they were presented with a short demographics form, although they were not required to answer all questions to proceed through the survey, followed by the two discounting questionnaires (see below). Participants had the option to quit at any point in time while taking the survey.

Materials

A Google Forms Survey link which included all materials (consent, demographics, and two discounting surveys) was provided to each participant after initial consent was given.

Following informed consent via the Google Forms and obtaining demographics, both discounting surveys were accessible. A statement was placed at the top of Survey 1 that read:

> *Observe the two food menus below. Examples of foods that fit into each of the categories are provided; however, this list is not exhaustive. If you have other preferred foods, feel free to consider them as they would logically appear in each of the below categories.*
>
> *Menu A (Low calorie foods) Salad with no dressing, Plain fresh vegetables, Plain fresh Fruit, Veggie burger with no bun or condiments, Plain baked chicken breast*
>
> *Menu B (Medium calorie foods) Salad with dressing, Vegetables with dressing or cheese, Fruit with dip, Toast with cream cheese or peanut butter, Scrambled eggs with cheese*
>
> *Imagine the choices below were real and you were at your current weight. Please select which menu you would choose for each of the questions.*

A statement was placed at the top of Survey 2 that read:

> *Observe the two food menus below. Examples of foods that fit into each of the categories are provided; however, this list is not exhaustive. If you have other preferred foods, feel free to consider them as they would logically appear in each of the below categories.*
>
> *Menu A- (Low calorie foods) Salad with no dressing, Plain fresh vegetables, Plain fresh Fruit, Veggie burger with no bun or condiments, Plain baked chicken breast*

Menu B-(Medium calorie foods) Salad with dressing, Vegetables with dressing or cheese, Fruit with dip, Toast with cream cheese or peanut butter, Scrambled eggs with cheese

Imagine the choices below were real and you weighed an additional 75 pounds more than you currently weigh. Please select which menu you would choose for each of the questions.

The surveys then offered participants hypothetical choices in two different categories, A and B, which included low and medium calorie foods. For each survey, the participants were provided with a choice between two alternatives, one of which imposed a delayed consequence and the other with a delay having no consequence. Different contextual variables were utilized in each survey; the contextual variable that varied for each survey was the weight of the participant. In Survey 1, the participant was directed to answer using their current weight, while Survey 2 directed them to base their responses from an additional hypothetical 75 pound weight gain. In Survey 1, each question was presented with the following format:

Would you rather choose to eat food A for X day(s) and lose Y lbs or choose to eat B food and lose 0 lbs?

This study examined temporal delayed discounting, utilizing differing contextual variables, looking at the current and hypothetical weight of the participants. Survey questions were calculated in the following manner: the number of days to eat food A (low calorie menu) was presented in ascending order, with values 1, 5, 10, 25, 100, 300, and 600. The number of pounds lost was also presented in ascending order, with values from 0 to 60. Pounds lost (*Y)* was calculated by multiplying the number of days (*X*), by the following values: 0, 0.01, 0.02, 0.03,

0.04, 0.05, 0.06, 0.07, 0.08, 0.09, and 0.1. For Survey 2, questions were presented in the same format; however, participants were given the following instruction:

> *Imagine the choices below were real and you weighed an additional 75 pounds more than you currently weigh. Please select which menu you would choose for each of the questions.*

The values for used for *X* and *Y* were the same as those used in Survey 1 and the presentation of alternatives was counterbalanced across participants to address potential sequence effects. At each breakpoint when *Y* reset to 0, across both surveys, menu options were repeated at the top, as both surveys began a new page at these points. On Survey 2, the additional instruction

> *Imagine the choices below were real and you weighed an additional 75 pounds more than you currently weigh. Please select which menu you would choose for each of the questions.*

was included again, to address blind clicking due to fatigue effect.

Data Analyses

Statistical and visual analyses were conducted at both the Individual and group participant levels. Switch points were calculated for each of the delays (X). A switch point was defined as the median value between the values in which the participant selected the choice with established consequence over the choice without an established consequence. Stated another way, switch points were the median value in which participants chose the healthier of the two food options that resulted in weight loss. The following formula was used to calculate the proportional values for the switch points:

$$PV = Sw \div X$$

Sw represents the switch point and *X* represents the value of pounds lost in delay. Proportional values for switch points were calculated by dividing each switch point by the maximum amount of weight lost for each delay. Proportional values ranged from 0 to 1 for the switch points. The proportional value was then used to calculate the area under the curve (AUC). AUC values were calculated using the formula by Myerson, Green and Warusawitharana (2001):

$$\text{AUC} = (X\square - X\square) \times [(Y\square + Y\square) \div 2]$$

Smaller AUC values are indicative of greater discounting or less healthy responding by the participant, whereas larger AUC values are indicative of less discounting or healthier responding by the participant. Additionally, small AUC values are considered to be representative as a measure of greater impulsivity, whereas larger AUC values are considered to be representative of less impulsivity.

Exponential functions were fit to both data sets, and provided the best fit for both conditions. The formula used was:

$$V = Ae - sD$$

CHAPTER 3

RESULTS

Figure 1 shows a scatter plot that provides the discounting curve for the current weight of each participant. Mean proportional switch values were calculated at time blocks of 1, 5, 10, 25, 100, 300, and 600 days for each participant. A visual analysis of the data show that the greatest proportional switch value occurred at proportional delay 0.0 and the lowest at 0.5 for the normal weight condition, indicating that participants switched from losing weight or maintaining weight at proportional delay 0.5, or day 100. Normal weight participants chose to eat the food that resulted in maintaining weight at day 300, although at proportional delay 1, or day 600, that switch value changed to .75, indicating participants were willing to eat the foods required to lose weight. The visual analysis of the switch values show that the highest switch value of 1.0 occurs at delay 0.0, dropping to 0.95 at delay .01. The next drop in proportional switch occurs at delay .2, when the proportional switch value for normal weight is .75. At delay .5, the switch value is .65, and normal weight condition shows a marked increase in switch values, as proportional delay 1.0 switch value is .75. Participants in the normal weight condition appeared more impulsive per visual analysis, as they discounted at a higher rate overall. The R^2 score from the exponential decay for survey 1 was.9455, and was the best fit for the data.

Figure 2 shows the results of the 75 pounds more weight condition. A visual analysis of figure 2 data shows that the greatest proportional switch value occurred at proportional delay 0.0, and the lowest at delay 0.2 and 1.0. The proportional switch values for delays 1.0 and 0.2 were 0.75, indicating that participants were willing to eat the foods required to lose weight at day 1 and day 600. The visual analysis of the switch values shows that the highest switch value of 0.95 occurs at delay 0.0, dropping to 0.75 at delay 0.2. At delay 0.5, the proportional switch value

increases to 0.85, while it decreases to 0.75 once more at delay 1.0. Participants in the 75 pounds more weight condition remained fairly stable in switch value scores overall, and remained willing to eat the food required to lose weight. The R^2 scores from the exponential decay for survey 2 was .7666, and was the best fit for the data.

Figure 3 shows the results of the area under the curve (AUC) analysis. A paired samples t-test was conducted using scores from the two conditions. Through visual analysis, participants are more impulsive in the normal weight condition than the 75 pound condition. However, the normal weight condition (M = 38.53, SD = .2912) was not significantly different than the hypothetical weight gain condition (M = 34.77, SD = .3027); $t(38) = 1.011$, p = .3186. . A larger population may present a statistically significant result between conditions.

CHAPTER 4

DISCUSSION

The present study examined future temporal discounting and health related behaviors by looking at eating behaviors based on current and hypothetical future weight of participants. This discounting study was used to examine how participants would differentially discount weight loss in a temporal discounting study, utilizing differing motivating operations. The results of the study, while not statistically significant, did show a visually significant difference between the two weight conditions of current weight and projected weight of 75 pounds more. In the normal weight condition, participants discounted delays at a higher rate than the hypothetical 75 pound weight condition. Proportional delay 0.5, or day 100, had a switch value of 0.65 for normal weight, while in the 75 pound more condition, the switch value was 0.85. This indicates that in the normal weight condition, participants were not willing to eat the foods required to lose weight at delay 0.5, while in the 75 pound weight condition, participants were willing to eat the foods required to lose weight. However, due to the sudden, sharp increase near the end of the normal weight condition, it appears that in this condition, participants are more impulsive. As they neared the end of the condition, and approached a significant amount of available weight loss, participants appeared to shift their preference to the larger/later reward. Although there was a sharp increase in the hypothetical 75 pound more condition at proportional delay 0.5, overall, the switch values decreased across delays, indicating this condition was less impulsive overall. Taken together, the results suggest that individuals were more likely to engage in healthy eating behaviors when they weighed 75lbs more than at their current weight.

Impulsivity encompasses lack of planning, lack of regard for future consequences, and rapid responding to internal and external stimuli (Hamilton et al., 2015), as well as encompassing

choice impulsivity, which refers to making impulsive decisions and tendencies to select smaller-sooner rewards over larger-later, which may relate to difficulties in delaying gratification or exerting self-control (Fineberg et al., 2010 This study examined impulsivity and planning for future health related consequences by looking at increasing amounts of weight loss over time, and examining participants menu choices at their current weight and at a hypothetical gain of 75 pounds. At normal weight, participants appeared more impulsive, as they chose the menu which would not result in weight loss, appeared to exert less self-control, and appeared to focus less on future consequences. However, as the larger reward (larger weight loss) approached, the normal weight loss condition appeared to abruptly switch to focusing on the larger reward (weight loss), as it appeared more attainable.

MacKillop (2013) refers to "impulsive discounting" in terms of repeated behavioral patterns of overestimating the present rewards at the very high cost of future outcomes and states addictive disorders, such as drug abuse, may be explained by impulsive discounting. These consistent struggles with impulsive discounting may be one explanation for self-control failures in addictive disorders, such as binge eating, drug abuse, or gambling. Some examples of self-control failures given are preference reversals (an individual changing their mind regarding one preference over another), as can be seen in Figure 1, the normal weight condition. In Figure 1, participants initially preferred the menu that would not result in weight loss; however, as the larger reward/larger weight loss approached, an abrupt and rapid preference reversal can be seen.

This study expands on previous research on future temporal discounting and health related behaviors by examining differing contextual variables, such as motivating operations. Carstensen, Isaacowitz and Charles (1999) conducted a study examining social goals and the perception of time, and determined that the perception of time is flexible. Fung, Carstensen and

Lutz (1999) expanded upon this by including a study in Hong Kong; results were similar. Both studies suggest that temporal perspective can be broadened, and that making time open-ended can impact social decisions. In other words, when individuals perceive time in a broader spectrum, they are more likely to choose long-term goals, however, when they view time as limited, they place more value on short-term goals and immediate payoffs. Houston and Finke (2003) looked at food choices and time preference, and found that individuals with a high future discount rate eat a lower quality diet, and are less likely to use nutritional labels. De Marchi, Caputo, Nayga, and Banterle (2016), found that individuals with a high time preference discounted more heavily, and showed little interest in health claims, organic foods, or caloric content of food. Continued studies on future temporal perspective and health related decisions, as well as the impact of temporal perspective on discounting is indicated, as these studies have shown that these areas influence one another.

This study examined the effect of contextual variables on discounting health related behaviors, specifically examining a hypothetical future weight gain of 75 pounds and the impact it would have on food choices. This addressed future temporal perspectives and discounting, as prior studies have done, and sought to build upon that through the addition of contextual variables. A difference in the weight conditions may have shown a difference in future temporal discounting between individual's current weight and a gain of 75 pounds. Overall, a statistical analysis of results showed that participants held fairly constant during both weight conditions, indicating that discounting was consistent across participants and conditions. This is consistent with prior discounting research, in that, discounting levels tend to be consistent across participants. Further research is needed in the area of future temporal perspective, as studies have shown that this is what impacts individual discounting. Although the findings from this study

were not statistically significant, visual analysis suggests there were slight differences between the groups. As a difference in impulsiveness is shown in visual analysis between the two groups; further research should continue to explore the effects of future temporal discounting and different motivating operations on health related behaviors. A larger sample may show a statistically significant difference between conditions; a visual analysis does show that the current weight group appears more impulsive in food choices than the 75 pounds more group. Had results of this study shown a significant statistical difference between groups, this would have given more support to future temporal perspective as a fluid, malleable perspective that can be changed and effects discounting. Higher rates of impulsiveness in the normal weight condition may have indicated that considering the future perspective (hypothetical weight gain) impacted discounting rates for individuals. Research from prior studies does support that influencing future perspective can impact discounting; further research is needed in this area.

While this study does expand on current research in several areas, there are several limitations. First, as it was presented in an online format, participants could have succumbed to a blind clicking fatigue effect, and simply clicked. Although a page break was inserted at each breakpoint when *Y* reset to 0, and participants had to click "continue" to go to the next page, the question format remained the same across surveys. For this reason, participants may have become fatigued, and began blind clicking A or B without reading the question, thus, missing the switch point. Additionally, there was no way in which to control for time of day, background noise, participants' level of attention/distraction to task, etc, as they completed the surveys. Future studies could require participants to read each instruction separately, prior to continuing to the questions.

Next, there was no control for the relative reinforcing value of the food options presented; while participants were instructed that the list was not exhaustive, the options presented may not have been preferable to participants. Medium and low calorie food options were only included on the menu presented; no high calorie food options were presented. Some participants may have had no preference for either menu, and may have made different selections had a high calorie menu been presented as an option. For this reason, future research should include a low, medium and high calorie option. Survey questions were not randomized, which could again lead participants to blind click, believing they know the question, especially in survey 2. In total, 154 questions were presented between the two surveys; fatigue may have influenced responding as well. Future research in this area should look at randomizing questions or separating studies between sessions.

Weight loss in each delay may not have been significant enough to influence responding for participants. Participant demographics were collected, but participants were not asked if they were motivated/desired to lose weight. Individuals may have desired to gain weight (e.g., build muscle) and/or have a positive body image at their current weight. Future areas of research could focus on weight gain and score body image at current weight. Although demographics were collected, the difference between individuals of varying weight was not analyzed. Individuals with normal BMI may discount differently than those with BMI in overweight or obese ranges. Future areas of research could focus on differences between individual groups. As this study addressed hypothetical weight gain of 75 pounds, not actual weight gain, it is possible that results did not transfer to given weight. Future research could address participants who have recently gained weight, or are attempting to lose weight- for example, those who have recently given birth or joined a gym.

The current study aimed to evaluate the effects of contextual variables on health related behavior. The results showed that in a normal weight condition, participants may be more impulsive and less likely to make long-term, healthy food choices in order to lose weight. This may have implications for the healthcare and weight industry- to target weight loss, smaller-sooner rewards may be more effective. This is an important area to continue to study to gain a greater understanding of how to change long-term health-related behaviors and outcomes.

Table 1.

Participant Demographic information

		n	%
Age	21-29	9	23
	30-39	19	49
	40-49	6	15
	50-59	3	8
	>60	2	5
Gender	Female	31	79
	Male	8	21
Race	Caucasian	34	87
	African American	4	10
	Prefer not to answer	1	3
Income	<30,000	13	33
	30,000-39,000	6	15.3
	40,000-49,000	3	8
	50,000-59,000	4	10.2
	60,000-69,000	4	10.2
	<70,000	6	15.3
	Prefer not to answer	3	8
BMI	Underweight <18.5	0	0
	Normal 18.5-24.9	8	20
	Overweight 25-29.9	7	18
	Obese >30	23	59
	Not reported	1	3

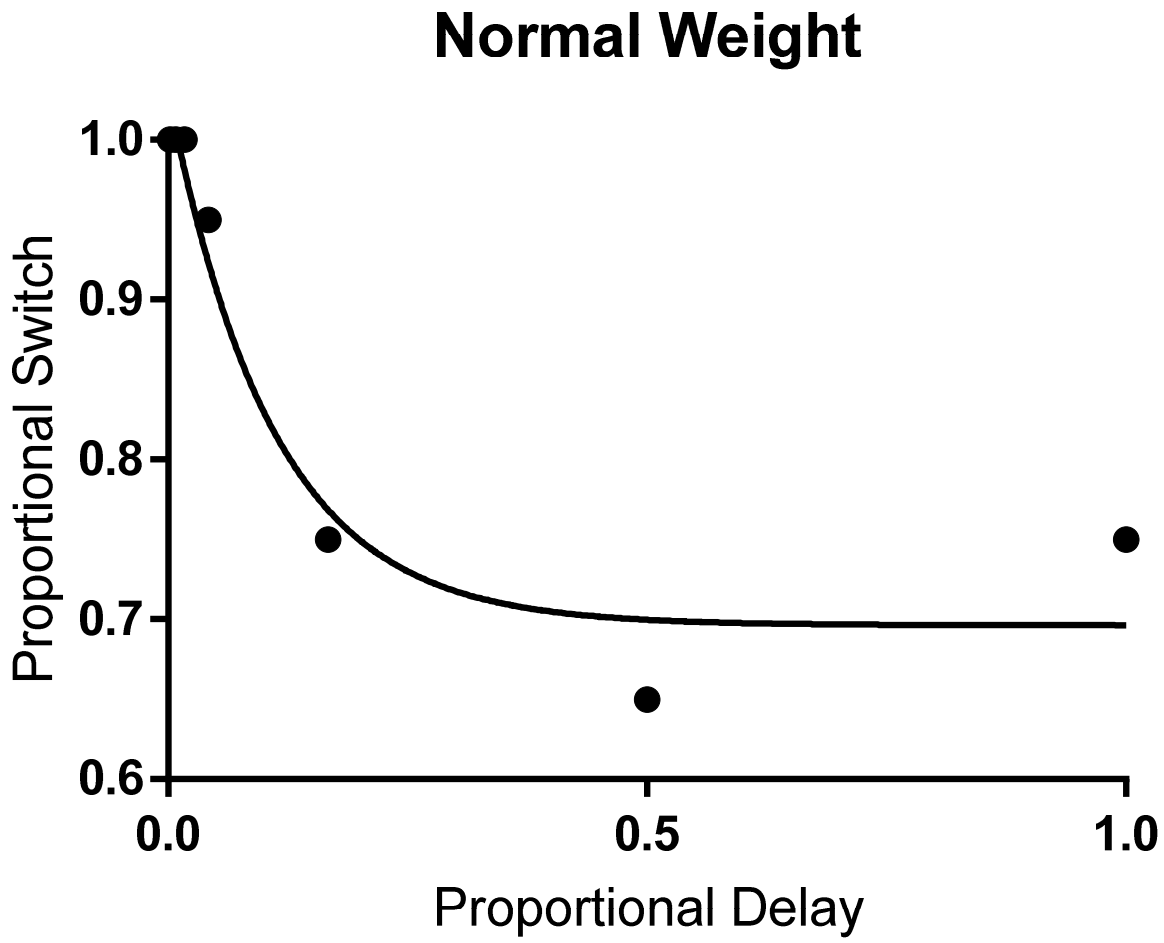

Figure 1. Normal Weight: Exponential decay function was best fit: R-square = .9455

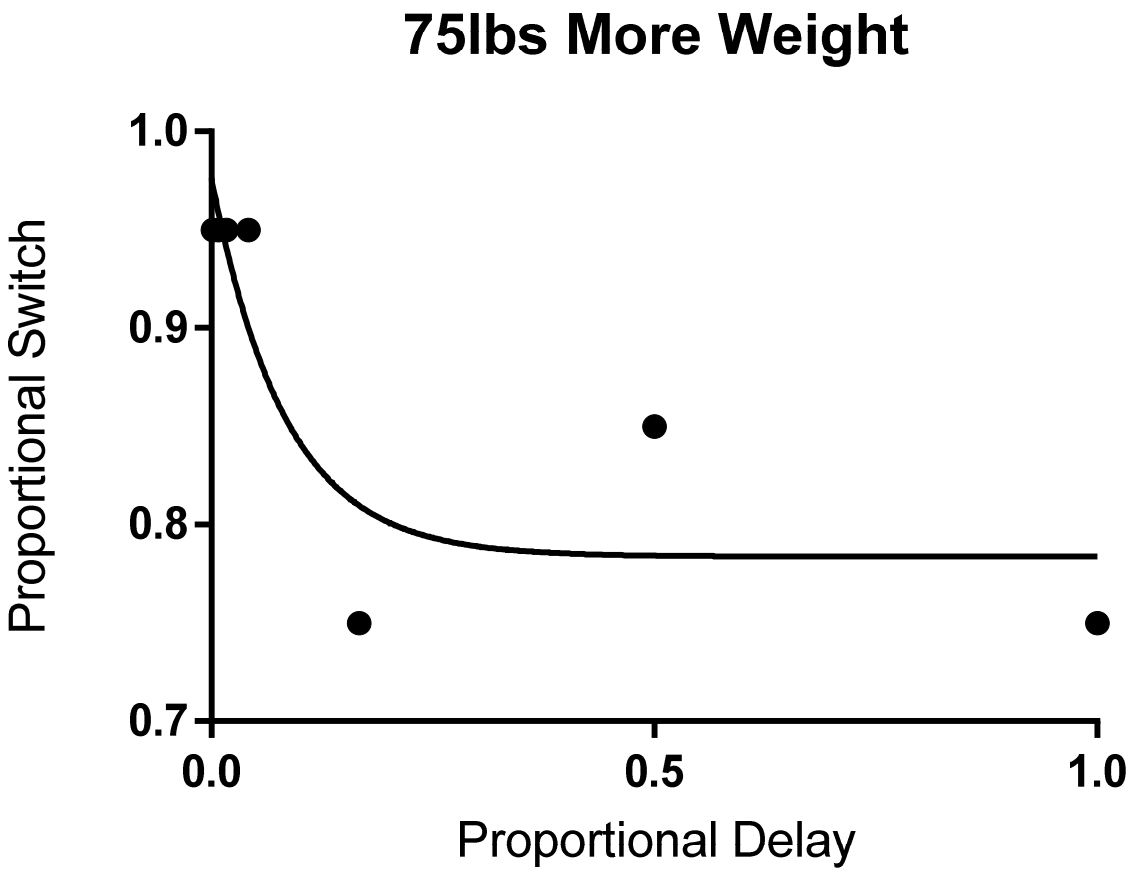

Figure 2. 75lbs more Weight: Exponential decay function was best fit: R-square = .7666

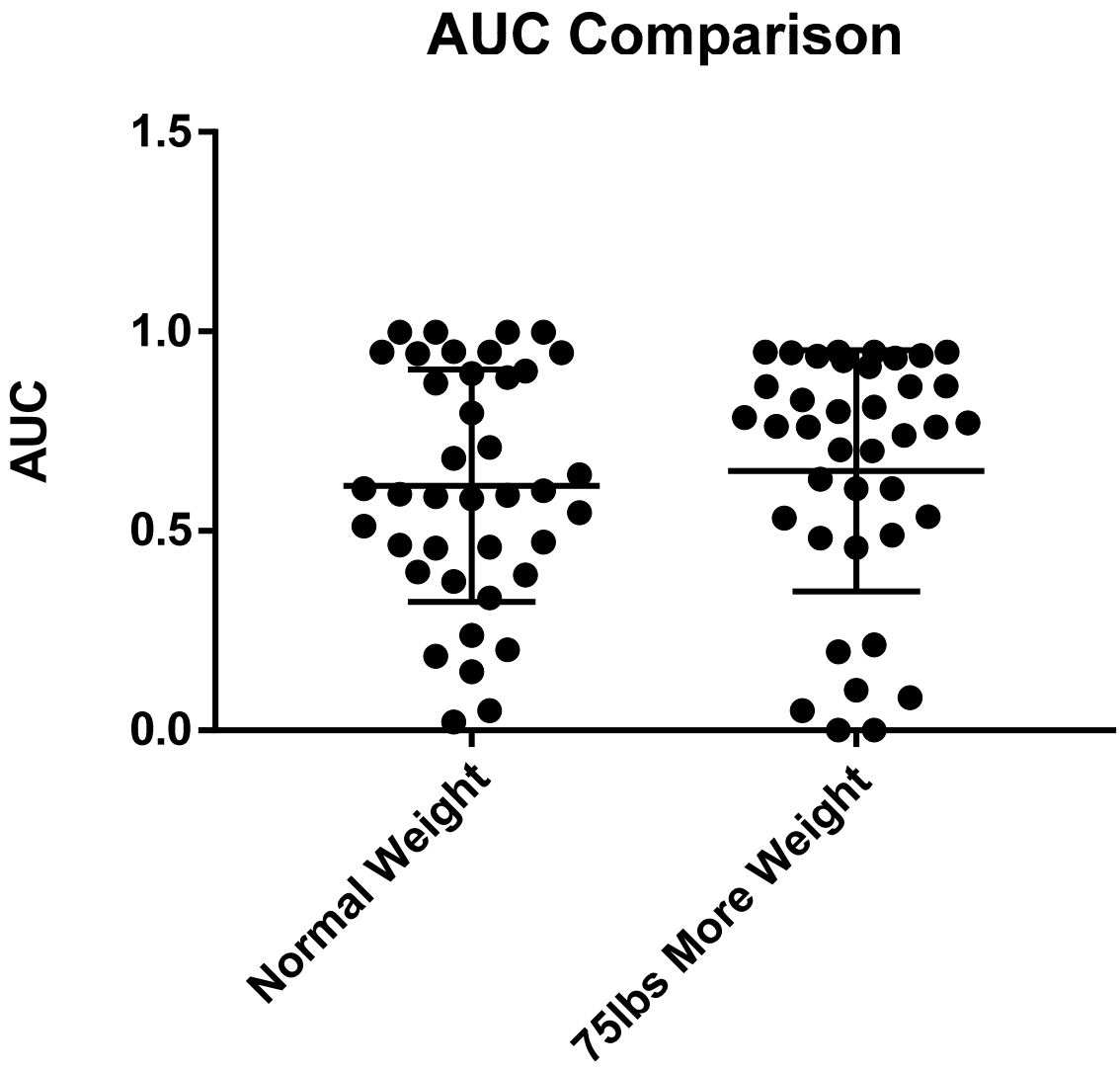

Figure 3. AUC comparison of conditions

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APPENDICES

Appendix A: Discounting Surveys

Survey 1
Observe the two food menus below. Examples of foods that fit into each of the categories are provided; however, this list is not exhaustive. If you have other preferred foods, feel free to consider them as they would logically appear in each of the below categories.

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit
Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Imagine the choices below were real and you were at your current weight. Please select which menu you would choose for each of the questions. * Mark only one oval.

Would you rather choose to eat food A for 1 day and lose 0 lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.01lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.02lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.03lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.04lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.05lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.06lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.07lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.08lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.09lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.1lbs or choose to eat B food and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit
Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Would you rather choose to eat food A for 5 days and lose 0lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.05lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.1lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.15lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.2lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.25lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.3lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.35lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.4lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.45lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.5lbs or choose to eat B food for 5 days and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit
Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Would you rather choose to eat food A for 10 days and lose 0lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.1lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.2lbs or choose to eat B food for 10 days and lose 0 lbs?

Would you rather choose to eat food A for 10 days and lose 0.3lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.4lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.5lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.6lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.7lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.8lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.9lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 1lbs or choose to eat B food for 10 days and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Would you rather choose to eat food A for 25 days and lose 0lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 0.25lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 0.5lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 0.75lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 1lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 1.25lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 1.5lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 1.75lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 2lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 2.25lbs or choose to eat B food for 25 days and lose 0 lbs? A or B

Would you rather choose to eat food A for 25 days and lose 2.5lbs or choose to eat B food for 25 days and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Would you rather choose to eat food A for 100 days and lose 0lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 1lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 2lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 3lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 4lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 5lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 6lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 7lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 8lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 9lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 10lbs or choose to eat B food for 100 days and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Would you rather choose to eat food A for 300 days and lose 0lbs or choose to eat B food for 300 days and lose 0 lbs? A or B

Would you rather choose to eat food A for 300 days and lose 3lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 6lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 9lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 12lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 15lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 18lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 21lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 24lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 27lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 30lbs or choose to eat B food for 300 days and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit
Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Would you rather choose to eat food A for 600 days and lose 0lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 6lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 12lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 18lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 24lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 30lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 36lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 42lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 48lbs or choose to eat B food for 600 days and lose 0 lbs? A or B

Would you rather choose to eat food A for 600 days and lose 54lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 60lbs or choose to eat B food for 600 days and lose 0 lbs? A or B

Appendix B

Survey 2

Observe the two food menus below. Examples of foods that fit into each of the categories are provided; however, this list is not exhaustive. If you have other preferred foods, feel free to consider them as they would logically appear in each of the below categories.

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Imagine the choices below were real and you weighed an additional 75 pounds more than you currently weigh. Please select which menu you would choose for each of the questions. * Mark only one oval.

Would you rather choose to eat food A for 1 day and lose 0 lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.01lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.02lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.03lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.04lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.05lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.06lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.07lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.08lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.09lbs or choose to eat B food and lose 0 lbs? A or B
Would you rather choose to eat food A for 1 day and lose 0.1lbs or choose to eat B food and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Imagine the choices below were real and you weighed an additional 75 pounds more than you currently weigh. Please select which menu you would choose for each of the questions. * Mark only one oval.

Would you rather choose to eat food A for 5 days and lose 0lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.05lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.1lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.15lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.2lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.25lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.3lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.35lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.4lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.45lbs or choose to eat B food for 5 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 5 days and lose 0.5lbs or choose to eat B food for 5 days and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit
Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Imagine the choices below were real and you weighed an additional 75 pounds more than you currently weigh. Please select which menu you would choose for each of the questions. * Mark only one oval.

Would you rather choose to eat food A for 10 days and lose 0lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.1lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.2lbs or choose to eat B food for 10 days and lose 0 lbs?
Would you rather choose to eat food A for 10 days and lose 0.3lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.4lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.5lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.6lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.7lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.8lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 0.9lbs or choose to eat B food for 10 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 10 days and lose 1lbs or choose to eat B food for 10 days and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Imagine the choices below were real and you weighed an additional 75 pounds more than you currently weigh. Please select which menu you would choose for each of the questions. * Mark only one oval.

Would you rather choose to eat food A for 25 days and lose 0lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 0.25lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 0.5lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 0.75lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 1lbs or choose to eat B food for 25 days and lose 0 lbs? A or B

Would you rather choose to eat food A for 25 days and lose 1.25lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 1.5lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 1.75lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 2lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 2.25lbs or choose to eat B food for 25 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 25 days and lose 2.5lbs or choose to eat B food for 25 days and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Imagine the choices below were real and you weighed an additional 75 pounds more than you currently weigh. Please select which menu you would choose for each of the questions. * Mark only one oval.

Would you rather choose to eat food A for 100 days and lose 0lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 1lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 2lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 3lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 4lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 5lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 6lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 7lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 8lbs or choose to eat B food for 100 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 100 days and lose 9lbs or choose to eat B food for 100 days and lose 0 lbs? A or B

Would you rather choose to eat food A for 100 days and lose 10lbs or choose to eat B food for 100 days and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese
Imagine the choices below were real and you weighed an additional 75 pounds more than you currently weigh. Please select which menu you would choose for each of the questions. * Mark only one oval.

Would you rather choose to eat food A for 300 days and lose 0lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 3lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 6lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 9lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 12lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 15lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 18lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 21lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 24lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 27lbs or choose to eat B food for 300 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 300 days and lose 30lbs or choose to eat B food for 300 days and lose 0 lbs? A or B

Menu A (Low calorie foods) Salad with no dressing Plain fresh vegetables Plain fresh Fruit Veggie burger with no bun or condiments Plain baked chicken breast

Menu B (Medium calorie foods) Salad with dressing
Vegetables with dressing or cheese Fruit with dip
Toast with cream cheese or peanut butter Scrambled eggs with cheese

Imagine the choices below were real and you weighed an additional 75 pounds more than you currently weigh. Please select which menu you would choose for each of the questions. * Mark only one oval.

Would you rather choose to eat food A for 600 days and lose 0lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 6lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 12lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 18lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 24lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 30lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 36lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 42lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 48lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 54lbs or choose to eat B food for 600 days and lose 0 lbs? A or B
Would you rather choose to eat food A for 600 days and lose 60lbs or choose to eat B food for 600 days and lose 0 lbs? A or B

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Thesis Title:
Evaluating The Effect of Contextual Variables on Discounting of Health Related Behaviors

Major Professor: Dr. Mark Dixon