

THE ROLE OF GLUCOSE IN RESISTANCE TO
PERSUASION

By

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PERSUASION

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CHAPTER I

INTRODUCTION

Imagine the following scenario that is familiar to many parents. After a long day at work, a father is approached at the door by his incessant teenage daughter who is adamant about attending the latest rock band's concert. After numerous attempts of begging and pleading, the father finally says "I just got home! I've had a long day, I'm exhausted. Let's talk about this after I get some dinner and rest a bit."

The above scenario is an example of a person's attempt to replenish his resources to resist a persuasive influence. Resisting persuasion is an effortful task that requires willpower (Burkley, 2008). By waiting until after dinner (or taking a break from the negotiations) to discuss the daughter's request, the father is giving himself the opportunity to rest and regain his willpower.

Persuasion is an everyday occurrence. Individuals are constantly bombarded with persuasive influences, from educational systems to mass media to relationships. Many of the influences people encounter are good; however, some are bad. For example, adolescent teens experience peer pressure to smoke, athletes must overcome the influence to take performance enhancing drugs, and consumers are enticed to engage in impulse buying. Given that some persuasive influences are bad, it would benefit society to develop ways to help people resist these harmful influences.

Increasing resistance to persuasive influences depends on how resistance was decreased in the first place. Early cognitive response explanations for decreased resistance included limited cognitive resources to evaluate and reject a message as well as the impairment of generating counterarguments (Gilbert, 1991; Wheeler, Brinol, & Hermann, 2007).

However, recent research suggests one reason why resistance is decreased is because of self-control fatigue (Burkley, 2008). In addition to fatigue, current work on self-control has shown that self-control resources can be replenished using various methods such as physical exercise, a regular program of academic study, monitoring posture, recording eating habits, consuming glucose (Gailliot & Schmeichel, 2007; Muraven, Baumeister, & Tice, 1999; Oaten & Cheng, 2006a; Oaten & Cheng, 2006b). The purpose of the present study is to take what is known about self-control replenishment and bridge this with the area of persuasion, showing that by replenishing self-control resources one can increase resistance to persuasion.

CHAPTER II

REVIEW OF LITERATURE

Self-control as a Limited Resource

Self-control is the ability to alter one's behaviors, responses, urges, and emotions (Gailliot et. al., 2007). This altering of responses is an effortful task and is dependent on the individual's available resources to make the necessary changes in behavior. Research has shown that self-control acts as a limited resource, mirroring a muscle, such that with continued use it is worn down and is less effective over time (Muraven, Tice, & Baumeister, 1998). Consider the traditional concept of willpower, that implies a source of strength or energy the self depends on in order to produce the altered responses needed. A dieting individual who has enough self-control to resist eating a chocolate chip cookie will fare better than the individual who has none or limited self-control. Furthermore, one of the most cited scientific explanations of self-control failure is based on the strength model, which states that when people have to exert self-control for a specific task, they tend to do more poorly on subsequent self-control tasks due to this limited resource (Muraven et. al., 1998). For example, Muraven et al. (1998) demonstrated that participants who were asked to refrain from showing emotions during a humorous video had poorer performance on a subsequent self-control task (i.e., holding a hand grip for as long as possible).

Those individuals who were “depleted” of their self-control resources during the video lacked the resources needed to perform efficiently on the subsequent task. When people are aware of an upcoming demanding task, they will conserve their (limited) resources to more effectively contribute to this demanding task.

Replenishing Self-control Resources

Another aspect of the strength model is that self-control resources can be improved. Just as a muscle is strengthened through rest and exercise, self-control can be strengthened through continual practice and rest. Rest seems to be the most common route to replenishing self-control, such that individuals perform better on self-control tasks after a good rest (Smith, 2002). This concept also highlights the fact that an individual’s self-control resources are reduced as the day continues. Diets are more often broken in the evenings compared to the morning, impulsive crimes are committed more often during the evening hours, and alcohol binges are more likely to occur in the evening hours (Baumeister, Heatherton, & Tice, 1994; Baumeister, Schmeichel, & Vohs, 2007). These patterns of behavior would suggest that a person begins the day with more than enough resources to exert self-control when needed, but as the day wears on those resources are significantly reduced.

Various routes to replenishment have been tested and provide promising results. Following the muscle analogy, research has shown that repeated exercise of self-control improves self-control strength over time (Muraven et. al., 1999). Over a two week period, participants who practiced one of three simple self-control exercises (monitoring and improving posture, regulating mood, or monitoring and recording eating) showed significant improvement in self-control capacity compared to a no-exercise control group.

Another study found that repeated practice of self-control via a program of academic study could also improve self-control strength (Oaten & Cheng, 2006b). Finally, positive emotion has also been found to improve self-control performance. In a series of studies, participants who watched a humorous video clip after completing a thought suppression task improved their performance on a subsequent task of self-control (i.e., handgrip task; Muraven et. al, 2006). The results showed that positive affect increased an individual's performance on subsequent self-control tasks after previously completing a depleting task.

Following the establishment of the strength model, research moved toward finding self-control's energy source to further the study of replenishment of resources. Recently, glucose has received increasing attention as the energy source because of its influential role in brain activity (Gailliot et al., 2007). The brain's activities have been found to rely heavily on glucose as a primary energy source for specific, controlled executive processes (Benton et. al., 1994; Benton, 1990; Laughlin, 2004). Altering one's behavior relies on controlled, effortful processes and therefore should also be highly susceptible to fluctuations in glucose. Indirect and direct evidence suggests self-control failure is linked to fluctuations in glucose. For example, self-control failure is a leading cause of criminal behavior and criminality has been linked to decrements in glucose (Bolton, 1979; Gottfredson & Hirschi, 1990; Virkkunen & Huttunen, 1982). More directly, laboratory tests of self control (e.g., Stroop task, thought suppression, emotion regulation) have shown that acts of self-control reduced blood glucose levels. Lab tests also have shown that low blood glucose levels predicted poor performance on subsequent self-control tasks, but consuming a glucose drink eliminated the effects of depletion (for

review see Gailliot et. al., 2007). Acts of self-control reduce the available amount of resources necessary for further self-control tasks, but restoring glucose in the blood seems to be the leading route to replenishing self-control fatigue.

Self-control and its Influence on Resistance to Persuasion

Research in the area of persuasion and attitude change has established a link between self-control and resistance to persuasion (Burkley, 2008). Intense indoctrination such as hazing by fraternities, interrogations by police, and brainwashing by cult leaders are just a few examples that highlight the “wearing down” process that takes place in order to influence individuals’ attitudes (Hunter, 1960; Taylor, 2004). During this wearing down process individuals can be deprived of food and water or fatigued in other ways that will limit their resistance (Baron, 2000). Empirical evidence indicating the link between self-control and resistance to persuasion was shown with participants who rated advertisements more favorable towards the end of a series compared to ones shown earlier in the series (Knowles & Linn, 2004). These results suggest that individuals lost their ability to resist persuasion due to the repeated appeals, mirroring self-control depletion effects. These results suggest that lack of self-control resources influences the individuals’ ability to resist persuasive appeals.

The strongest evidence for a link between self-control and resistance to persuasion was demonstrated by Burkley (2008). Self-control depletion was found to reduce participants’ ability to generate counterarguments in response to weak messages (Wheeler et. al., 2007). This work provides the first demonstration of self-controls’ effect on cognitive thoughts. This study showed that self-control depletion reduces the ability to engage in subsequent self-control tasks and leads to increased persuasion, particularly

under effortful resistance. Furthermore, the results of this work demonstrate that self-control plays a key role in resistance to persuasion, in that resistance to persuasion both requires and consumes self-control resources.

Present Research

It has been suggested that glucose could be the underlying source behind self-control's resources. As previous research has linked low blood glucose to reduced self-control (Gailliot et. al., 2007), and reduced self-control resources to susceptibility to persuasion (Burkley, 2008), the current research proposed (a) a link between glucose and persuasion and (b) provide further evidence that self-control relies on glucose as a limited energy source. More specifically, I propose to demonstrate an individual's susceptibility to persuasion is dependent on glucose. I assert that glucose will increase resistance to persuasion by way of replenishing self-control resources in previously depleted individuals. It was predicted that individuals whose self-control resources were replenished via glucose would show greater resistance to persuasive influences compared to those who were given a placebo. Thus, significant main effects of glucose and depletion were expected contingent on the interaction between glucose and depletion.

CHAPTER III

METHODOLOGY

Participants

Seventy-nine undergraduate students (34 women) enrolled in introductory psychology at Oklahoma State University ranging from 18 to 24 years of age ($M = 19.09$, $SD = 1.25$) participated in the study for course credit. Participants were randomly assigned to one of four conditions in a 2 (self-control: depletion vs. control) \times 2 (drink: glucose vs. placebo) factorial design. Participants were instructed not to eat 3 hours prior to arriving at the experiment. This was done because glucose levels fluctuate regularly throughout the day due to food consumption; and by requiring participants to refrain from eating prior to the experiment it assures that glucose levels will be stable prior to the experiment. The primary dependent variable was level of agreement with a persuasive essay. Nine participants were excluded from all analyses because they had either eaten less than an hour prior to the session, or did not follow directions completely (e.g., were using cell phone, reading personal papers, etc.); leaving 70 participants for all final analyses.

Procedure and Materials

Self-control phase. Participants were run individually and were informed that the study sought to investigate task performance on cognitive measures. First, participants completed a video task which served as the manipulation of self-control exertion.

Participants then watched a 5 minute video (without sound) of a woman talking (modified from Gilbert, Krull, & Pelham, 1988). In the bottom right corner of the screen, one-syllable words (e.g. hat, car, dog) will appeared for 10 seconds individually.

Participants were randomly assigned to the self-control condition. Participants assigned to the depletion condition were instructed to focus only on the woman's face and refrain from looking at the words at the bottom of the screen. If they happened to look at the words they were instructed to refocus their attention back to the woman's face as quickly as possible. Previous research shows that this act requires self-control (Gailliot et. al., 2007). Participants in the self-control control condition were instructed to watch the video as they would normally. Immediately following the video, participants answered 3 questions about recollection of any words from the video (e.g., "How often did you look at the words in the video?", "How often did you look at the woman?", and "Do you remember any of the words from the video?"). The first 2 questions were answered on a scale that ranged from 1 (*most of the time*) to 5 (*very rarely*) for each item. The third question was answered using a simple yes or no and included follow-up probing that gave

participants the opportunity to list recalled words.

Following the video task, participants' current mood valence and arousal were assessed using the Brief Mood Introspection Scale to examine if mood had an effect on the dependent measure (BMIS; Mayer & Gaschke, 1988). The BMIS assesses current mood state by asking participants to rate how they currently feel on 16 adjectives (e.g., happy, nervous, drowsy). Previous literature has found Cronbach's alpha reliabilities for the BMIS to be quite satisfactory, ranging from .76 to .83, while 90% of marker variables on the BMIS significantly correlated with similar scales ($r = .50$) (Mayer & Gaschke, 1988). Responses were made on a scale ranging from 1 (*definitely do not feel*) to 4 (*definitely feel*) for each item.

Glucose phase. After the video task, participants were told the second part of the study would examine factors related to different tasks and food. Previous research has established that self-control relies on glucose therefore participants in the depletion condition should enter the second part of the study in a depleted state (see Gailliot et al., 2007; Study 2 & 3). After the procedures taken from Gailliot (Study 7, 2007), participants were given 14 ounces of lemonade sweetened with either sugar (glucose condition) or a sugar substitute, *Splenda* (placebo condition). The glucose drink contained approximately 140 calories, whereas the placebo contained 0 calories. Both the participants and experimenter were blind to condition. Participants consumed the drink and then completed two measures of liking for the drink that were embedded among other filler questions (e.g. "How pleasant was it for you to drink the beverage?", "How pleasant for you was the taste of the beverage?"). The measures of liking questions were answered on a scale from 1 (*very pleasant*) to 5 (*very unpleasant*) for each item.

Participants then completed personality filler questionnaires for 12 minutes to allow the glucose from the drink to metabolize (Donohoe & Benton, 1999).

Attitude phase. After 12 minutes, participants read a cover message stating that the university wanted to assess students' responses to a policy change to shorten the summer vacation to 1 month (Insko, Turnbull, & Yandell, 1974; Zimbardo, Snyder, Thomas, Gold, & Gurwitz, 1970). All participants were informed that the policy would be implemented in 5 years. Next, participants were presented with an essay containing arguments for shortening the summer vacation to 1 month (e.g., "earlier graduation for students," "reduction in student fees").

After reading the essay, participants completed a five-item semantic differential scale that assessed attitudes regarding the policy (e.g. "Please rate the University's policy on the following traits"; bad/good, unfavorable/favorable, negative/positive, against/in favor, and harmful/beneficial; Tormala & Petty, 2002). Responses were made on an 11-point scale ranging from -5 (*extremely bad*) to 5 (*extremely good*). Overall, the five questions had high internal consistency ($\alpha = .94$). All five responses were combined to obtain an overall mean composite score that served as an index of the participant's attitude toward the policy.

CHAPTER IV

FINDINGS

Manipulation check. Responses to the first 2 questions about the video task were compared to ensure that the groups were following the instructions. As predicted, participants across the two conditions appeared to be successful in following the video task instructions. Participants in the depletion group reported having looked at the words less often ($M = 4.22$, $SD = .87$) compared to the control condition ($M = 2.41$, $SD = .78$) on a scale that ranged from 1 (*most of the time*) to 5 (*very rarely*), $t(68) = -9.15$, $p < .001$, $\eta^2 = .55$. Furthermore, participants in the depletion group reported looking at the woman more often ($M = 1.11$, $SD = .32$) compared to the control condition ($M = 1.71$, $SD = .91$) on the scale that ranged from 1 (*most of the time*) to 5 (*very rarely*), $t(40.65) = 3.62$, $p < .001$, (a significant Levene's Test of equality of variances resulted in adjusted degrees of freedom), $\eta^2 = .24$. Further analysis were conducted on the last video task question to ensure groups differed in the number of words recalled. Participants in the depletion condition recalled less words ($M = 1.92$, $SD = 1.36$) compared to the control condition ($M = 5.47$, $SD = 3.26$), $t(43.63) = 5.89$, $p < .001$ (a significant Levene's Test of equality of variances resulted in adjusted degrees of freedom), $\eta^2 = .44$.

Mood. BMIS scores were compared across the depletion/control conditions to ensure that the groups did not differ in terms of their mood or arousal levels. As predicted, there were no significant differences among depletion/control conditions, $t(68) = -.25, p = .81, \eta^2 = .001$, however when comparing BMIS responses across all four groups there was significance, $F(3, 66) = 3.49, p = .02, \eta^2 = .16$. Post hoc tests revealed significant differences between depleted participants who received a placebo drink and those receiving a glucose drink ($p < .02$) with participants receiving glucose reporting higher BMIS scores ($M = 55.11, SD = 10.12$) than those receiving the placebo ($M = 47.39, SD = 7.03$). Thus, it appears there were no mood differences between the depletion/control conditions but there were mood differences between the placebo and glucose conditions.

Attitude ratings. The composite attitude score was subjected to a 2 (depletion vs. control) \times 2 (glucose vs. placebo) Analysis of Variance (ANOVA). The patterns of results are shown in Figure 2. It was predicted that individuals whose self-control resources were replenished via glucose would show greater resistance to persuasive influences compared to those who were given a placebo. Contrary to prediction, the interaction was not significant, $F(1, 66) = 1.27, p = .26, \text{partial } \eta^2 = .02$, but the pattern of means was in the predicted direction (see Figure 1).

Glucose did not significantly affect mean agreement scores of participants between conditions. Also contrary to prediction, the main effect of glucose condition was not significant, $F(1, 66) = .001, p = .98, \text{partial } \eta^2 = .001$. On average, glucose participants and placebo participants showed the same negative mean agreement with the policy change. However, consistent with predictions, the main effect of self-control condition was not significant, $F(1, 66) = 1.07, p = .30, \text{partial } \eta^2 = .02$. There was no

difference, on average, in depleted and control participants mean agreement with the policy change.

Given the predicted pattern of means, further post hoc analyses were conducted to examine simple main effects of conditions. No significant difference was found between depleted participants receiving glucose or placebo, $F(1, 66) = .643, p = .43$, partial $\eta^2 = .01$. Neither was a significant difference found between depleted nor control participants receiving the placebo, $F(1, 66) = .004, p = .95$, partial $\eta^2 = .001$.

To rule out the influence of liking for the drink, a 2 (depletion vs. control) x 2 (glucose vs. placebo) between-subjects analysis of covariance (ANCOVA) was conducted on the attitude ratings, controlling for liking of the drink. A preliminary analysis evaluating the homogeneity-of-regression (slopes) assumption indicated that the relationship between the liking for the drink and attitude ratings did not differ significantly as a function of the independent variables, $F(4, 63) = 1.18, p = .33$, partial $\eta^2 = .07$. The two-way interaction of the ANCOVA was not significant after controlling for liking of the drink ($p = .23$). Furthermore, the main effects of self-control ($p = .43, \eta^2 = .010$) and glucose condition ($p = .63, \eta^2 = .003$) were also not significant.

CHAPTER V

CONCLUSION

The present study sought to provide evidence that susceptibility to persuasion is dependent on glucose. Depleted participants given a sugar substitute did show agreement with the counterattitudinal essay as predicted, but the difference was not significant. Furthermore, depleted participants given glucose did disagree with the policy as predicted; however, control participants in this group showed surprising agreement with the policy as well. This agreement in the control group is surprising given that previous research has shown the opposite effect; therefore this effect should be further investigated (Burkley, 2008). However, the findings that was in the predicted directions give promise for future research. Although statistical significance was not met in the conducted analyses, predicted directions of the overall interaction and main effects lend support to the hypothesis that glucose increases an individual's resistance to persuasion. Overall, the present study provides a starting point for future research.

Limitations and Future Research

The present study utilized the same video task used in previous research conducted on glucose and self-control (see Gailliot, 2007; Study 1) as the primary manipulation of self-control exertion; however it is suspected that not all participants

focused on the task during the testing session. If this were the case it could lead to problematic data.

Participants in the present study were run individually in separate, closed rooms and had interaction with the experimenter only during the explaining of the consent forms and debriefing. This lack of interaction may have led to a decrease in effort as seen by the participants who were excluded from all analyses due to their lack of attention given to the video task (e.g. found text messaging, reading newspaper, etc.). It is unknown whether the previous research modeled allowed monitoring by the experimenter to assure effort was being put forth by participants. Future studies should include monitoring by the experimenter if the same self-control manipulation is utilized. An alternative and more robust self-control manipulation, such as the typing task used in previous research could also remedy this problem with its direct measurement of self-control exertion through mistakes made on the task (see Muraven et al. 2006; Study 2).

A second limitation to the present study was the slight difference in mood between groups. Mood differences were found between depleted participants receiving the sugar substitute and glucose. It is unknown why this mood difference was found in the present study and not in the previous research (Gailliot, 2007). A possible explanation for the findings could also be attributed to the previously mentioned limitation. If participants were not attending to the video task and were doing other things (as mentioned above), mood differences could be expected such that those not

attending would report higher mood scores.

Future studies should further investigate this mood difference to determine whether positive or negative affect is elicited within any aspect of the self-control video task or if lack of monitoring was the issue in the present study.

A third limitation of the present study revolved around the dependent measure. Previous research utilizing the counterattitudinal message found it to be viewed negatively by the control group (Burkley, 2008); however, this was not the case in the present study.

Ideally, participants who had not been depleted and received the placebo drink should have been against the policy change. Surprisingly, these individuals were in favor of the policy change. This suggests that the message, at least in this population, is not considered counterattitudinal. If this is the case, it could dramatically impact the results of this study, since the depletion effects assume that participants are motivated to resist the persuasive argument in the first place. In the future, the persuasive message should be administered in a pilot study to determine if the message is actually counterattitudinal and if it is not, the message will need to be altered so that it is less persuasive for this population.

Implications

Limited research has been done to investigate the links between improved self-regulation and resistance to social influence. Self-regulation failure is evident in today's society with increased debt, drug addictions, and delinquency. The present research is important because it posits the extent to which glucose may increase self-regulatory resources and in turn increases one's ability to resist social influences. The present study provides reasons for why individuals may give into negative social influences that lead to

negative outcomes. The present findings coupled with future research in this area will provide evidence and insight into ways to train individuals to self protect and guard against potentially harmful social influences.

Conclusion

The present study provides a starting point between glucose and persuasion. This avenue of resistance to persuasion has not been taken and at first glance there would not seem to be a link between glucose and persuasion. However, given the previous links between self-control and glucose, and self-control and persuasion theory would suggest a link between glucose and persuasion. The present study suggests future research should continue to explore the possibility of a link between glucose and resistance to persuasion in hopes of aiding individuals to resist the negative and/or harmful social influences experienced daily.

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APPENDIX A

Manipulation Check Questionnaire

Click the one answer that best represents your response.

Most of the time, Often, Sometimes, Rarely, Almost never

1 2 3 4 5

1. How often did you look at the woman in the video?
2. How often did you look at the words in the video?

3. Did this task require much effort?

Yes No

1 2

4. Do you remember any words from the video?

Yes No

1 2

If yes, please list them in the available space.

Measure of Liking Questionnaire

Click the one answer that best represents your response.

1. Do you like to try new beverages?

Yes No

1 2

2. How pleasant for you was it to drink the beverage?

Very Pleasant, Somewhat Pleasant, Neutral, Somewhat Unpleasant, Very Unpleasant

1 2 3 4 5

3. Did the appearance of the beverage fit the taste?

Yes No

1 2

4. How pleasant for you was the taste of the beverage?

Very Pleasant, Somewhat Pleasant, Neutral, Somewhat Unpleasant, Very Unpleasant

1 2 3 4 5

5. How would you rate the appearance of the beverage?

Good, Fair, Poor

1 2 3

APPENDIX B

Personality Questionnaire – Filler Questions

Click the one answer that best represents your response.

strongly disagree, disagree, neutral, agree, or strongly agree

1. I shy away from crowds of people.
2. Other people often look to me to make decisions.
3. In conversations, I tend to do most of the talking.
4. My life is fast paced.
5. I laugh easily.
6. I don't like to waste my time daydreaming.
7. Poetry has little or no effect on me.
8. I would rather praise others than be praised myself.
9. I'm something of a "workaholic"
10. I have trouble making myself do what I should
11. I find it easy to smile and be outgoing with strangers.
12. Sometimes I bubble with happiness.

Click the one answer that best represents your response.

Very inaccurate, moderately inaccurate, neither inaccurate nor accurate, moderately accurate, or very accurate.

13. I worry about things.
14. I make friends easily.
15. I have a vivid imagination.
16. I trust others.
17. I complete task successfully.
18. I get angry easily.
19. I love large parties.
20. I believe in the importance of art.
21. I use others for my own ends.
22. I like to tidy up.
23. I often feel blue.
24. I take charge.
25. I experience my emotions intensely.
26. I love to help others.
27. I keep my promises.
28. I am always busy.
29. I prefer variety to routine.
30. I work hard.
31. I love excitement.
32. I love to read challenging material.
33. I am always prepared.
34. I feel comfortable around people.
35. I excel in what I do.

36. I get irritated easily.
37. I talk to a lot of different people at parties.
38. I like music.
39. I stick to the rules.
40. I try to lead others.
41. I feel other's emotions.
42. I anticipate the needs of others.
43. I am afraid I will do the wrong thing.
44. I am always on the go.
45. I like to visit new places.
46. I can't stand confrontations.
47. I don't know why I do some of the things I do.
48. I seek adventure.
49. I become overwhelmed by events.
50. I dislike talking about myself.
51. I have a lot of fun.
52. I believe there is no absolute right or wrong.
53. I choose my words with care.
54. I warm up to others quickly.
55. I enjoy wild flights of fantasy.
56. I fear for the worst.
57. I avoid mistakes.
58. I sympathize with the homeless.
59. I radiate joy.
60. I panic easily.
61. I get chores done right away.
62. I dislike being the center of attention.
63. I like to solve complex problems.
64. I am easily intimidated.
65. I go straight for the goal.
66. I am easy to satisfy.
67. I try to follow the rules.
68. I make people feel welcome.
69. I like order.
70. I believe that others have good intentions.
71. I feel sympathy for those who are worse off than myself.
72. I love a change of scenery.
73. I am easily amused.

APPENDIX C

Mood Measure **Brief Mood Introspection Scale (BMIS)** **Mayer & Gaschke, 1988**

Please use the following adjectives to report how you are feeling RIGHT NOW. Please click the number that most describes the way you are feeling for each word.

1	2	3	4	5	6	7
definitely		do not		slightly		definitely
do not feel		feel		feel		feel

1. Grouchy
2. Tired (in general)
3. Gloomy
4. Happy
5. Loving
6. Calm
7. Active
8. Jittery
9. Fed up
10. Drowsy
11. Sad
12. Lively
13. Caring
14. Content
15. Peppy
16. Nervous

APPENDIX D

Summer Vacation Policy Essay

Instructions: This next task is being conducted on behalf of OSU. OSU is considering a change in their summer vacation policy and has asked the psychology department to assess students' opinions toward the policy change. You will be presented with an essay that describes the proposed change. Then you will be asked to provide your opinion of the policy through a series of questions.

The proposal that college summer vacations be shortened to one month has a solid amount of common sense. At least three major arguments convincingly show the desirability and necessity for this change. First, the current academic calendar leads to an incredible waste of resources. Under this new proposal, the college facilities would be used more fully and this would result in a reduction of costs and fees. Second, a longer academic year would permit students to graduate in three years instead of four and therefore they could begin their careers sooner. Third, this more serious approach to learning would enhance both students' own self-respect and their status in the eyes of the community.

Two of these three arguments require a closer analysis. As stated in the first argument, there is an incredible waste of resources under the present system. All the universities in the country represent approximately four hundred billion dollars of fixed investment. However, this investment is fully used for only sixty percent of the year. The three and a half months of summer vacation, plus various other breaks and holidays, all add up to nearly five months of the year, during which the greater part of the university facilities are standing idle. If General Motors closed for this long each year, their car prices would increase by twenty-five percent. There are economic facts that universities cannot escape: the cost of maintenance, the salaries of staff who must be employed for twelve months, and the capital costs of past and current building programs. Colleges cannot find places for all who want to attend, nor can they provide the facilities that all their students' need. They are in fact failing to meet the nation's needs for more and better-educated graduates. They try to meet this need by costly programs for building more classrooms, labs, and dorms, when what they already have is so often standing empty. This fact is ridiculous and it makes student and faculty desires for long vacations look like an irresponsible abuse of privilege. Furthermore, the present waste is against the students' own interests because the efficient use of college facilities would bring down the cost per semester and lead to a significant reduction in fees.

The second argument also concerns advantages for students. With a one-month summer vacation, a longer academic year could be instituted which would enable students to graduate in three years instead of four. There is an underlying anxiety about the inordinate time it takes to complete formal education in this day and age, and it is taking longer every year. According to a recent survey conducted by the University of Chicago, more and more undergraduates feel that a graduate degree is necessary for a decent career. They are troubled at the prospect of deferring the time when they can earn

a living and begin their careers, assume positions of responsibility in society, and embark on marriage and parenthood, all without financial worries. A three-year B.A. course would knock one year off this endless schooling and permit students to get out into the world sooner.

One obvious objection to this proposal is that a one-month summer vacation would prevent students from earning money and getting valuable experiences in the world. However, this financial problem would be dealt with in three ways. First, the more efficient use of college facilities would lower the total cost of the B.A. program. Second, state and federal governments, which are increasingly recognizing their responsibility for paying the cost of higher education, would be under pressure to speed up this recognition. Third, students could be eligible for interest-free loans, repayable later when a former student had a higher-paying salary, rather than a low paying summer job. As for students' wider experiences, this is something of a myth. The survey mentioned above showed that most students spend their summers in ways that have little value for broadening horizons. Indeed, they often find long vacations boring, marred by the troubles of spending too long at home. Thus, the proposal to reduce the summer vacation to one month, though radical at first sight, has outstanding advantages for the student in terms of status, expenses, and one's career.

APPENDIX E

Attitude Measure for Summer Vacation Policy

Directions: Please indicate your response to the following questions in regards to the University's shortened summer vacation policy you just read. Click the one number that best represents your response.

Please rate the University's policy on the following traits:

A) Trait : Bad –Good

-5	-4	-3	-2	-1	0	1	2	3	4	5
extremely bad		bad			neutral			good		extremely good

B) Trait : Unfavorable – Favorable

-5	-4	-3	-2	-1	0	1	2	3	4	5
extremely unfavorable		unfavorable			neutral			favorable		extremely favorable

C) Trait : Negative – Positive

-5	-4	-3	-2	-1	0	1	2	3	4	5
extremely negative		negative			neutral			positive		extremely positive

D) Trait : Against – In-favor

-5	-4	-3	-2	-1	0	1	2	3	4	5
extremely against		against		neutral				in-favor		extremely in-favor

E) Trait : Harmful - Beneficial

-5	-4	-3	-2	-1	0	1	2	3	4	5
extremely harmful		harmful		neutral				beneficial		extremely beneficial

APPENDIX F

Personality Measure of Self-Control

Directions: Please indicate your response to the following statements. Click the one number that best represents your response.

Exactly like me, A lot like me, Somewhat like me, A little like me, Not at all like me

1 2 3 4 5

1. I am good at resisting temptation.
2. I have a hard time breaking bad habits
3. I am lazy
4. I say inappropriate things
5. I never allow myself to lose control
6. I do certain things that are bad for me, if they are fun
7. People can count on me to keep on schedule
8. Getting up in the morning is hard for me
9. I have trouble saying no
10. I change my mind fairly often
11. I blurt out whatever is on my mind
12. People would describe me as impulsive
13. I refuse things that are bad for me
14. I spend too much money
15. I keep everything neat
16. I am self-indulgent at times
17. I wish I had more self-discipline
18. I am reliable
19. I get carried away by my feelings
20. I do many things on the spur of the moment
21. I don't keep secrets very well
22. People would say that I have iron self-discipline
23. I have worked or studied all night at the last minute
24. I'm not easily discouraged
25. I'd be better off if I stopped to think before acting
26. I engage in healthy practices
27. I eat healthy foods
28. Pleasure and fun sometimes keep me from getting work done
29. I have trouble concentrating
30. I am able to work effectively toward long-term goals
31. Sometimes I can't stop myself from doing something, even if I know it is wrong
32. I often act without thinking through all the alternatives
33. I lose my temper too easily
34. I often interrupt people
35. I sometimes drink or use drugs to excess
36. I am always on time

APPENDIX G

Oklahoma State University Institutional Review Board

Date: Wednesday, September 10, 2008

IRB Application No AS0858

Proposal Title: Cognitive Assessment and Taste Perception

Reviewed and Processed as: Expedited

Status Recommended by Reviewer(s): Approved Protocol Expires: 9/9/2009

Principal

Investigator(s):

Darshon Anderson
116 N. Murray
Stillwater, OK 74078

Edward Burkley
116 North Murray
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

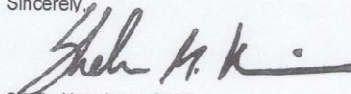
☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,



Shelia Kennison, Chair
Institutional Review Board

Figure 1.

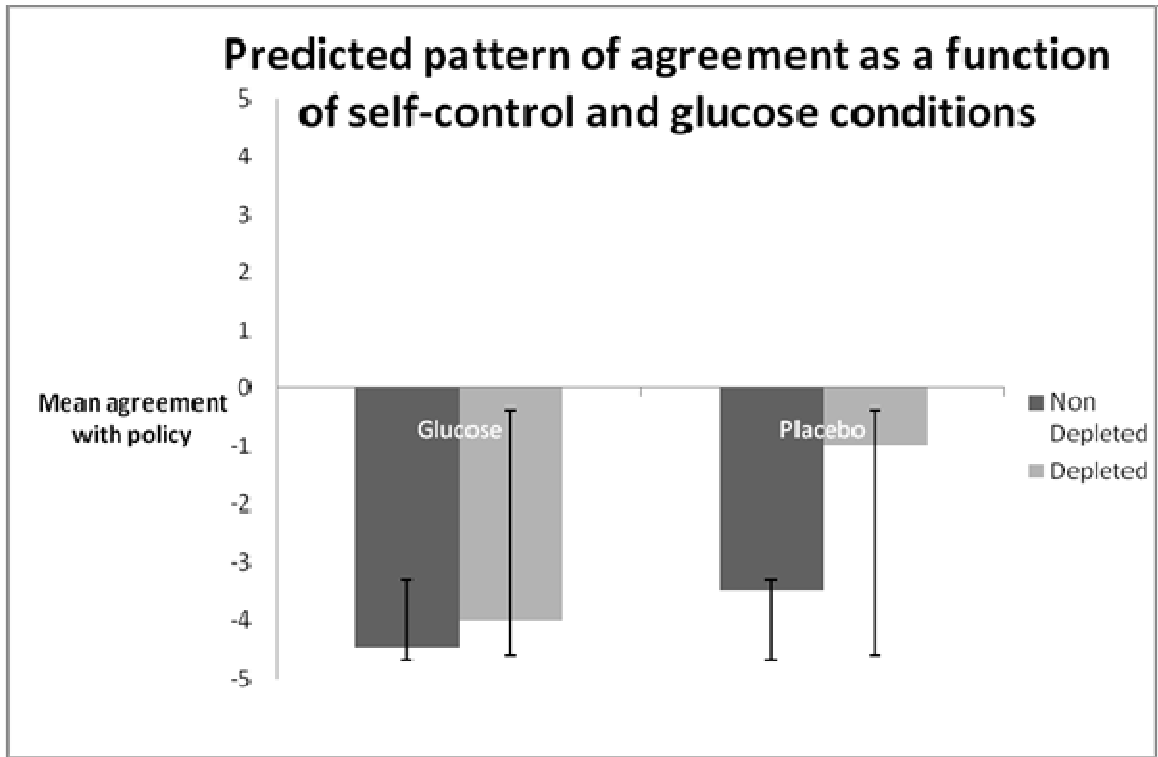
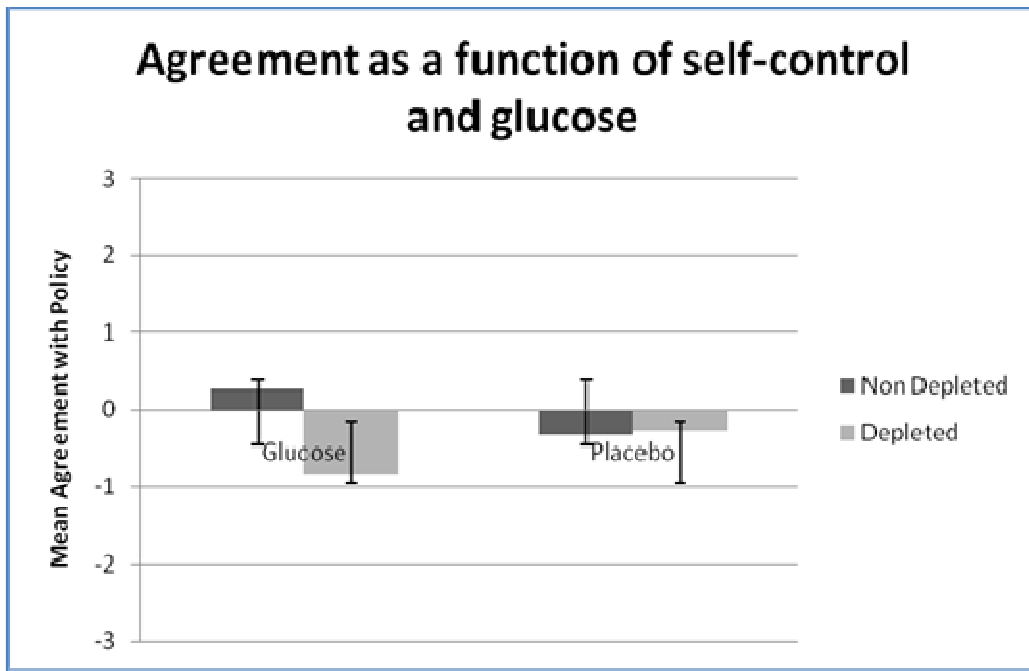


Figure 2.



VITA

Darshon LaTrece Anderson

Candidate for the Degree of

Master of Science

Thesis: THE ROLE OF GLUCOSE IN RESISTANCE TO PERSUASION

Major Field: Psychology

Biographical:

Personal Data: Born in Oklahoma City, OK, the daughter of Freddie and Delores Anderson.

Education:

Completed the requirements for the Master of Science in Psychology at Oklahoma State University, Stillwater, Oklahoma in December, 2008.

Completed the requirements for the Bachelor of Arts in Psychology (Minor in Sociology) at The University of Central Oklahoma, Edmond, Oklahoma in December, 2006.

Graduated from Northwest Classen High School in May, 2002.

Experience: Graduate Research Coordinator for Self-Regulation Lab at Oklahoma State University, 2007 to Present.

Professional Memberships: American Psychological Association's Division 8- Society for Personality and Social Psychology, Social Psychology Network, Oklahoma Network for the Teaching of Psychology, American Psychological Society, Psi Chi National Honor Society in Psychology

Name: Darshon Anderson

Date of Degree: December, 2008

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: THE ROLE OF GLUCOSE IN RESISTANCE TO PERSUASION

Pages in Study: 32

Candidate for the Degree of Master of Science

Major Field: Psychology

Scope and Method of Study: Previous research has established a link between glucose and self-control resources as well as self-control and persuasion. Given these established links, the present study proposed a link between glucose and persuasion. Specifically, it was predicted that glucose would serve as a tool to replenishment of self-control resources that would in turn help the individual resist persuasive appeals. Participants included undergraduate students ranging in age from 18 to 24. Participants were randomly assigned to one of four conditions in which they were depleted of self-control resources or not, then given a drink sweetened with glucose (sugar) or not. Following the drink, all participants read a counterattitudinal essay in favor of a school policy change and completed a five-item semantic differential scale that assessed attitudes regarding the policy. All five responses were combined to obtain an overall mean composite score that served as an index of the participant's attitude toward the policy with higher scores indicating more agreement with the policy.

Findings and Conclusions: The present study sought to provide evidence that susceptibility to persuasion is dependent on glucose. Depleted participants given a sugar substitute did show agreement with the counterattitudinal essay as predicted, but the difference was not significant. Furthermore, depleted participants given glucose did disagree with the policy as predicted; however, control participants in this group showed surprising agreement with the policy as well. This agreement in the control group is surprising given that previous research has shown the opposite effect; therefore this effect should be further investigated (Burkley, 2008). However, the findings that was in the predicted directions give promise for future research. Although statistical significance was not met in the conducted analyses, predicted directions of the overall interaction and main effects lend support to the hypothesis that glucose increases an individual's resistance to persuasion.

ADVISER'S APPROVAL: Edward Burkley, Ph.D.
