

The Strength of Self-Control When Resources are Limited

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Abstract

This experimental study was designed to show the change in self-control when resources are limited and participants are placed under a minimal amount of stress. A sample of 80 undergraduate males and females will be separated into two groups of 40, one with a 2.7oz size of Skittles candy and the other with a 7.2oz size of Skittles candy. Participants will then view a controversial billboard which will be followed by a lead discussion by the researcher. During the discussion, the researcher will measure how quickly the candy is consumed and compare the two sizes. I hypothesize that when under stress, participants will eat the candy rapidly and will consume more than a single serving size.

Keywords: adults, stress, self-control, unlimited resources, self-regulation

Self-Control and Limited Resources

The purpose of this study is to measure the changes in self control when resources change and the participant is subjected to elements of stress. When an abundance of resources are within reach, self control crumbles. This is seen in the study conducted by Polivy, Coleman and Herman (2005). Their study shows that deprivation of certain types of food can lead to cravings and overeating but just in restrained eaters. 103 female undergraduate students were assigned to be deprived from either chocolate, vanilla or non-deprived for 7 days. Those who were restricted from consuming chocolate were observed as the cravings group, as chocolate is not as easily substituted by other foods. Results show that those who were restrained eaters and in the deprived chocolate group consumed more chocolate than any other group, thus supporting their hypothesis. (Polivy, Coleman, & Herman, 2005)

(Hill, Weaver, & Blundell, 1991) Evaluated 206 adult women to see how craving affects them. Participants were initially given a questionnaire to show how often they find themselves craving food. Each participant kept a record of what they ate each day and when they found themselves craving food and their current mood. The results of this study showed that women who are constantly craving food have lower energy and are more anxious and bored. (Hill, Weaver, & Blundell, 1991)

The groundbreaking study on this subject comes from Peter Herman and Janet Polivy, both psychologists from the University of Toronto. Herman and Polivy have both published multiple works on eating disorders, dieting, and self control. In a particular study entitled *Distress and Eating: Why do Dieters Overeat?* (1998) they came across interesting results. The purpose of their study was to address the “masking hypothesis” which theorizes that when one

has little control over certain parts of their lives, they will use overeating as a cover (Polivy & Herman, 1998). The method of study included 137 female college students and divided into three groups titled no distress, unlabeled distress, and labeled distress. (following the experiment, participants in group 3 were publicly acknowledged as having done poorly and that they must feel badly). Participants were then given access to either “ad libitum” (as much or as little) ice cream or three spoonfuls of ice cream to then rate on the Restraint Scale followed by multiple questionnaires. The results of this study show that the unlabeled distress group and the labeled distress group were more anxious than the no distress group, but that there was little difference in anxiety between unlabeled and labeled distress. In regards to the consumption of ice cream, those who were assigned ad libitum felt more negative feelings towards the ice cream versus those who were assigned three spoonfuls only (Polivy & Herman, 1998). This study does show that those who are under stress have a tendency to eat more when they have a greater amount of ice cream (or resources) in front of them than those who have a limited amount.

A similar study by Iyengar and Lepper, 2000, showed that the phrase “the more the merrier” is not exactly true, but the power of personal choice is still very important. The mind quickly becomes overwhelmed and unable to make a decision until a smaller sample is provided. It would be interesting to evaluate if under enough stress, the brain will overdo it and make more choices than necessary. The example provided were essays on a test. When the teacher provides one essay that the student must complete, the student will not score as well since they did not experience personal choice. But when the teacher gives 10 essays to choose from, the student becomes overwhelmed. The balance that the researchers found was to provide the student choice, but not to overwhelm them with options. (Iyengar & Lepper, 2000)

The study entitled *Perceived healthiness of food. If it's healthy, you can eat more!* (Provencher, Polivy & Herman, 2009) addresses the effects of healthy foods, restrained eating and weight salience beliefs before participating in an ad libitum oatmeal raisin cookie snack. 99 female college students participated and all participants ate nearly 35% more of the snack when it was deemed healthier (Provencher, Polivy & Herman, 2009). Restrained eating and weight salience showed no influence on consumption of the cookies. However, this does show that when people view something to be healthy, it will impact how much they will consume. This is a very important factor to dieting since each person will view food on different levels of healthiness.

Oakes and Slotterback (2001) address this exact issue. In their study entitled *Judgements of food healthfulness: Food name stereotypes in adults over age 25* gender was the main object of study. When given food names and descriptions, there was a small discrepancy in healthiness between males and females. However, women were more likely to view dietary fat more critically while men judged vitamin and mineral content as well as dietary fat. (Oakes & Slotterback, 2001)

It would appear that in the first study, participants gravitate towards eating more ice cream when under stress, and the second study shows that when food is labeled as being healthy, the consumption is greater, yet there is a gap among these studies. When under stress, will one always eat unhealthy foods such as ice cream or is it just the urge to chew anything? It is also fair to say that if food is considered healthy the consumption increases, but what if that person is stressed? Will they still eat large amounts of healthy food or will they begin to crave unhealthy food? The outcome of my study will hopefully clarify these questions.

Another study that may bridge the gap between these two studies is one conducted by Andrew Smith entitled *Effects of chewing gum on cognitive function, mood, and physiology in stressed and non-stressed volunteers* (2010). Smith acknowledges studies that suggest cognitive function and mood may be improved, but he wanted to gather more specific attributes such as “chewing habit, type of gum, and personality” (Smith, 2010). 133 volunteers were placed into tests in which they were either chewing or not chewing gum. Before the study began, tests were conducted to establish participants chewing habits and personality. Mood was assessed at the beginning of the experiment and heart rates were taken throughout. Following the study, those in the gum group showed longer attention spans and stress was lowered compared to those who were not chewing gum. Memory did not improve regardless of group.

The results of this study have been published in many health journals and dietitians who strongly encourage people with low eating restraints to chew gum. This implies that it is not so much the food that is available (healthy versus unhealthy) but the need to chew, stimulating the hypothalamus and creating the feeling that you’re actually eating instead of just chewing.

The present hypothesis is that participants under stress and with a large amounts of food will lack the self control to eat the proper portion size. Those under the same amount of stress but a limited supply of resources will not eat as much. I expect that regardless of the types of food provided (healthy or not), those with a seemingly unlimited supply will eat more than those with a limited supply. I would be interested to see if the “masking hypothesis” still applies, and if I am even able to stimulate strong enough circumstances to make one feel out of control in a certain aspect of their lives (Polivy & Herman, 1998).

I will have 20 participants, 10 per Skittle sample size, the two sizes being 2.17oz bag and 7.2oz bag. Following the viewing of a controversial ad, they will fill out a questionnaire and have a brief discussion time. They will be observed to see how quickly they consume the Skittles. A deceptive title will be given and it will derive from the controversial ad.

Method

Participants

In order to study the relationship between self-control and limited resources, age group will be limited to younger adults (20 women, 20 men, and ages 17-23.) Participants are given the opportunity to participate via Sona Systems, an online study signup system. Compensation will be handled by the professor, usually giving extra credit.

Materials and Procedure

Two different sizes of Skittles candy will be offered including a small single serving bag (2.17oz) and a large size (7.2oz). Participants will be randomly divided into two groups - those who receive the 2.17 serving bag and those who will received the 7.2 bag. The smaller sample will be timed to see how long it took them to consume the product. Participants will only be observed with like-sized samples. They will sit in a seat of their choosing. I will begin by providing a distraction by showing a controversial billboard (Figure 1) and asking for a verbal response based off of a questionnaire (Appendix) that I will be leading. This is so that the attention is not solely on the consumption of the product, and natural eating habits should occur. Because of this, the study will have a deceptive title. Because of the nature of the image, (Figure 1) the deceptive title will be “Generational Effects of Animal Testing”. Following the

study of the large bag group, the timed results will be compared. Should the speed and quantity consumed of the 7.2oz bag exceed that of the 2.7oz bag, then the data will support my hypothesis.

Discussion

From this study I hope we can learn new dieting techniques and ways to strengthen self-control and regulated eating. If those in the larger sample size group consume more candy than those in the smaller sample size, it will show that when under stress, people tend to eat more, especially if there is more in front of them. This will align with previous research, however the particular emotion of stress has not been studied before.

References

- Hill, A.J., Weaver, C.F., Blundell, J.E. (1991) Food craving, dietary restraint and mood. *Appetite*, 17(3), 187-197. doi:10.1016/0195-6663(91)90021-J
- Iyengar, S., Lepper, M. (2000) When choice is demotivating: Can one desire too much of a good thing? *American Psychological Association*, 79(6), 995-1006. doi: 10.1037/0022-3514.79.6.995
- Oakes, M.E., Slotterback, C.S. (2001) Judgements of food healthfulness: Food name stereotypes in adults over age 25. *Appetite* 37(1), 1-8. doi:10.1006/appe.2001.0405
- Polivy, J., Coleman, J., Herman, C.P. (2005) The effect of deprivation on food cravings and eating behavior in restrained and unrestrained eaters. *International Journal of Eating Disorders* 38(4), 301-309. doi:10.1002/eat.20195
- Polivy, J., Herman, C.P. (1998) Distress and eating: why do dieters overeat? *International Journal of Eating Disorders*, 26(2), 153-164. doi:10.1002/(SICI)1098-108X(199909)26:2<153::AID-EAT4>3.0.CO;2-R
- Provencher, V., Polivy, J., Herman, C.P. (2009) Perceived healthiness of food. It it's healthy, you can eat more! *Appetite* 52(2), 340-344. doi:10.1016/j.appet.2008.11.005

Smith, A. (2010) Effects of chewing gum on cognitive function, mood and physiology in stressed and non-stressed volunteers. *Nutritional Neuroscience* 13(1),7-15.

doi:10.1179/147683010X12611460763526

Vohs, K., Baumeister, R., Schmeichel, B., Twenge, J., Nelson, N., Tice, D. (2008) Making choices impairs subsequent self-control: A limited-resource account of decision making, self-regulation, and active initiative. *Journal of Personality and Social Psychology*, 94(5), 883-898. doi:10.1037/0022-3514.94.5.883



Figure 1. Retrieved from: Google.com: <http://www.cityprintfinder.com/blog/12-controversial-billboard-advertisements/>

Appendix

1. Do you agree or disagree with this image?
 - a. If you agree, please explain why
 - b. If you disagree, please explain why
2. How does this image make you feel?
 - a. Does this image make you feel upset? On a scale of 1-5 with 1 being not upset and 5 being extremely upset, please rate how you feel.
 - b. Does this image make you feel proud to conduct research? On a scale of 1-5 with 1 being not proud and 5 being extremely proud, please rate how you feel.
 - c. Does this image make you feel sad? On a scale of 1-5 with 1 being not sad and 5 being extremely sad, please rate how you feel.
3. If you disagree with this photo, how could the image be altered to where you would agree with it?
 - a. Change images
 - b. Change wording
 - c. Change animal
 - d. Change child to an adult
 - e. Change gender of child

LONGWOOD UNIVERSITY
Human Subjects Research Review Committee
Committee Action Form

(To Be Completed By Researcher)

Proposal Title: _____ The Strength of Self-Control When Resources Are Limited _____

Principal Investigator: _____ Hannah Burns _____

.....
(For Committee Use Only)

- Meets the criteria for making research exempt from obtaining written informed consent and Committee review.
- Approved by the Longwood University Human Subjects Research Review Committee.
- Approved with revisions by the Longwood University Human Subjects Research Review Committee. The researcher(s) must provide a revised copy of the proposal to the Committee before commencing research.
- Rejected by the Longwood University Human Subjects Research Review Committee.

Date: _____

Signature of Committee (circle one) Member/Chair: _____

Comments:

**Longwood University Human and Animal Subjects Research Review Committee
Research Proposal Submission Form**

I. Proposal

All Longwood University administration, faculty, and students conducting investigations involving human subjects, and all other researchers conducting investigations involving human subjects at Longwood University, must submit a research proposal to be reviewed and approved by the Human Subject Research Review Committee prior to the commencement of research. Research involving children should conform to the ethical standards found at <http://www.srcd.org/ethicalstandards.html>. **Some types of human subjects research are exempt from the provisions of state and federal law, however, even research exempt from these provisions must be reviewed by the committee to determine that they are indeed exempt.** Research proposals submitted to the committee must follow the protocols contained in this form and include the following information. *Check those that are included.*

A description of the research, including:

- 1) A Title,
- 2) The purpose of the research, and
- 3) The methods or procedures to be employed including descriptions of:
 - a) The human subjects and the criteria for including them in the research,
 - b) What is to be done with or to them,
 - c) Any possible risks, stress, or requests for information subjects might consider personal or sensitive, or which may be illegal, and whether or not the only risk to the subjects is the harm resulting from a breach of confidentiality,
 - d) the steps that will be taken to ensure the anonymity and confidentiality of the subjects,
 - e) the permissions from other institutions, if required, that will be obtained.

A signed, completed copy of this submission form.

In addition, the research proposal may have to include the following documents. *Check those that are included.*

A copy of the test, survey, or questionnaire, if employed, and if it is not a standardized professional diagnostic tool otherwise specified in the proposal.

A copy of the written statement explaining the research indicating that participation is voluntary, if required. (See III. A. below.)

A copy of what will be said to subjects before and after the research is conducted, if the methodology requires that the subjects be misled in any way. (See III. B.)

A copy of the informed consent statement that will be used, if required. (See Sec. IV. below.) A model informed consent statement can be found at the end of this form.

II. Exemptions

If your research falls into any of the categories of research below, it is exempt from the requirement of obtaining written informed consent and being reviewed by the entire Committee, and only 1 copy of the proposal need be submitted. All others must submit 3 copies of their proposal. If your project conforms to any of the following descriptions, check those which apply:

- Research or student learning outcomes assessments conducted in educational settings involving regular or special education instructional strategies, the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods, or the use of educational tests, whether cognitive, diagnostic, aptitude, or achievement, if the data from such tests are recorded in a manner so that subjects cannot be identified, directly or through identifiers linked to the subjects.
- Research involving surveyor interview procedures unless responses are recorded in such a manner that the subjects can be identified, directly or through identifiers linked to the subjects, and either (i) the subject's responses, if they became known outside the research, could reasonably place the subject at risk of criminal or civil liability or be damaging to the subject's financial standing or employability or (ii) the research deals with sensitive aspects of the subject's own behavior, such as sexual behavior, drug or alcohol use, or illegal conduct.

- Research involving survey or interview procedures, when the respondents are elected or appointed public officials or candidates for public office.
- Research involving solely the observation of public behavior, including observation by participants, unless observations are recorded in such a manner that the subjects can be identified, directly or through identifiers linked to the subjects, and either (i) the subject's responses, if they became known outside the research, could reasonably place the subject at risk of criminal or civil liability or be damaging to the subject's financial standing or employability or (ii) the research deals with sensitive aspects of the subject's own behavior, such as sexual behavior, drug or alcohol use, or illegal conduct.
- Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in a manner so that subjects cannot be identified, directly or through identifiers linked to the subjects.

III. Special Types of Research

A. In addition to the above types of research that are exempt from the requirement to obtain written informed consent and full committee review, the committee may waive the requirement that the investigator obtain written informed consent for some or all subjects for the following type of research. If your research conforms to the following description, indicate by checking.

- Research in which the only record linking the subject and the research would be the consent document, and the principal risk would be potential harm resulting from a breach of confidentiality.

In the forgoing type of research, the committee may require the investigator to provide the subjects with a written statement explaining the research and indicating that their participation is voluntary. In addition, each subject shall be asked whether s/he wants documentation linking him or her to the research, and the subject's wishes shall govern. In the case that the subject agrees to be identified in the research, her or his written permission to do so shall be obtained by the researcher.

B. Some research methodologies may require that the subjects be initially misled regarding the purpose of the research, and so require that the consent procedure omit or alter some or all of the basic elements of informed consent, or waive the requirement to obtain informed consent. If your research conforms to the following description, indicate by checking.

- Research involves no more than "minimal risk" or risk of harm not greater than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests, research could not practicably be performed without the omission, alteration or waiver, and the omission, alteration or waiver will not adversely affect the rights and welfare of the subjects.

In the forgoing type of research, the committee requires the researcher to provide the subjects with an adequate post-investigative explanation of the purpose and methods of the research, or explanatory debriefing procedure to be undertaken immediately after the conclusion of each subject's participation. The committee requires investigators undertaking this sort of research to furnish the committee with copies of the information that will be supplied to the subject before and after the investigation.

IV. Written Informed Consent

Research engaged in all other types of research must obtain written informed consent from the research subjects. Informed consent means the knowing and voluntary agreement, without undue inducement or any element of force,

fraud, deceit, duress, or other form of constraint or coercion, of a person who is capable of exercising free power of choice.

The basic elements of information necessary to such consent are:

- 1. A reasonable and comprehensible explanation to the person of the proposed procedures of protocols to be followed, their purposes, including descriptions of any attendant discomforts, and risks and benefits reasonably to be expected;
- 2. A disclosure of any appropriate alternative procedures or therapies that might be advantageous for the person;
- 3. An instruction that the person may withdraw his consent and discontinue participation in the human research at any time without prejudice to her or him;
- 4. An explanation of any costs or compensation which may accrue to the person and, if applicable, the availability of third party reimbursement for the proposed procedures or protocols; and
- 5. An offer to answer and answers to any inquiries by the person concerning the procedures and protocols.

Informed consent must be obtained in the following manners for the following types of human subjects: (a) competent, then it shall be subscribed to in writing by the person and witnessed; (b) not competent at the time consent is required, then it shall be subscribed to in writing by the person’s legally authorized representative and witnessed; or (c) a minor otherwise capable of rendering informed consent, then it shall be subscribed to in writing by both the minor and her or his legally authorized representative.

Legally authorized representative means (a) the parent or parents having custody of a prospective subject, (b) the legal guardian of a prospective subject, or (c) any person or judicial or other body authorized by law or regulation to consent on behalf of a prospective subject to such subject’s participation in the particular human research.

Any person authorized by law or regulation to consent on behalf of a prospective subject to such subject’s participation in the particular human research shall include an attorney in fact appointed under a durable power of attorney, to the extent the power grants the authority to make such a decision. The attorney in fact shall not be employed by the person, institution, or agency conducting the human research. No official or employee of the institution or agency conducting or authorizing the research shall be qualified to act as a legally authorized representative.

A legally authorized representative may not consent to nontherapeutic research, or research in which there is no reasonable expectation of direct benefit to the physical or mental condition of the human subject, unless it is determined by the human subject research review committee that such research will present no more than a minor increase over minimal risk to the human subject.

Notwithstanding consent by a legally authorized representative, no person who is otherwise capable of rendering informed consent shall be forced to participate in any human research.

In the case of persons suffering from organic brain diseases causing progressive deterioration of cognition for which there is no known cure or medically accepted treatment, the implementation of experimental courses of therapeutic treatment to which a legally authorized representative has given informed consent shall not constitute the use of force.

No informed consent form shall include any language through which the person who is to be the human subject waives or appears to waive any of her or his legal rights, including any release of any individual, institution, or agency or any agents thereof from liability for negligence.

Human subject research investigators are responsible for obtaining written informed consent from research subjects in accordance with these specifications, and for obtaining permissions from any other institutions that may be involved in informed consent statement which conforms to these specifications.

The Longwood University Human Subjects Research Review Committee must be informed of any violation or alteration of the research protocol. Continuing research projects must be re-approved annually.

The undersigned researcher(s) indicate that the information provided to the committee is accurate and true to the best knowledge of the researcher(s), and that the researcher(s) have conformed to the above guidelines to the best abilities of the researcher(s).

Date: _____ Signed (legibly): _____

Date: _____ Signed (legibly): _____

Date: _____ Signed (legibly): _____

If this research is being completed in partial fulfillment of a Masters degree, the thesis committee must approve of your project prior to submission of these forms. The signature(s) of your committee chair/advisor on the appropriate form constitutes acknowledgement of this prior approval by your committee.

Please indicate the address where you would like the approval form sent (along with phone # and/or e-mail address):

Further information of the status of proposals may be found at the following:

Dr. Eric Laws
Department of Psychology
Phone: (434)395-2841; e-mail: lawsel@longwood.edu

Longwood University
Consent for Participation in Social and Behavioral Research

1

I consent to participate in the research project entitled:

The Strength of Self-Control When Resources are Limited

being conducted in the Department of **Longwood University** by

Hannah Kathleen Burns

- I understand that my participation in this research is voluntary, and that I am free to withdraw my consent at any time and to discontinue participation in this project without penalty.
- I acknowledge that the general purpose of this study, the method to be followed, and the expected duration of my participation have been explained to me.
- I acknowledge that I have the opportunity to obtain information regarding this research project, and that any questions I have will be answered to my full satisfaction.
- I understand that no information will be presented which will identify me as the subject of this study unless I give my permission in writing.
- I acknowledge that I have read and fully understand this consent form. I sign it freely and voluntarily. A copy of this form will be given to me.

Name (Print): _____

Date: _____ Signed: _____

I understand that if I have concerns or complaints about my treatment in this study, I am encouraged to contact the Office of Academic Affairs at Longwood University at (434) 395-2010.

DESCRIPTION OF RESEARCH

Title of Research: **The Strength of Self-Control When Resources are Limited**

- Purpose of Research: The goal of this research is **to analyze the the strength of self-controlled eating when participants are placed under stress**. The research is being conducted as an experimental design, under the supervision of **Dr. Stephanie Buchert**.
- Methods and Procedures:
 - Participants: Participants will be Longwood University students who agree to voluntarily participate in the research. The purpose of the research will be explained to the students and they will be asked to participate with the provision that they are free to withdraw at any time without penalty.
 - Procedures:

Method

Participants

In order to study the relationship between self-control and limited resources, age group will be limited to younger adults (20 women, 20 men, and ages 17-23.) Participants are given the opportunity to participate via Sona Systems, an online study signup system. Compensation will be handled by the professor, usually giving extra credit.

Materials and Procedure

Two different sizes of Skittles candy will be offered including a small single serving bag (2.17oz) and a large size (7.2oz). Participants will be randomly divided into two groups - those who receive the 2.17 serving bag and those who will received the 7.2 bag. The smaller sample will be timed to see how long it took them to consume the product. Participants will only be in the room with like-sized samples. They will sit in a seat of their choosing. I will begin by providing a distraction by showing a controversial billboard (Figure 1) and asking for a verbal response based off of a questionnaire (Appendix) that I will be leading. This is so that the attention is not solely on the consumption of the product, and natural eating habits should occur. Because of this, the study will have a deceptive title. Because of the nature of the image,

(Figure 1) the deceptive title will be “Generational Effects of Animal Testing”. Following the study of the large bag group, the timed results will be compared. Should the speed and quantity consumed of the 7.2oz bag exceed that of the 2.7oz bag, then the data will support my hypothesis.

- Possible Risks: Because of the sensitive nature of the study, it is anticipated that participants may experience some emotional discomfort. Participants will be informed of the nature of the study ahead of time, they will be told that they are free to participate or not participate, and that they can withdraw from the study at any time without penalty. No physical harm is anticipated. Nor is it anticipated that participation in the research will place the participants at any risk of criminal or civil liability, or damage the participants' financial standing or employability.
- Assurance of Anonymity and Confidentiality: Participants will be informed of the voluntary and confidential nature of the research via instructions on the data collection instrument. Participants will also be instructed not to put their name or any identifying information on the instrument. When collecting data from participants, the researcher will immediately place the data in a large envelope, and will not examine any of the data until all data have been collected. Once collected, the raw data will only be accessible to **Hannah Burns and Dr. Stephanie Buchert**. In the event that any information provided by a participant should become known outside the research, it is unlikely that any harm would come to the participant.