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Encouraging Healthy Eating : An Application of a Dissonance Paradigm

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Encouraging Healthy Eating: An Application of a
Dissonance Paradigm

by

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Abstract

The purpose of this study was to evaluate participants' food choices after completing a dissonance task disguised as a healthy eating campaign. The study sought to determine whether participants would make healthy food choices after completing tasks designed to measure healthy eating behaviors. A total of 100 students from Montclair State University were randomly assigned to four treatment conditions and then completed an intention scale designed to measure intended eating behaviors using the Theory of Planned Behavior (Ajzen, 1991). Analysis showed that treatment condition had no effect on participants' food choices and did not influence participants' intentions to make healthy food choices in the future.

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Exploring Healthy Food Choices: An Application of a
Dissonance Paradigm

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Encouraging Healthy Eating: An Application of the Dissonance Paradigm

Eating habits impact our health, longevity, and quality of life. There are numerous health consequences from poor eating patterns. For example, heart disease, cancer, diabetes, hypertension, and obesity are all affected by dietary practices. In turn, these diseases require millions of dollars in medical costs to address these chronic conditions, and result in poor quality of life and ultimately premature death (Frazao, 1999).

Although more Americans are adopting healthier eating habits, there is still a gap between public health recommendations for a healthy diet and what people reportedly eat (Huang, 1999). In 2003, only 23% of Americans consumed five servings of fruits and/or vegetables a day (Center for Disease Control, 2003). Using the Healthy Eating Index, Kennedy, Bowman, Lino, Gerrior, and Basiotis (1999) showed that only 12% of Americans had diets classified as "good" diets. Diets that emphasized vegetables, fruits, low fat dairy products, lean meats, poultry, fish, beans, eggs, and low in saturated fats and sugars were defined as health promoting. As a result of this and other studies, numerous recommendations have been made for people to increase their consumption of

vegetables, fruits, and whole-grains or plant-based foods. The current study sought to see whether a cognitive dissonance task would influence participants' healthy food choices.

The aim of this study was to determine whether participants, after taking part in a dissonance task disguised as an activity to develop a healthy eating campaign, would display eating behavior similar to what they advocated during the activity and whether they intended to practice healthy eating habits in their own lives in the near future. Although dissonance tasks have been primarily involved with research involving social behaviors, it was of interest to see whether it affected eating behaviors.

According to Festinger (1957), people will experience discomfort when they realize that their actions are inconsistent with an established standard of judgment. This could happen when people realize they violated a social norm established by the dominant culture or one's personal expectation. In such situations, he explains, people will attempt to reduce the dissonance through some change in behavior. The theory was revolutionary because it suggested that people do not have to change their attitudes as a precursor to changing behaviors. It noted

that once people change a behavior their attitudes would change to agree with the new behavior.

Aronson and Carlsmith's (1968) work on cognitive dissonance revealed that dissonance is experienced the greatest when the self-concept is violated. Aronson (1992) stated that people strive to preserve a consistent sense of self as someone who is competent and morally good. One particular dissonance paradigm in their study had participants first take part in a commitment task where they have to compose a speech advocating an issue. For example, in one study on AIDS prevention, participants wrote a campaign speech to encourage young adults to use condoms for AIDS prevention (Aronson, Fried, & Stone, 1991; Stone, Aronson, & Crane, 1994). Another study had participants develop a speech about the importance of recycling (Fried & Aronson, 1995; Fried, 1998). Then participants were asked to perform a mindfulness task in which they reflected on and then wrote about times they failed to perform the behaviors they advocated in the previous assignment. According to Aronson et. al., dissonance was aroused because participants were asked to "preach" about something through the commitment task and then realized they did not practice what they advocated when performing the mindfulness task. Aronson found that

in order to reduce the dissonance created, participants were more likely to change their behavior.

The most noted application of this paradigm was Stone et al.'s (1994) research encouraging young adults to use condoms. Half of the participants were asked to reflect on situations in their recent past when they could have used a condom, but did not (high mindfulness). The other half (low mindfulness) did not complete this task. Instead this group was instructed to only recall from memory occasions when they did not use a condom during sexual intercourse. Half of the high mindfulness group and half of the low mindfulness group were then given a commitment task where they composed a short speech directed to a high school student audience about the importance of condom usage to prevent AIDS. These participants were then videotaped reciting their speeches and speakers were told that these speeches would be shown to students in an AIDS prevention program (high commitment).

The remaining members of the low mindfulness and high mindfulness groups were assigned a low commitment condition. They simply composed a speech directed to other students in an AIDS prevention program and recited the speech to themselves. They were not videotaped. All participants were given the opportunity to buy condoms at

the conclusion of the sessions. Results showed that those who participated in the dissonance arousing condition (high mindfulness, high commitment) were more likely to buy condoms.

Previous studies have shown the effectiveness of incorporating tasks that evoke this type of cognitive dissonance in eating disorder prevention programs (Stice, Trost & Chase, 2003) or in nutrition programs that encouraged fruit and vegetable intake in African-American teenagers (Wilson, Friend, Teasley, Green, Reaves, Sica, 2002). It was of interest if whether this theory could be applied to attitudes and actions surrounding eating behaviors. No studies were identified, though, that used a dissonance paradigm with a mindfulness and commitment task to evaluate participants' food choices.

Another issue in these dissonance paradigms concerns assessing the likelihood of maintaining the new behaviors. Aronson et al. (1991) used self-report to measure intention of future condom use among its participants and found high levels of intention across all conditions. Stone et al. (1994) followed up with participants a few weeks after they participated in that study and found that participants from the dissonance condition were more likely to use condoms than the other participants.

While following up with participants after partaking in this study would be the best approach to ascertain actual behaviors, a less costly and expeditious way to assess their intentions to choose healthy foods would be to measure their intentions by administering a survey at the conclusion of the study. The survey used for this study is based on Ajzen's Theory of Planned Behavior (TPB).

Ajzen (1991) theorized that the stronger the intention to perform a behavior, the more likely that behavior will be performed. TPB outlines three independent factors that determine intention: attitude toward the behavior; subjective norm (i.e. social pressure to perform or not perform a behavior); and perceived behavioral control (perceived ease of performing a behavior). According to TPB, these conditions would predict intention which in turn would then predict behavior (Ajzen, 1991).

Many researchers use TPB to predict intentions to perform various behaviors. Some studies have used TPB to predict the intention of eating healthier (Conner, Norman, & Bell, 2002; Oygard & Rise, 1996). The current study will test, also, Azjen's TPB to examine relationship between cognitive dissonance and eating behaviors. Specifically, the study will test whether participants would be more likely to choose healthy foods for consumption (e.g.,

plant-based items) rather than processed snacks after completing tasks that induce dissonance.

Method

Participants

A total of 100 undergraduate students from Montclair State University participated in this study. Participants volunteered for this experiment through the Department of Psychology's subject pool.

Materials

The New American Plate. This brochure was included to help participants construct their healthy eating campaigns. The New American Plate is a brochure, designed by the American Institute for Cancer Research (2000), which encourages a balanced meal, defined as two-thirds plant-based foods (i.e. fruits and vegetables) and one-third poultry, lean meats, or low-fat dairy products and appropriate portion sizes for various foods. The brochure also includes healthy recipes that can be incorporated into a healthy lifestyle. The goal of this brochure is to educate individuals about the quantity and types of food that comprise a healthy diet.

TPB Questionnaire. Participants' intentions to eat a healthier diet in the future were measured using a healthy

eating questionnaire (Conner et al., 2002). The statements followed the recommended guidelines in assessing the components of TPB (Azjen, 1991). Participants were asked to complete the questionnaire as though answering for their closest friend. Similar instructions were given to participants who completed measures to assess AIDS risk behaviors. Researchers theorized that individuals aspire to reach a normative standard their social network may set for them and thus might be more likely to adopt more ideal behaviors (Kelly, Kalichman, Kauth, Kilgore, Hood, Campos, Rao, Brasfield, & St. Lawrence, 1991; Walter, Vaughan, Gladis, Ragin, Kasen, & Cohall, 1992). Thus if participants think their friends have the intention to eat a healthy diet, that participants would want to achieve this too. For example, intention to eat a healthier diet was measured by averaging five items such as: "My friend intends to eat a healthy diet in the future." Participants' responses on each statement were assessed using 7-point bipolar scale scored (-3 to +3).

Attitude was determined from the mean of six semantic differential scales, that included items such as: "I believe that for my friend, eating a healthy diet would be: Bad - Good; Harmful - Beneficial; Unpleasant - Pleasant; Unenjoyable - Enjoyable; Foolish - Wise; Unnecessary -

Necessary," again using a 7-point bipolar scale (-3 to +3). Subjective norm (SN) was measured only by one item ("For my friend to eat a healthy diet is: Difficult - Easy") and was scored using the same bipolar scale as the other items. Finally, perceived behavioral control (PBC) was determined from a mean of six items such as: "My friend is confident that he/she could eat a healthy diet if he/she wanted to: Strongly Disagree - Strongly Agree" scored in the same manner as the other scales.

Procedure

Participants were assigned randomly to one of four treatment conditions: High Mindfulness/High Commitment; High Mindfulness/Low Commitment; Low Mindfulness/High Commitment; Low Mindfulness/Low Commitment as shown in Figure 1. Dissonance was expected to be aroused in the High Mindfulness/High Commitment condition only.

High Mindfulness Task

This task was designed to encourage participants to reflect on times when they have not made healthy food choices. The high mindfulness task contained 10 written situations thought to represent occasions when it was most difficult to make healthy food choices (e.g. "When I am on vacation"; "When I am sick"; When I am at a party", etc).

Participants were to choose the three situations in which it would be most difficult to make healthy food choices.

Low Mindfulness Task

In this setting, participants were to reflect on situations when it was difficult to make healthy food choices. In this situation, participants reviewed the same 10 written situations presented in the high mindfulness condition, but did not identify the three most challenging incidences to make healthy food choices. Instead they had just reviewed the 10 scenarios listed on the sheet provided.

High Commitment Task

The purpose of this task was to have participants communicate to others the importance of a healthy diet. The high commitment task contained a list of facts from the New American Plate. In this condition, participants review the fact sheet, prepare a persuasive speech geared to their peers about the importance of including more plant-based foods in their meals and then record their speeches using an audio recorder.

Low Commitment Task

In this condition, participants reviewed the New American Plate fact sheet and prepared a persuasive speech for their peers, but did not record their speeches. The

purpose of this task was to advocate for the importance of a healthy diet, but not to the extent of those performed the high commitment task.

Intention Questionnaire

After completing all tasks, all participants were instructed to complete the TPB questionnaire to measure intention to make healthier food choices.

Food Choices

After participants completed their designated tasks and questionnaires, they were lead to a small room with a variety of foods, such as fruits (e.g. strawberries and grapes), vegetables (e.g. carrot sticks), and processed snacks (e.g. granola bars, coffee cakes, and fig bars). All fruit and vegetables snacks were packaged for a single serving and were portable. Processed snacks were in their original packaging and sized as individual portions. Participants were encouraged to select a snack as a thank you for their participation in the campaign tasks.

The experimenter was able to assess which snack was taken by the participant by taking inventory of the snacks displayed. The experimenter recorded the number of snacks in the snack room before a participant entered it and the experimenter took inventory again after the participant concluded all activities.

Results

Demographics

There were a total of 100 participants: 89 females and 11 males. 8 participants were not included in the analyses because they did not choose a snack. Amongst the 100 participants, the overwhelming majority (92) chose a snack after completing the healthy eating activities.

Univariate Analyses

Chi -Square Analysis. It was predicted that participants who took part in the condition that induced dissonance (High Mindfulness/High Commitment) would be more likely to choose plant-based snacks instead of processed snacks. Across conditions more participants chose plant based snacks (71 participants) than processed snacks (21 participants), hence the analysis showed no significance by condition, $X^2(3) = 1.667$, $p = .644$. These results are summarized in Table 1.

Another chi-square analysis was performed including only 2 conditions - High Mindfulness/High Commitment and Low Mindfulness/Low Commitment, to see if a masking effect was occurring. The analysis showed no significant effect ($X^2(1) = 1.257$, $p = 0.2622$).

Descriptive Statistics

Regression Scores. Pearson Correlations for the TPB variables are presented in Table 2. These results show that intention to exercise healthy eating behaviors was significantly correlated with attitude ($r = .320$, $p < .01$) and PBC ($r = .660$, $p < .01$). Additionally, attitude was significantly correlated with Social Norm (SN) and with Perceived Behavioral Control (PBC): attitude and SN ($r = .311$, $p < .01$; ($r = .212$, $p < .05$). There was an insignificant relationship, however, between intention and SN.

ANOVA. The influence of the conditions on participants' intentions to make healthier food choices in the future was also examined. Participant's overall response on the intention questionnaire (TPB) ($M = 1.18$, $SD = 1.30$) and its three predictors- attitude ($M = 1.80$, $SD = 1.13$), SN ($M = 1.30$, $SD = 1.60$), and PBC ($M = .93$, $SD = 1.08$) were included as dependent variables in a series of ANOVA analyses.

The first ANOVA compared treatment conditions (High Mindfulness/High Commitment (HMHC); High Mindfulness/Low Commitment (HMLC); Low Mindfulness/High Commitment (LMHC); Low Mindfulness/Low Commitment (LMLC)) to the intention score of the TPB measure. Results showed that the treatment conditions did not significantly affect the

intention score ($F(3) = .539, p = .657$). The second ANOVA included the attitude score from the TPB measure as the dependent variable. Again, treatment conditions did not significantly affect the attitude score on the TPB measure, $F(3) = 1.11, p = .657$. The third ANOVA measured the treatment conditions affect on the subjective norm score of the TPB questionnaire. No significant effect was found, $F(3) = .332, p = .802$. The fourth ANOVA with PBC as the dependent variable also showed that the conditions had no effect on the PBC measure of the TPB questionnaire, $F(3) = .197, p = .899$.

Multivariate Analysis

Backward stepwise regression analysis was used to find the best model predicting participant intention to make healthier food choices in the future. Predictors included attitude, SN, PBC, and all treatment conditions. Table 3 displays these results. Although a model with variables LMLC, PBC, SN, HMHC, attitude, and HMLC proved to be significant ($F(6) = 14.157, p < .05$), the only significant predictors were PBC ($\beta = .620, p < .05$) and attitude ($\beta = .188, p < .05$). There were no significant changes in the model as one by one insignificant variables were removed from the model. It is of interest to note though that the condition HMHC was finally removed second to the last

model. In the end though, PBC and attitude best predicted intention.

Discussion

Snack Choice

This study sought to determine whether participants who took part in a healthy eating activity that induced cognitive dissonance would be more likely to choose plant-based snack items compared to processed snack foods. Treatment condition did not significantly affect participants' snack choices when assessed through the chi-square.

One reason for the results may be the fact participants did not have to pay for their snacks. In this study, participants were allowed to choose snacks as a thank you for completing the tasks. Fruits and vegetables can be expensive during different periods of the year and this can affect how often they are consumed (Huang, 1999). The plant-based items may have been seen as more valuable items for the participants and thus were more attracted to them.

Another limitation may have been the snack choices used in the study. The plant-based snacks (grapes, carrots, and strawberries) were chosen for their portability. The processed snacks (fig bars, coffee cakes, and granola bars) were incorporated as snack choices

because they were portable and also were contained in packaging that did not display nutritional information.

Another limitation of this research was the inability to follow-up with participants and measure their food choice behavior. Although the intention measure is a more cost effective and expeditious approach to measure future behaviors, it is not effective as conducting follow-up interviews with participants. One way to resolve this problem is to follow-up with participants to determine whether they included more plant-based foods in their diet.

Intention Factor

Similar studies that investigated healthy eating and TPB showed that SN had the smallest correlation with intention (Conner, Norman, & Bell, 2002; Oygard & Rise, 1996), a finding consistent with this study's outcome. PBC and attitude were found to be the best predictors for intention to make healthier food choices in the future. People have to have a positive attitude toward healthy eating and the confidence that they can control their own eating behaviors. According to past research, this will lead to healthier eating intentions and will in turn be put into practice. In the results, PBC and attitude were found to be the best predictors of intention.

Intention to make healthier food choices in the future was not affected by treatment condition. This was similar to Aronson et al.'s (1991) results which showed high intention of condom use across all conditions. It is important to note that HMHC condition was one the last predictors to be removed from the model.

Finally, it should be mentioned that this should not be cause to doubt the power of this dissonance paradigm. Unfortunately the results of this study do not support the success of previous applications of this paradigm, but this is probably due to the limitations experienced.

Figure 1

Order of Tasks in Healthy Eating Campaign by Condition

	High Mindfulness	Low Mindfulness
High Commitment	<ul style="list-style-type: none"> ➤ Rating Tasks/Campaign Tasks <ul style="list-style-type: none"> - Challenging Eating Occasions - Develop and Record Campaign Task - TPB Questionnaire ➤ Choose Snack 	<ul style="list-style-type: none"> ➤ Rating Task/Campaign Task <ul style="list-style-type: none"> - Challenging Eating Occasions - Develop and Record Campaign Task - TPB Questionnaire ➤ Choose Snack
Low Commitment	<ul style="list-style-type: none"> ➤ Rating Tasks/Campaign Task <ul style="list-style-type: none"> - Challenging Eating Occasions - Develop Campaign Task - TPB Questionnaire ➤ Choose Snack 	<ul style="list-style-type: none"> ➤ Rating Task/Campaign Task <ul style="list-style-type: none"> - Challenging Eating Occasions - Develop Campaign Task - TPB Questionnaire ➤ Choose snack

Table 1

Participants Snack Choice By Experimental Condition

	High Commitment		Low Commitment	
Snack Choice	High Mindfulness	Low Mindfulness	High Mindfulness	Low Mindfulness
Plant-Based	N = 16	N = 16	N = 20	N = 19
Processed	N = 6	N = 7	N = 5	N = 3

* 8 participants did not choose a snack

$\chi^2(3) = 1.667, p = .644$

Table 2

Correlations Table for Theory of Planned Behavior Variables

	Intention	Attitude	SN	PBC
Intention		.320**	.190	.660**
Attitude			.311**	.212*
SN				.146
PBC				

** p < .01

*p < .05

Table 3

*Summary of Backward Hierarchal Regression Analysis for
Variables Predicting Intention*

Model	R ²	Sig F Change
LMLC+ PBC+SN+HMHC+A+ HMLC	.477	.000*
LMLC+PBC+SN+HMHC+A	.477	.857
LMLC+PBC+HMHC+A	.475	.538
PBC+HMHC+A	.473	.513
PBC+A	.469	.445

* $p < .05$

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