Health Enhancing Beliefs and Behaviors: Does Nutrition Education Translate to Action?  
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INTRODUCTION

- Obesity rates in the United States are on the rise, with approximately 21% of annual medical spending being allocated to treat obesity-related conditions (American Heart Association, 2013).
- Recommendations for addressing this epidemic include adopting a lifestyle of healthy eating and engaging in regular physical activity (Center of Disease Control, 2013).
- An important component to health promotion is nutrition education, yet many Americans possess limited nutrition knowledge (IFIC, 2012).
- Furthermore, little is known about how nutrition education might influence nutrition knowledge and factors associated with health-enhancing beliefs and behaviors.
- Therefore, we explored how nutrition knowledge is related to the Theory of Planned Behavior (TPB; Ajzen, 1985) and healthy food consumption.
- We then examined the effects of a nutrition education intervention on nutrition knowledge and diet choices.

HYPOTHESES

- Hypothesis 1: As nutrition knowledge increases, so do health enhancing behaviors (diet) and factors of the TPB.
- Hypothesis 2A: Those who receive a nutrition education intervention will have greater nutrition knowledge and make healthier diet choices compared to those who do not receive any type of education intervention.
- Hypothesis 2B: The education group will not only gain but also retain the nutrition knowledge learned during the course of the study.

METHOD

Participants
- Young adult women (N = 51)
- M = 22.69, SD = 5.97
- 78.4% Caucasian, 7.8% Asian, 5.9% African American, 8.8% other
- Control = 23; Education = 28

Demographics
- Age, school year, relationship status, race

Procedure
- 3 Periods of Data Collection:
  1. Control
  2. Nutrition Education
  3. 1 month follow-up

1 Form of Data Collection:
- Food Diaries (4 days per week)
- Participants were randomly assigned to one of two groups and asked to record their diet for four days at three time periods (before, after, and one month post-intervention). Participants also completed questionnaires and were given food diary tracking instructions and feedback at each time point.

Measures
- Food Diary: Participants used a food diary to record their diet for four days before, after, and one-month post-intervention.
- Theory of Planned Behavior Components (Ajzen & Fishbein, 2010)
  - Intention, Attitudes, Perceived Behavioral Control, Subjective Norms

Nutrition Education Intervention
- Participants read through two nutrition tip sheets and one handout from the USDA (choosemyplate.gov)
- Participants were asked two questions:
  1. Did they learn anything?
  2. What might they like to incorporate into their diet?
- Nutrition analysis was computed using USDA guidelines for serving sizes.
- 2, 3 (group) x3 (time) Between Subjects Repeated Measures ANOVAs and appropriate follow-up tests were conducted.

RESULTS

Hypothesis 1

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<tr>
<td>1. Intention</td>
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<td>.43***</td>
<td>.26*</td>
<td>.15</td>
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<td>2. Attitudes</td>
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<td>.43***</td>
<td>.26*</td>
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<td>3. Perceived Behavioral Control</td>
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<td>.32**</td>
<td>.30*</td>
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<td>4. Subjective Norms</td>
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<td>.25*</td>
<td>.23*</td>
<td>.07</td>
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<td>5. Healthy Eater Identity</td>
<td>.50***</td>
<td>.25*</td>
<td>.23*</td>
<td>.07</td>
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<td>6. Nutrition Knowledge Score</td>
<td>.53***</td>
<td>.40***</td>
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Note. *p < .05, **p < .01, ***p < .001

- Greater nutrition knowledge was positively and significantly correlated with the TPB components of healthy eating intentions, attitudes, identities, and overall healthy eating scores.

Hypothesis 2A

- There was a significant main effect of time, F (2,98)=6.29, p < .003
- The control group had a significant overall decrease in healthy food consumption, F (2,4)=5.22, p < .001
  - Follow-up tests indicated a significant decrease between Time 1 and Time 3, t (48)>3.21, p < .001
- The education group had a significant decrease in healthy food consumption, F (2,48)=3.11, p < .05
- No differences between time points were found.
- There was not a significant group or interaction effect.

Hypothesis 2B

- There was not a significant group or interaction effect.
- There was a significant time effect, F (2,98)=6.81, p < .002
- There was not a significant time effect for the control group
- There was a significant time effect for the education group, F (2,48)=9.78, p < .001
  - There was a significant increase from Time 1 to Time 2, t (48)=4.46, p < .001
  - From Time 1 to Time 3, t (48)=2.64, p = .04.
  - There was not a significant change from Time 2 to Time 3, t (48)=2.28, p = .08.

DISCUSSION

- Nutrition knowledge was positively associated with healthy eating behaviors and some beliefs, but it did not cause an increase in healthy food consumption.
- Those who received nutrition education enhanced their nutrition knowledge and retained it throughout the study, but the knowledge gained was not significantly greater than those who did not receive any education.
- Why did participants in both groups decrease their healthy eating consumption during the course of the study?
  - Regression towards the mean: variables that are extreme on the first measurement tend to regress closer to the average on later measurements; participants that ate very healthily at the beginning of the study gradually regressed to their normal diet behaviors.
  - Observer effect: participants were excited about participating in the study and may have modified their diet behavior at the beginning of the study since they knew that they were being observed (Clark & Suguie, 1991).
  - The nutrition intervention was basic; participants simply read handouts from the USDA, so a more intensive intervention might be needed to create lasting behavioral change.
- Since nutrition education alone is not enough to change healthy eating behaviors, future studies could address barriers to healthy eating, motivation, and social norms in order to produce better outcomes.

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