Journal of Extension
www.joe.org

August 2013
Volume 51
Number 4
Article # 4IAW6

Use of Program Theory in a Nutrition Program for Grandchildren and Grandparents

Abstract

Grandparents University ® (GPU) is a 2-day campus-based nutrition education program for grandparents and grandchildren based on constructs from Social Cognitive Theory and the Theory of Planned Behavior. This article describes how program theory was used to develop a working model, design activities, and select outcome measures of a 2-day nutrition program at GPU 2010 that fostered behavioral intention among intergenerational participants to eat more fruits and vegetables and become more physically active.

Mallory Koenings
Post Doctoral Fellow
Davis College of Agriculture, Natural Resources, and Design
Division of Animal and Nutritional Sciences
West Virginia University
Morgantown, West Virginia
mallory.koenings@mail.wvu.edu

Sara Arscott
Postdoctoral Research Associate
University of Wisconsin – Madison
Madison, Wisconsin
arscott@nutrisci.wisc.edu

Introduction

"For education to be most successful, programming efforts should be theory-driven" (Bird & McClelland, 2010). These authors posit that even short programs of an hour or less can benefit from the use of program theory. Presented here is an example from Grandparents University ®. Grandparents University ® (GPU) is an annual 2-day program for children aged 7-14 years and their grandparents who are not their primary care givers. GPU has been co-hosted by the Wisconsin Alumni Association (WAA) and University of Wisconsin-Extension since 2001 (Wisconsin Alumni Association, 2010). The program provides learning opportunities for grandchild and grandparent pairs through hands-on activities in the college campus environment and confers a certificate or "degree" for completion of a coordinated series of classes in a specific "major" or program (Wisconsin Alumni Association, 2010). Participants chose one of 18 programs and spent 3 hours in their program each day. This article describes how the nutrition program at GPU 2010, based on constructs from Social Cognitive Theory and the Theory of Planned Behavior, fostered intent for grandchildren and grandparent participants to eat more fruits and vegetables, and become more physically active.

Participants and Lesson Description

The target audience of GPU 2010 nutrition program was children ages 7-14. All learners were from Wisconsin, Illinois, and Minnesota. For demographics of GPU 2010 participants in all 18 programs and the home state of nutrition program participants, see Table 1. Only the results of the nutrition program (program) are presented here.

Table 1.

Demographics of GPU 2010 Participants (b) Home State of Nutrition Program Participants

(a) Demographics (n=183 GP, 204 GC)		**Number (%)**	
Race			
White		167 (91)	
Other		3 (2)	
Ethnicity			
Non-Hispanic or Latino		158 (86)	
Hispanic/Latino		2 (1)	
UW Alumni			
Yes		94 (51)	
No		77 (42)	
Gender		**GP†**	**GC‡**
Male		61 (33)	96 (47)
Female		117 (64)	91 (45)
Age			
51-65	6-8	35 (19)	38 (19)
65-70	9-11	76 (42)	117 (57)
>70	12-14	58 (32)	49 (24)
(b) Characteristic (n=31; 14 GP, 17 GC)		**Number (%)**	

©2013 Extension Journal Inc.

Home state	GP†	GC‡
Illinois	3 (21)	3 (18)
Minnesota	1 (7)	2 (12)
Wisconsin	10 (71)	12 (71)

†GP represents grandparents

‡GC represents grandchildren

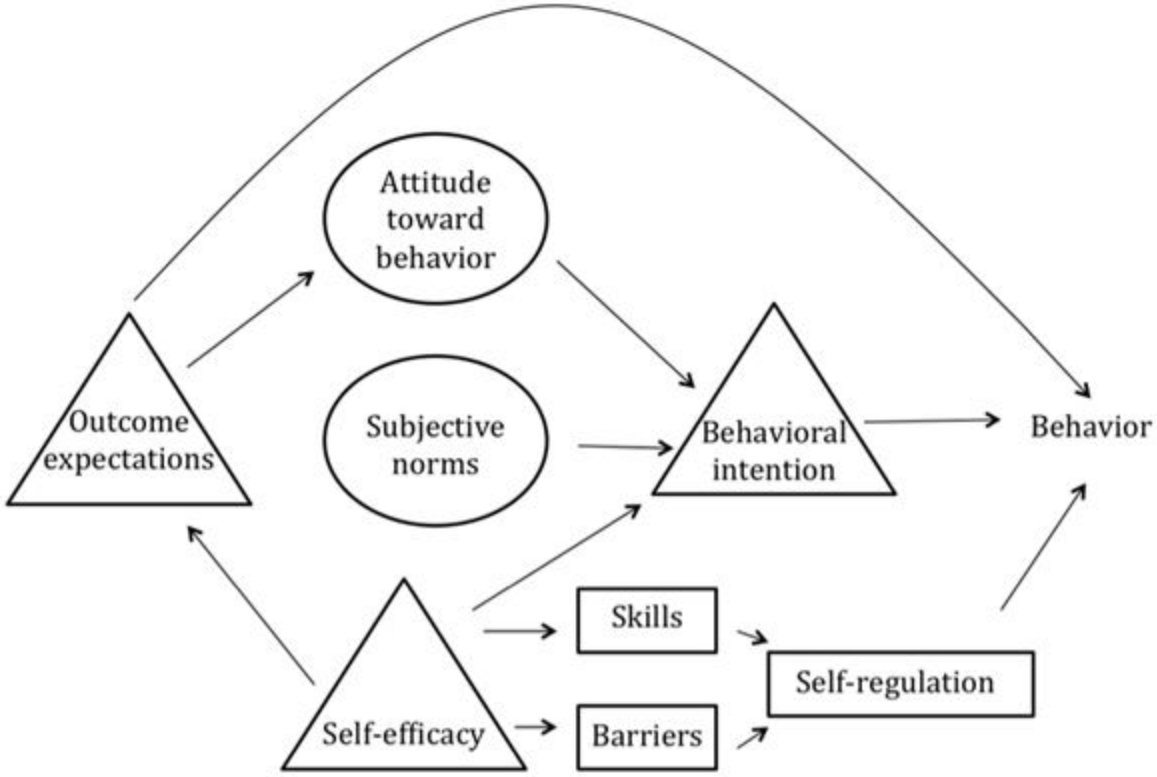
Note: GC were not surveyed. GPs reported the age, gender, and number of grandchildren participating in GPU 2010. Some categories may not add up to 100% due to rounding error and inclusion of incomplete questionnaires in the sample.

Program content was designed according to a working model (Figure 1) that was based on applicable constructs from Social Cognitive Theory (SCT) and the Theory of Planned Behavior (TPB) (Contento, 2011). The program combined nutrition education and time for physical activity, as recommended by Bird and McClelland (2010). Learner outcomes planned for the program, consistent with SCT and TPB, were for grandchildren and grandparents (learners) to be able to demonstrate behavioral capability; for example, we planned a BINGO activity to enable learners to demonstrate and reinforce skills and understanding of MyPyramid and the 2005 Dietary Guidelines for Americans, the relationship between whole fruits and household measures (cups), sensory analysis vocabulary, and health properties of colorful fruits and vegetables (Contento, 2011). Table 2 describes each of the program's independent, pair, and group activities by learning outcome and theory constructs addressed. Consistent with the TPB, a behavioral intention approach was used in the design of the program's outcome measure, because intent is a measurable and direct mediator of behavior change (Bird & McClelland, 2010; Contento, 2011).

Figure 1.

Working Model Used for the Design of the GPU 2010 Nutrition Program

©2013 Extension Journal Inc.



Constructs from the Theory of Planned Behavior are represented by the circles. Constructs from Social Cognitive Theory are represented by rectangles. Constructs common to both theories are represented by triangles.

Table 2.

Nutrition Program Activities, Descriptions, and Corresponding Learner Outcomes per Constructs from SCT and TPB†

(a) Learner Outcome 1: MyPyramid and the 2005 Dietary Guidelines for Americans			
Activity (minutes)		**Description**	**Corresponding Concept from SCT TPB**
Day 1			
a.01	Presentation (15)	PowerPoint® presentation	Outcome Expectations (both theories)
a.02	Sort the grains (5)	Individual worksheet with 12 grains that were sorted into whole & non-whole grains.	Address Barriers and Behavioral Capability
a.03	Vegetable Word Search (12	Individual word search that contained 20 vegetables. Learners circled green vegetables in green, orange	Address Barriers and Behavioral Capability

©2013 Extension Journal Inc.

	)	vegetables in orange and starchy vegetables in yellow.	
a.04	Fruit Alphabet (7)	GP and GC worked together to write down a fruit for each letter of the alphabet, e.g., A, apple, B, banana…	Address Barriers, Behavioral Capability, Self-Efficacy, and Subjective Norms
a.05	Favorite Dairy Foods (5)	GP and GC worked together to record each other's favorite kind of milk, cheese, yogurt, and dessert.	Address Barriers, Behavioral Capability, Self-Efficacy, and Subjective Norms
a.06	Meat & Beans (7)	GP and GC worked together to circle the foods they each eat for breakfast, lunch, and dinner in different colors. They also recorded any foods they were willing to try.	Address Barriers, Behavioral Capability, Self-Efficacy, and Subjective Norms
a.07	Games and Activities (5)	Individual worksheet where GC's activities were circled, GP's activities were squared, and common games/activities were starred.	Address Barriers, Behavioral Capability, Self-Efficacy, and Subjective Norms
a.08	Place the Food on MyPyramid (30)	GC were dealt a variety of food cards that they stuck on a large MyPyramid poster. GC explained their choices. Any foods that learners disagreed on were discussed.	Reinforcement
a.09	Physical Activity* (30)	GC made up and played games outside based on the day's activities.	Reinforcement
a.10	BINGO Game* (30)	Learners covered pictures of the correct answers to questions based on the day's activities.	Reinforcement
Day 2			
a.11	What's on the Label? What's the Score? (15)	MyPyramid for Kids worksheets that require learners to read nutrition facts labels to answer questions, such as "which item has the least calcium with the most fat?"	Behavioral Capability, Self-Regulation, Reinforcement, and Behavioral

©2013 Extension Journal Inc.

			Intentions
a.12	Where's the Fat? (10)	MyPyramid for Kids worksheet with low-fat choices & a chart of grams from fat.	Behavioral Capability, Self-Regulation, Reinforcement, and Behavioral Intentions
a.13	Food Math (20)	MyPyramid for Kids worksheet where learners select foods to meet a child's daily needs. This worksheet was supplemented with food pictures and entering selections into the MyPyramid Tracker.	Behavioral Capability, Self-Regulation, Reinforcement, and Behavioral Intentions
a.14	Physical Activity* (30)	GC made up and played games outside based on the day's activities.	Reinforcement
a.15	BINGO Game* (30)	Learners covered pictures of the correct answers to questions based on the day's activities.	Reinforcement
(b) Learner Outcome 2: Relationship Between Whole Fruits and Cups (e.g. 1 large orange = 1 cup of fruit)			
Activity (minutes)		**Description**	**Corresponding Concept from SCT TPB**
Day 1			
b.01	Fruit Kebabs (30)	Learners filled a measuring cup with fruit. They loaded the fruit on skewers and completed a worksheet about the number of fruit kebabs that equal GC's daily fruit recommendations.	Address Barriers, Behavioral Capability, Self-Efficacy, Affective Attitudes, and Subjective Norms
b.02	Fruit & Cups Matching (15)	Learners selected measuring cup amounts to reflect typical servings/portions of fruit.	Address Barriers, Behavioral Capability, and Behavioral Intentions
b.03	BINGO Game* (30)	Learners covered pictures of the correct answers to questions based on the day's activities.	Reinforcement

©2013 Extension Journal Inc.

(c) Learner Outcome 3: Sensory Analysis Vocabulary			
Activity (minutes)		**Description**	**Corresponding Concept from SCT TPB**
Day 2			
c.01	Presentation (10)	PowerPoint® presentation	Outcome Expectations (both theories)
c.02	Carrot and Carrot Muffin Tasting (45)	GP and GC tasted and ranked white, yellow, orange, red, and purple carrots on flavor, sweetness, crispiness, and overall taste; and orange and purple carrot muffins on their smell, mouthfeel, taste, sound and overall perception.	Address Barriers, Behavioral Capability, Self-Efficacy, Affective Attitudes, and Subjective Norms
c.03	Carrot Muffin Making (45)	GP and GC made low fat, half whole grain orange carrot muffins.	Address Barriers, Behavioral Capability, Observational Learning/Modeling, Self-Efficacy, Affective Attitudes, and Subjective Norms
c.04	BINGO Game* (30)	Learners covered pictures of the correct answers to questions based on the day's activities.	Reinforcement
(d) Learner Outcome 4: Health Properties of Colorful Fruits and Vegetables			
Activity (minutes)		**Description**	**Corresponding Concept from SCT TPB**
Day 2			
d.01	Presentation (10)	PowerPoint® Presentation	Outcome Expectations (both theories), and Attitudes
d.02	BINGO	Learners covered pictures of the	Reinforcement

©2013 Extension Journal Inc.

	Game* (30)	correct answers to questions based on the day's activities.	

*Physical activity and BINGO were played for 30 minutes each day for a total of 60 minutes. BINGO questions were cumulative.

†GP represents grandparents, GC represents grandchildren, SCT refers to Social Cognitive Theory, and TPB represents the Theory of Planned Behavior.

Outcomes

On the second day learners were invited to complete three written questionnaires. USDA's Supplemental Nutrition Assistance Program "Loving Your Family Feeding Their Future" educational program handouts, "My favorite vegetables," "My favorite fruits," and the second page of "Ways to Eat Smart and Move More" were used to provide visual cues appropriate for 7-14 year olds. The instructions were:

1. Circle any vegetables that you intend to eat more of and list any not pictured,
2. Circle any fruits that you intend to eat more of and list any not pictured,
3. Check any ways in which you plan to move more and list any not listed, and Write "no" or "none" in the list area if applicable.

Ten GC out of 17 and nine GP out of 14 completed all questionnaires. The program's response rate (74% overall) was acceptable given that it is limited by the small number of program participants and participation was optional at the end of the day. The response rate could have been improved by requiring participants to complete the questionnaires or by completing questionnaires before the program's final activity. Demographic data of learners were not collected to minimize respondent burden, and there was not an opportunity to conduct follow-up interviews for this program (Van Offelen, Schroeder, Leines, Roth-Yousey, & Reicks, 2011). At the end of the program, learners' responses indicated that both GP and GC intended to eat 5-6 [5.64 mean±(3.38 Std. Dev.) GC and 5.60±(3.31) GP] out of 14 listed fruits, and 5-9 [5.85±(4.65) GC and 8.50±(4.79) GP] out of 26 vegetables, and perform 2-3 [2.60±(1.65) GC and 2.22±(1.20) GP] out of 10 activities more often.

Upon reflection, we lack the baseline data or non-treatment controls for comparison to rule out other factors that may have affected participants' reported behavioral intentions. This could be improved by collecting baseline behavioral intention data in the future. This is a great example of how the use of theory to guide the development, design, and evaluation can improve impact and identify future research questions. Thus, there are many opportunities for use of program theory in educational programs and workshops in Extension.

In conclusion, this article describes the use of theory in the development of a brief educational program through the use of a working model, design of program activities, and selection of outcome measures according to constructs from research-based theories of behavior change. GPU 2010's

©2013 Extension Journal Inc.

nutrition program is a unique and innovative application of theory-based approach to self-directed behavior change that has diverse applications within Extension.

Acknowledgments

The authors would like to acknowledge Michele Dickenson, Outreach Specialist with UW-Extension, and Kate Siemieniewski, Program & Outreach Assistant with Wisconsin Alumni Association, whose work makes Grandparents University possible each year.

References

Bird, C., & McClelland, J. (2010). Practical application of theory-driven intervention to Extension programming. *Journal of Extension* [On-line], 48(6) Article 6FEA4. Available at: http://www.joe.org/joe/2010december/a4.php

Contento, I. R. (2011). *Nutrition education: Linking research, theory, and practice* (second ed.). Boston, Massachusetts: Jones and Bartlett Publishers.

Van Offelen, S. J., Schroeder, M. M., Leines, D. R., Roth-Yousey, L., & Reicks, M. M. (2011). Go wild with fruits and veggies: Engaging children in nutrition education and physical activity with animal characters. *Journal of Extension* [On-line], 49(2) Article 2RIB6. Available at: http://www.joe.org/joe/2011april/rb6.php

Wisconsin Alumni Association. Grandparents University (R) Retrieved from: (http://www.uwalumni.com/home/gpugeneralinfo.aspx)

Copyright © *by Extension Journal, Inc.* ISSN 1077-5315. Articles appearing in the Journal become the property of the Journal. Single copies of articles may be reproduced in electronic or print form for use in educational or training activities. Inclusion of articles in other publications, electronic sources, or systematic large-scale distribution may be done only with prior electronic or written permission of the *Journal Editorial Office*, *joe-ed@joe.org*.

If you have difficulties viewing or printing this page, please contact *JOE* Technical Support