

# Eat Right for a Long and Healthy Life: What Everyone Needs to Know in 9 Nutritious Lessons - Phase II Report

## Final Report

### Eat Right for Long Life

5R44DK063892-03

Beginning and ending period: 3/01/2003 - 12/31/2007

Martin Sheehan, Ph.D., Principal Investigator

Laura Backen Jones, Co-Investigator

### Specific Aims of the project

This Phase II Project had the following aims:

1. Develop draft of the content for 9-unit curriculum
2. Conduct focus group meeting with individuals with disabilities and their learning partners
3. Complete draft of scripts and activity book
4. Have consultants review all the material
5. Produce video (DVD/VHS ) segments for the 9 lessons
6. Produce the written materials
7. Conduct a randomized controlled study

All of the above tasks were successfully completed in this project.

### Summary of the results

#### **Task 1. Develop draft of the content for the 9-unit curriculum**

Guided by SCT, we developed a series of instructional modules designed to increase behavioral capability, self-efficacy, and outcome expectations for individuals with mental retardation. The 9 sessions lasted approximately 35-45 minutes each. Specific behavioral objectives were identified for each session with a listing of activities to be done by the learning partner. Materials contained in an Activity Book included objectives, worksheets/handouts, materials/resources, homework, and suggested activities. It was suggested that each week one module should be done for a total of 9 weeks. The educational video and activity book were designed to interact in each learning session in order to maximize learning opportunities. The principles espoused in DI will be used in the videos. The emphasis will be on a dynamic presentation, the use of positive and negative examples when teaching concepts, frequent repetition of key concepts, and the cumulative review of previously taught materials. See Content Map next for an overview of the video and workbook content.

#### **Content Map**

Episode Topic(s)	Video Content				
	Home-Cooked Cafe	Dr. Why	Snoop	Katie	Workbook Topic
1. Wellness Prescription - Healthy eating - Fitness	Liquid Sunshine - Healthy breakfast - Daily exercise	Lifestyle Turnaround Healthy Lifestyle Prescription - Move - 5 a day - Cut down on red meat - Cut down on trans fat	The Case of the Extra Pounds - Smart snacking - Calories add up - Smart substitutions	Nothing	The Wellness Prescription

		- Cut down on sugary drinks			
2. Intro. to Nutrition - Energy balance - God eating with variety & nutritious food	Secret Sandwiches - Healthy, tasty eating - Trying new things	Calories, Schmalories - What is a calorie? - Getting the right number of calories	The Case of the Missing Nutrients - Macronutrients + Calories - High-nutrient food substituting	Why Is Bounce the Puppy Getting Plump? Energy balance: calories in ? calories out	Calories Macronutrients
3. Choosing and eating healthy foods - Fresh vegetables - Fats - Serving size - Food labels	Emergency Shopping - Vegetables are good! - Choosing a quick, healthy snack	Out with the Bad Fat, In with the Good Fat - Solid fats - Liquid fats	The Case of the Confusing Serving Size Food Labels: Serving Size	Charlotte's Snack Attack Snack attack away from home	Fats Serving Size
4. Daily exercise	Groovin' on Movin' - Sonny & Pedro - Getting invigorated - A walking club	The Activity Pyramid - Adding activity - Daily/weekly guidelines	The Case of the Missing Motivation - Learning about options - Picking something you enjoy	Nothing	The Activity Pyramid
5. Benefits and sources of micronutrients and fiber	Zero + Zero - Nuts about Nutrition game show - Eat the rainbow: a good source of vitamins, minerals, and fiber	Nuts About Nutrition- Micronutrients - Vitamins - Minerals - Fiber	The Case of the Missing Vitamins & Minerals - Knowing sources - Eating variety	Montel Takes a Vitamin Supplement Vitamins can't replace a healthy diet	Micronutrients Fiber
6. Water and it's Benefits	You Are What You Drink - Water & exercise - Ways to stay hydrated	Water, Water Everywhere - Water's jobs in the body - Exercise, sweat and staying hydrated	The Case of the Misunderstood Milk - Milk the solid body - Good sources of hydration	Why Is Albert Tired Being dehydrated makes you tired	Fluids

7. Food pyramids and digestion	Unfries for Dave - Healthy choices - Healthy substitutions	The Food Pyramid Guidelines for healthy food choices	The Case of the Bloated Belly Digestion: eating for healthy digestion	Nothing	The Food Pyramid
8. Healthy & unhealthy snacks and food labels	Snack Attack - Using Food labels to pick healthy snacks - The four rules	The Science of Food Labels How to read food labels	The Case of the Convenience Store Lunch Finding wholesome food with a variety of nutrients	Nothing	Reading food labels (four rules)
9. Go, Slow, Whoa and special occasion eating	Party Time! Food selection guidelines that work at parties, special occasions, and all the time.	Go, Slow, Whoa - Nutrient density - Nutrients vs. calories	The Case of the Fast Food Favorites Guidelines for healthy fast food selections	Rashida Goes to a Party How to use Go, Slow, Whoa to stay on track when temptations calls.	Go, Slow, Whoa

**Task 2. Conduct focus group meeting.**

A focus group meeting consisting of 8 adults (four with intellectual disabilities and four careproviders) was held in November of 2006. A brief overview of the project - Eat Right for Long Life - was given. The participants were told the following:

- We are developing a program to teach people with Developmental Disabilities about good nutrition and healthy eating. The program is 9 units long with each unit being a 20 minute DVD and then a workbook exercise.
- You are not going to see the entire program just some short film clips and then you will together fill out a workbook page.
- Please sign the informed consent form after I go over it with you.

(Hand out the consent forms)

- There will be five short video clips - watch each one and then fill out the work book page.
- We are not interested too much in whether you get the right answer. After all you have not watched the entire program - just some short clips of part of the lessons. We want to see how difficult it is for you to do the workbook pages and if the instructions are clear.
- Do not ask me for help during this session. I want to see how you can do it as a team alone.
- You will each be paid \$35 for you participation.
- Do you have any questions?

After they watched the five clips and filled out the pages we asked the following questions:

- What did you think of the little bit of the program you saw?
- What were the easiest pages to fill out?
- What were the most difficult pages to fill out?
- Any comments or thoughts on anything you saw or were asked to do?

- Do you think it is important to learn more about good nutrition and healthy eating?
- How would you rate your knowledge of good nutrition?

Based on the focus group results, these are the changes to the workbook that we made:

- Clarify question about protein on page 5 of the workbook.
- Make the facts in the Dr. Why episode video and on page 7 in the workbook consistent.
- Include options for physically disabled program participants in the activity pyramid and activity commitment pages.
- Change or delete the question about dairy products on the Bi-weekly Evening Check-in on page 13.

### ***Task 3. Complete draft of scripts and workbook***

The Principal Investigator worked with the Media Developers to develop scripts and a workbook for a program that would teach and encourage adults with DD. The primary goal of this project was to conduct a randomized trial of a theory-based intervention to improve eating and exercise behavior among people with mental retardation who are ages 21 and over. The research took place both at home and in residential settings where adults with mental retardation live. The secondary goals were increasing their parent or learning partner's nutritional knowledge about FJV&LFF and improving staff and parental awareness about the importance of having these foods available and accessible.

Based on discussions with project consultants and feedback from the focus group, the developers decided to: a) create nine lessons that would coach participants and learning partners through the content and b) develop work sheets to accompany the video lessons. Developers then created scripts and storyboards that provided a readable account of the audio-visual presentation and indicated key points regarding actions, narrations, images, graphics, dialogs, and pacing. The goal of script development was to create materials that would engage the viewer with storylines, action sequences, and situations that would be engaging as well teach and model curriculum content. Language used by narrators and characters was required to be simple and concrete. In general, the scripts were to rely on visual images as much as possible, with documentary and dramatic sequences portrayed as realistically as possible, attending to authenticity of detail in the selection of environmental props and style of dress, in the use of colloquialisms, and in the use of cultural and professional values and symbols. The scripts were also to develop storylines with specific instructional sequences leading to the solution or containment of problems, such as thinking of new ideas or overcoming a barrier. Finally, we would endeavor to present characters and situations in a manner that is respectful and promoting of self-determination. Instructionally, the materials made use of Direct Instruction teaching principles which include the use of fast-paced, dynamic presentations; use of positive and negative examples for teaching concepts; and cumulative review of previously taught materials.

The complete script covered nine lessons, each with its own topic. The main setting for the action was at the Home Cooked Café where a cast of characters met and set the stage for presenting nutritional knowledge in a fun and interesting fashion. The goal of teaching healthy eating was actualized by bringing to life three expert characters who delivered video lessons about nutrition. Dr. Why was an animated nutritional genius, Snoop, the Sleuth was a detective who solved nutritional riddles and Katie, the Cyber-Nutrition Advisor would answer nutritional questions.

### ***Task 4. Have consultants review all the material***

Drs. Anthony Rotatori and Karen Cullen served as consultants for the duration of this project. They were actively involved in the development of the total content -- providing initial content ideas and then feedback about the proposed treatment and scripts; reviewing the completed VHS/DVD; and helping with the development of the workbook and homework assignments.

### ***Task 5. Produce video segments for the 9 lessons***

The Media Producer/Director was responsible for the video production and worked with a professional team consisting of the Project Manager, Project Coordinator, Camera Operator, Sound Recordist, and Production Grip. The Media Producer/Director auditioned a cast of actors and selected the onscreen actors including several who were recruited from an established network of experienced actors with developmental disabilities. The production team ensured that actors reflected diversity of race, ethnicity, gender and disability.

An empty storefront restaurant in downtown Eugene was rented for lesson rehearsals and for the production period of the main video elements. The cast rehearsed intensively and mastered all the core content. The cast were paid for attending the rehearsals. Other location sites were identified for home and community segments.

Once the actors were sufficiently prepared, videotaping began. The program was shot on professional digital video format, DVCAM, and a professional lighting and grip package was used. Production took 10 days to complete.

Post-production was completed at IRIS Media's studio. The Editor assembled the program on a Fast 601 nonlinear digital editing system. A digital offline version of each video was available for review by the Principal Investigator and other members of the project team to view and necessary revisions to the programs were made in the course of the editing process. The Graphic Artist/Animator created graphics, illustrations and animations using a combination of professional graphic and animation software programs. The Director worked with the Sound Designer to mix and sweeten audio using digital audio tools at the IRIS studio. Original music was composed and recorded for use as a program introduction, finales and for segues in the program.

The resulting program was digitally mastered digital on high-quality digital videotape (DVC-PRO format) and made ready for duplication.

### **Task 6. Produce the text materials**

Developers produced a companion Activity Book. Each lesson consisted of two to four pages of worksheets that used simple language, large friendly lettering, and playful design elements.

**Task 7. Conduct a randomized controlled study** with a sample of 100 adults with mild to moderate mental retardation and their learning partners to evaluate the efficacy of the intervention.

### **Participants.**

Ninety dyads consisting of a target adult with mental retardation (TA) and an adult without mental retardation to serve as a learning partner (LP) were recruited to participate in the evaluation. Of these dyads, 24 did not complete the baseline assessment, leaving a total of 66 dyads. An additional 15 dyads failed to complete either follow-up or exit interviews or both. The analyses were performed on the remaining 51 individuals. 39 of the 90 participants failed to complete the study; 24 dropped out before completing the Baseline assessment, and 15 after completing the Baseline assessment, representing an attrition rate of 43%.

Participants in the Intervention Group received the Eat Right for Long Life Curriculum. Participants in the Control Group received selected materials from the 5 A Day program, and at the end of the research study, a complementary copy of the Eat Right for Long Life curriculum. All participants in both groups were paid a total of \$130.00: \$25.00 for each of two face-to-face interviews and \$20.00 each for completion of four one-week daily food diaries.

### **Procedures.**

All participants were recruited via flyers sent to the Arc facilities, group home organizations, foster homes, vocational facilities, other MR service providers and People First chapters and through presentations by the Principal Investigator and project staff at meetings of these organizations. In addition, we placed advertisements in The Arc national home page, the IRIS website, and the National Association of Down Syndrome bulletin board. IRIS Media also utilized a database of individuals with MR, parents, and support staff who have indicated an interest in participating in evaluation activities. People in this database who fit our subject criteria were contacted directly by mail or email. Individuals were also recruited through personal contacts of the Principal Investigator and via IRIS Media's presence at in-service conferences.

Flyers and advertisements briefly explained the study and provide a toll-free number and email address that we could be contacted at for those interested. When interested participants contacted us, a member of the project staff fully explained the study. Individuals were asked to identify either an LP or a TA. Project staff then contacted the LP or TA to explain the study. Participants who indicate an interest were mailed a complete written explanation and were randomly assigned to either the Intervention or Control group. Written informed consents from TAs and their LPs were obtained either prior to the Baseline assessment or at the time of the Baseline assessment.

Assessments was conducted at three points in time: Baseline, Exit (Baseline + 10 weeks), and Follow Up (Baseline + 6 months). The Baseline assessment consisted of a demographics questionnaire, and LP nutritional knowledge, motivation and confidence, self-efficacy, and family eating habits. Upon completion of the Baseline assessment, the Intervention group was mailed the Eat Right for Long Life curriculum. The Control group was mailed a packet of materials from the Produce for Better Health Foundation, consisting of ?The Color Way Plan? (a 40-page introductory booklet with menu plans and recipes), 5 brochures (Take the 5 A Day Challenge, Snack Your Way to 5 A Day, Fruits and Vegetables By Popular Demand, Eat More Salads, and Fruits and Vegetables are as Good as Gold), the Color Way Refrigerator Magnet, and the 5 A Day Bingo game (<http://www.shop5adaycatalog.com/acatalog/>). Participants in the Control Group were also be given the url for the 5 A Day website for recipes and additional information (<http://www.cdc.gov/nccdphp/dnpa/5aday/index.htm>). Approximately 10 weeks post-Baseline, we conducted an Exit assessment with the LP, consisting of the baseline assessment and a Consumer Satisfaction questionnaire for the LPs.

### **Instruments**

Demographics. This was developed by project staff, with items measuring relevant demographic variables such as gender, age, ethnic background, income, education, and diagnosis for the adult with MR.

Nutritional Knowledge: This instrument was developed in-house by the development team and consisted of 18 general nutrition questions.

L.P. Questionnaire: Self-Efficacy to Regulate Eating Habits. This instrument was developed by Bandura (2006) and consists of 29 questions that describe situations that make it difficult to adhere to a diet. Parents will be asked to rate their degree of confidence by recording a number from 0 to 100 for each question.

L.P.'s Motivation and Confidence Scale. This 8-item questionnaire measures parents' motivation to change and confidence about weight management for their child. Some of these items were adapted from Dieting Readiness Test (Brownell, 1990); others were created by project staff.

Family Eating and Activity Habits Questionnaire (FEAH) (Golan & Weizman, 1998). This is a 21-item questionnaire designed to measure factors that facilitate children's obesity and to monitor environmental changes and family behavior modifications associated with weight loss. Items refer to the responding parent, his/her spouse, and the overweight/obese child. We will modify the language, as needed, to be congruent with adult children. The questionnaire contains four scales:

1. Activity Level (AL) (5 items): Frequency of physical and sedentary activity by parent, spouse, and TA.
2. Stimulus Exposure (SE) (6 items): Presence and visibility of snacks, sweets, cake and ice-cream in the home and boundaries of TA's autonomy in buying or taking these foods. We will add items to this scale to measure the presence and visibility of fruits, vegetables and low-fat foods, and the boundaries of the TA's autonomy in buying or taking these foods.
3. Eating Related to Hunger (ERH) (4 items): Person in family who initiates eating, eating and hunger, dealing with no appetite at mealtimes, and eating during mealtimes when not hungry.
4. Eating Style (ES) (6 items): Eating while standing, while watching TV, doing homework or reading, following stress (anger, frustration, boredom), and between meals; second helpings; parental presence when TA is eating.

Chronbach's alpha for the four scales is reported as .82 (AL), .78 (SE), .86 (ERH) and .88 (ES). Test-retest reliability for individual items and the total score ranges from .78 to .90 (median .84); total score test-retest reliability is .85. Scores on the four scales have been shown to have adequate concurrent validity by discriminating between normal-weight and overweight children. Pearson correlations between self and spouse report range from .81 to .94. Predictive validity has been established through use of the questionnaire in a clinical intervention with families with overweight children. (Golan & Weizman, 1998).

Learning Partner Consumer Satisfaction Questionnaire. This instrument was developed by project staff in questionnaire form for the LP. The questionnaire consists of approximately 31 questions, in multiple formats (five-point Likert-type scales, binary, open-ended), to obtain both quantitative and qualitative responses. Questions were written to measure user reactions in three areas: the video materials; the written materials, and reactions to the entire program. General reaction questions are also included.

Copies of these instruments are provided in the Appendix.

## Results

### Sample Demographics

Table 1a. Learning Partner Demographics?Analysis Sample (n=51)

		Treatment Assignment					
		0 Control		1 Treatment		Total	
		Column N %	Count	Column N %	Count	Column N %	Count
Learning Partner Gender	1 male	3.7%	1	4.2%	1	3.9%	2
	2 female	96.3%	26	95.8%	23	96.1%	49
	Subtotal	100.0%	27	100.0%	24	100.0%	51
Learning Partner Race	1 white	96.3%	26	100.0%	23	98.0%	49
	2 asian	3.7%	1	.0%	0	2.0%	1
	3 black	.0%	0	.0%	0	.0%	0
	4 native amer	.0%	0	.0%	0	.0%	0
	5 hawaiian	.0%	0	.0%	0	.0%	0
	6 other	.0%	0	.0%	0	.0%	0
	13 white & black	.0%	0	.0%	0	.0%	0
Subtotal	100.0%	27	100.0%	23	100.0%	50	
Learning Partner Ethnicity	1 hispanic	.0%	0	.0%	0	.0%	0
	2 nonhispanic	100.0%	27	100.0%	24	100.0%	51
	Subtotal	100.0%	27	100.0%	24	100.0%	51

Table 1b. Learning Partner Demographics (continued)

	Treatment Assignment					
	0 Control		1 Treatment		Total	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Learning Partner Age	52.2	9.1	53.8	8.9	52.9	8.9
Learning Partner: Height (feet)	5.4	.2	5.4	.2	5.4	.2
Learning Partner Weight	157.3	40.8	177.7	73.9	166.9	59.0

Table 2a. Target Adult Demographics?Analysis Sample (n=51)

		Treatment Assignment					
		0 Control		1 Treatment		Total	
		Column N %	Count	Column N %	Count	Column N %	Count
Target Adult Gender	1 male	37.0%	10	29.2%	7	33.3%	17
	2 female	63.0%	17	70.8%	17	66.7%	34
	Subtotal	100.0%	27	100.0%	24	100.0%	51
Target Adult Race	1 white	81.5%	22	95.5%	21	87.8%	43
	2 asian	3.7%	1	.0%	0	2.0%	1
	3 black	3.7%	1	.0%	0	2.0%	1
	5 hawaiian	3.7%	1	.0%	0	2.0%	1
	6 other	7.4%	2	4.5%	1	6.1%	3
	Subtotal	100.0%	27	100.0%	22	100.0%	49
Target Adult Ethnicity	1 hispanic	3.7%	1	4.2%	1	3.9%	2
	2 nonhispanic	96.3%	26	95.8%	23	96.1%	49
	Subtotal	100.0%	27	100.0%	24	100.0%	51
Target Adult In School	0	51.9%	14	58.3%	14	54.9%	28
	1 in school	48.1%	13	41.7%	10	45.1%	23
Target Adult In Day Program	0	74.1%	20	79.2%	19	76.5%	39
	2 in day program	25.9%	7	20.8%	5	23.5%	12
Target Adult Stays At	0	59.3%	16	58.3%	14	58.8%	30
	3 stays at home	40.7%	11	41.7%	10	41.2%	21
Target Adult In Supported	0	70.4%	19	79.2%	19	74.5%	38
	4 in a supported work prog	29.6%	8	20.8%	5	25.5%	13
Target Adult At a Community	0	88.9%	24	75.0%	18	82.4%	42
	5 at a community job	11.1%	3	25.0%	6	17.6%	9

Table 2b. Target Adult Demographics (continued)

	Treatment Assignment					
	0 Control		1 Treatment		Total	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Target Adult Age	24.5	8.6	23.7	6.8	24.1	7.7
Target Adult Height (feet)	5.3	.5	5.2	.3	5.2	.4
Target Adult Weight	167.6	37.7	160.1	29.4	164.0	33.9

Table 1a and 1b present the demographic characteristics of the learning partners by condition; the characteristics were comparable across conditions. Nearly all participating learning partners were white women. Table 2 presents the target adult demographic characteristics by condition. This sample was about two-thirds female and nearly 88% white. Individual characteristics did not differ significantly between control and treatment conditions.

Repeated measures analysis of covariance (RANCOVA) models were used to compare the two conditions on learning partner report of target adult activity measures at follow-up and exit controlling for baseline differences. Treatment effects were inferred by examining several types of effects. First, between-subject differences between treatment and control conditions, with baseline values of each outcome variable included in the model as a covariate, provided the primary point of comparison. Thus specified, the models were essentially testing for differences in changes from baseline to an average of both post-treatment assessments (see columns Marginal Means in Table 3).

Table 3. Treatment effect analyses

Outcome	Marginal Means				Trend towards Improvement <sup>3</sup>	
	Cx	Nu-II	t	p	Nu-II	Both

LP1: Times/wk leisure time classes	0.53	0.97	1.83	NS	NS	NS
TA1: Times/wk leisure time classes	1.25	2.17	4.15	< 0.05	NS	NS
LP: Bored when alone	1.61	1.32	6.40	< 0.02	< 0.06	NS
Snacks/sweets usually found in house	2.37	2.29	0.38	NS	NS	NS
TA is allowed sweets/snacks	1.93	2.03	0.23	NS	NS	< 0.05
TA buys sweets/snacks	1.18	1.40	2.47	< 0.12	NS	< 0.05
LP: eating pace2	2.12	2.10	0.06	NS	NS	< 0.05
TA: eating pace2	1.80	1.88	0.52	NS	NS	NS
LP: asks for seconds	2.67	2.52	1.21	NS	NS	NS
TA: asks for seconds	3.04	3.00	0.04	NS	NS	NS
LP: Motivation & confidence	4.05	4.25	2.89	< 0.10	< 0.09	NS
LP: Self-efficacy to regulate eating habits	7.11	7.33	0.71	NS	NS	< 0.01
LP: TV watching/Video games	10.20	13.38	1.15	NS	NS	NS
TA: TV watching/Video games	17.77	14.57	1.48	NS	NS	< 0.05
LP: Healthy leisure activities	8.29	7.29	1.12	NS	NS	< 0.01
TA: Healthy leisure activities	9.29	9.28	0.00	**	NS	< 0.01
Stimulus Exposure	4.98	4.57	1.00	NS	NS	< 0.05
LP: Healthy eating style	2.52	2.58	0.28	NS	NS	< 0.01
TA: Healthy eating style	2.99	3.04	0.24	NS	NS	< 0.01
LP: Appropriate eating place	2.80	2.93	0.96	NS	NS	< 0.01
TA: Appropriate eating place	2.92	2.89	0.11	NS	NS	< 0.01
LP: How often eat with TA	3.24	3.20	0.07	NS	NS	NS
LP: Nutrition knowledge	19.80	19.89	0.10	NS	NS	< 0.01

1. LP = Learning Partner; TA = Target Adult with MR

2. Larger = faster

3. Nu-II column gives significance of 1-tailed test for slope over all 3 waves that is specific to the treatment condition. Both columns provide the same test across both treatment and control, indicating improvement in both conditions.

We also examined interactions between treatment and wave (time) effects as a means to determine whether the rate of change in an outcome measure was significantly different between

treatment conditions (columns under Trend towards Improvement).

It is evident from Table 3 that the Nutrition II (NU-II) program improved several outcomes better than the control condition. Program TA's spent almost 75% more time in leisure classes than those in control ( $p < 0.05$ ), and program LP's reported more motivation and confidence to help their child with weight control in the NU-II condition relative to control (trend,  $p < .10$ ). Furthermore, LP's reported more improvement in avoiding boredom when alone in the NU-II condition compared to control ( $p < 0.02$ ). All of these outcomes could be expected to support weight control. On the other hand, there was also a weak trend ( $p < 0.12$ ) towards TAs buying snacks and sweets on their own, perhaps in response to their lowered availability in the home.

While no other outcomes improved significantly better in the NU-II condition compared to control, note that tests for trend indicated broad improvement in outcomes in both program and control conditions (the last column of Table 3). These results suggest that providing any reasonable level of support for weight control among adults with MR and their caregivers is beneficial to improvements in lifestyle, diet, and daily routines involving meals. In addition, the NU-II program appears to be particularly helpful in offering support and confidence to the caregiver.

Usability and customer satisfaction results are presented in Tables 4a and 4b, with descriptive means in the former and tests of statistical significance in the latter. Examining means for the program condition in Table 4a, all means were well above average rating (3.0 for 5-point scales, 5.5 for 10-point scales); most of the 5-point ratings were in fact between "quite" and "very" good (4 and 5).

Examining Table 4b, it is evident that the Nutrition-II program was found to be significantly (or trend-significantly, i.e., p-value under 0.10) more useable than the control program on most ratings. Exceptions mostly involved items that would not likely have differed much between control and treatment, such as staff responsivity, ease of online questions, and the overall difficulty of undertaking the program.

Finally, Table 4c presents results for several summary judgments of each program rated in a simple yes-no format. At least 50% of all Nu-II participants gave "yes" answers to these questions, and for every such question, there were more "yes" responses in the Nu-II than control conditions.

**Table 4a. Usability and user satisfaction means by treatment group and total**

	Treatment Assignment					
	0 Control		1 Treatment		Total	
	Mean	Count	Mean	Count	Mean	Count
did the dvd grab yr interest	2.17	27	3.77	24	2.93	51
did the dvd keep yr interest	2.25	27	3.77	24	2.98	51
did the dvd grab childs interest	2.04	27	4.23	24	3.09	51
did the dvd keep childs interest	2.04	27	4.23	24	3.09	51
how clear were main messages	2.71	27	4.68	24	3.65	51
how clear were messages to child	2.38	27	4.32	24	3.30	51
did the info make sense to you	2.79	27	4.82	24	3.78	51
did the info make sense to child	2.29	27	4.41	24	3.30	51
overall rate the quality of dvd	4.83	27	8.95	24	6.80	51
rate quality of workbook	3.46	27	4.77	24	4.09	51
does workbook go well with dvd	2.79	27	4.59	24	3.65	51
were the activities useful	3.08	27	4.41	24	3.72	51
were instructions easy to understand	3.79	27	4.45	24	4.11	51
was it hard to do knowledge worksheets	3.38	27	3.77	24	3.57	51
was it hard to do check in worksheets	3.25	27	3.77	24	3.50	51
were my promise worksheets realistic	3.04	27	3.64	24	3.33	51
overall, rate quality of workbook	6.04	27	8.18	24	7.07	51
were materials designed for home use	3.92	27	4.68	24	4.28	51
is this something you would do w child	3.92	27	4.64	24	4.26	51
overall,did you like online questions	4.33	27	4.64	24	4.48	51
were online questions easy to read	4.58	27	4.68	24	4.63	51
was online info presented well	4.46	27	4.64	24	4.54	51
how responsive was staff	4.54	27	4.50	24	4.52	51

Table 4b. Usability and user satisfaction mean ratings: Control v. Nu-II

		t-test for Equality of Means				
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
did the dvd grab yr interest		-4.540	44	.000	-1.606	.354
did the dvd keep yr interest		-4.023	44	.000	-1.523	.379
did the dvd grab childs		-6.516	44	.000	-2.186	.335
did the dvd keep childs		-6.516	44	.000	-2.186	.335
how clear were main		-5.165	44	.000	-1.973	.382
how clear were messages		-5.715	44	.000	-1.943	.340
did the info make sense to		-5.251	44	.000	-2.027	.386
did the info make sense to		-6.129	44	.000	-2.117	.345
overall rate the quality of		-4.977	44	.000	-4.121	.828
rate quality of workbook		-4.103	44	.000	-1.314	.320
does workbook go well with		-4.541	44	.000	-1.798	.396
were the activities useful		-3.941	44	.000	-1.326	.336
were instructions easy to		-1.901	44	.064	-.663	.349
was it hard to do		-1.015	44	.315	-.398	.392
was it hard to do check in		-1.344	44	.186	-.523	.389
were my promise		-1.852	44	.071	-.595	.321
overall, rate quality of		-3.103	44	.003	-2.140	.690
were materials designed for		-2.842	44	.007	-.765	.269
is this something you would		-2.528	44	.015	-.720	.285
will child now ask for what		-1.863	44	.069	-.515	.276
overall, did you like online		-1.378	44	.175	-.303	.220
were online questions easy		-.579	44	.565	-.098	.170
was online info presented		-1.031	44	.308	-.178	.173
how responsive was staff		.167	44	.868	.042	.250

Table 4c. Usability and User Satisfaction? Binary Choice (Yes/No) Questions.

			Treatment Assignment		
			0 Control	1 Treatment	Total
would you recommend to other parents	1 Yes	Row N %	46.3%	53.7%	100.0%
was workbook designed for	1 Yes	Row N %	43.2%	56.8%	100.0%
program increased	1 Yes	Row N %	42.9%	57.1%	100.0%
prog convinced child to eat	1 Yes	Row N %	48.7%	51.3%	100.0%
prog motivated child to eat	1 Yes	Row N %	44.7%	55.3%	100.0%
prog increase import on child	1 Yes	Row N %	50.0%	50.0%	100.0%
did child learn about asking	1 Yes	Row N %	47.5%	52.5%	100.0%
did study mats arrive on time	1 Yes	Row N %	46.2%	53.8%	100.0%

### Summary

In sum, there is evidence that the Nutrition-II program is superior to a control program on several important outcome measures, including caregiving adult's motivation and confidence, and MR adult's adoption of more active leisure time activities. Further, the Nutrition-II program was judged superior to control on most measures of usability and consumer satisfaction, suggesting that over a longer period of time than the present study, it would be more consistently utilized by the target population. Finally, the Nutrition-II program produced improvements in most of the critical outcomes shown in Table 3, including lower availability of sweets and high-fat foods, a more active lifestyle, and better eating habits; however, interestingly, so did the control program. If anything, this finding demonstrates not only that it is possible to help adults with MR and their caregivers achieve a healthier lifestyle, but also that this target population will respond positively to even relatively less sophisticated interventions. Further research will be needed to identify program components that are especially effective.

### Publications

There are no papers depicting the Phase II outcomes currently under review.

### Patents/Copyrights and Materials

The program, ***Eat Right for a Long and Healthy Life***, has been copyrighted in 2007 by IRIS Media, Inc.

### **Product and Intended Use**

This DVD delivers healthy portions of nutrition and fitness information guaranteed to please many audiences. The carefully crafted content in this nine-lesson curriculum is based on national health curriculum standards for grades 3 through 6, and has been designed to appeal to students in upper elementary grades and to students who have developmental disabilities.

First, viewers join an inclusive cast of characters at the Home-Cooked Cafe where learning about how to eat right is served up with every meal.

Next, viewers meet two experts, Dr. Why and Snoop-the-Sleuth, who use animation and humor to make complicated ideas fun and easy to understand.

Viewers learn about:

- What healthy eating really is
- Calories and metabolism
- Food groups and nutrients
- Healthy and unhealthy fats
- Decoding food labels
- Optimum serving sizes
- Water and why it's important
- The role of digestion
- The activity pyramid and daily exercise
- 25 colorful Activity Sheets that integrate with the video lessons are filed on the DVD as PDFs for easy printing.

### **Related Principal Investigators**

- Martin R. Sheehan, Ph.D.